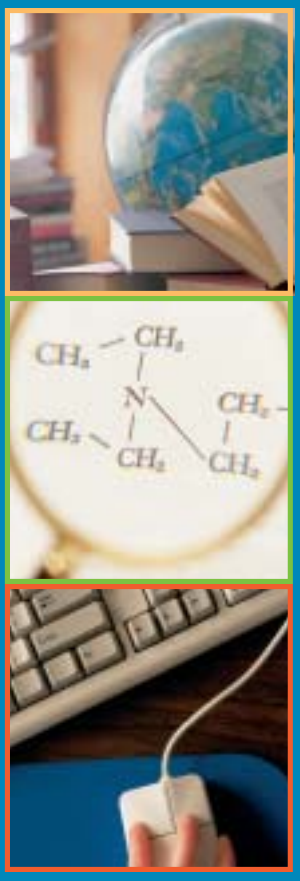
Education Indicators in Canada



Report of the Pan-Canadian Education Indicators Program 2003

PCEIP 2003

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Symbols

The following standard symbols are used in this publication

.	not available for any reference period
..	not available for a specific reference period
...	not applicable
p	preliminary
r	revised
e	estimate
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
E	use with caution
F	too unreliable to be published

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The Pan-Canadian Education Indicators Program

Background

This document is the third edition of *Education Indicators in Canada: Report of the Pan-Canadian Education Indicators Program*.

The Pan-Canadian Education Indicators Program, or PCEIP, is a joint venture of Statistics Canada and the Council of Ministers of Education (CMEC), Canada. Funding in support of PCEIP has also been provided by Human Resources Development Canada.

In the Victoria Declaration of 1993, the provincial and territorial ministers responsible for education and training agreed to create the PCEIP. The PCEIP mission is to publish a set of statistical measures on education systems in Canada for policy makers, practitioners and the general public to evaluate the performance of education systems across jurisdictions and over time.

The first indicators published under the PCEIP banner appeared in 1996. A consultation with provincial and territorial governments and other education stakeholders the following year led to the definition of a new set of indicators, designed to address key policy issues.

In 1999, the first PCEIP report based on the new indicator set was published. Data for about half of the full set of indicators were included in it. The present report updates information on most of the indicators reported in 1999, and provides several additional indicators.

What is unique about PCEIP

The Pan-Canadian Education Indicators are not the only indicators on Canadian education systems. Within Canada, many jurisdictions have developed education indicators, or are in the process of doing so.

The diversity of education systems in Canada and differences in definitions and data collection methods often restrict meaningful interjurisdictional comparisons. The Pan-Canadian Education Indicators incorporate extensive methodological work aimed at harmonizing data across jurisdictions. Indeed, the goal of the program is to provide consistent and high-quality information on education for all of Canada to support informed decision-making, policy formulation and program development.

Internationally, the Organisation for Economic Co-operation and Development produces a set of education indicators called the *Indicators of Educational Systems (INES)*. The INES compare education systems of OECD member countries. Results are published annually in *Education at a Glance: OECD Indicators*. Canada has participated in this project since its inception in 1988. PCEIP incorporates certain INES indicators to provide an international framework for pan-Canadian and jurisdictional indicators.

Value of education indicators

Indicators combine discrete education statistics and give them context. Indicators permit comparisons—between jurisdictions, over time, and with commonly accepted standards.

Although indicators show trends and uncover interesting questions, they cannot by themselves provide explanations or permit conclusions to be drawn. Additional research will always be required to diagnose the causes of problems and suggest solutions. The aim of this report is to stimulate thinking and promote debate on education issues.

Future plans

The next PCEIP report is tentatively scheduled for 2005. Program priorities include:

- developing a Web site for PCEIP that will provide electronic access to more detailed underlying databases and make updated information readily available;
- updating existing indicators as new data become available;
- continuing research to refine and select data for the remaining indicators;
- improving timeliness and cross-jurisdictional comparability;
- consulting with provincial and territorial governments and other education stakeholders to increase the relevance and usefulness of the PCEIP.

In this edition

The indicators are divided into five chapters. **The first chapter**, *A Portrait of the School-Age Population*, focuses on demographic trends for the population aged 5 to 24, and considers indicators of cultural diversity, family background, and low income.

Chapter B, *Financing Education Systems*, looks at trends in public and private expenditures on education, examines the distribution of capital and current expenditures, and reports on student debt.

Chapter C, *Elementary-Secondary Education*, includes indicators on pre-school children, enrolment, graduation, human resources and school characteristics at the elementary-secondary level. Other topics covered are information and communications technology and student achievement.

Chapter D, *Postsecondary Education*, provides similar information at the postsecondary level, looking at participation and graduation rates for trade-vocational/apprenticeship programs, colleges and universities, as well as human resources at colleges and universities. It also covers research and development, adult education and training, and the educational attainment of the working-age population.

Finally, **Chapter E,** *Transitions and Outcomes*, looks at transitions from high school to postsecondary education and work, and provides information on labour market outcomes by level of education.

The indicators in this report were selected on the basis of two criteria: relevance for policy development and availability of data. They are based on the most recent available data. Excel tables will be updated regularly.

Highlights

A portrait of the school-age population

Chapter A presents the evolution of some key characteristics of the school-age population during the 1990s, and attempts to highlight some of the challenges for the education systems in Canada.

Due to the recent drop in births, Canada can expect the population aged 5 to 13 to decline by an estimated 14% between 2001 and 2011. As the small generations born in the second half of the 1990s age, a corresponding drop is expected for the population aged 14 to 18 between 2006 and 2016 and, for the 19- to 24-year-olds, between 2016 and 2026.

All jurisdictions could be facing a period of decline in their school-age population. However, the level at which the school-age population would stabilize at the end of the projection period varies by jurisdiction depending on the level and direction of both internal and international migrations. Despite the decline in births, the school-age population could stabilize at levels higher than or close to those of 1991 in three provinces, Ontario, Alberta and British Columbia and two territories, Northwest Territories and Nunavut, while it could end up below the 1991 levels in the Atlantic provinces, Quebec, Manitoba, Saskatchewan and Yukon.

Since 1990, an average of 225,000 new immigrants of all ages arrive in Canada every year. This influx is having a profound impact on the ethnic, linguistic, and cultural diversity of Canadian schools. In terms of diversity, two Census Metropolitan Areas (CMAs) stand out: Toronto and Vancouver. The 2001 Census showed that, in both these CMAs, over 25% of the school-age population were immigrants, over 40% were visible minorities, and close to 20% had a home language other than English or French.

The home environment of school-age children is also changing. School-age children in 2001 were less likely than those in 1991 to have parents who were married. The youngest were more likely to be born to a lone parent or to experience parental separation, and, with higher proportions of parents working in 2001 than in 1991, they were also less likely to have a parent at home.

Young adults aged 19 to 24 were staying in their parents' homes in higher proportions in 2001 than in 1991. Children in lone-parent families and youth who have left the parental home were more likely to experience low income and for longer periods than those who lived in two-parent families.

Financing education systems

Chapter B offers an overview of expenditure on education in Canada. The chapter examines expenditures on a per-student and per-capita basis as well as in relation to the gross domestic product (GDP), and distinguishes public and private as well as capital and current expenditures.

Between 1997-1998 and 2001-2002, the total education expenditure in Canada rose 6% in 2001 constant dollars; the average cost per student for all educational levels combined rose 5.6% while the expenditure per capita increased 2%. Most of the increase occurred at the postsecondary level.

In 1999-2000, expenditure on education represented 6.6% of the Canadian GDP. According to OECD, Canada ranked first among the G-7 countries in 1999 with respect to the percentage of the GDP allocated to education, followed by the United States. The territories and the small provinces allocated a higher percentage of their GDP to education than the large provinces.

In 2001, governments as a whole in Canada spent 15% of their total expenditure on education compared to 17% for health. Until 2000, they had spent more on education than health. Between 1997-1998 and 2001-2002, public expenditure on education grew 2% at the elementary-secondary level and 9% at the postsecondary level.

Private funding also plays an important role in education. In 2001-2002, 7% of all expenditure at the elementary-secondary level and 27% at the postsecondary level came from private sources. In 2000, 43% of households incurred education expenses, spending an average of $1,946. Tuition fees at universities increased during the 1990s. They almost doubled for undergraduate programs between 1990-1991 and 2001-2002, rising from an average of $1,806 to $3,585 (in 2001 constant dollars).

Between 1990-1991 and 1999-2000, student tuition and other non-government revenue increased from 32% to 45% of total university revenue.

Most of the expenditure at the elementary-secondary level is on teachers' salaries, which accounted for about three-quarters of all expenditures in 1999-2000.

Salaries of university and college faculty fell slightly in 2001 constant dollars during the 1990s. In 1999-2000, female university full and associate professors earned 95% of what their male counterparts earned.

In Canada, 1995 graduates who borrowed from government student loan programs owed on average just over $10,000 at graduation, one-third more than 1990 graduates. In all jurisdictions, debt levels were higher and repayment rates slower for the 1995 than the 1990 graduates.

College graduates from the class of 1995 owed less at graduation than university graduates and had faster rates of repayment.

Elementary-secondary education

The indicators in Chapter C cover pre-elementary, elementary and secondary education. Topics examined include school readiness of 4- and 5-year-olds, enrolments by age, the ageing of the teaching work force, the use of information technologies and student outcome measures.

In 1998-1999, about 15% of both 4- and 5-year-olds performed relatively poorly on a test of cognitive development that is generally regarded as a good predictor of school readiness. Twice as many boys as girls of those ages had some speech difficulty.

Two-thirds of 4- and 5-year-olds had an adult who read to them every day. The proportion of 4-year-olds who looked at books daily by themselves when at home was higher for girls (79%) than boys (64%). One in three children aged 4 and 5 participated in coached sports activities at least once a week.

At the pan-Canadian level, the number of schools grew 3% during the 1990s, while enrolments grew 6%. Although compulsory education begins at age 6 in most jurisdictions, 95% of 5-year-olds and 43% of 4-year-olds were attending school in 1999-2000. Enrolment at age 16—the last year of compulsory education in most jurisdictions—was at 95% in 1999-2000 in Canada.

At the pan-Canadian level, the average number of students per educator in public elementary-secondary schools increased from 15.7 in 1990-1991 to 16.9 in 1998-1999 and fell back to 16.3 in 1999-2000.

The number of full-time educators did not vary during the 1990s while the number of educators working part-time grew 52%. Men represent a declining percentage of educators, a trend likely to continue given that female educators are, on average, younger than their male counterparts. Compared to the entire labour force, a much larger proportion of educators are nearing retirement.

The percentage of secondary school principals who reported that the instructional and material resources of their school were adequate was higher in Canada than in most other countries.

In Canada, in 2000, there were, on average, seven students per computer in a school, which was among the best ratios internationally. Compared to other countries, Canada's schools were among those with the highest proportion of computers connected to the Internet.

More than 85% of Canadian students reported they had frequent access to computers both at school and at home. Across OECD countries, students of both sexes had about the same access to computers at school, but, in most countries including Canada, more males than females actually used them.

In 2000, 15-year-olds in 32 countries were assessed by OECD's Programme for International Student Assessment (PISA). Canada ranked among the top countries in all three areas tested: reading, mathematics and science.

According to another international assessment, the Third International Mathematics and Science Study (TIMSS), Canada was one of the few countries in which performance in both mathematics and sciences improved between 1995 and 1999.

Finally, in a pan-Canadian assessment, the School Achievement Indicators Program (SAIP), about 68% of 13-year-olds and slightly under half of 16-year-olds attained the expected performance level in mathematics for their age. About three-quarters of both 13- and 16-year-old students attained the expected performance level for their age in science.

Canada shows greater equity in reading achievement across socioeconomic groups than many countries.

In reading and science, students performed at lower levels in the Francophone school systems outside Quebec than in the Anglophone systems.

There were no consistent or significant differences in mathematics or science performance between male and female students across the range of assessments in Canada (PISA, TIMSS and SAIP). However, in PISA 2000, females outperformed males in reading in all participating provinces and countries.

The pan-Canadian secondary school graduation rate[1] rose from 76% in 1994-1995 to 78% in 1999-2000. However, it remained well below that of Japan (94%), Germany (91%) and France (84%). Graduation rates in Canada remained higher for females (83%) than for males (73%), but the gap narrowed in the latter half of the 1990s.

At the pan-Canadian level, the high school leaver rate[2] fell from 18% in 1991 to 12% in 1999. The higher the level of a parent's education, the more likely a student is to complete high school. Most high school leavers reported that they had at least a "C" grade average in their last year of high school, a fact that suggests that poor academic performance is not the only reason for leaving school. High school leavers were more likely not to work, or to work 30 hours or more in a week, than were graduates. More than one-quarter of female leavers had at least one dependent child.

1. Defined as the number of high school graduates relative to the population at the typical age at graduation (18 years in all jurisdictions except in Quebec, where it is 17 years).
2. Defined as the proportion of 20-year-olds who have not completed their secondary education and are not working towards its completion.

Postsecondary education

Chapter D examines several aspects of postsecondary education, including enrolment and graduation in trade-vocational, apprenticeship, college and university programs, adult education and training, human resources, research and development (R&D), and the educational attainment of the working age population.

Between 1988-1989 and 1998-1999, enrolment in trade-vocational programs decreased among both full-and part-time students. In 2000, females represented 9% of the total number of registered apprentices compared to 4% in 1991.

Between 1987-1988 and 1999-2000, full-time enrolment in community colleges increased by 28% and part-time enrolment by 12%.

Between 1988-1989 and 1998-1999, full-time enrolment at Canadian universities increased while part-time enrolment dropped. In 1998-1999, the majority of students in full-time undergraduate studies were women.

Although overall participation rates in adult education and training declined slightly during the 1990s, the number of hours spent on adult education and training increased. People who are employed are more likely to participate in education or training activities than those who are unemployed. Employees are most likely to receive employer-sponsored training if they work for a medium or large firm in a white-collar occupation.

The number of full-time college educators increased by half between 1989-1990 and 1999-2000, from 18,500 to 27,800, while the number of full-time university educators declined from 35,900 to 33,800. The majority of postsecondary educators are men, although the percentage of female educators rose during the 1990s. Postsecondary educators are significantly older as a group than the overall work force.

In 2000, Canada placed 15th among OECD countries in terms of its investment in overall R&D activity. The Government of Canada has set a goal of placing among the top five by 2010.

The university sector is the second largest contributor to R&D at the Canada level (after the business sector), but is the primary contributor in most provinces. Since 1991, expenditures that universities make on R&D have increased, with most of the growth occurring during the latter half of the decade.

Universities are the largest financial supporters of their own research, accounting for 50% of funding from all sources in 2000, followed by the federal government, through sponsorship of university R&D, which accounted for 22%. Internationally, governments' share of R&D funding for postsecondary education declined between 1991 and 1999.

In Canada, the largest proportion of university R&D occurs in the natural sciences and engineering. However, during the 1990s, university R&D in health sciences grew at the fastest rate.

Graduation rates for bachelor's degrees[3] levelled off at about 30% in the late 1990s. The graduation rate for doctoral students increased from 0.4% in 1991 to 0.6% in 1998. In Canada and across OECD countries, the largest concentration of college and university graduates is in the combined fields of social sciences, business and law.

3. Defined as the number of bachelor's graduates relative to the population at the typical age at graduation (22 years in all jurisdictions).

Graduation rates have increased at a faster rate for women than men at the undergraduate and master's levels. Close to 60% of all university degrees awarded in 1998 were to women.

In 2001, over half of Canada's working age population (ages 25 to 64) had postsecondary credentials. In 2000, Canada had the highest proportion of its working-age population with college or university credentials among OECD countries. Women accounted for a little over half of Canada's working-age university graduates.

The population aged 25 to 34 years in 2001 is the most highly educated ever: 61% of them have credentials beyond the secondary level.

The immigrants of the 1990s are much more highly educated than earlier immigrants: 61% had credentials beyond the secondary level.

The educational attainment of the Aboriginal population has increased substantially between 1996 and 2001.

University graduates tend to concentrate in the four major urban regions in Canada—Montreal and adjacent region, the extended Golden Horseshoe, the Calgary–Edmonton corridor and Lower Mainland and southern Vancouver Island in British Columbia.

Transitions and outcomes

Chapter E looks at transitions to postsecondary education and to the labour market, a critical stage in the life cycle, and examines unemployment rates and earnings for different levels of educational attainment in Canada and abroad.

Canadians spent more time in postsecondary education in 2001 than in 1991. A higher proportion of the population aged 20 or over was in school in 2001 than in 1991 at both the college and university levels. About half of the students work, a proportion that has not varied much over the 1990s.

Across OECD countries in 2000, the unemployment rates for both men and women aged 25 to 64 were around three times higher for those without high school graduation than for those with university education. In Canada, unemployment rates are lower and less subject to economic fluctuations for university graduates than for the rest of the labour force.

Higher education is a gateway to higher earnings. According to the 2001 Census, more than 60% of people in the lowest earnings category did not have more than a high school education, while more than 60% of those in the top earnings category had a university degree.

A

Chapter A

Chapter A figures

A portrait of the school-age population

Introduction

The school-age population (defined here as the population aged 5 to 24) is slowly changing. Its size, cultural diversity, and family characteristics are all evolving in ways and directions to which schools and teachers have to adapt. This chapter presents the evolution of some key characteristics of the school-age population during the 1990s, and attempts to highlight some of the challenges for the education systems in Canada. These trends will have a country-wide influence but may not apply to specific local areas. Furthermore, the statistical portrait traced here could be enriched further with scores of other important statistics, on topics such as health, exposure to violence, or activities outside schools.

Indicator A1 looks at the evolution of the size of the school-age population from 1991 to 2001, and provides projections through to 2026.

Indicator A2 presents the increasing diversity of the school-age population in terms of immigrants, visible minorities, and languages spoken at home in some of the major census metropolitan areas (CMAs) in Canada. It also traces shifts in the proportion of the school-age population with Aboriginal identity.

Indicator A3 focuses on family composition and parents in the workplace.

Finally, Indicator A4 shows the proportion of the school-age population in low-income families.

A1

Population size

Context

This indicator presents the trend in the size of the school-age population from 1991 to 2001, and shows projected changes through to 2026.

Demographic information is an important factor to consider in anticipating the demand for education services. At ages when schooling is compulsory, trends in population size provide a direct indication of resource requirements of the education systems—from teacher hiring to investment in the construction and maintenance of buildings to program planning that meets the educational needs of particular sectors of the population. At the postsecondary level, trends in population provide a sense of the changing size of the potential "clientele."

However, the relationship between population change and capacity requirement is not linear. Mechanisms exist in the education systems to adjust to certain levels of population shifts—growth and declines. For instance, depending on the distribution of population change, students can be transported from areas where demand exceeds capacity to areas where unused capacity exists; within certain legislated limits, ratios of students to teachers can vary; and schools can operate below capacity level.

This indicator provides an overview of recent trends in the school-age population as a whole and at the elementary (population aged 5 to 13), secondary (aged 14 to 18), and postsecondary (aged 19 to 24) levels of education. These trends are first examined at the pan-Canadian and provincial/territorial levels, with projections through to 2026. Population change from 1991 to 2001 is then shown at the sub-jurisdictional level for census divisions (CDs) and CMAs.

Findings

Canada

Over the 2001 to 2011 period, Canada can expect the population aged 5 to 13 to decline by an estimated 14%. A corresponding decline can be expected for the population aged 14 to 18 between 2006 and 2016 and for the 19- to 24-year-olds between 2016 and 2026.

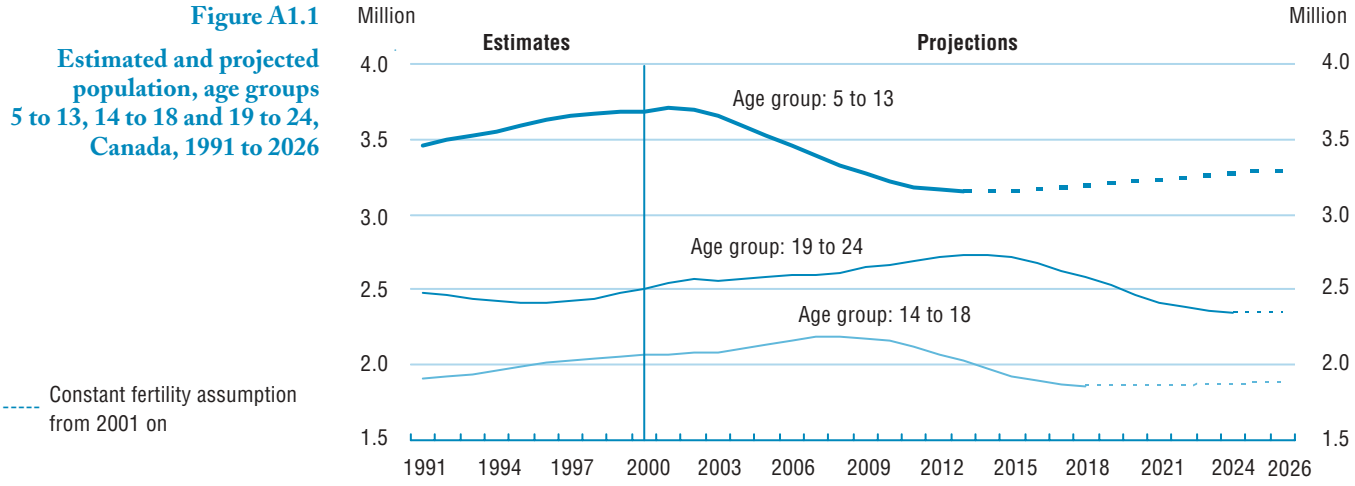
A trend reversal in the size of the school-age population is expected to occur in the coming years. After a long period of slow but steady growth, the school-age population is expected to peak and start declining.

This is due to a reversal in trend in the number of births, a reversal that occurred in 1990. The annual number of births slowly increased from 340,000 in 1973 to a peak of 405,000 in 1990. It then started to decline, dropping 18% in the following decade to 332,000 in 2000, the last year for which data were available when this publication was prepared.

The trend reversal in the school-age population should occur at different times, depending on the education level (Figure A1.1). The population aged 5 to 13 years

had, given current demographic assumptions, already peaked at 3.7 million in 2001. It is projected to decline by about half a million during the 2001-2011 decade to just below 3.2 million, as the smaller cohorts born in the 1990s enter elementary schools. After 2016, it may start to slowly increase again if fertility remains constant from 2001 on, as assumed in the medium growth scenario of Statistics Canada's official population projections (see Appendix 2).

Figure A1.1
Estimated and projected population, age groups 5 to 13, 14 to 18 and 19 to 24, Canada, 1991 to 2026



Source: Table A1.1.

The population aged 14 to 18 years is projected to peak between 2006 and 2011 at 2.2 million, 14% above the 1991 level. It would then drop 16% between 2006 and 2016 and remain relatively stable at 1.9 million from then on, assuming again that the 2000 fertility rates remained constant throughout the projection period.

Finally, the 19 to 24 population is expected to peak between 2011 and 2016 at nearly 2.7 million and to decline between 2016 and 2021 when it would stabilize at 2.3 million.

Provinces and territories

Due to the recent trend in births, all jurisdictions could experience a period of decline in their school-age population. However, the level at which the school-age population could stabilize at the end of the projection period varies significantly by jurisdiction. It could stabilize at levels higher than or close to those in 1991 in three provinces, Ontario, Alberta, and British Columbia, and two territories, the Northwest Territories and Nunavut, while it could stabilize below 1991 levels in the Atlantic provinces, Quebec, Manitoba, Saskatchewan, and Yukon.

All jurisdictions should experience periods of declining school-age population at some point between 2001 and 2026 (Table A1.1). But the magnitude and timing will vary significantly, in part because of the differences in migration at both the international and inter-jurisdictional levels. A positive net migration slows the decline, while a negative one accelerates it. Extra caution, however, should be exercised with projections at the provincial/territorial level, given the uncertainty surrounding the migration assumptions.

With Statistics Canada's medium growth projection scenario, Ontario and British Columbia gain the most through migratory exchanges. As a result, at the end of the cycle of increase and decline, their school-age population stabilizes at levels higher than in 1991. Following a relatively small decline during the 2001-2011 decade, the population aged 5 to 13 in Ontario would be 5% higher in 2011 than in 1991 and 8% higher in British Columbia. The decline expected between 2011 and 2016 for the population aged 14 to 18 years, and between 2016 and 2021 for the population aged 19 to 24 years, should also end at levels higher than in 1991.

The other jurisdiction where the school-age population is projected to remain higher in the coming decades than it was in 1991 is Nunavut, but, in this case, it is entirely attributable to the high birth rate among its Aboriginal population.

According to the medium growth scenario, the school-age population at all three education levels will also go through a phase of increase followed by one of decline in Alberta and the Northwest Territories, but, at the end of the projection period, the school-age population could stabilize at levels relatively close to 1991.

In all the other jurisdictions, the four Atlantic provinces, Quebec, Manitoba, Saskatchewan, and Yukon, however, the school-age population is projected to stabilize at lower levels. The projections for these jurisdictions are influenced by low birth rate and negative migration.

The population in the 5 to 13 age group in these jurisdictions peaked and started to decline before 2001. By 2011, in all cases, the population aged 5 to 13 is expected to be less than 85% of what it was in 1991.

With brief interludes, particularly in Yukon where population fluctuations are relatively large, the numbers of 14- to 18- and 19- to 24-year-olds in these jurisdictions are not likely to rise much above 1991 levels and are expected to stabilize at 85% or less of their 1991 levels at the end of the projection period. The declines are the most pronounced in Newfoundland and Labrador and New Brunswick.

Sub-jurisdictional trends

These differences in population change between jurisdictions emerge clearly in Figure A1.2, a map showing the change in the total school-age population (5 to 24 age group) by CD between 1991 and 2001. Most CDs in southern Ontario, southern British Columbia, Alberta, the Northwest Territories, and Nunavut grew in school-age population between 1991 and 2001.

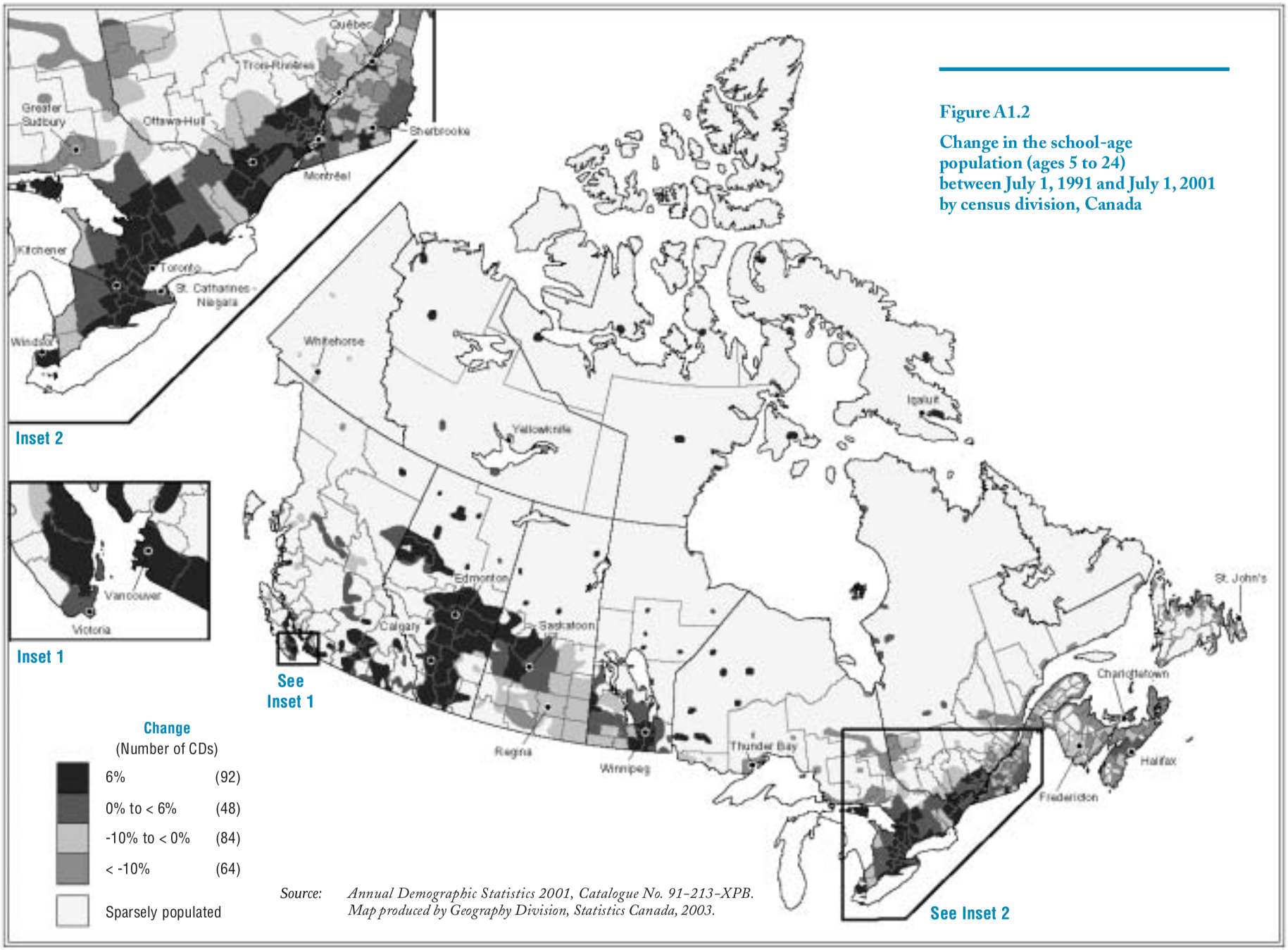


Figure A1.2

Change in the school-age population (ages 5 to 24) between July 1, 1991 and July 1, 2001 by census division, Canada

Source: *Annual Demographic Statistics 2001, Catalogue No. 91-213-XPB.*
Map produced by Geography Division, Statistics Canada, 2003.

In the Atlantic provinces, only two CDs in Prince Edward Island and three around Halifax experienced some growth in their school-age population. In Quebec, growth was mainly concentrated around Gatineau, Montréal, and Sherbrooke. There were very few CDs east of Montréal or in the northern part of the province where the school-age population grew. Manitoba's growing CDs were scattered across the province, while those of Saskatchewan were located to the north and west of Saskatoon.

Except for areas with a relatively large Aboriginal population, most rural areas declined in population. However, many large urban centres also declined in school-age population. The school-age population in 11 of the 25 CMAs declined between 1991 and 2001 (Figure A1.3). The CMAs where most growth occurred were in British Columbia, Alberta, southern Ontario, and Ottawa–Gatineau. In the remaining provinces, the CMAs of Montréal, Saskatoon, and Halifax were the only ones that grew in population between 1991 and 2001. Three CMAs, Vancouver, Oshawa, and Calgary, had growth exceeding 20%, primarily due to migration.

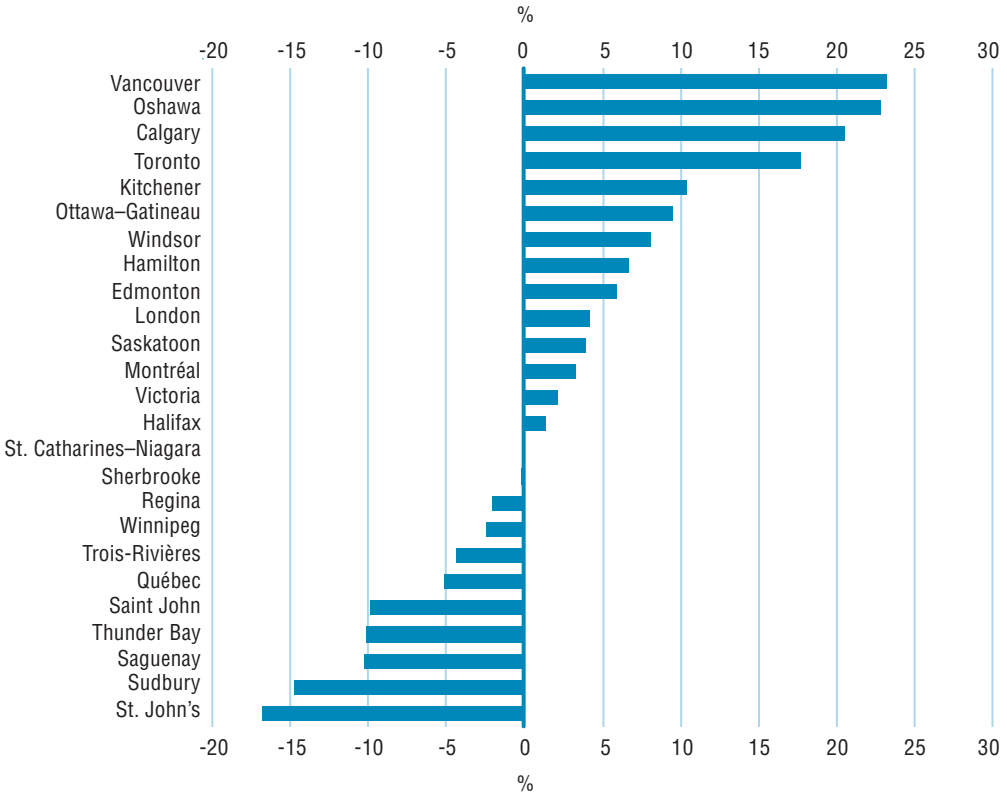


Figure A1.3

Change in school-age population by census metropolitan area, 1991 to 2001

Source:
Table A1.2.

A2

Cultural diversity

Context

This indicator provides an overview of the continued increasing diversity of the school-age population in major census metropolitan areas in the country.

Primarily as a result of immigration, the cultural makeup of the school-age population is growing more diverse. This diversity has an impact on teaching, support services, and school dynamics, in many ways. The challenge is to adapt the learning environment to the needs of students who are immigrant, Aboriginal, or not fluent in the teaching language, in a school community where students are from diverse cultural backgrounds.

Using Census data, this indicator captures three major aspects of the diversity of the school-age population, for Canada's ten most ethnically diverse CMAs. It measures the proportion of the school-age population who are immigrants, who are visible minorities, and whose home language is neither English nor French. It also presents the proportions of the school-age population with Aboriginal identity in the parts of Canada where they are the highest.

The focus of the indicator is on areas of the most significant diversity. This is not to underestimate issues that may also arise in areas where only a small minority of the school-age population has different cultural backgrounds.

Findings

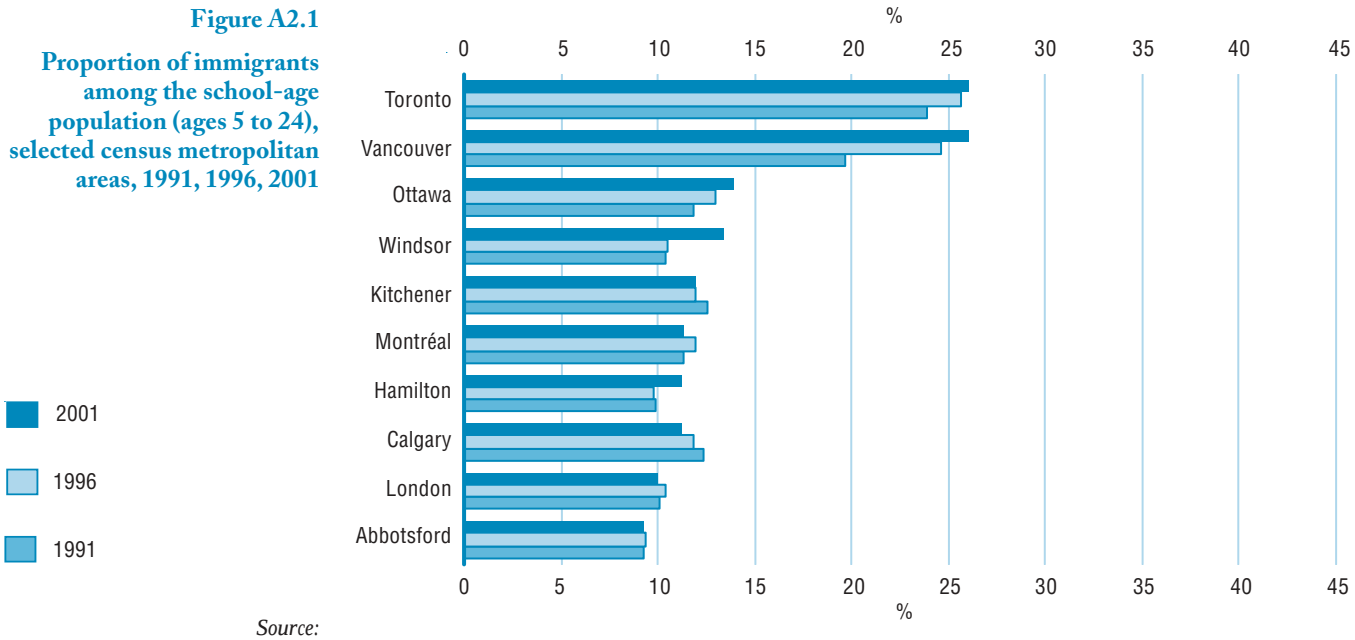
Immigration, visible minorities and non-official languages

In terms of diversity, two census metropolitan areas stand out: Toronto and Vancouver.

Since 1990, an average of 225,000 immigrants of all ages arrive in Canada every year. With the decline in births (see Indicator A1), more than half of Canada's demographic growth is currently attributable to immigration. Nearly three-quarters (73%) of the immigrants who came in the 1990s settled in just three CMAs: Toronto, Vancouver, and Montréal. The vast majority of them have come from non-western countries: 60% are from Asia and 20% from the Caribbean, Latin America, and Africa. This results in a rapidly growing and increasingly diverse population in certain CMAs that contrasts with the slow-growing (or even declining) and relatively homogeneous population elsewhere.

Figure A2.1

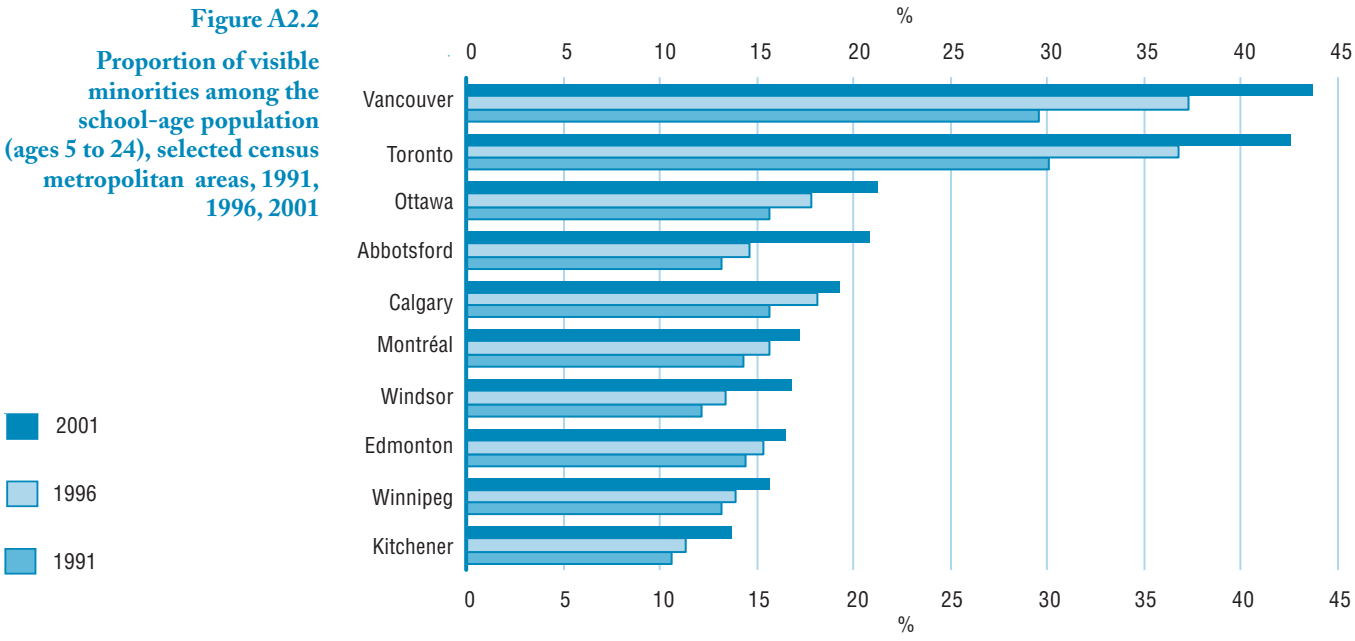
Proportion of immigrants among the school-age population (ages 5 to 24), selected census metropolitan areas, 1991, 1996, 2001



Source:
Table A2.1.

Figure A2.2

Proportion of visible minorities among the school-age population (ages 5 to 24), selected census metropolitan areas, 1991, 1996, 2001



Source:
Table A2.2.

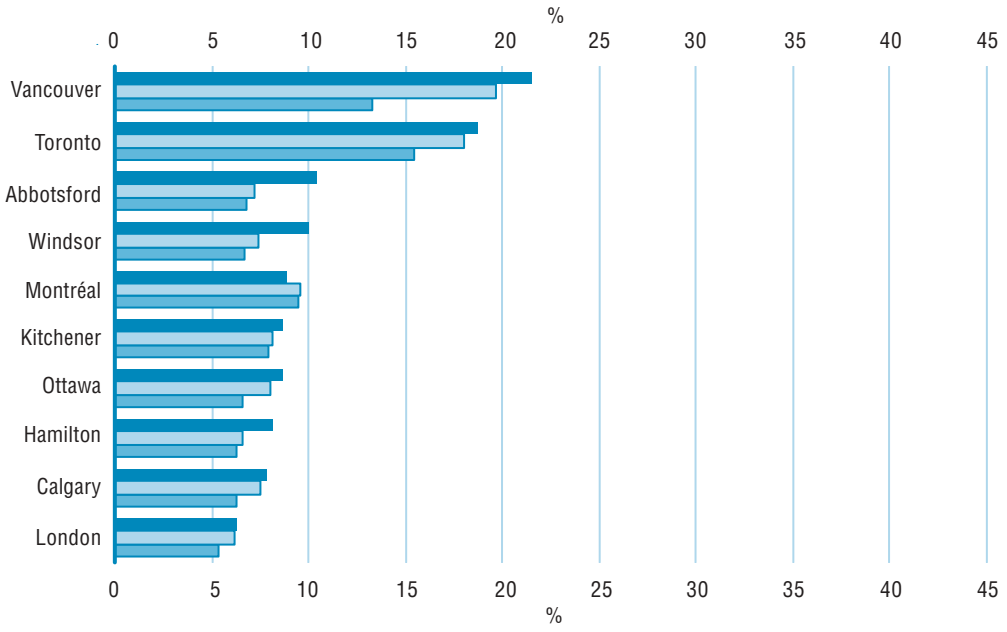


Figure A2.3

Proportion of the school-age population (ages 5 to 24) with non-official home languages, selected census metropolitan areas, 1991, 1996, 2001

Source:

Table A2.3.

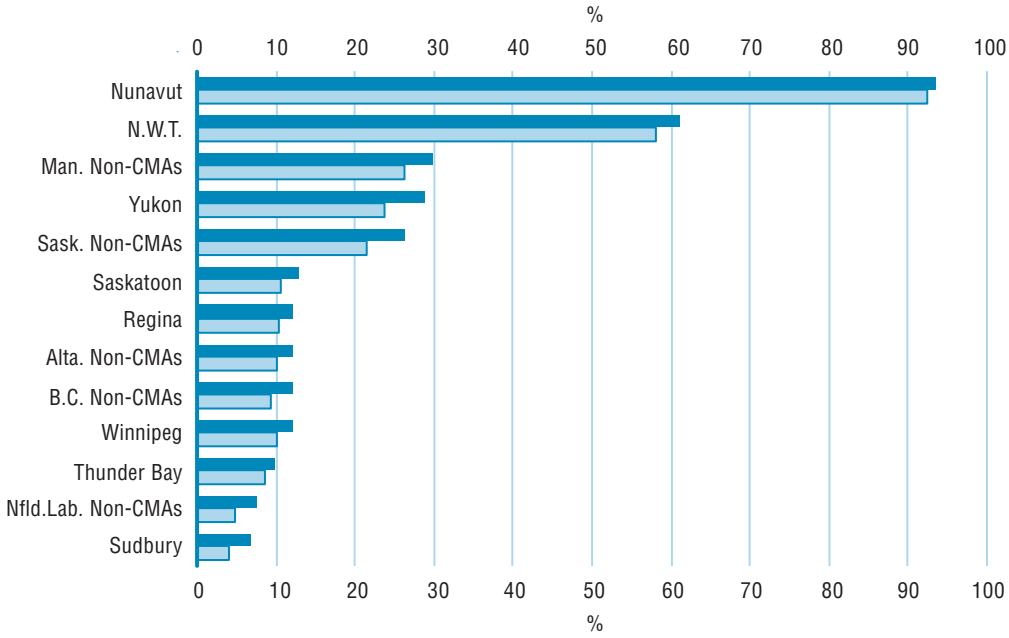


Figure A2.4

Proportion of the school-age population (ages 5 to 24) with Aboriginal identity, 1996 and 2001

Note:

Nunavut and N.W.T.: data are calculated using the 1999 boundaries.

Source:

Table A2.4.

Two CMAs particularly stand out: Toronto and Vancouver. In both, over 25% of the school-age population in 2001 were immigrants, over 40% were visible minorities, and close to 20% had a home language other than English or French (Figures A2.1, A2.2 and A2.3). Toronto and Vancouver are among the world's most multiethnic urban centres.

The other eight CMAs where diversity is particularly significant are Montréal, Ottawa–Gatineau, Kitchener, Hamilton, London, Windsor, Calgary, and Abbotsford. In these CMAs in 2001, between 9% and 14% of the school-age population were immigrants, between 12% and 21% were visible minorities, and between 6% and 10% had a home language other than English or French. Comparable percentages of visible minorities among the school-age population are found also in the CMAs of Winnipeg, Edmonton, and Victoria.

Diversity generally increased between 1991 and 2001. The proportion of visible minorities, many of whom were born in Canada, grew in all ten CMAs of Figure A2.2. The school-age population whose home language is neither English nor French also increased in relative terms in all these CMAs except Montréal, while the proportion of immigrants declined slightly in Kitchener, Montréal, Calgary, London, and Abbotsford.

Aboriginal identity

Because the birth rate remains higher among the Aboriginal than the non-Aboriginal population, the proportion of the school-age population with Aboriginal ancestry is significant and growing in the CMAs and in areas outside the CMAs in certain provinces and territories (Figure A2.4).

This was also the case in the three territories. In 2001, 94% of the school-age population had Aboriginal identity in Nunavut, 61% in the Northwest Territories, and 29% in Yukon.

Among provinces, Manitoba and Saskatchewan had the highest proportions of the school-age population with Aboriginal identity in 2001, both within and outside CMAs. In Manitoba, 30% of the school-age population outside the CMA of Winnipeg had Aboriginal identity and 12% in the CMA of Winnipeg. In Saskatchewan, the equivalent proportions were 26% outside the CMAs of Regina and Saskatoon, 13% in the CMA of Saskatoon, and 12% in the CMA of Regina.

The non-CMA parts of Alberta, British Columbia, and Newfoundland and Labrador, as well as the CMAs of Thunder Bay and Sudbury were the other areas of the country with a high and growing proportion of the school-age population with Aboriginal identity, in 2001.

A3

Family background

Context

Families sometimes undergo transformations that may have either positive or negative impacts on children's learning. As parents and teachers are partners in the education of children, it is important that children from all types of families be accommodated in schools and that strong links be maintained with their parents.

This indicator provides information on the composition of Canadian families and on the living arrangements and work situation of parents.

This indicator presents data on the composition of Canadian families and the working status of parents.

Findings

Family composition

Children of elementary-secondary school ages were less likely to live with married parents in 2001 than a decade earlier (Figure A3.1). The proportion of children aged 5 to 13 who were living with married parents fell from 78% in 1991 to 69% in 2001. The corresponding proportions of teenagers aged 14 to 18 were 74% in 1991 and 69% in 2001.

Children are now less likely to have married parents or to have an at-home parent than at the beginning of the 1990s.

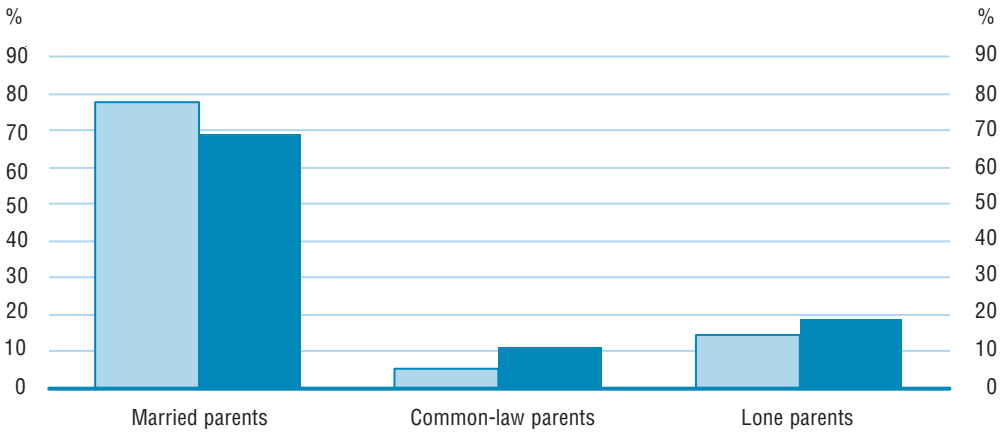


Figure A3.1

Parental situation of children aged 5 to 13, Canada, 1991 and 2001

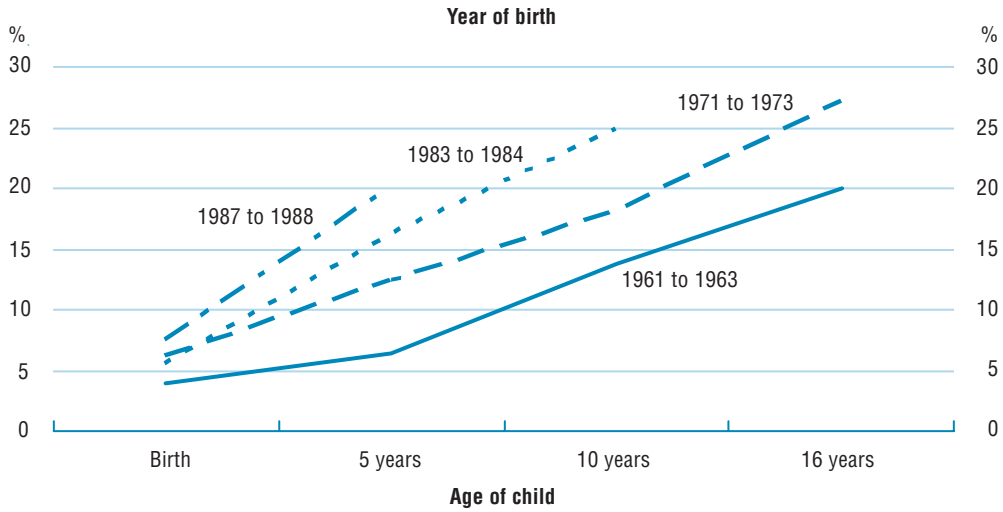
Source:
Table A3.1.

The proportions of young people raised by parents living in common-law situations increased from 6% in 1991 to 11% in 2001 for children aged 5 to 13, and from 4% to 7% for those aged 14 to 18. In 2001, children were much more likely to be living with common-law parents in Quebec (25% for children aged 5 to 13) than in the rest of Canada.

According to the General Social Survey (GSS), almost 12% of all Canadian families with children consisted of stepfamilies in 2001, compared to 10% in 1995.

Data from the National Longitudinal Survey of Children and Youth (NLSCY) show that children are experiencing parental separation at increasingly younger ages. Just over one in five children born in 1987-1988 either were born to a lone parent or had already experienced the separation of their parents by the age of 5 (Figure A3.2).

Figure A3.2
Proportion of children born to a lone parent or who have experienced parental separation by age and year of birth, Canada



Source:
Table A3.3

Census data show that, in 2001, 19% of children aged 5 to 13 and 20% of those aged 14 to 18 lived with a lone parent. These proportions were higher than in 1991.[1] The majority of lone parents are mothers. However, of the 37,000 children for whom custody was determined through divorce proceedings in 2000, 37% were awarded to the husband and wife jointly, continuing a 14-year trend of steady increases in joint custody arrangements.

In 2001, the largest proportions of children aged 5 to 13 living in lone-parent families were found in Yukon, Nova Scotia, and Northwest Territories (Figure A3.3).

1. Changes to the Census family definition in 2001 make comparisons with previous years difficult for lone-parent families.

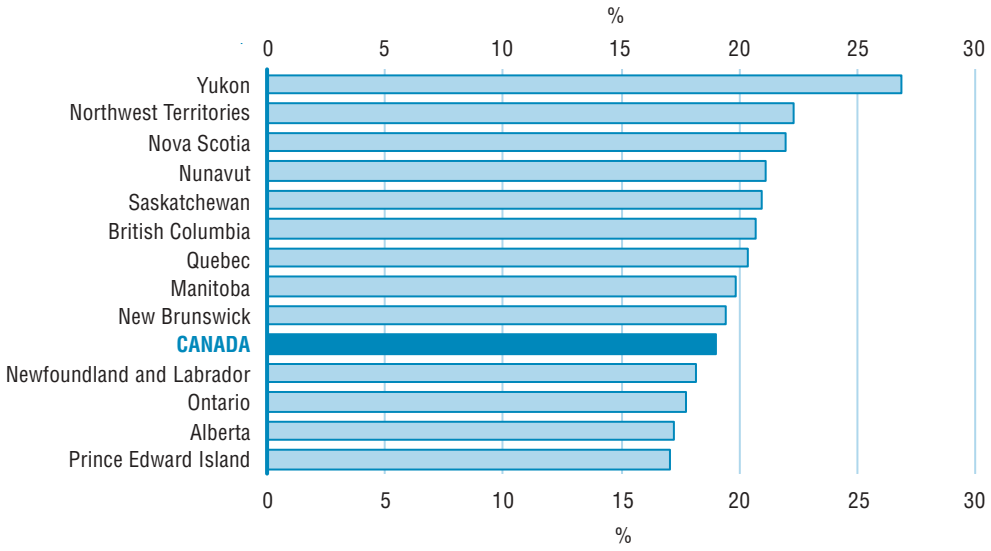


Figure A3.3

Proportion of children aged 5 to 13 living with lone parent, Canada, provinces and territories, 2001

Source:
Table A3.1.

Young adults

Over the last decade, young adults in Canada have tended to remain in growing proportions in (or to return to) the parental home (Figure A3.4). The 2001 Census showed that 61% of the young adults aged 19 to 24 lived with their parents, a significant increase from 54% in 1991. One of the factors that help explain this trend is certainly the pursuit of higher education in a climate of increasing tuition fees and student debt. The 2001 General Social Survey showed that about a third of this age group returned home at least once after an initial departure.

Young adults aged 19 to 24 are staying in or returning to their parents' residences in growing proportions.

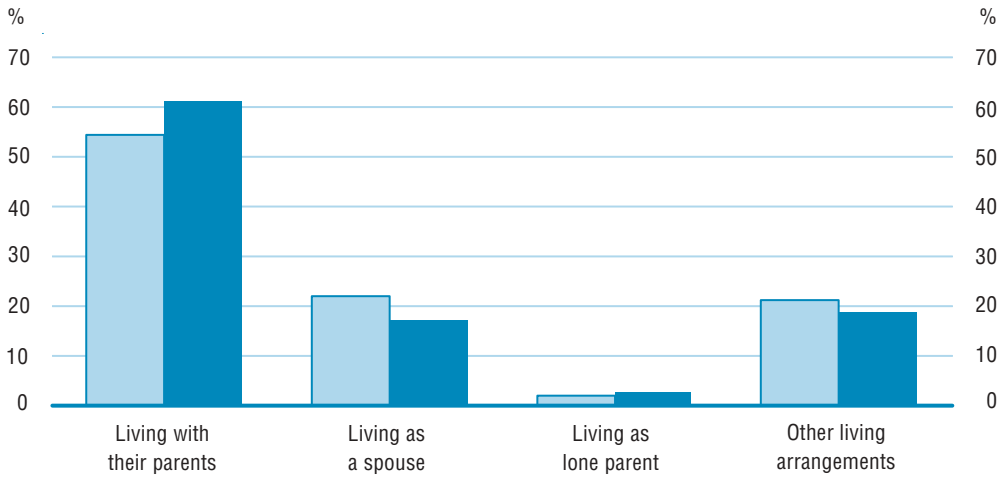


Figure A3.4

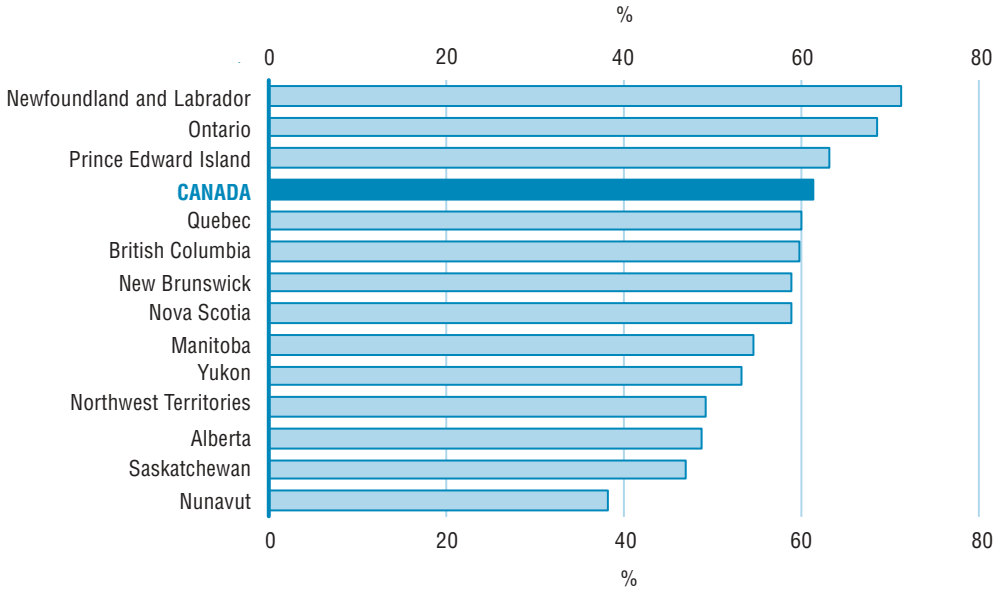
Living arrangements of population aged 19 to 24, Canada, 1991 and 2001

Source:
Table A3.1.

In 2001, the proportions of young adults who lived with their parents were highest in Newfoundland and Labrador and Ontario, and lowest in Saskatchewan, Alberta, and the three territories (Figure A3.5).

Figure A3.5

Proportion of population aged 19 to 24 living with their parents, Canada, provinces and territories, 2001



Source:
Table A3.1.

Work situation

Higher proportions of parents were working in 2001 than in 1991.

More parents worked full time in 2001 than in 1991 (Table A3.2). The proportion of children aged 5 to 13 living in two-parent families where both parents worked full time increased from 45% in 1991 to 48% in 2001, while the proportion of those where one parent worked full time and the other worked part time declined slightly from 27% to 26%, and the proportion of those where one parent worked and the other stayed home declined from 24% to 20%.

The same was true for children living with a lone parent (Table A3.2). The proportion of these children whose parent worked full time increased from 54% in 1991 to 57% in 2001. The proportion whose parent worked part time increased from 18% to 20%, resulting in a decline from 29% to 23% in the proportion of children with a non-working lone parent.

The highest proportions of children with two parents or a lone parent working full time were found in Prince Edward Island, Yukon, and Northwest Territories (Figure A3.6 and A3.7).

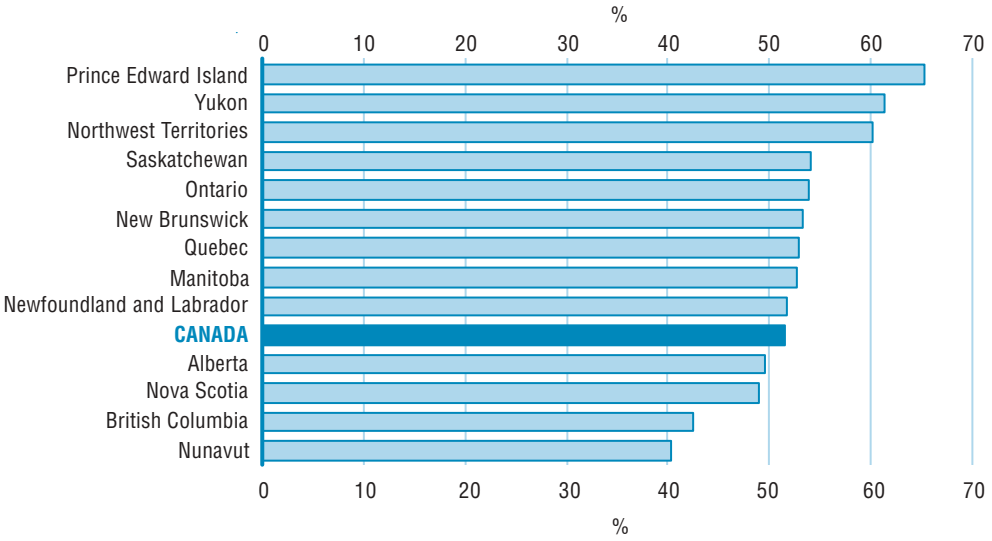


Figure A3.6

Percentage of the school-age population (ages 5 to 24) living in two-parent families where both parents work full time, Canada, provinces and territories, 2001

Source:
Table A3.2.

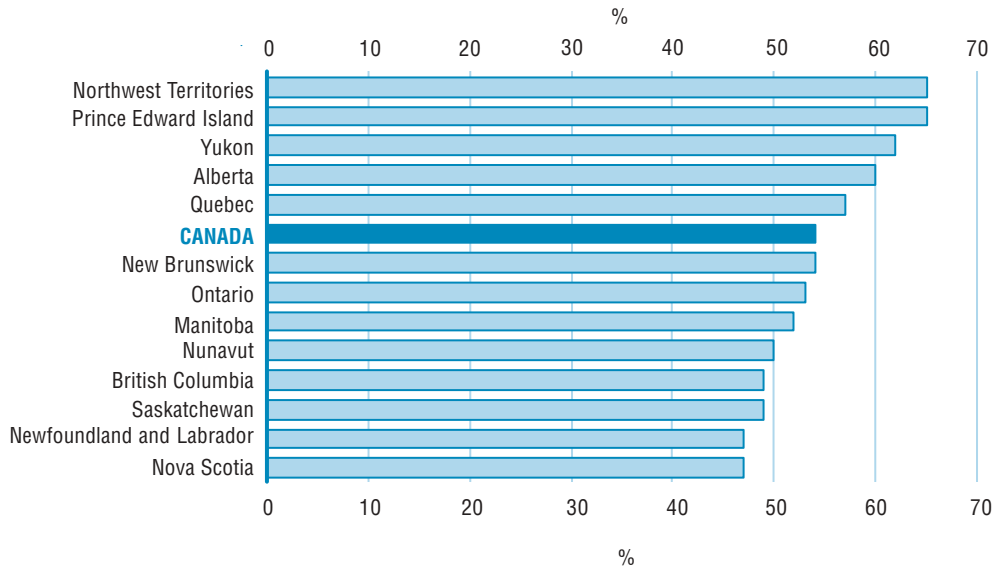


Figure A3.7

Percentage of school-age population (ages 5 to 24) living in lone parent families where the parent works full time, Canada, provinces and territories, 2001

Source:
Table A3.2.

A4

Low income

Context

This indicator provides information on the proportion of the school-age population living in low-income circumstances, including the duration of low-income spells.

Family income can significantly influence a child's academic results. Living in low-income[1] circumstances impedes school readiness of pre-school children (Dearing, McCartney and Taylor 2001), reduces the likelihood of attending university (Zhao and de Broucker 2001), and increases the likelihood of living in low-income circumstances as an adult (Corak 2001, Heisz 2001).

Information on the number and characteristics of children in low-income families can help develop appropriate policies and programs that target children most in need. Examples include pre-school and after-school programs, in-school access to computers and the Internet, and student loan programs.

Findings

Low income trends

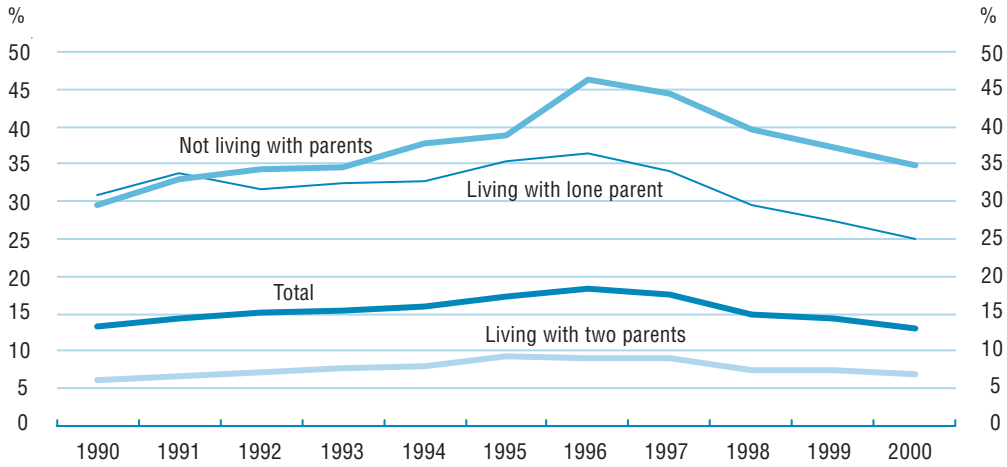
Children in lone-parent families and youth who have left the parental home are more likely to experience low income and for longer periods than those who live in two-parent families.

The proportion of the school-age population living in low-income families differs significantly by family types. It is also influenced by economic conditions. In 2000, 7% of all children living with two parents were in low-income situations, down from a peak of 9% in 1995. Among children living in lone-parent families, the proportion was 25% in 2000, down from 36% in 1996. For those not living with their parents, most of whom were between 19 and 24 years of age, the proportion was 35% in 2000 compared to 46% in 1996 (Figure A4.1 and Table A4.1).

1. See Appendix 2 for methodological information on the after-tax low-income cutoffs (LICOs) used here.

Figure A4.1

Proportion of the school-age population (ages 5 to 24) in low-income families, Canada, 1990 to 2000 (based on after-tax low-income cutoffs)



Source:
Table A4.1.

Duration of low income

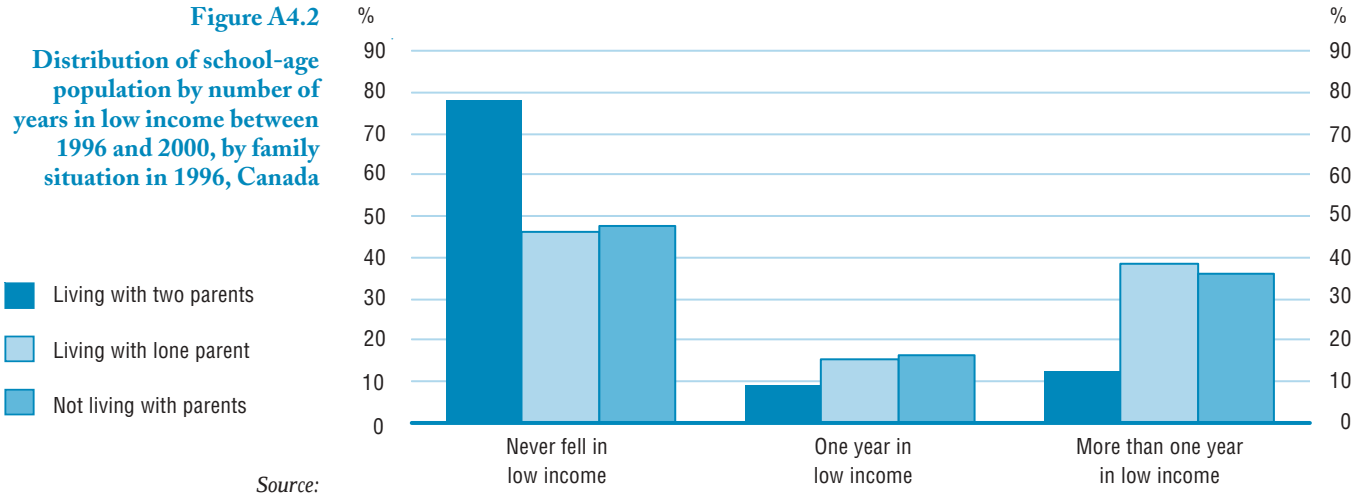
A longitudinal perspective reveals that over one in five (22%) children in two-parent families in 1996 experienced a period of low income at some point between 1996 and 2000, due to changes in employment or family circumstances. For 9%, the low-income spell lasted up to one year, while 12% experienced a longer spell (Figure A4.2 and Table A4.2).

Children living in lone-parent families were much more at risk of experiencing a longer period of low income. For those living with one parent in 1996, over half (53%) experienced a spell of low income at some time between 1996 and 2000. For 38%, the spell lasted more than a year.

Finally, for those who were not living with their parents in 1996, 52% experienced low income between 1996 and 2000, with 36% having low income for more than one year.

Figure A4.2

Distribution of school-age population by number of years in low income between 1996 and 2000, by family situation in 1996, Canada



Source:
Table A4.2.

Provinces and territories

In 2000, the highest proportions of the school-age population living in low income were found in Manitoba, Newfoundland and Labrador, and British Columbia. The lowest were in New Brunswick, Ontario, and Prince Edward Island. Over the 1996 to 2000 period, the provinces with the highest proportions of the school-age population who spent more than a year with an income below the low-income cutoffs (LICOs) were also Manitoba, Newfoundland and Labrador, and British Columbia, while the proportions were the lowest in Ontario, Prince Edward Island, and Nova Scotia (Figure A4.3 and Figure A4.4).

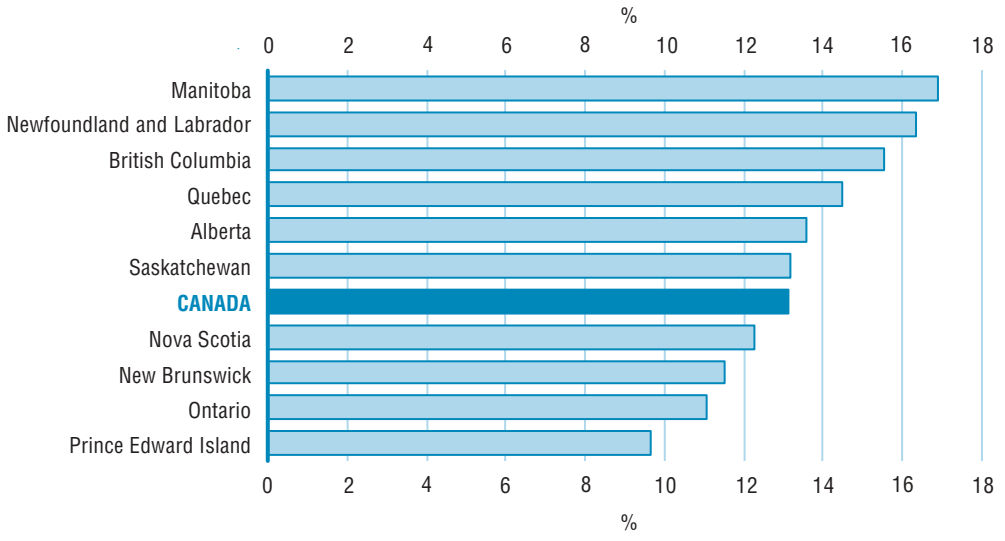


Figure A4.3

Percentage of school-age population (ages 5 to 24) living in low income by province, 2000

Source:
Table A4.1.

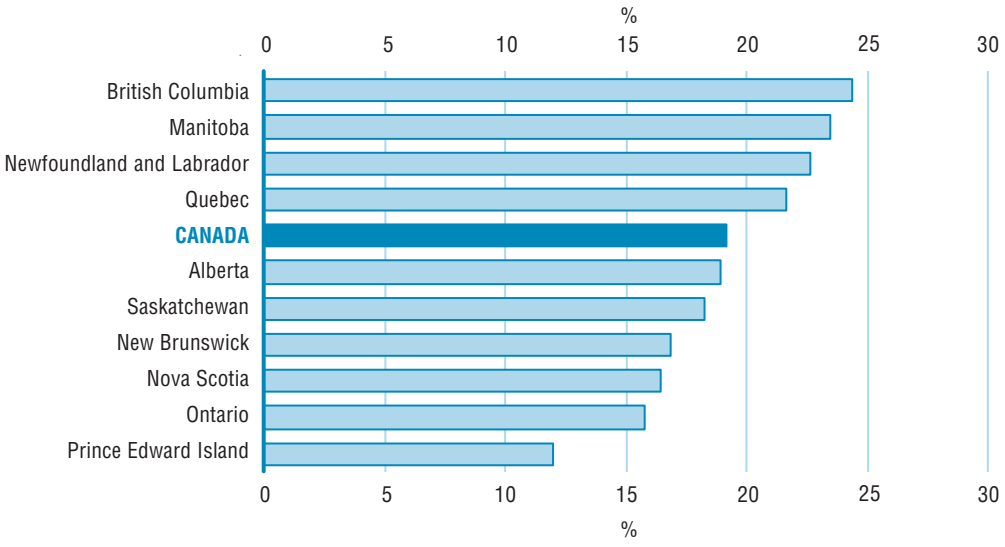


Figure A4.4

Percentage of the school-age population (ages 5 to 24) who spent more than a year in low income between 1996 and 2000 by province

Source:
Table A4.2.

B

Chapter B

Chapter B figures

Financing education systems

Introduction

One of the key indicators of social and economic progress in Canada, and in a growing number of other countries throughout the world, is the proportion of youth who attain high literacy standards and complete advanced levels of education. These higher educational expectations, driven in part by the needs of a global knowledge society, have elevated education as a funding priority for many governments and private households.

While investment in education is now seen as central to the development of advanced societies, no absolute standards exist for measuring the financial resources needed to ensure optimal returns for individual students or, for that matter, to society as a whole. Nonetheless, comparisons between provinces and territories and between countries can provide a starting point for discussion by evaluating the variation that exists between jurisdictions in educational investment.

Indicator **B1** examines the combined expenditure on education in Canada by governments and private households. In addition to the overall pattern of public and private expenditures across the country, expenditure amounts are displayed per student, per capita, and in relation to gross domestic product (GDP).

Public and private expenditures on education are examined in Indicator **B2**. Indicator B2 looks at public expenditure relative to expenditure on other government programs, as well as private expenditure on education, including expenditure by households and by individuals on university tuition.

Indicator **B3** shows how school boards and postsecondary institutions spend their financial resources; expenditure is divided into capital and current expenditures. Compensation of staff is the most significant current expense, at all levels of education, and the proportion of expenditures allocated to this is shown separately, along with salary information for university and community college staff.

Finally, Indicator **B4** examines debt loads incurred by students at the postsecondary level through the 1990s.

Total expenditure on education

B1

Context

Governments provide most of the funding for education at all levels, but many private households also pay for education services or resources. To obtain a full picture of education expenditure in Canada, this indicator includes expenditures by all orders of government, by crown corporations and agents (CANARIE, federal research funding councils, federal funding to schools on reserve), by the private sector and by households. The results cannot be used to compare provincial governments' funding commitment to education.

The measures reported here should be interpreted in the light of various interrelated supply and demand factors, including the demographic structure of the population, enrolment rates at different levels of education, and changes in the overall value of goods and services produced in the economy.

This indicator displays total education expenditure in Canada, from both public and private sources.

Findings

Total expenditure

In the fiscal year 1997-1998, the combined public and private expenditures on education reached a total of $64.9 billion (in 2001 constant dollars[1]). By 2001-2002, $68.6 billion was spent on education, an increase of $3.7 billion, or 6% over the four-year period (Figure B1.1 and Tables B1.1, B1.2).

Between 1997-1998 and 2001-2002, total education expenditure in Canada rose by 6% in 2001 constant dollars, with most of the increase occurring at the postsecondary level.

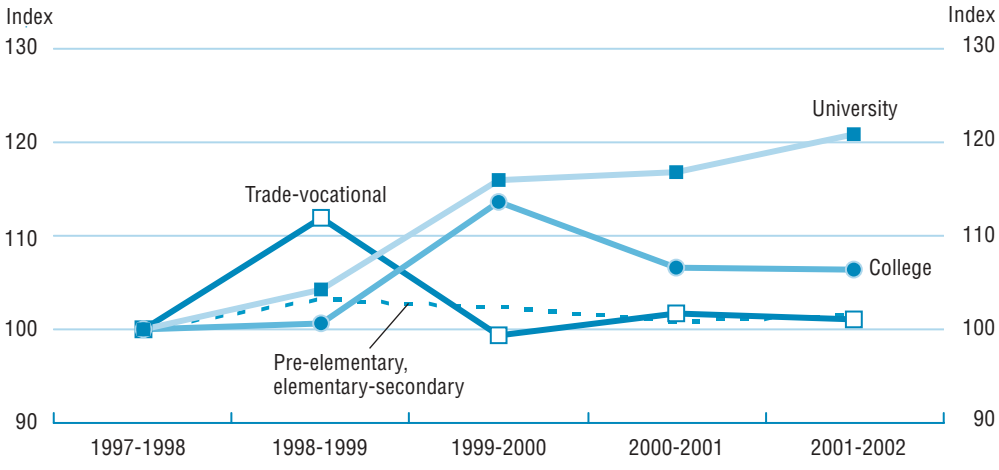


Figure B1.1

Indices of change in combined public and private expenditures on education by level of education, Canada, 1997-1998 to 2001-2002 (1997-1998 = 100)

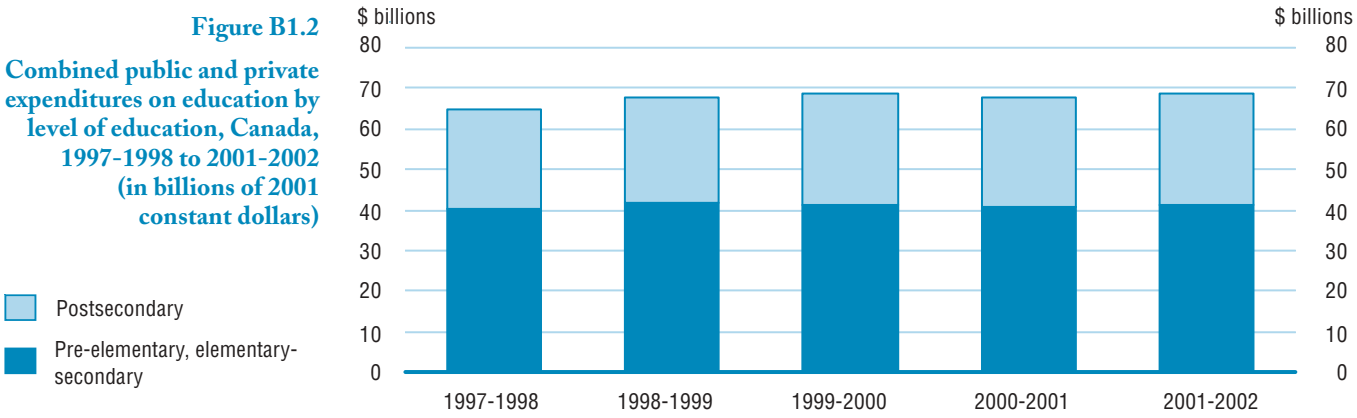
Source:
Table B1.2.

1. Unless otherwise indicated, all amounts are in 2001 constant Canadian dollars.

Most of the increase between 1997-1998 and 2001-2002 occurred at the postsecondary level. Expenditure rose by $3.2 billion, or 13%, climbing from $24.4 billion to $27.6 billion. Universities received the greatest share of the postsecondary increases; expenditures at this level increasing 21% over the period (Figure B1.1). Expenditure at the elementary-secondary level remained relatively flat, increasing by about 1% to $41 billion. In 2001-2002, 60% of all expenditure was at the elementary-secondary level and 40% at the postsecondary level (Figure B1.2 and Table B1.3).

Figure B1.2

Combined public and private expenditures on education by level of education, Canada, 1997-1998 to 2001-2002 (in billions of 2001 constant dollars)



Source: *Table B1.1.*

Note: Figures for 2000-2001 and 2001-2002 are estimates.

Over the four-year period, total expenditure increased across all jurisdictions, with the exceptions of Ontario, where it dropped 1%, and Newfoundland and Labrador, where it dropped 16%, mostly as a result of spending reductions in trade-vocational programs. The decline in expenditure in Newfoundland and Labrador was in fact a return to "normal" expenditure level after a significant but short-term funding increase in the mid-1990s, notably for the Atlantic Groundfish Strategy.

For most jurisdictions, expenditure increases were higher at the postsecondary than at the elementary-secondary level; expenditures at elementary-secondary level decreased in some jurisdictions.

Expenditure per student

Between 1997-1998 and 1999-2000, the average cost per student for all educational levels combined rose 5.6% at the Canada level.

Another way of measuring education expenditure is to calculate the cost per student by dividing the total expenditure by full-time equivalent enrolments at each educational level (Table B1.4). Between 1997-1998 and 1999-2000, the cost per student for all educational levels combined rose 5.6% at the Canada level, from $9,197 in 1997-1998 to $9,714 in 1999-2000[2].

The higher the educational level, the higher the cost per student and the higher the increase in cost per student. Between 1997-1998 and 1999-2000, the average cost per student increased 2% at the elementary-secondary level from $7,607 to $7,758, 11% at the college level, from $11,925 to $13,290, and 13% at the university level, from $20,504 to $23,159.

2. Trade-vocational programs are excluded because of the poor quality of the estimation of full-time equivalent enrolments. Full-time equivalents are available only up to 1999-2000.

Among provinces[3], the total cost per student for all educational levels combined in 1999-2000 ranged from $8,057 in Prince Edward Island to $10,157 in Manitoba (Figure B1.3). The largest increases, over the 1997-1998 to 1999-2000 period, were found in Nova Scotia and Alberta.

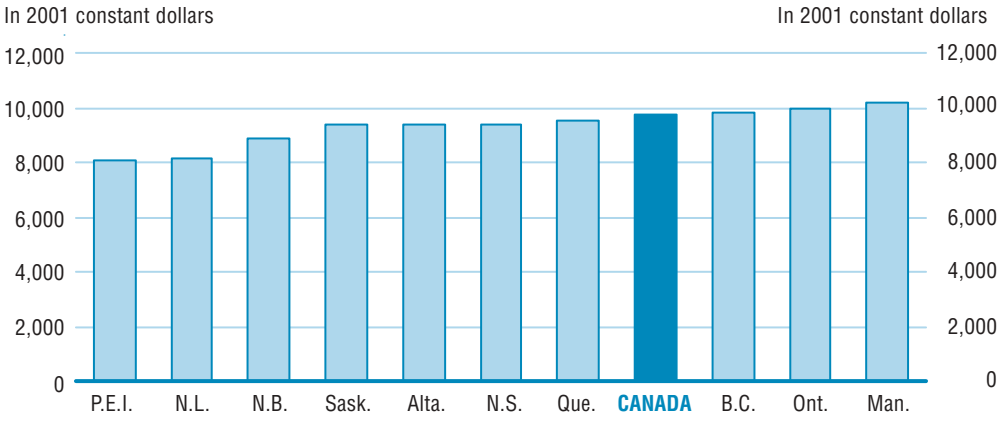


Figure B1.3

Combined public and private expenditures on education per student (based on full-time equivalents – FTEs), all education levels combined excluding trade-vocational programs, Canada and provinces, 1999-2000 (in 2001 constant dollars)

Source:
Table B1.4.

Expenditure per capita

Between 1997-1998 and 2001-2002, per capita expenditure increased 2% in Canada.

The previous measure related the total combined public and private expenditures on education to the number of students (on a full-time equivalent basis); this measure examines expenditures in relation to the total number of people living in the province or territory.

In 2001-2002, an average of $2,207 per person was spent on education in Canada. Among jurisdictions, average per capita amounts for that year ranged from $2,008 in Prince Edward Island to $6,072 in Nunavut. Reflecting higher operating costs in the north, average per capita expenditure in the territories was more than double that of the provinces (Figure B1.4 and Table B1.5).

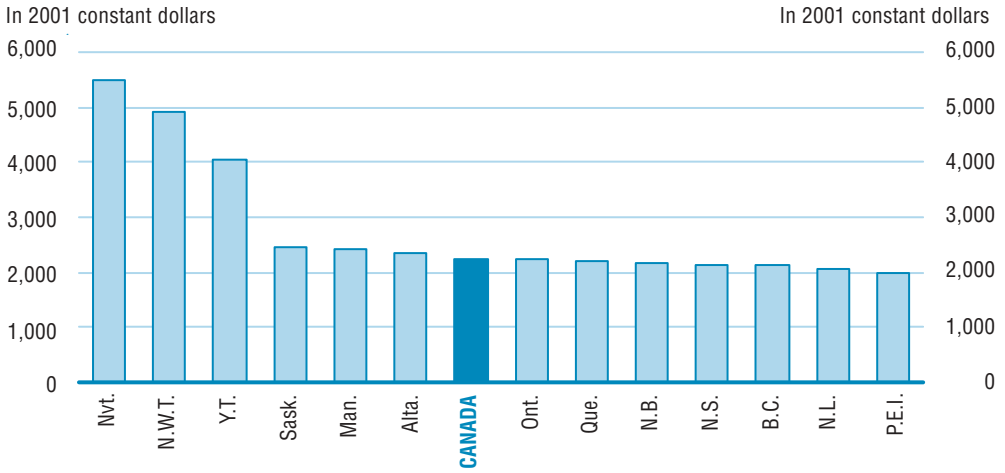


Figure B1.4

Combined public and private expenditures on education per capita, Canada and jurisdictions, 1999-2000 (in 2001 constant dollars)

Source:
Table B1.5.

3. Estimates for the territories are not reliable.

Between 1997-1998 and 2001-2002, per capita expenditure in Canada increased 2%, a result of a 6% total expenditure increase and a 4% population increase. Yukon showed the highest increase in per capita expenditure over this period, at 15%. Among the provinces, per capita expenditure increased the most in Manitoba and Alberta (10%). It dropped in only two provinces: in Newfoundland and Labrador, by 13%, with the end of short-term funding increases, notably for the Atlantic Groundfish Strategy, and the return to normal expenditure levels, and in Ontario, by 6%.

Expenditure relative to GDP

In 1999-2000, expenditure on education represented 6.6% of the Canadian GDP: it represented a higher percentage of the GDP of the territories and the small provinces than of the large provinces.

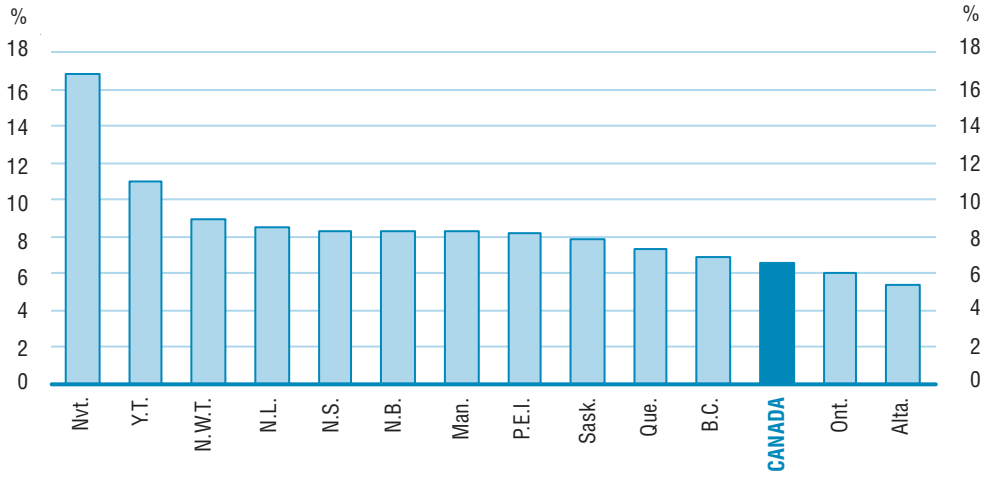
This fourth measure of total expenditure on education is expressed as a percentage of GDP. While expenditure on education relative to GDP helps provide a picture of the resources allocated to education, it is important to consider it in the context of other information, such as expenditure per student, the age distribution of the population, and the relative size of GDP, in order to interpret it appropriately.

In Canada, total public and private expenditure on education rose from 6.8% of GDP in 1997-1998, to 6.9% the following year, settling back at 6.6% in 1999-2000 (Table B1.6). Over this three-year period, five provinces—Nova Scotia, Quebec, Manitoba, Saskatchewan and Alberta—either maintained current levels or increased expenditure as a proportion of GDP.

In 1999-2000, education expenditure represented a higher percentage of the GDP in the territories and the small provinces than in the large provinces. Expenditures on education represented a lower proportion of the GDP in Ontario and Alberta (Figure B1.5).

Figure B1.5

Combined public and private expenditures on education as a percentage of GDP, Canada and jurisdictions, 1999-2000



Source:
Table B1.6.

International comparisons

According to the OECD, per-student expenditure at the university level across G-7 countries ranged from a low of $7,557 USD per student in Italy to a high of $19,220 USD in the United States. Canada ranked second at $15,470 USD[4] (Figure B1.6 and Table B1.7).

According to the OECD, Canada ranked second among G-7 countries in 1999 with respect to cost per student at the university level.

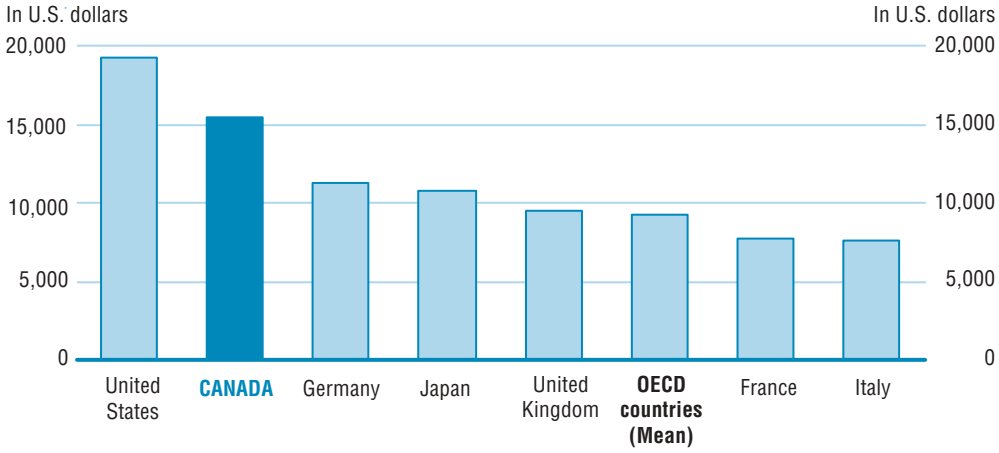


Figure B1.6

Combined public and private expenditures on educational institutions per student, university level, G-7 countries and OECD mean, 1999 (in U.S. dollars converted using PPPs)

Source:
Table B1.7.

Compared to the OECD average and G-7 countries in 1999, Canada ranked first in total expenditure in relation to GDP. Canada spent more on education as a proportion of GDP than the OECD average, 6.6% versus 5.5%, and marginally more than the United States, where expenditure on education represented 6.5% of the GDP (Figure B1.7 and Table B1.8).

According to OECD, Canada ranked first among G-7 countries in 1999 with respect to the percentage of the GDP allocated to education.

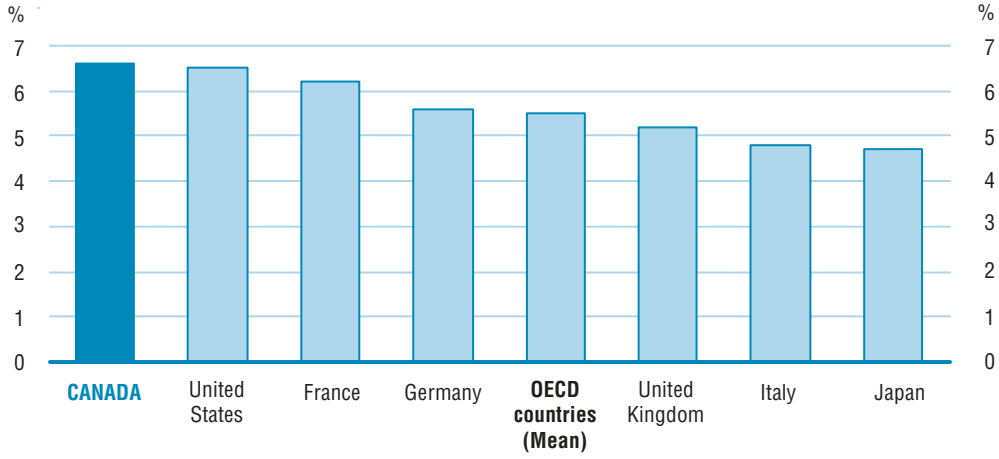


Figure B1.7

Combined public and private expenditures on educational institutions as a percentage of GDP, all levels of education combined, G-7 countries and OECD mean, 1999

Source:
Table B1.8.

4. These amounts have been converted to US dollars, using purchasing power parities (PPPs).

Public and private expenditure on education

B2

Context

This indicator distinguishes public and private expenditure on education in Canada.

Public expenditure in Canada changed during the 1990s as one of the priorities for governments has been to eliminate deficits. In this context, governments' ability to increase expenditure for education has been limited as the needs of the sector have competed directly with those of other public priorities, such as health.

Governments in Canada provide funding to cover the costs of basic education at the elementary and secondary levels. Nonetheless, parents often incur costs for materials and supplies, and for a variety of school activities. In some cases, parents pay for private tutoring or enroll their children in private schools where they pay tuition fees.

At the postsecondary level, community colleges and universities receive substantial funding from governments, but also rely on student tuition fees as an important revenue source. Students and their parents at this level also assume greater responsibility for books and supplies, and for travel and living costs. Government-sponsored student loan programs have expanded to support the growing numbers of students enrolled in postsecondary studies.

This indicator is intended to provide policy makers with a better understanding of shifts that may be occurring in the expenditure on education and to inform related discussions about student access to education in Canada.

Findings

Expenditure on education relative to other government programs

In 2001, 15% of government expenditure was on education compared to 17% for health.

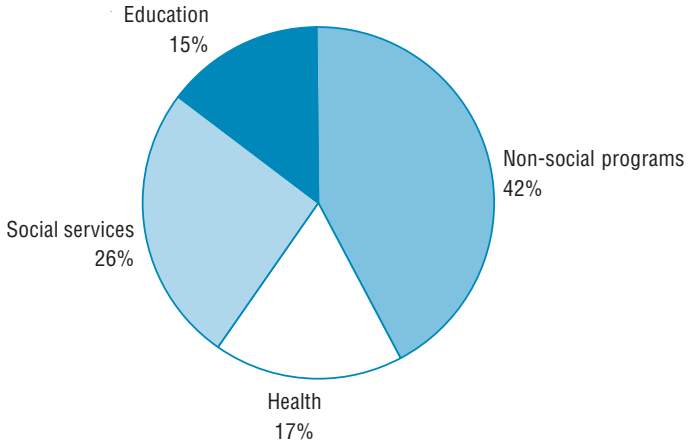
Public expenditure on education declined slightly to $62.8 billion dollars in 2001[1], from above $64 billion observed between 1993 and 1995. After a period of stability in the mid-1990s, expenditure on health increased to $72.8 billion in 2001. Until 2000, governments in Canada, as a whole, spent more money on education than health (Table B2.1).

1. Unless otherwise indicated, all amounts are in 2001 constant Canadian dollars.

By 2001, education expenditure represented 15% of total public expenditure compared to 17% for health (Figure B2.1). The three largest areas of public expenditures—social services, health and education—accounted for 58% of all public expenditure in 2001, compared to 52% in 1990, an increase of six percentage points. By comparison, education expenditure grew by less than half a percentage point over this period.

Figure B2.1

Percentage distribution of public expenditures on education by all orders of government combined, Canada, 2001



Source:
Table B2.1.

Public expenditure

Between 1997-1998 and 2001-2002, public expenditure grew 9% at the postsecondary level and 2% at the elementary-secondary level.

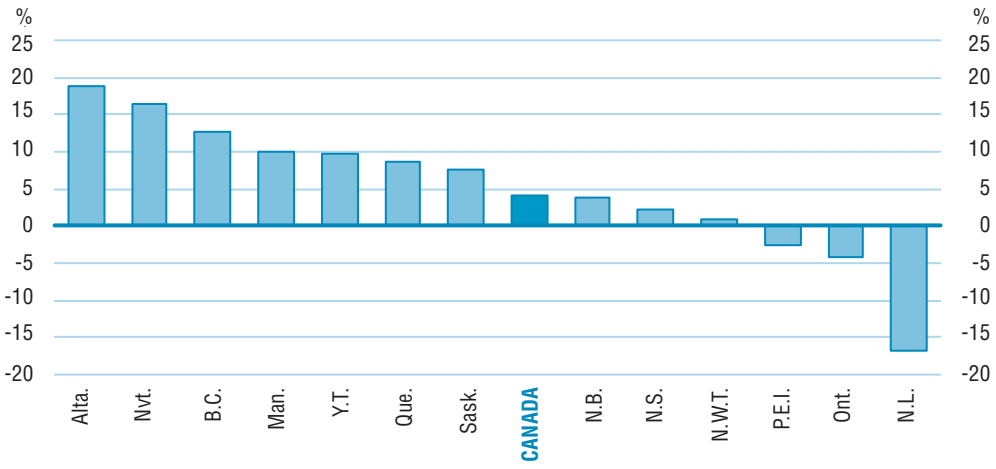
In the fiscal year 1997-1998, expenditure on education by all orders of government reached $55.8 billion. Four years later, $58.1 billion was spent on education, an increase of $2.3 billion, or 4% (Table B2.2).

Most of the increases in government expenditure in Canada between 1997-1998 and 2001-2002 occurred at the postsecondary level where it grew by 9%; expenditure at the elementary-secondary level grew only by 2% (Table B2.3).

Over this period, total government expenditure increased across most jurisdictions, with Alberta leading at 19% (Figure B2.2). Expenditure dropped 3% in Prince Edward Island, 4% in Ontario, and 17% in Newfoundland and Labrador with the end of short-term funding increases, notably for the Atlantic Groundfish Strategy, and the return to normal expenditure levels.

Figure B2.2

Percent change in public expenditures on education between 1997-1998[1] and 2001-2002, Canada and jurisdictions



1. Between 1999-2000 and 2001-2002 in the Northwest Territories and Nunavut.

Source:
Table B2.3.

For most jurisdictions, expenditure increases were higher at the postsecondary level than at elementary-secondary level. However, Newfoundland and Labrador, Prince Edward Island, Nova Scotia, and Nunavut have experienced a drop in postsecondary expenditure, due to the drop in expenditure on trade-vocational programs (Table B2.3).

Private expenditure

In 1997-1998, $9.0 billion spent on education was from private sources. Four years later, private expenditures rose to $10.5 billion, a 16% increase, four times the increase in public expenditures. Of this amount, $3.1 billion was spent at the elementary-secondary level and $7.4 billion at the postsecondary level (Tables B2.4 and B2.5).

In 2001-2002, 7% of all expenditure at the elementary-secondary level and 27% at the postsecondary level came from private sources.

Private expenditure accounted for 15% of total expenditure in education in 2001-2002, compared to 14% in 1997-1998. Private expenditure was concentrated at the postsecondary level, since it represented 36% of the expenditure at the university level and 22% at the college level. Private expenditure accounted for only 7% of total expenditure at the elementary-secondary level (Figure B2.3 and Table B2.6).

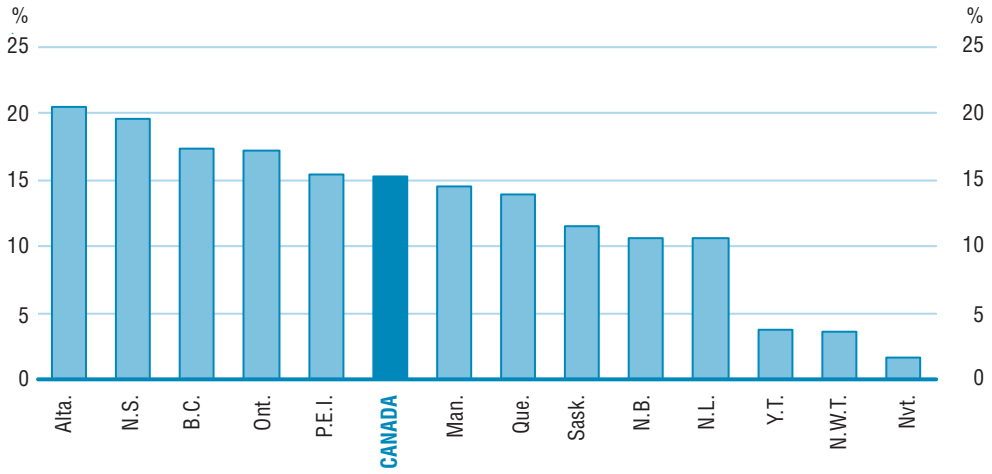


Figure B2.3

Private expenditure as a percentage of total expenditure on education, Canada and jurisdictions, 2001-2002

Source:
Table B2.6.

Among the jurisdictions, private expenditure accounted for nearly 21% of total expenditure in education in Alberta and nearly 20% in Nova Scotia. It accounted for around 11% in Newfoundland and Labrador, New Brunswick and Saskatchewan and for less than 4% in each territory. Private expenditure accounted for over 10% of the total expenditure on elementary-secondary education in Quebec and Alberta, and over 35% of the total expenditure on postsecondary education in Nova Scotia, Ontario and Alberta.

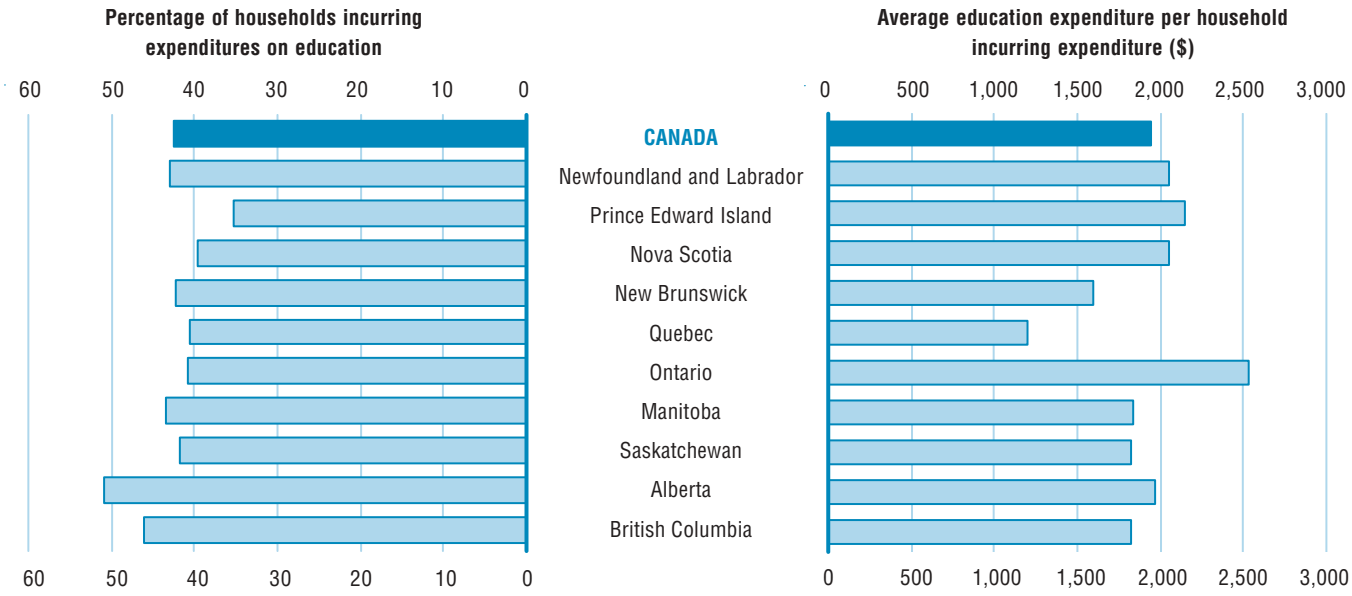
Expenditure by households

In 2000, 43% of Canadian households incurred educational expenses such as textbooks, school supplies and tuition costs, spending an average of $1,946. Prince Edward Island had the lowest proportion of households incurring education expenses, at 35%, while Alberta had the highest, at 51%. The average cost for households incurring expenditures on education was lowest in Quebec at $1,202, and highest in Ontario at $2,530 (Figure B2.4 and Table B2.7).

In 2000, 43% of households incurred education expenses, spending an average of $1,946.

Figure B2.4

Household expenditures on education, 2000



Source:
Table B2.7.

In 2000, the 9% of households in Canada that incurred expenditures on pre-elementary and elementary-secondary tuition paid an average of $974. Among provinces, the percentage of households paying tuition fees at this level ranged from 4% in Nova Scotia and Ontario to 22% in Alberta. The average tuition ranged from $193 in Saskatchewan to a high of $1,988 in Ontario.

The 17% of households that incurred expenditures on postsecondary tuition paid an average of $2,907. The percentage of households paying postsecondary tuition ranged from a low of 13% in Prince Edward Island and New Brunswick to highs of 20% in Alberta and British Columbia. At $1,362, Quebec households paid the lowest amount for postsecondary tuition while Prince Edward Island households, at $4,522, paid the highest.

University tuition fees

Tuition fees increased during the 1990s, and for some university programs the fee increases were particularly significant.

Undergraduate university tuition fees almost doubled over the period 1990-1991 to 2001-2002, rising from an average of $1,806 to $3,585 across Canada. In 2001-2002, Nova Scotia had the highest tuition fees at $4,855, and Quebec had the lowest at $1,842 (Figure B2.5 and Table B2.8).

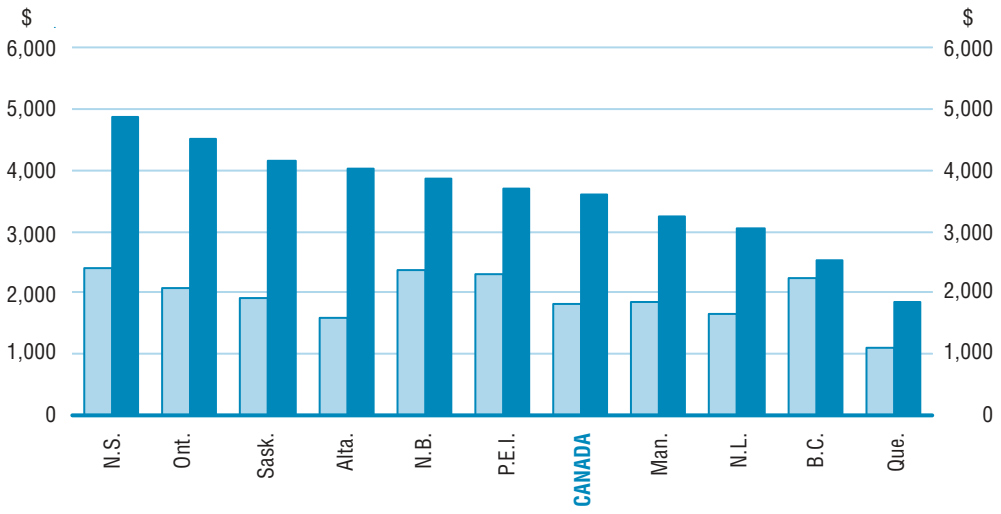


Figure B2.5

Average undergraduate university tuition fees, Canada and provinces, 1990-1991 and 2001-2002 (in 2001 constant dollars)

Note: Provinces ranked by 2001-2002 tuition.

Source:

Table B2.8.

In 1990-1991, tuition fees for various programs ranged from a low of $1,646 in Commerce to a high of $2,220 in Dentistry. By 2001-2002, the range had widened, with fees ranging from $2,923 in Education to $9,105 in Dentistry (Table B2.9).

Private revenues at universities

Between 1990-1991 and 1999-2000, a greater proportion of university revenues came from private sources.

Student tuition and other non-government revenues, as a proportion of total university revenues, increased from 32% to 45% over the ten-year period 1990-1991 to 1999-2000. Among provinces in 1999-2000, Nova Scotia, at 57%, had the highest proportion of private revenues at the university level, rising from 37% ten years earlier. Quebec, at 35%, had the smallest proportion of private funding in 1999-2000, compared to 22% ten years earlier (Table B2.10).

Allocation of resources

B3

Context

This indicator shows the balance between current expenditures and capital expenditures for the provinces and territories, and for Canada and the G-7. It also provides information on salaries of college and university educators.

An analysis of current and capital expenditure shows how jurisdictions in Canada allocate funds for ongoing expenses and for building or expanding infrastructure (e.g., schools, laboratories and libraries). The relative weighting between the two typically depends on current and projected enrolments, and on economic factors such as the cost of living, increases in instructor salaries, and changes in interest rates. Capital expenditure may also fluctuate in response to the overall age and adequacy of existing facilities.

The delivery of education services is achieved primarily through educators and other staff; consequently, current expenditures (the chief component of which is salaries) typically far outweigh capital expenditure. This is especially true at the elementary-secondary level. At the postsecondary level, other services, such as expenditure related to research and development (R&D) activities, can account for a significant portion of total current expenditure (see Indicator D4). Postsecondary communities also tend to have larger infrastructure requirements (e.g., libraries, computing facilities, housing, non-credit instruction) than is the case at the elementary-secondary level, resulting in a different balance between capital and current expenditures.

In light of the high proportion of current expenditures spent on staff salaries, it is useful to consider how these salaries have changed over time. Comparable information is not available for the provinces and territories for elementary-secondary education. Consequently, this indicator focuses on the compensation of college and university educators in the 1990s. The question of gender wage parity is an ongoing analytical concern, and information is presented on how the salaries of female educators compare to their male counterparts.

Findings

Capital and current expenditures

Elementary-secondary

In Canada, capital expenditures represented 6.3% of total resources spent on elementary-secondary education in 1999-2000.

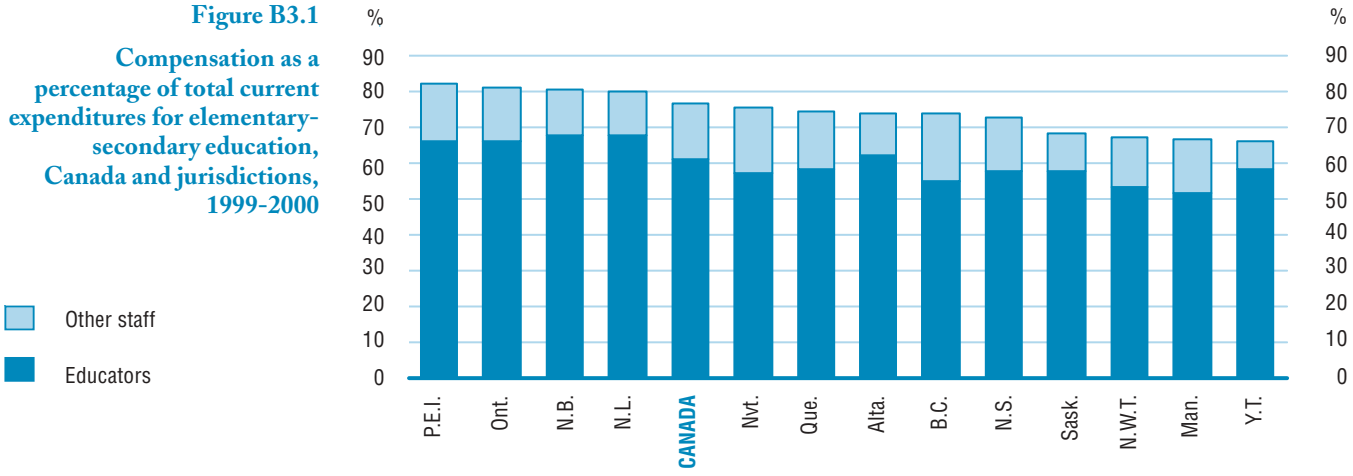
In 1999-2000, 93.7% of expenditure at the elementary-secondary level went to current expenditures. Of that, about three-quarters, or nearly $30 billion[1], was spent on compensation for educators and other staff (Tables B3.1 and B3.2). The distribution between capital and current expenditures showed little change between 1997-1998 and 1999-2000.

Among the provinces and territories, the majority spent over 92% of resources on current expenditures in 1999-2000. The exceptions were Prince Edward Island (91.2%), New Brunswick (86.4%), Ontario (91.5%), Yukon (86.9%), and the Northwest Territories (86.9%). Some jurisdictions showing a high proportion of current expenditures, such as Nova Scotia, include expenses relating to infrastructure costs under current expenditures, as a result of a different financing structure for items such as school buildings, which may be leased rather than owned.

The compensation of staff is the largest portion of expenditures in all jurisdictions. In Manitoba, Saskatchewan, Yukon, and Northwest Territories, approximately two-thirds of all current expenditures were spent on staff in 1999-2000. In Newfoundland and Labrador, Prince Edward Island, New Brunswick, and Ontario, staff compensation represented over 80% of ongoing expenditures (Figure B3.1).

Figure B3.1

Compensation as a percentage of total current expenditures for elementary-secondary education, Canada and jurisdictions, 1999-2000



Source: Table B3.2.

1. Unless otherwise indicated, all amounts are in 2001 constant dollars.

Postsecondary

At the postsecondary level, 4% of resources were allocated to capital costs in 1999-2000, down from 6% two years earlier. But with rising postsecondary expenditure (see Indicator B1), actual capital expenditure increased over this period.

Capital expenditures at the postsecondary level declined by $84 million between 1997-1998 and 1999-2000, while compensation for staff increased by $2.6 billion.

Approximately two-thirds of current expenditures go to staff compensation. While this percentage is essentially the same as in 1997-1998, the actual amount spent on compensation increased by approximately $2.6 billion (Figure B3.2 and Tables B3.1 and B3.2).

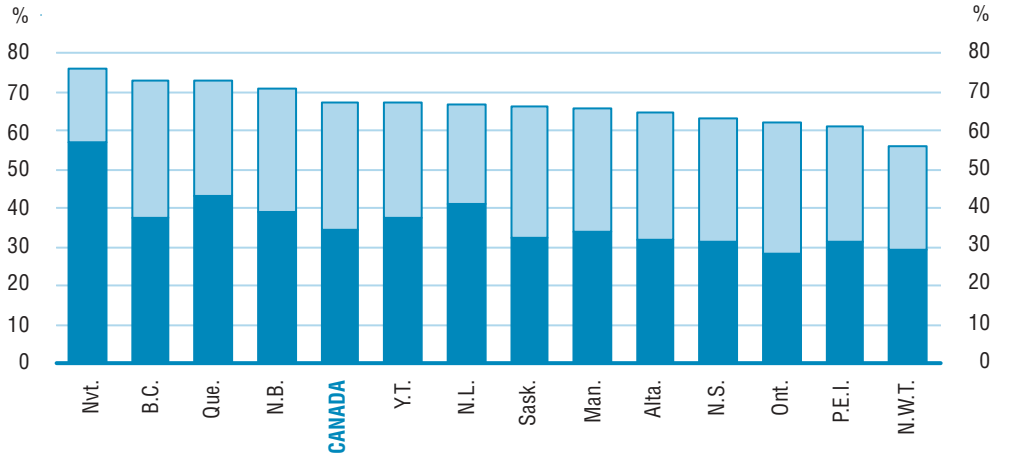


Figure B3.2

Compensation as a percentage of total current expenditures for postsecondary education, Canada and jurisdictions, 1999-2000

Source:
Table B3.2.

Across the provinces and territories, the share of resources allocated to current expenditures in 1999-2000 was generally close to the pan-Canadian average. Quebec was lower (94%), while New Brunswick (98%), Manitoba (97%), Yukon (98%), Northwest Territories (100%), and Nunavut (100%) were higher (Table B3.2). Staff compensation represented between 56% and 76% of current expenditures, and had declined between 1997-1998 and 1999-2000 in terms of the relative share of current expenditures in every jurisdiction except Quebec, British Columbia, and Northwest Territories. Actual costs of compensation rose over the three-year period everywhere except Newfoundland and Labrador, Prince Edward Island, and Northwest Territories.

Canada and other countries

In 1998-1999, the most recent year for which comparable data are available through OECD, the percentage of resources allocated to capital expenditures was smaller in Canada, at both levels of education, than among other G-7 countries. The only exception was the United Kingdom, which allocated 3% to postsecondary capital expenditure. Canada is sixth at the elementary-secondary level in terms of the proportion of current expenditures used for staff compensation, but has the third-highest percentage at the postsecondary level (Table B3.3).

In 1998-1999, Canada allocated a smaller percentage of postsecondary resources to capital expenditures than most other G-7 countries, while the percentage spent on compensation was generally comparable.

Salary of full-time university and college educators

Salaries of university and college faculty fell during the 1990s.

In constant dollars, average salaries of university faculty fell slightly during the 1990s at the pan-Canadian level, while full-time college educators experienced a somewhat greater decline (Tables B3.4 and B3.5). Wages of full-time university faculty edged up slightly in Ontario, were little changed in British Columbia, and decreased in other jurisdictions. For those jurisdictions for which data are available for both 1989-1990 and 1999-2000, salaries of full-time college staff increased in British Columbia, held steady in Ontario, and decreased elsewhere.

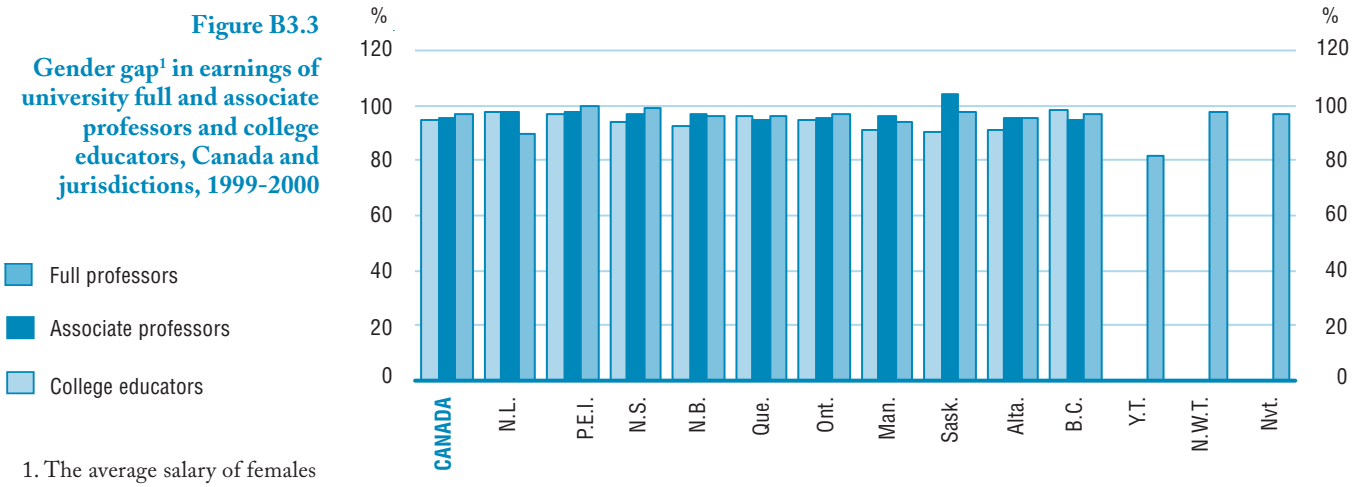
In 1990-2000, female university full and associate professors earned 95% of what their male counterparts earned.

In universities, the gender gap in earnings narrowed slightly during the 1990s. In 1999-2000, across all academic ranks (full and associate professors, and others), women's average salary was 86% that of men, compared to 82% ten years earlier. The gender gap within ranks has shown little change over the decade: females in each rank earn approximately 95% of what males earn. Much of the overall gender gap stems from the lower representation of women in the higher ranks (Table B3.4).

Among the provinces, in 1999-2000, the gender gap for full professors ranged from 90% in Saskatchewan to 98% in Newfoundland and Labrador and British Columbia. For associate professors, the gap was between 95% and 98% in all provinces, except Saskatchewan, where the gender gap favoured females, at 104% (Figure B3.3).

Figure B3.3

Gender gap[1] in earnings of university full and associate professors and college educators, Canada and jurisdictions, 1999-2000



1. The average salary of females as a percentage of the average salary of males.

Sources:

Tables B3.4 and B3.5.

In community colleges (CEGEP in Quebec), the gender gap in earnings has also narrowed slightly. In 1989-1990, salaries of female faculty were 94% those of males, and in 1999-2000 they were 97%. Among the jurisdictions, the gender gap in 1999-2000 ranged from 82% in Yukon to 100% in Prince Edward Island (Figure B3.3 and Table B3.5).

Student debt

B4

Context

This indicator shows data on student debt from government-run student loan programs, using data for the classes of 1990 and 1995, the two most recent graduating classes for which comparable pan-Canadian survey results are available.

Public debate and concern about rising student indebtedness grew during the 1990s as the cost to households rose. The debate over student debt relates to the broader discussion of public versus private contributions to the funding of postsecondary education, as well as the question of what proportion of postsecondary expenses ought to be borne by students.

Rising student debt levels among postsecondary graduates, together with a significant gap in participation between people from low- versus middle-to-high income backgrounds raise concerns about access to postsecondary education, especially at the university level. The student loans programs offered by the federal and provincial governments operate under the principle that access to postsecondary education should be independent of an individual's financial situation. Provincial and federal governments have recently undertaken initiatives to improve the affordability of postsecondary education. Accurate information on student debt can help to not only identify possible barriers to access, but also assist policy makers in monitoring the effectiveness of loan programs.

Findings

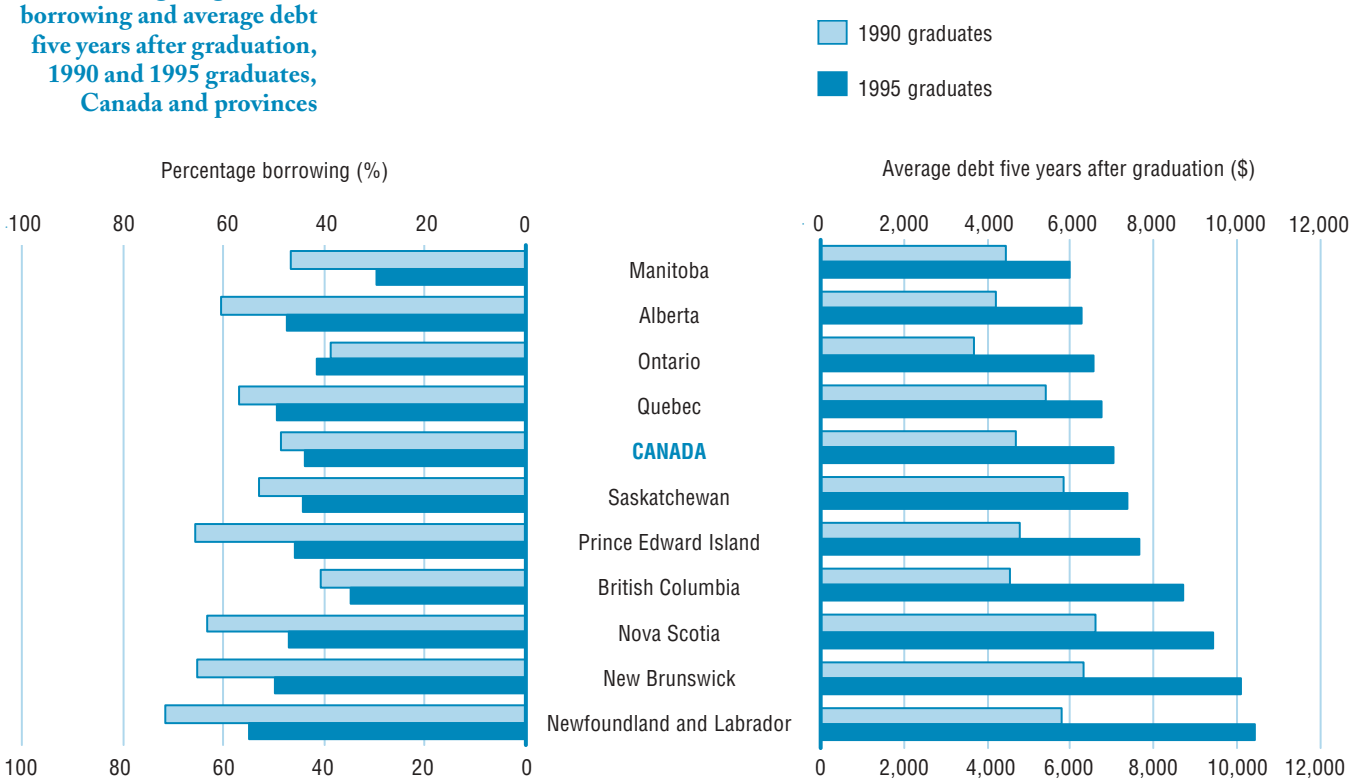
Levels of student debt in Canada

In Canada, overall, 1995 graduates who borrowed from government student loan programs owed, at graduation, on average just over $10,000, one-third more than 1990 graduates.

Those in the 1995 cohort who borrowed from government student loan programs to help finance postsecondary education owed more at the time of graduation, as well as two years and five years later, than their 1990 counterparts (in 1995 constant dollars). The percentage of graduates borrowing from these loan programs across Canada decreased from 48% to 44% between 1990 and 1995. Data for later cohorts will be needed to determine whether this represents the beginning of a trend. The 1995 postsecondary graduates who borrowed from government student loan programs owed an average of $10,601 at graduation, 33% more than 1990 graduates (Figure B4.1 and Table B4.1). In Canada, the 1995 class had, in the five years after graduation, reduced its debt by an average of 34%. The corresponding reduction for the 1990 class was 41% (Table B4.2). As a result of the higher initial debt and slower rate of repayment, 1995 graduates who borrowed from government student loans programs had 63% more debt two years after graduation and 49% more debt five years after graduation than their 1990 counterparts.

Figure B4.1

Percentage of graduates borrowing and average debt five years after graduation, 1990 and 1995 graduates, Canada and provinces



Sources: *Table B4.1 and Table B4.2.*

Notes: All amounts in 1995 constant dollars.
Provinces ordered by debt after five years, 1995 graduates.

Student debt by province

In all provinces, debt levels of 1995 graduates were higher and repayment rates slower, compared to the 1990 class.

Although the percentage of graduates with student loans at graduation decreased in all provinces except Ontario, debt levels increased in all provinces between 1990 and 1995, at graduation as well as two and five years later. For the 1995 cohort, postsecondary graduates in Quebec and Prince Edward Island reported the lowest average amount owed at the time of graduation, $9,278 and $9,446, respectively, while corresponding debt levels were highest in Saskatchewan ($15,049) and British Columbia ($13,993). The higher debt levels in Saskatchewan were due to the provision of higher levels of assistance and the switch from a provincial bursary program to a provincial loan program.

In almost all provinces, 1995 postsecondary graduates took longer to pay off their debts than the 1990 cohort, though the differences in repayment rates after five years were small in Quebec, Ontario, and Manitoba. In Saskatchewan, however, 1995 graduates had repaid a larger portion of their loans five years after graduation than had 1990 graduates. Five years after graduation, 1995 graduates from the Atlantic provinces and Quebec had reduced their debt by amounts ranging from 17% to 28%. The corresponding rate of loan repayment was faster in Ontario and the Western provinces, where 1995 graduates had reduced their debt by between 38% and 51%.

Debt incurred by college and university graduates

1995 college graduates owed less at graduation than university graduates, and had faster rates of repayment.

In both 1990 and 1995 classes, college graduates had lower average debts on graduation than university graduates. In Canada as a whole, 1995 college graduates who borrowed from government loan programs owed, on average, $9,186 on graduation compared to $12,203 for university graduates at all levels. These differences reflect the typically shorter duration and lower tuition fees of college programs than university programs. However, the gap narrowed between 1990 and 1995 as debt at graduation increased by 48% among college graduates, compared to 41% among university graduates. Among the class of 1995, college graduates had slightly faster rates of repayment both two and five years after graduation than university graduates.

In six provinces, the average debt of 1995 college graduates who took out loans ranged between $9,000 and $11,000. In Quebec and Manitoba, average debt was about $7,500, while in Newfoundland and Labrador and Prince Edward Island it was $11,575 and $6,167, respectively. Five years after graduation, college graduates from Newfoundland and Labrador had repaid 49% of their debts, leaving them with an average remaining debt comparable to most other provinces. College students from Manitoba combined initial low debt with a high rate of repayment for the lowest average debt five years after graduation.

On average, in Canada and most provinces, undergraduates had the highest student debt.

University students completing bachelor's-level degrees (including professional programs such as dentistry, law and medicine) generally had the highest levels of student debt at all time points. Five years after graduation, debt repayment rates for graduates from bachelor's programs were 4% lower than for college graduates, and 10% to 30% lower than for graduate students. Repayment rates varied across the provinces, but, in general, the same pattern emerged.

Comparing the 1990 and 1995 classes, master's and doctoral graduates had the largest increase in debt two and five years after graduation, but their outstanding debt remained lower than that of bachelor's graduates.

Since the debt levels reported by master's and doctoral students could include debt incurred during undergraduate study, it is perhaps not surprising that master's and doctoral students experienced the largest increase in debt at graduation between 1990 and 1995, with increases of 61% and 89%, respectively, compared to increases of 38% among bachelor's graduates. Interestingly, over this period, the percentage of students incurring debt dropped more among graduate students than for college or undergraduate students. Repayment rates were also faster, though by a smaller margin for 1995 graduates than the 1990 class. The average debt of the 1995 doctoral cohort five years after graduation, at $4,054, was 172% higher than the comparable debt of 1990 graduates, though still only just over half that of undergraduates, and two-thirds that of the average master's degree graduate with debt.

Chapter C

C

Chapter C figures

Chapter C figures

Elementary-secondary education

Introduction

The education indicators in this chapter offer an overview of pre-elementary, elementary and secondary education in Canada. Indicator C1 looks at the early years and school readiness of 4- and 5-year-olds.

Elementary-secondary enrolment reflects demographic trends given compulsory school attendance. In addition, kindergarten programs are now almost universal. Indicator C2 examines enrolment trends by age, with particular emphasis on the ages that students typically enter and leave the elementary-secondary system.

A large number of teachers recruited during the growth years of the 1960s and 1970s are nearing retirement age. Indicator C3 looks at human resource issues, including the demographic characteristics of the teaching work force and the student-teacher ratio. Indicator C4 focuses on school characteristics. At first glance, a declining school-age population in some jurisdictions might appear to alleviate the requirement for new schools. However, gradual population shifts are more likely to result in reduced operating capacity than in school closings. Even areas undergoing considerable population shrinkage are under pressure to keep schools open.

The education system is increasingly reliant on information technologies. Familiarity with computers and proficiency with everyday applications are seen by many as critical skills for the next generation. Indicator C5 deals with the student–computer ratio, connectivity and impediments to better use of information technology in the school.

Closer attention to measuring outcomes has become a hallmark feature of education policy in the last ten years or more. Indicator C6 examines school achievement in such key areas as reading, mathematics and science. The chapter closes with secondary school graduation rates, a traditional measure of educational outcomes. Indicator C7 includes comparisons to other countries as well as among jurisdictions.

Home to school transitions: Early childhood development and learning

C1

This indicator examines data on the physical, social and cognitive development of 4- and 5-year-olds.

Context

The developmental stages of early childhood are complex, multidimensional and interdependent. For example, the ability to participate in age-appropriate conversations (social and cognitive development) is in part dependent on a child's oral acuity (physical development). For any one child, his or her stage of early childhood development can influence how prepared he or she is to enter the school environment.

Long-term success in school, as well as later in life, may be influenced by what a child achieves in the first years of school. Although not the beginning of all learning, the first years in school lay the foundation in reading and writing, mathematics and science concepts. James Heckman, Nobel Prize winner in Economics, has claimed that "all the available evidence points to the great long-run value of raising the skill levels and motivation of the very young. Research in psychology and economics indicates that skill begets skill; early learning promotes later learning. Investment in the education and training of the very young earns a far higher return than investment placed in a teenager or middle age adult."[1]

In recent years, all orders of government in Canada have turned their attention to the question of whether children are ready to enter school fully prepared for the academic and social challenges they will face. This section presents pan-Canadian level data from the National Longitudinal Survey of Children and Youth (NLSCY) on the physical, social and cognitive development of 4- and 5-year-olds.

Findings

Health status

The early development of children occurs in a variety of contexts: the family, more or less formalized organisations of child care and, for later years (ages 4 and 5), participation in pre-elementary programs in school settings. Although compulsory schooling begins at age 6 in most jurisdictions (see Appendix 1 for more information), in 1999-2000, 95% of 5-year-olds and 43% of 4-year-olds were attending school (Figure C2.2 in Section C2).

1 James Heckman, "*A response to Richard Freeman's Solving the New Inequality*", Boston Review, December/January 1996-97.

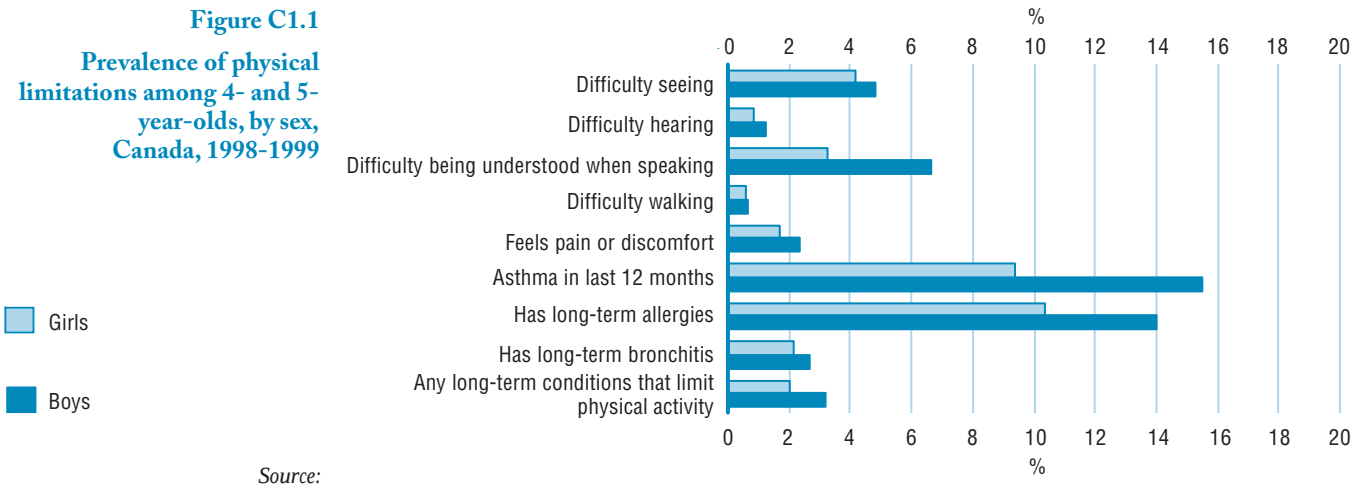
Parents reported that the physical health of 4-and 5-year-old Canadians was generally very good. About 87% of these children were considered by their parents to be in excellent or very good health (Table C1.1). This leaves about 13% (almost 100,000 children) with less than optimal general health.

Twice as many young boys as girls had some speech difficulty.

Only a small proportion of 4-and 5-year-olds suffered from physical challenges that would prevent them from seeing well, hearing well, speaking distinctly or walking without support (Figure C1.1 and Table C1.1). Still, the parents of more than 26,000 boys reported that their child had experienced some speech difficulty, twice the prevalence for girls (about 7% of boys compared to 3% of girls). In the 4- and 5-year-old population, health problems such as asthma and allergies were markedly more prevalent than physical deficiencies: more than 12% of these young children experienced either one and boys suffered from these more often than girls. But overall, according to their parents, less than 3% of these young children had long-term conditions or health problems which limited their participation in school, at play, sports or in any other activity for children of their age.

Figure C1.1

Prevalence of physical limitations among 4- and 5-year-olds, by sex, Canada, 1998-1999



Source:

Table C1.1.

Participation in activities

One in three children aged 4 and 5 participated in coached sports activities at least once a week.

Among young children, general theory indicates that social development and behaviour emerge, and were enhanced through, participation in structured activities outside school and activities with friends.

In 1998-1999, many young children participated in out-of-school structured activities on a regular basis (at least once a week) (Figure C1.2 and Table C1.1). Sports with a coach was the most popular activity among girls (32% of all girls aged 4 and 5 practice sports on a regular basis) and boys (37% of all boys). Participation in music and other art-related activities was lower, with about 10% of young children participating in these on a regular basis. Girls more often than boys took regular lessons in dancing, gymnastics or martial arts. About 15% of 4- and 5-year-olds participated in club, group or community program activities.

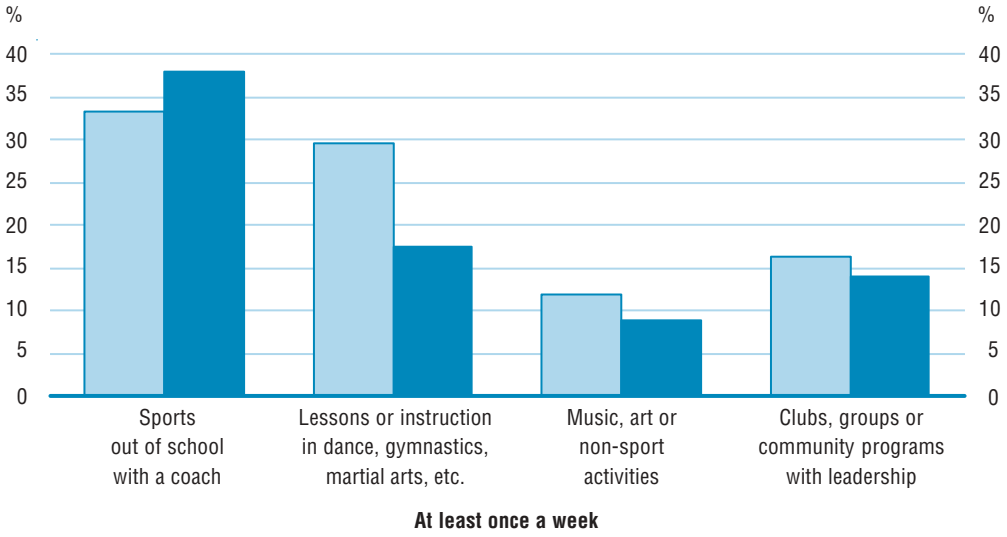


Figure C1.2

Participation of 4- and 5-year-olds in out-of-school activities, by sex, Canada, 1998-1999

Source:
Table C1.1.

Exposure to books and reading

Once they enter Grade 1, children are expected to begin learning to read and write, two fundamentals largely conditioning their experience in school and beyond. Access to books and pencils and language development during the pre-school years help prepare children for the reading and writing challenges they will confront when entering Grade 1.

Although the majority of 4-year-olds, according to their parents, looked at books, magazines or comics daily at home, by themselves, a gender gap emerged: 79% of girls looked at books daily, compared with only 64% of boys (Figure C1.3 and Table C1.1).

A much larger proportion of 4-year-old girls (79%) looked at books daily by themselves when at home than did 4-year-old boys (64%).

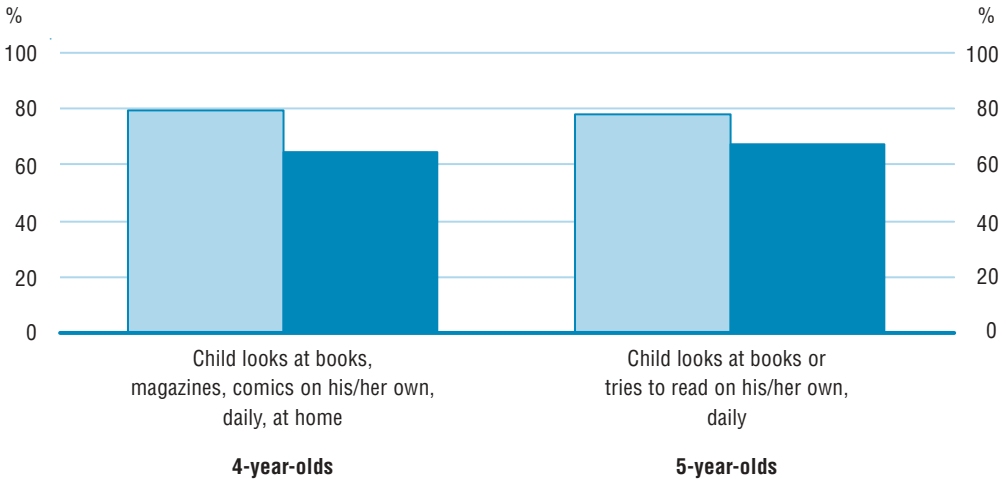


Figure C1.3

Interest in books and reading among 4- and 5-year-olds, by sex, Canada, 1998-1999

Source:
Table C1.1.

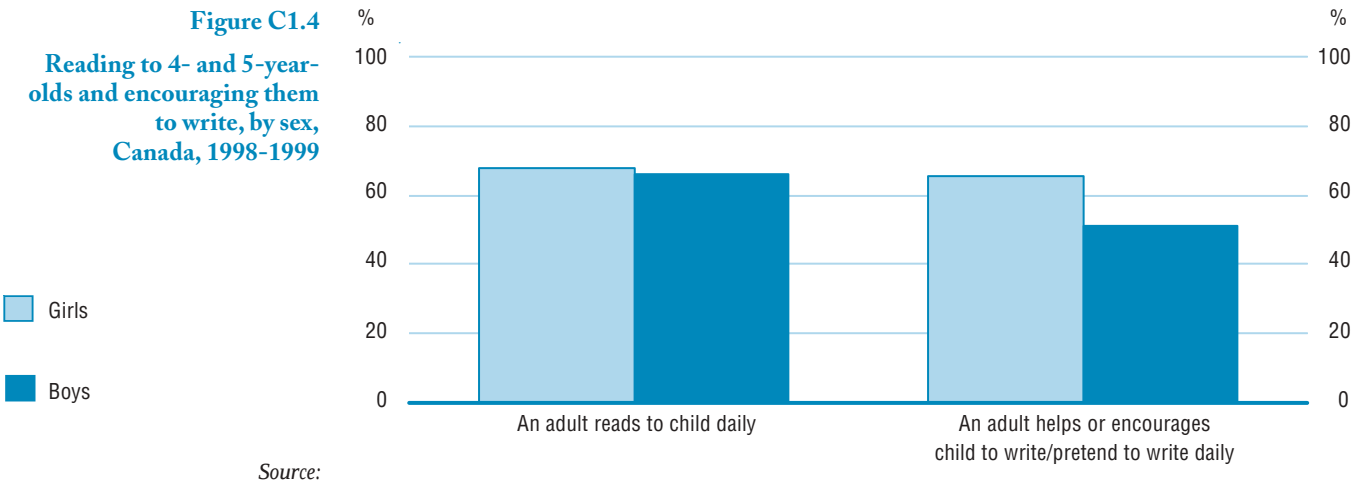
Children are expected to move from looking at books to pretending to read them. Among 5-year-olds, a large proportion of both girls (78%) and boys (67%) looked at books or tried to read on their own on a daily basis. This meant that a considerable proportion of both girls and boys did have daily contact with books.

Two-thirds of 4-and 5-year-olds had an adult who read to them every day.

Young children develop an appetite for reading when they are surrounded by reading material, have the opportunity to see adults reading as a habit and are read to at a very early age. This seems to have been the environment for a majority of young children in 1998-1999: two-thirds of 4- and 5-year-olds had an adult who read to them every day (Figure C1.4 and Table C1.1). However, this means that about a third will enter school without this high level of familiarity with books and printed material. There was no difference between boys and girls in their access to an adult who read to them daily. However, there is a difference in terms of parents encouraging their young child to write: 65% of girls' parents encouraged them to write daily, compared to 51% for boys.

Figure C1.4

Reading to 4- and 5-year-olds and encouraging them to write, by sex, Canada, 1998-1999



Source: Table C1.1.

Peabody Picture Vocabulary Test

The NLSCY complements the perceptions of a parent (most often the mother), by a more "objective" measure of the child's cognitive development. The *Peabody Picture Vocabulary Test—Revised* (PPVT-R) assesses receptive vocabulary at ages 4 and 5.

In 1998-1999, the vast majority of 4- and 5-year olds had normal or advanced receptive language skills on the PPVT-R. Only about 15% performed relatively poorly. About the same proportions of boys and girls were high performers (Figure C1.5 and Table C1.2).

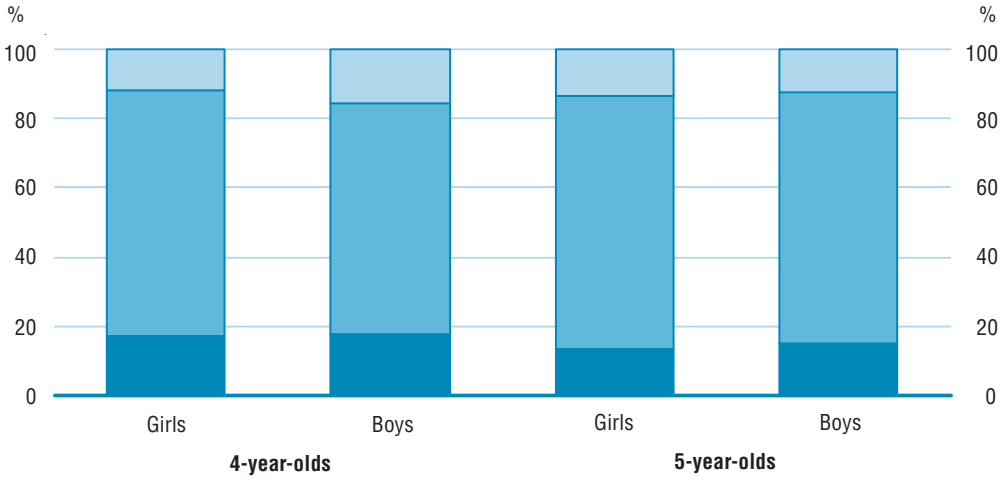


Figure C1.5

Peabody Picture Vocabulary (Revised) scores for 4- and 5-year-olds, by sex, Canada, 1998-1999

Source:
Table C1.2.

Findings from the NLSCY confirm that children who demonstrated some delay in motor/social development are three times as likely to have vocabulary problems two years later. And those who experienced vocabulary problems (as measured with the PPVT-R) are twice as likely to experience school achievement problems two years later.[2]

2. Ivan P. Fellegi, Presentation at "Investing in Children: A National Research Conference", Ottawa, October 27-29, 1998.

Elementary-secondary school participation

Context

C2

This indicator focuses on enrolment levels for the youngest and oldest students in the elementary-secondary school system.

Elementary-secondary enrolment reflects demographic trends because of compulsory school attendance. The size of the school-age population in any jurisdiction is affected not only by the birthrate within that jurisdiction, but also by migration into and out of the jurisdiction. Areas experiencing a substantive decline in school-aged population may face underutilized facilities, overstaffing and pressure to reduce program offerings. Conversely, areas where enrolments have been increasing may feel pressure to provide increased funding to maintain per-student expenditure.

There are a variety of arrangements across jurisdictions for pre-elementary programs, with all jurisdictions offering 5-year-old kindergarten[1] and some offering 4-year-old kindergarten as well. The intensity of the programs also varies, with some jurisdictions opting for full-day programs, some for half-day programs and some offering a mixture, depending on the school board. Clearly, the number of years and intensity of pre-elementary schooling have cost implications in terms of both human resources and physical resources such as class space for students.

The typical age of secondary school graduation (17 or 18 in most provinces, 16 in Quebec) is higher than the age at which compulsory attendance ends (16 in most jurisdictions). Since students can legally leave school before completing their secondary education, this affects enrolment in the senior grades of high school. As of July 1999, New Brunswick changed the age of compulsory school attendance from 16 to 18 years. The impact of this change on enrolment rates in New Brunswick will be monitored in future reports. In 2002-2003, Ontario will complete its shift from a five-year to a four-year high school program. Thus, in the 2003-2004 school year, the province will face lower secondary-school enrolments.

Enrolment at the secondary school level is also affected by both the number of years of study required for secondary graduation and postsecondary entrance requirements. For example, in some jurisdictions, the prerequisite for postsecondary attendance is the completion of specific courses rather than a secondary school diploma.

1. Prince Edward Island introduced its kindergarten program in 2000-2001. This change will not be reflected in the statistics until data become available.

Findings

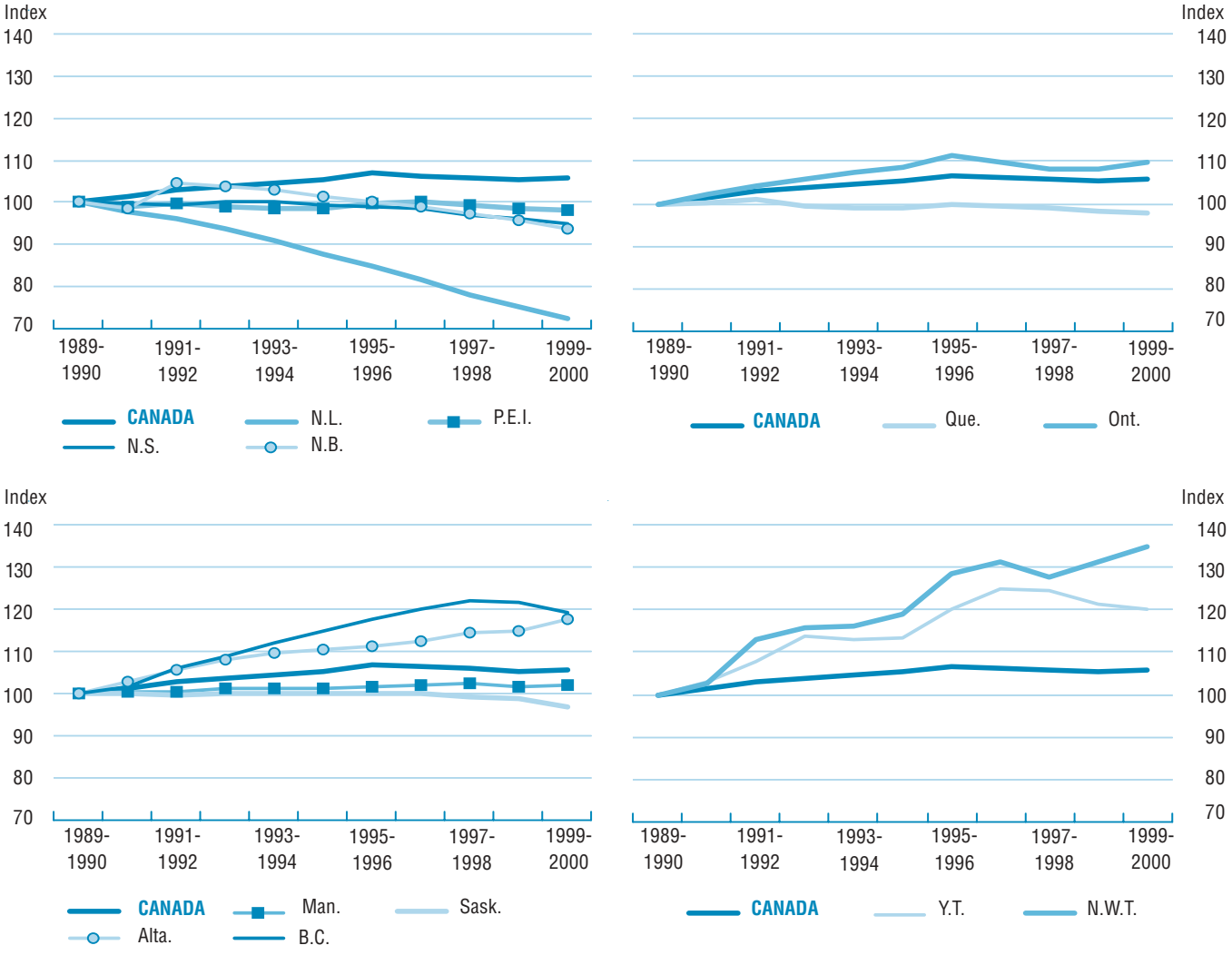
Overall enrolment

At a pan-Canadian level, elementary-secondary school enrolment levels have been stable since the mid-1990s.

At a pan-Canadian level, elementary-secondary school enrolments increased 7% between 1989-1990 and 1995-1996, and have changed little since (Figure C2.1 and Table C2.1). As noted, trends in enrolments follow population trends closely (see also Indicator A1).

Figure C2.1

Elementary-secondary enrolment index, Canada and jurisdictions (1989-1990 = 100)



Source:
Table C2.1.

Enrolments decreased over the ten-year period ending in 1999-2000 in the Atlantic provinces, Quebec and Saskatchewan. The largest decrease was in Newfoundland and Labrador, where enrolment fell 27%. Declines in other jurisdictions were small in comparison, with the next largest drop (6%) in New Brunswick. The largest percentage increases (17% or over) occurred in Northwest Territories, Yukon, British Columbia and Alberta, jurisdictions that experienced the highest rates of population growth over the period.

Enrolment of 4- and 5-year-olds

In 1999-2000, just over one-half million children were enrolled in pre-elementary (pre-Grade 1) programs in Canada (Table C2.2). This represented 66% of 4- and 5-year-olds, up from 61% ten years earlier. The enrolment rate was highest in Ontario (87%), which has almost universal pre-elementary programs for both 4- and 5-year-olds, followed by Manitoba (60%) and Quebec (58%). (See Appendix 1 for more information on the structure of provincial and territorial education systems.)

At a pan-Canadian level, 95% of 5-year-olds were attending school (either pre-elementary or elementary grades), with rates in the 90s for all jurisdictions except Northwest Territories (89%) and Prince Edward Island where, as noted above, the data pre-date the introduction of a 5-year-old pre-elementary program (Figure C2.2 and Table C2.3).

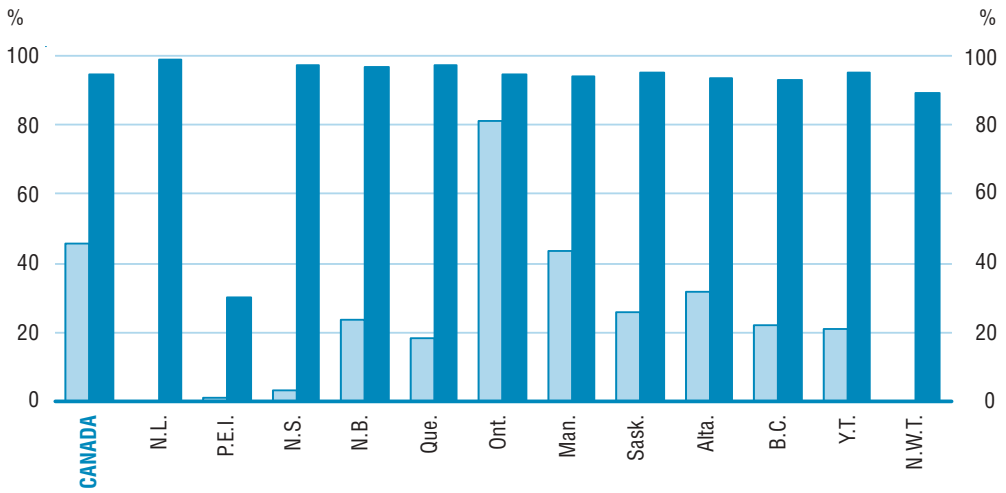


Figure C2.2

Enrolment rate in pre-elementary education, ages 4 and 5, Canada and jurisdictions, 1999-2000

Source:
Table C2.3.

Enrolment rates of 4-year-olds were more variable, and clearly highest in Ontario (81%). Despite the absence of universal 4-year-old kindergarten programs in other jurisdictions, appreciable numbers were enrolled in some cases, ranging from 44% in Manitoba and 32% in Alberta to over 20% in New Brunswick, Saskatchewan, British Columbia and Yukon (Figure C2.2 and Table C2.3).

Despite the absence of universal 4-year-old kindergarten programs, many children of this age attended school in 1999-2000.

Enrolment of youth aged 16 and over

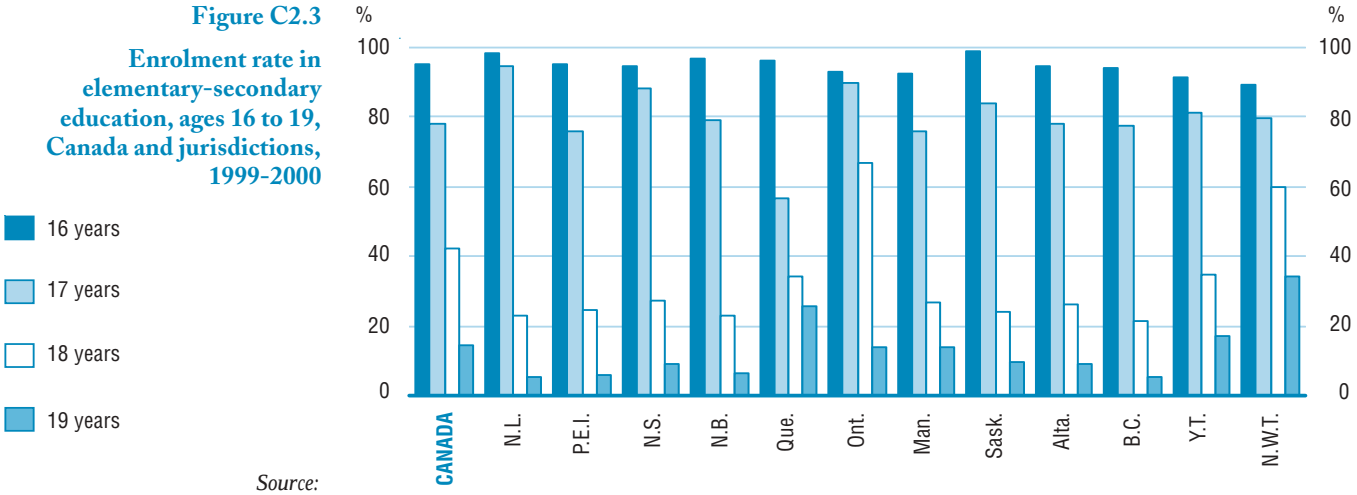
In all jurisdictions, the enrolment rate of 16-year-olds was high, ranging from the upper 90s in Newfoundland and Labrador, New Brunswick and Saskatchewan to just under 90% in Northwest Territories. In Quebec, the rate for 16-year-olds, who are typically in their last year of secondary school, was 96%.

Enrolment at age 16—the last year of compulsory education in most jurisdictions—was above 90% in 1999-2000 for most provinces and territories.

In all jurisdictions other than Quebec and Ontario, 17-year-olds are typically in their last year of secondary school (see Appendix 2, Methodological notes). Enrolment rates for this age were highest in Newfoundland and Labrador (95%), followed by Nova Scotia, Saskatchewan, Yukon and Northwest Territories (Figure C2.3 and Table C2.3).

Figure C2.3

Enrolment rate in elementary-secondary education, ages 16 to 19, Canada and jurisdictions, 1999-2000



Source:
Table C2.3.

Secondary school enrolment rates for 18-year-olds were in the mid-20s in most jurisdictions, but were higher in Yukon (35%) and Northwest Territories (60%) where students tend to complete secondary school later. It is too early to see the impact of the change in compulsory school attendance from 16 to 18 years of age in New Brunswick.

The enrolment rate of 16-year-olds (those typically in their last year of secondary school) in Quebec was 96% in 1999-2000, higher than the rate for those in their last year in most other jurisdictions. Enrolment rates one and two years after typical completion age were 57% and 34%, respectively. In Ontario, 90% of 17-year-olds were enrolled. The rate fell to 67% among 18-year-olds, dropping off quickly to 14% and 2% of 19- and 20-year-olds, respectively. However, due to the mixture of those taking the extra year of Ontario Academic Courses and those not taking this year, these rates are not comparable to those in other jurisdictions.

Overall, the enrolment rate of the group typically in its final year of secondary school ranges from the mid-70s to mid-80s in most jurisdictions. Roughly 15% to 20% of youth leave school before the usual age of completion.

Human resources

Context

C3

This indicator discusses changes in pupil–educator ratios that occurred in the 1990s as well as changes in the full-time and part-time employment status of educators, and in the male/female composition of the educator workforce. The age distribution of the educator workforce is compared to that of the total workforce. All data presented are for public schools only.

Educators, one of the largest occupational groups in Canada, account for a workforce of close to one-third of a million in elementary-secondary education alone. Salaries of educators represent about two-thirds of total expenditures in elementary-secondary education. A number of important policy issues relate to the educator workforce, including supply and demand, gender distribution, full- versus part-time employment, and pre-service and in-service training. Working conditions are another important issue, and include time for course preparation, marking, classroom instruction, training and professional development.[1]

The elementary-secondary school educator workforce differs from the workforce as a whole in that it has higher proportions of both female and older workers. However, it is similar to the total workforce in that the increase in part-time employment experienced by the Canadian labour market during the 1990s also occurred among educators due to both economic and social factors. Each of these elements affects how jurisdictions pursue human resource management within the sector.

Educators are the public face of the education system. Many factors, including educator hiring and attrition rates, enrolment changes and jurisdictional policy all affect the pupil–educator ratio. A small change in the ratio can have large cost implications for jurisdictions.

Findings

Pupil-educator ratio

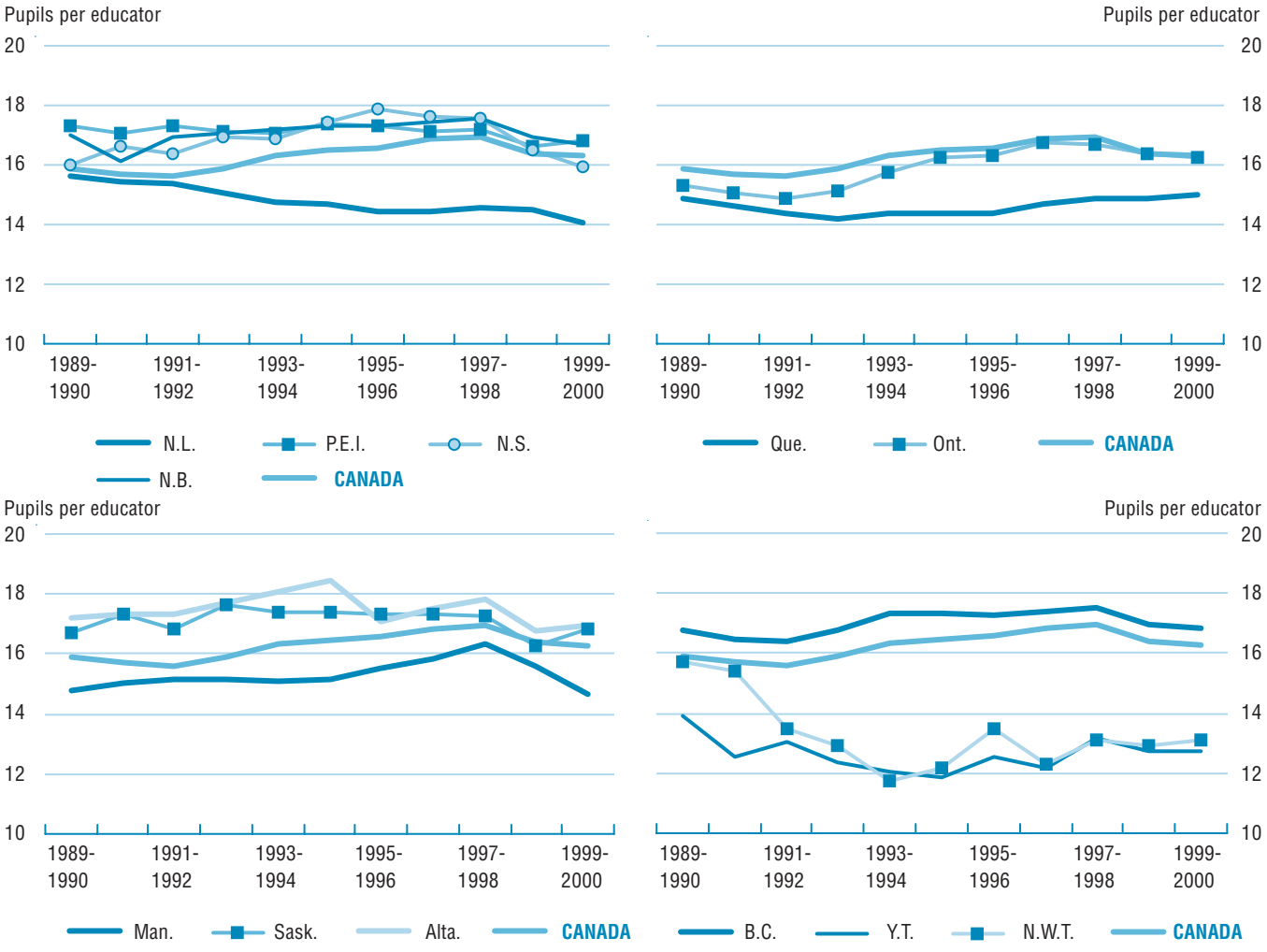
During the 1990s, the pupil–educator ratio at the pan-Canadian level increased until 1998-1999 when it began a two-year decline.

The pupil–educator ratio in public elementary-secondary schools in Canada rose from 15.9 students per educator at the beginning of the 1990s to 16.9 in 1996-1997. By 1999-2000, it had fallen back to 16.3 (Figure C3.1 and Table C3.1). Overall during the 1990s, enrolments grew faster than did the educator workforce, resulting in a greater number of students per educator at the end of the decade.

1. A number of these issues were addressed at the 2001 Pan-Canadian Education Research Agenda Symposium, *Teacher Education/Educator Training: Current Trends and Future Directions* (Canadian Education Statistics Council, 2002).

Figure C3.1

Pupil–educator ratio in public elementary-secondary schools, Canada and jurisdictions, 1989-1990 to 1999-2000



Source:
Table C3.1.

Northwest Territories, Yukon, and Newfoundland and Labrador all experienced large reductions in their pupil–educator ratios during the 1990s.

During the 1990s, Northwest Territories, Yukon, and Newfoundland and Labrador experienced substantial drops in their pupil-educator ratios. At the end of the decade, these jurisdictions had more educators per pupil than did any other. In Northwest Territories and Yukon, where both full-time equivalent enrolments and educators increased, the growth in educators outstripped growth in enrolments (Figure C3.2 and Table C3.2). In Newfoundland and Labrador, the drop in the ratio was the result of declines in both educators and enrolments, with enrolments declining at a greater rate.

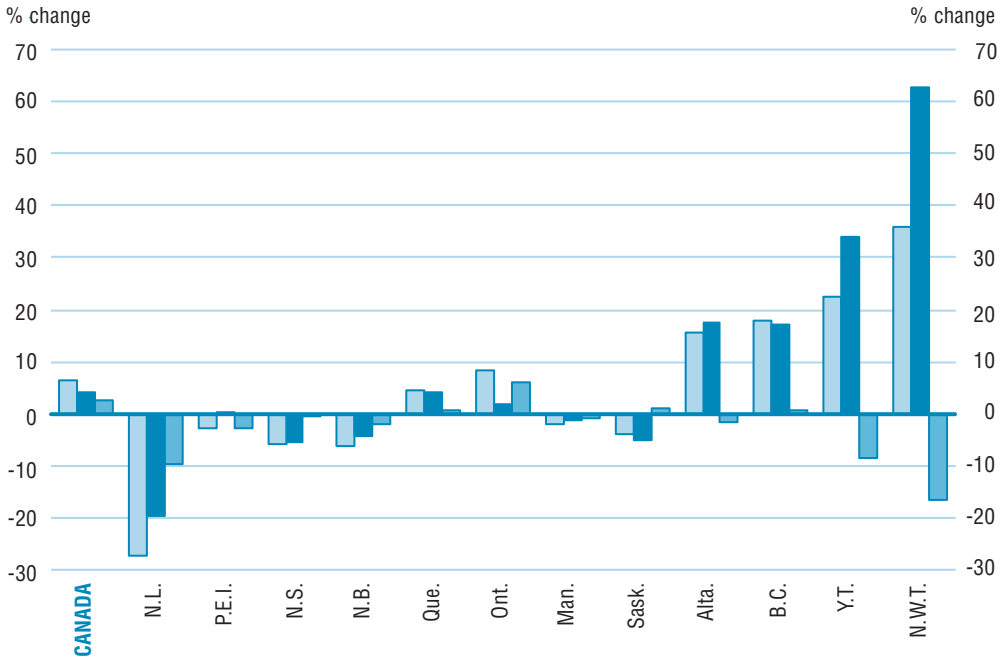


Figure C3.2

Percentage change in pupil–educator ratio, full-time equivalent (FTE) enrolments and educators in public elementary and secondary schools, Canada and jurisdictions, 1989-1990 to 1999-2000

Source:
Table C3.2.

Prince Edward Island, Nova Scotia, New Brunswick, Manitoba and Alberta also had fewer pupils per educator at the end of the decade than at the beginning, though in the cases of Nova Scotia and Manitoba the declines were very small.

In Quebec, Saskatchewan and British Columbia, the pupil–educator ratio edged up slightly, due to comparable changes in the number of full-time equivalent enrolments and educators. In Quebec and British Columbia, enrolments and educators both increased while in Saskatchewan they declined.

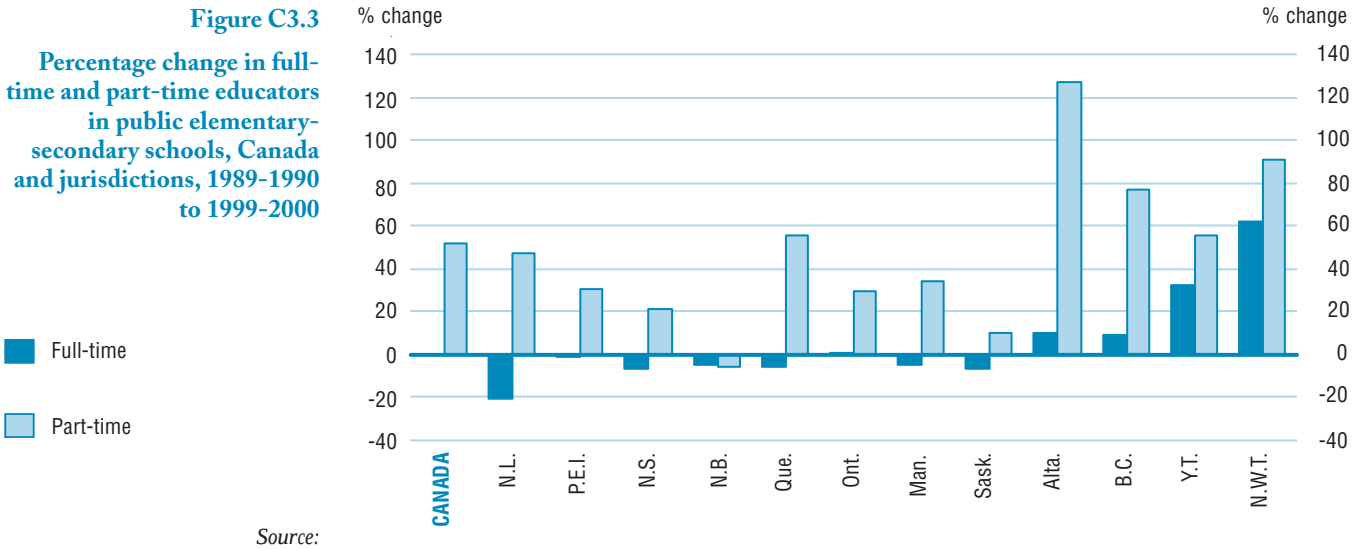
Full-time and part-time composition of the educator workforce

The number of full-time educators remained relatively stable during the 1990s while the number of educators working part-time grew considerably.

In 1999-2000, the number of full-time educators in Canada had changed only slightly from ten years earlier, while the part-time educator workforce rose 52% over the same period (Figure C3.3 and Table C3.3). The number of part-time educators rose in all jurisdictions. The increase was over 50% in Alberta, British Columbia, Northwest Territories, Yukon and Quebec. The number of full-time educators also rose in all of these jurisdictions except Quebec, where it dropped 5%.

Figure C3.3

Percentage change in full-time and part-time educators in public elementary-secondary schools, Canada and jurisdictions, 1989-1990 to 1999-2000

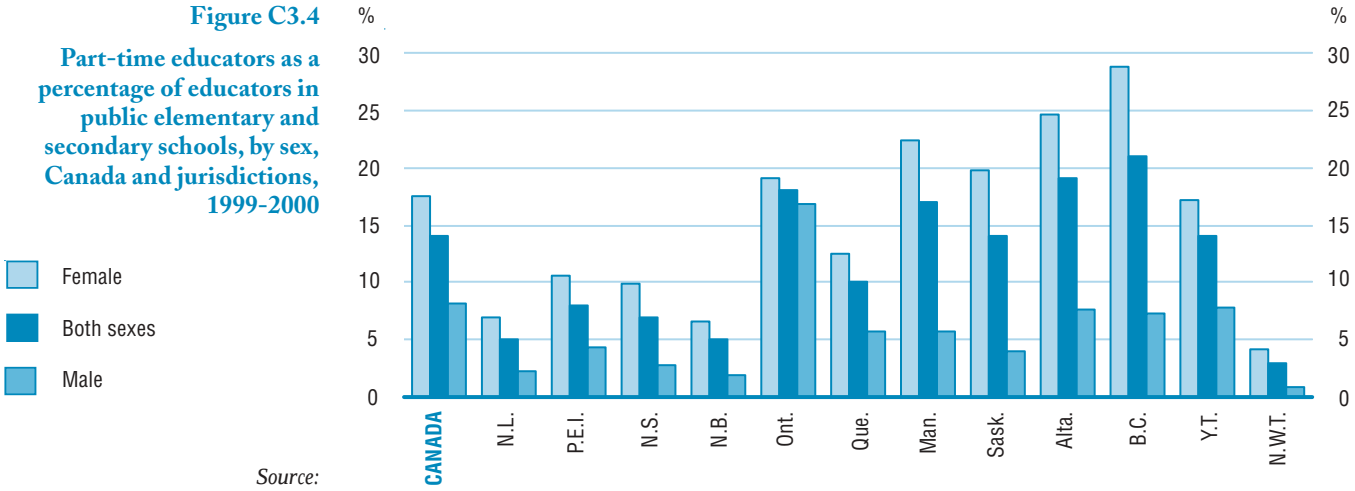


Source:
Table C3.3.

Despite the increase in part-time educators, the majority of educators were employed full-time in 1999-2000. In that year, 8% of male and 17% of female educators worked part-time (Figure C3.4 and Table C3.4).

Figure C3.4

Part-time educators as a percentage of educators in public elementary and secondary schools, by sex, Canada and jurisdictions, 1999-2000



Source:
Table C3.4.

There were marked differences across jurisdictions in the incidence of part-time work in 1999-2000. The proportion of educators who worked part-time was lowest (8% or less) in Northwest Territories, Prince Edward Island, Nova Scotia, Newfoundland and Labrador and New Brunswick. It was highest in British Columbia (21%) followed by Alberta (19%), Quebec (18%) and Manitoba (14%).

In Quebec, the proportions of male and female educators working part-time were equal. In all other jurisdictions, females were far more likely to be working part-time.

Females were two to three times more likely to work part-time than males in all jurisdictions except Quebec, where the percentages working part-time were similar for men and women.

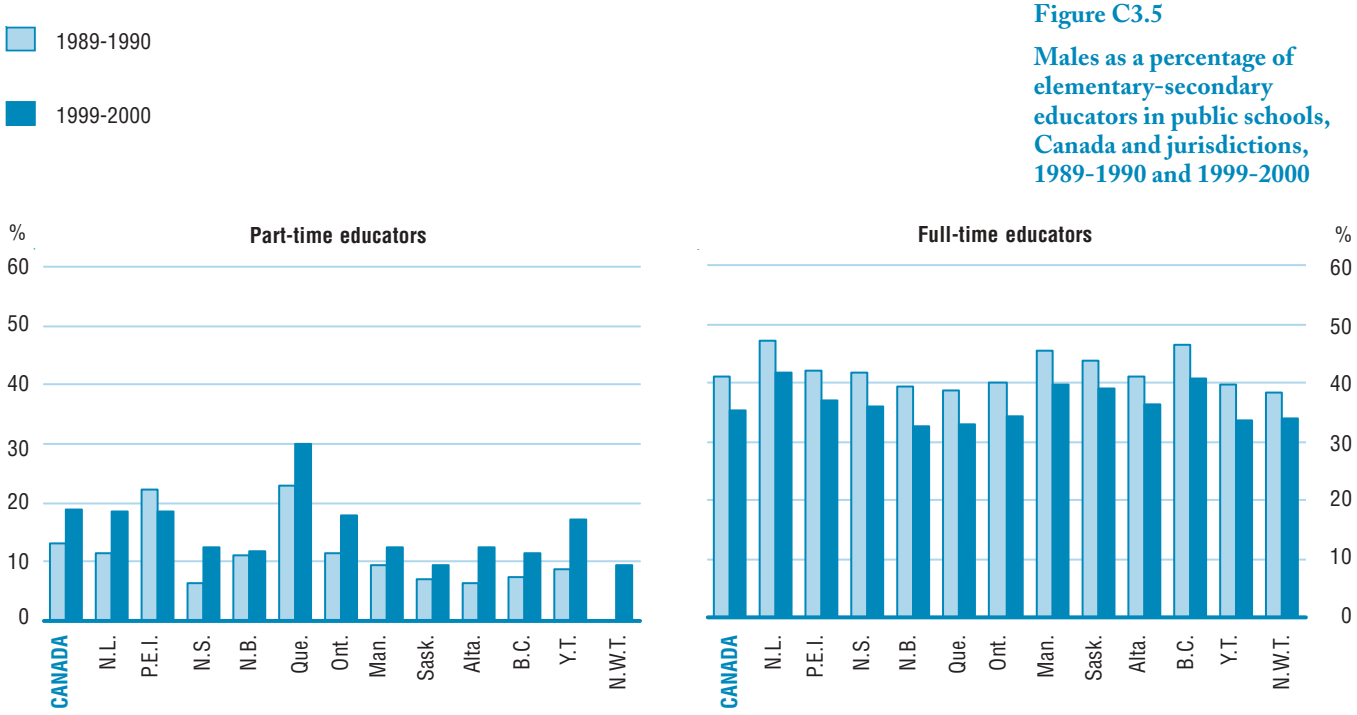
Male/female composition of the educator workforce

Men represent a declining percentage of educators, and given the demographics of the workforce, this trend is likely to continue.

The male proportion of the full-time educator workforce dropped from 41% in 1989-1990 to 35% in 1999-2000 (Figure C3.5 and Table C3.5). Furthermore, the percentage of male teachers was lower among younger educators: males accounted for 33% of educators aged 30 to 39 years, but only 22% of those aged 20 to 29. This pattern is similar in all jurisdictions except Yukon, where larger proportions of young educators were male.

Figure C3.5

Males as a percentage of elementary-secondary educators in public schools, Canada and jurisdictions, 1989-1990 and 1999-2000



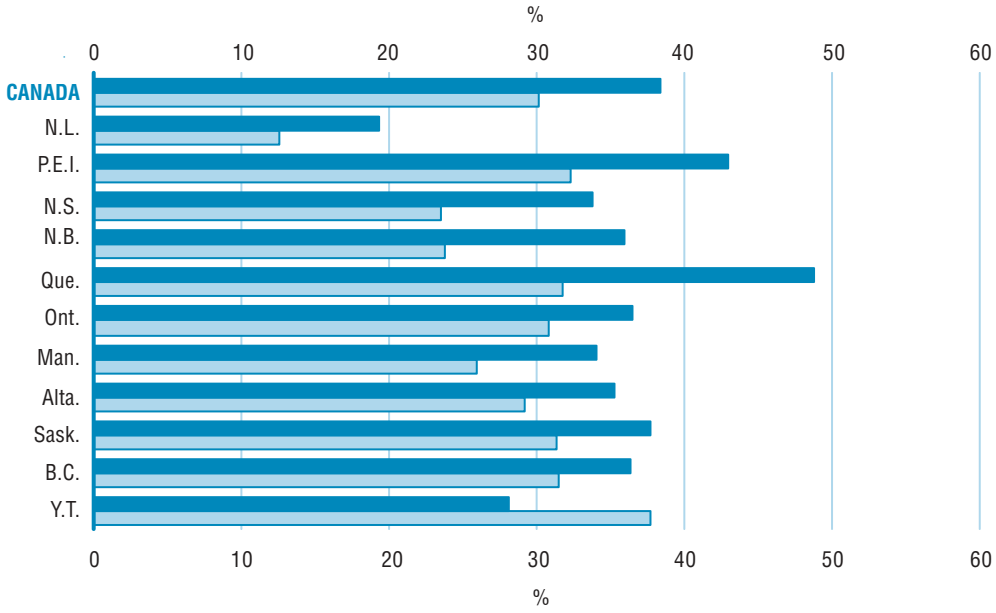
Source:
Table C3.5.

In Quebec, even fewer men are entering the teaching profession among the younger cohorts, with males accounting for only 26% of full-time educators aged 30 to 39 years and 15% of those aged 20 to 29 in 1999-2000.

Close to 40% of male teachers are over age 50 and thus likely to retire within the next 10 years. Combined with the low proportions of male educators at younger ages, these upcoming retirements will probably result in further declines in the proportion of male educators in the coming years (Figure C3.6 and Table C3.6).

Figure C3.6

Proportion of educators aged 50 and over, by sex, Canada and jurisdictions[1], 1999-2000



1. 1999-2000 data not available for Northwest Territories.

Source:
Table C3.6.

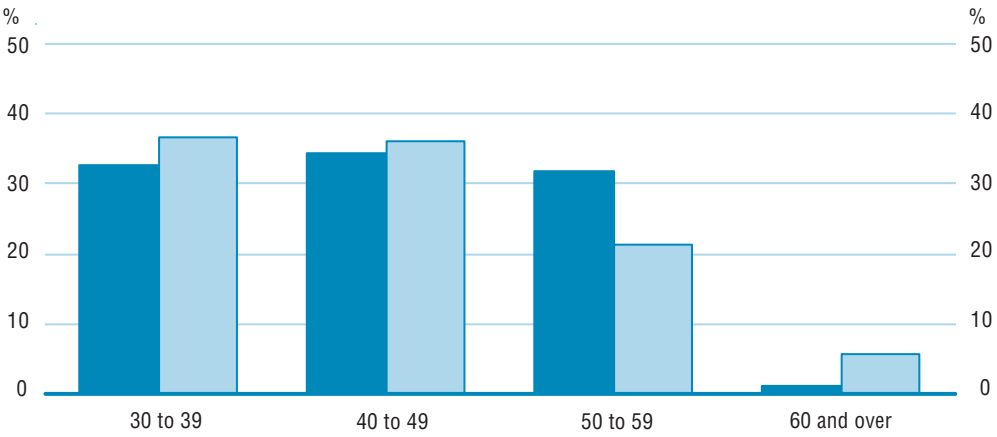
Age distribution of educators

Compared to the entire labour force, a much larger proportion of educators are nearing retirement.

In 1999, 32% of educators and 21% of the labour force[2] were between the ages of 50 and 59 (Figure C3.7 and Table C3.7). Combined with the very low percentage of educators that work past age 60 (1%), this gap implies that over the next ten years or less, the educator workforce will be harder hit by retirements than the overall workforce. All the jurisdictions, except Newfoundland and Labrador (where the proportion of educators aged 50 to 59 was only 15%), are likely to be affected.

Figure C3.7

Age distribution of full-time educators and total labour force aged 30 and older, Canada, 1999



Source:
Table C3.7.

2. Age distributions of educators and labour force are calculated as a percentage of the educator and labour force populations aged 30 and older.

While such a large number of departures from the educator workforce might be expected to increase the pupil–educator ratio, other factors, such as changes in enrolments and the hiring of new teachers also have to be considered. Tremblay (1997) examined teacher supply and demand issues and concluded that no overall shortage is expected at the pan-Canadian level. Further research is underway to examine the implications by jurisdiction and by field of study (Gervais et al. 2001).

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Gervais, G., Thony, I. and Maydan, V. 2001. "The supply and demand of elementary-secondary educators in Canada". Paper presented at the 2001 pan-Canadian Education Research Agenda Symposium, *Teacher Education/Educator Training: Current Trends and Future Directions*, Canadian Education Statistics Council, May 22-23, 2001.

Tremblay, A. 1997. "Are we headed towards a teacher surplus or a teacher shortage?", *Education Quarterly Review*, 4(1): 53-85.

School characteristics

Context

C4

This indicator presents trends in the number of and average enrolments in elementary and secondary schools and examines school resources in secondary schools.

Schools are among the most visible of public buildings and require significant resources for their development and maintenance. Jurisdictions face a number of competing priorities for resources, including aging buildings, changes in curricula and technology, the fluctuating cost of energy and new needs triggered by demographic and geographic shifts.

Within any school board or district, a decline in the school-age population may lead to a reduction in the number of schools required. Areas experiencing substantial population declines are also subject to considerable pressures to keep their schools open. Shifts in the school-age population may result in some schools operating at less than full capacity while others are overcrowded. As well, a district may need to find a new balance between transporting students and maintaining local schools. On the other hand, population growth can result in larger schools or a greater number of schools.

Compounding the impact of population change and transportation costs on school infrastructure is the necessary time lag between local changes in the school-age population and decisions to build new schools or close existing facilities. In the face of such forces, major change in the number and configuration of schools has, for a number of years, been a common theme across all jurisdictions.

Instructional resources such as textbooks, computers, library materials, and laboratory equipment, combine with material resources (condition of buildings, heating, cooling and lighting systems, instructional space, etc.) to comprise the physical resources contributing to a student's education. The adequacy of these resources can have a significant impact on the learning environment.

Findings

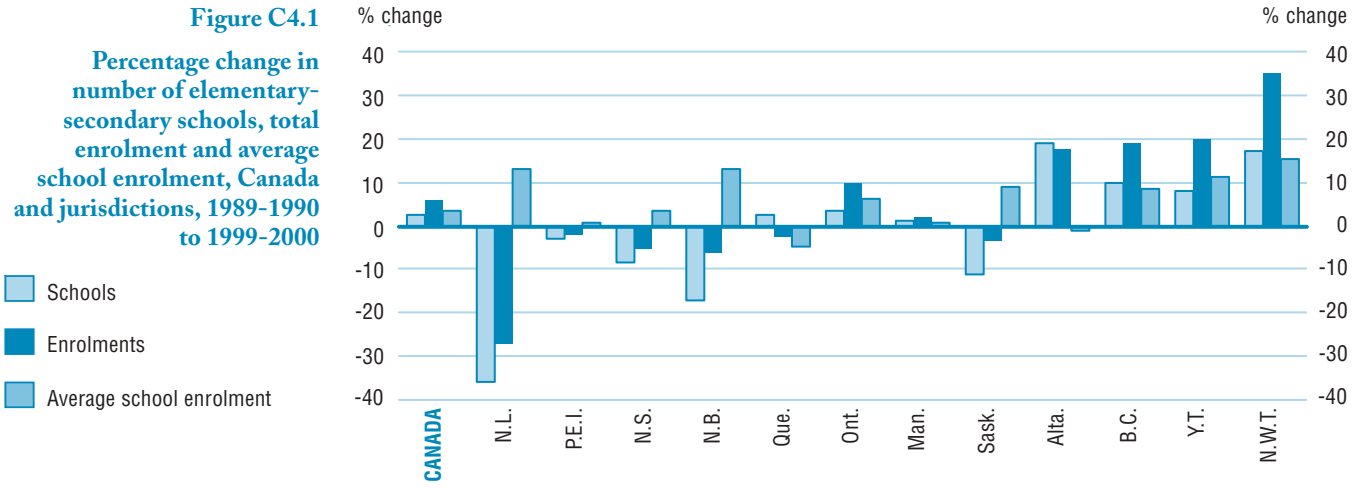
Total number of schools

At the pan-Canadian level, the number of schools grew by 2% during the 1990s.

Over the 1990s, the total number of elementary-secondary schools in Canada increased by 2%, or 371 schools (Table C4.3). At a jurisdictional level, many schools (particularly elementary schools) in the Atlantic provinces closed, while most other areas saw increases during this period. The largest relative increases were in Alberta (19%) and Northwest Territories (17%). Comparing overall counts of schools at different times only reveals the net change in the number of schools, and does not reveal the extent to which existing schools are closed and new schools are opened as a jurisdiction responds to population shifts and the need to update school facilities.

Figure C4.1

Percentage change in number of elementary-secondary schools, total enrolment and average school enrolment, Canada and jurisdictions, 1989-1990 to 1999-2000



Source: Table C4.3.

During the 1990s, the number of schools in Newfoundland and Labrador declined by 195 (36%) as the province restructured its school system and experienced a large decline in enrolment (-27%).

With just over a third of elementary-secondary schools closing between 1989-1990 and 1999-2000, Newfoundland and Labrador experienced the largest decline in the number of schools. This reduction reflects both a drop in the number of students and a restructuring of the provincial education system. The number of schools in both New Brunswick and Saskatchewan also dropped considerably over the decade (Figure C4.1 and Table C4.3).

By the end of the 1990s, the number of schools in Alberta and Northwest Territories had grown by almost 20%—the largest increases among all jurisdictions.

Average number of students per school

Between 1989-1990 and 1999-2000, the average number of students per school in New Brunswick, Newfoundland and Labrador, Northwest Territories and Yukon increased by over 10%, but still remained lower than the pan-Canadian average.

Over the past decade, the average number of students per school in Canada increased (Figure C4.2 and Table C4.3). Average full-time enrolment per school in 1999-2000 was 351 students, up 3% from ten years earlier. Average school size increased by over 10% in Newfoundland and Labrador, New Brunswick, Yukon and Northwest Territories. Average enrolment per school decreased in only two provinces: Alberta (-1%), and Quebec (-5%).

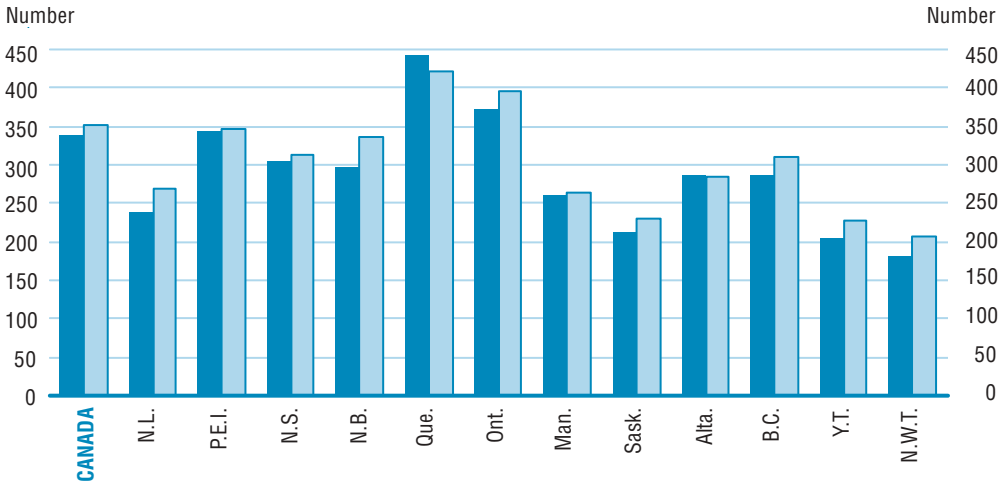


Figure C4.2

Average enrolment per elementary-secondary school, Canada and jurisdictions, 1989-1990 and 1999-2000

Source:
Table C4.3.

Secondary schools typically receive students from a wider geographic area than do elementary schools. This allows secondary schools to deliver a more diverse curriculum efficiently. As a result, secondary schools are outnumbered by elementary schools and tend to be larger. In 1999-2000, there were 3,534 secondary schools and 12,490 elementary schools (Table C4.1). Three-quarters of elementary schools had fewer than 400 students, compared to one-half of secondary schools (Table C4.2).

Instructional and material resources

The Programme for International Student Assessment (PISA) collected information on various aspects of school characteristics from 15-year-old students and their principals in 2000. The adequacy of both instructional resources (textbooks, computers, library materials, laboratory equipment, etc.) and material resources (condition of buildings and heating/cooling/light systems and instructional space) were rated by principals.

Principals in Canadian secondary schools more often reported that instructional and material resources were adequate than principals in other countries.

According to principals, inadequate instructional and material resources were, on average, less of a constraint to student learning in Canada than in other PISA countries (Table C4.4). The exceptions in Canada were Newfoundland and Labrador, Nova Scotia and Manitoba, where principals felt that the lack of instructional resources was detrimental to the learning of 15-year-olds in their schools. In terms of material resources, only principals in Nova Scotia reported a problem more serious than the PISA average.

Reference

PISA Canada (2001). *Measuring Up: The Performance of Canada's Youth in Reading, Mathematics and Science, OECD PISA Study—First Results for Canadians Aged 15.* Human Resources Development Canada, Council of Ministers of Education, Canada and Statistics Canada. Ottawa. December 2001.

Information and communications technologies (ICT) in schools

C5

This indicator presents data on computers in schools, including their availability, use by students and Internet connectivity.

Context

Over the past 20 years, provincial and territorial ministries and departments of education have promoted the use of ICT in schools. Initiatives include special funds for the purchase of computers, computer networks, new distance learning strategies, in-service training for teachers and the integration of ICT skills into the standard curriculum. The federal government has also promoted the development and use of ICT in education through, for example, the Industry Canada funded SchoolNet program.

The use of ICT in schools is viewed as essential to prepare students for a knowledge-based society in which information technology is central. Students with little or no exposure to computers and information technology may face difficulties in making a smooth transition to the labour market.

Not enough is yet known about the impact of technology on the quality of learning or the costs and benefits of investments in ICT for schools. For these reasons, both the International Association for the Evaluation of Educational Achievement (IEA) and the OECD, through its PISA, have started to track and analyze the use of ICT in schools.

Findings

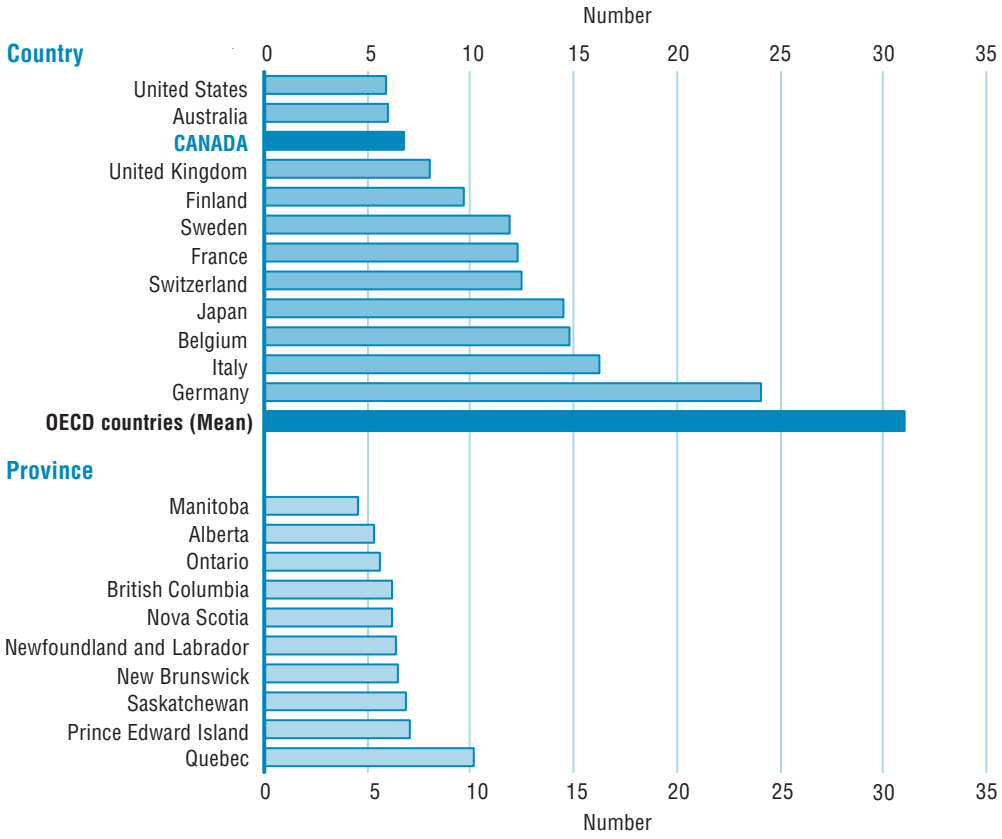
Students per computer and Internet connectivity

In Canada there were, on average, seven students per computer in a school, which was among the best ratios internationally.

On average, in OECD countries there were 31 students for every computer in 2000, but the ratio varied widely (Figure C5.1 and Table C5.1). In Canada there were, on average, seven students per computer in a school, which was among the best ratios internationally. Other countries with favourable results were the United States and Australia (6:1) and the United Kingdom (8:1).

Figure C5.1

Average number of students per school computer[1,2], Canada, provinces and other countries, 2000



1. Total number of students enrolled in the school divided by the total number of computers for the school in which 15-year-olds are enrolled.

2. Mexico and the Russian Federation are excluded because their high ratios (87 and 109, respectively) would distort the chart.

Source:

Table C5.1.

Provincial student-computer ratios ranged from 5:1 in Alberta and Manitoba to 10:1 in Quebec. While these ratios may include older computers with limited use, most of the provincial ratios ranked among the best in the world.

These data, collected as part of PISA 2000, were similar to the Second Information Technology in Education Study 1999 (SITES 1999) findings which were reported in the last edition of PCEIP. For Canada, SITES (1999) reported ratios of 9:1 for elementary schools, 8:1 for lower secondary schools, and 7:1 for upper secondary schools.

Compared to other countries, Canada's schools were among those with the highest proportion of computers connected to the Internet.

Canadian principals, along with those from Australia and Finland, reported that at least 80% of school computers were connected to the Internet (Figure C5.2 and Table C5.1). In contrast, less than 40% of school computers in the United States were connected to the Internet. Across the provinces, the rate ranged from 73% in Manitoba to 86% in Prince Edward Island and Alberta.

Student access to computers at home and at school

More than 75% of Canadian and Australian students reported they had frequent access to computers both at school and at home.

Australian and Canadian students reported relatively high access rates to computers both at school and at home (Figure C5.3 and Table C5.2). In both countries, more than 75% of students reported that computers were available on a frequent basis (almost every day or a few times each week) both at school and in the home.

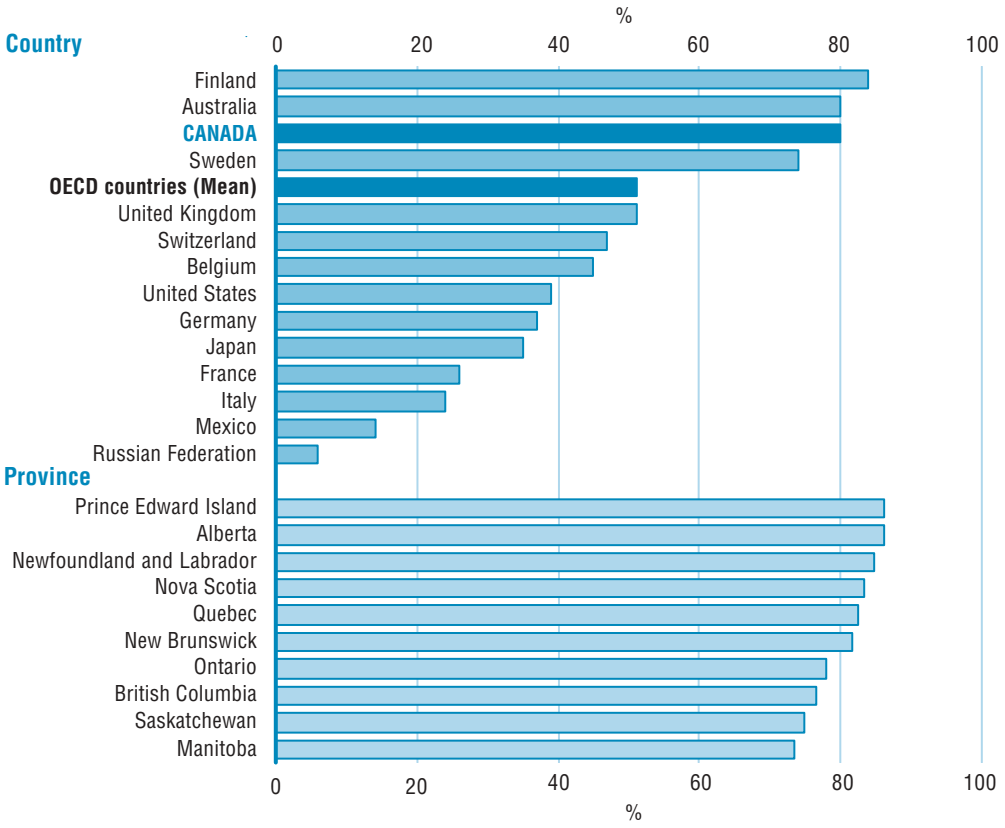


Figure C5.2

Percentage of school computers connected to the Internet, Canada, provinces and other countries, 2000

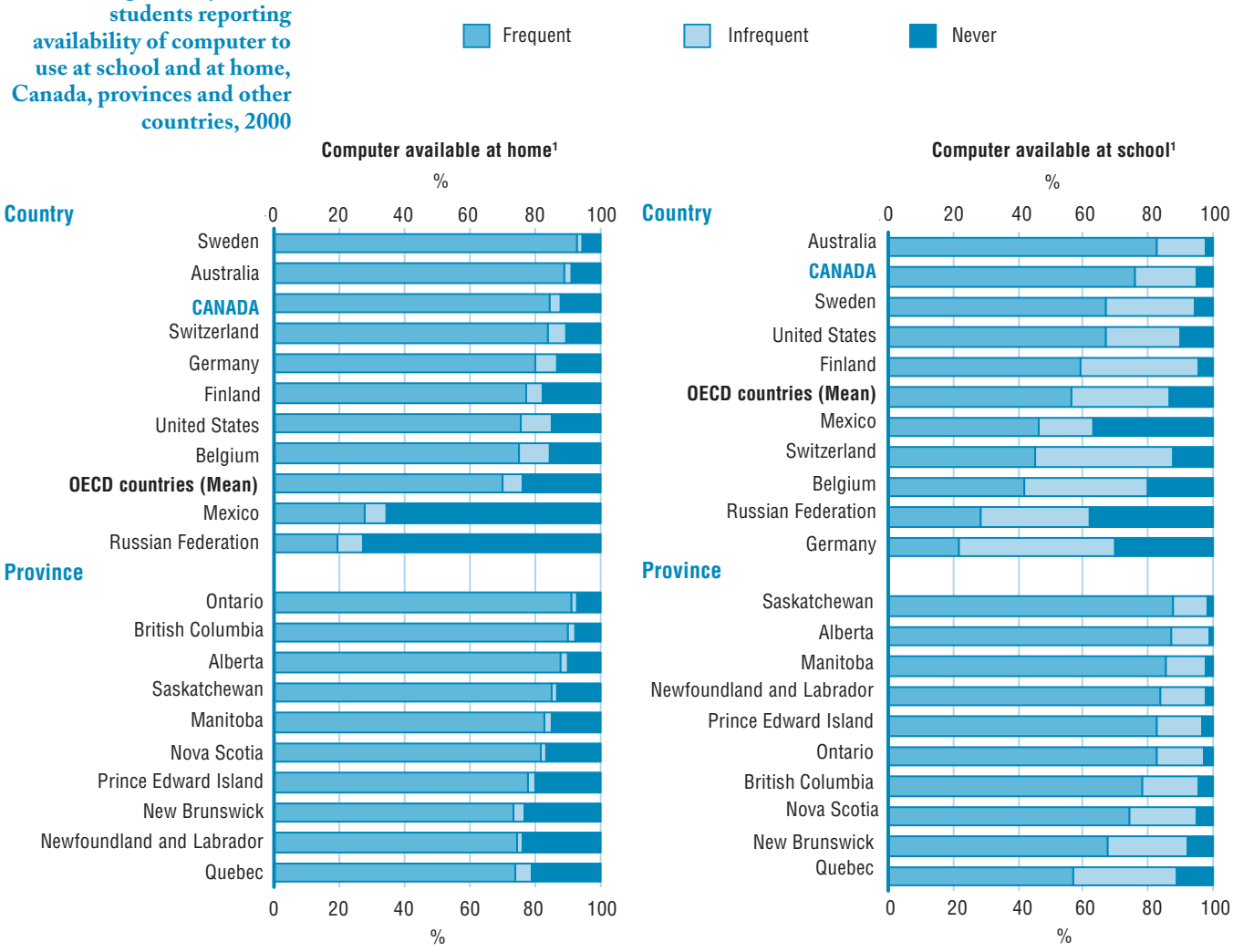
Source:
Table C5.1.

Across OECD countries, computers appeared to be more available at home than they were at school: 56% of students reported frequent access to computers at school and 70% at home. This pattern was reversed in Mexico and the Russian Federation, two countries with fewer home computers, where more students reported frequent access to computers in school.

Among most provinces, students reported relatively high access rates both at school and at home. More than 80% of students in Saskatchewan, Alberta, Manitoba and Ontario reported they had frequent access to computers both at school and at home.

Figure C5.3

Percentage of 15-year-old students reporting availability of computer to use at school and at home, Canada, provinces and other countries, 2000



Source: *Table C5.2.*

1. Frequent: Computer available almost every day or a few times each week.
Infrequent: Computer available between once a week and once a month or less than once a month.
Never: Computer never available.

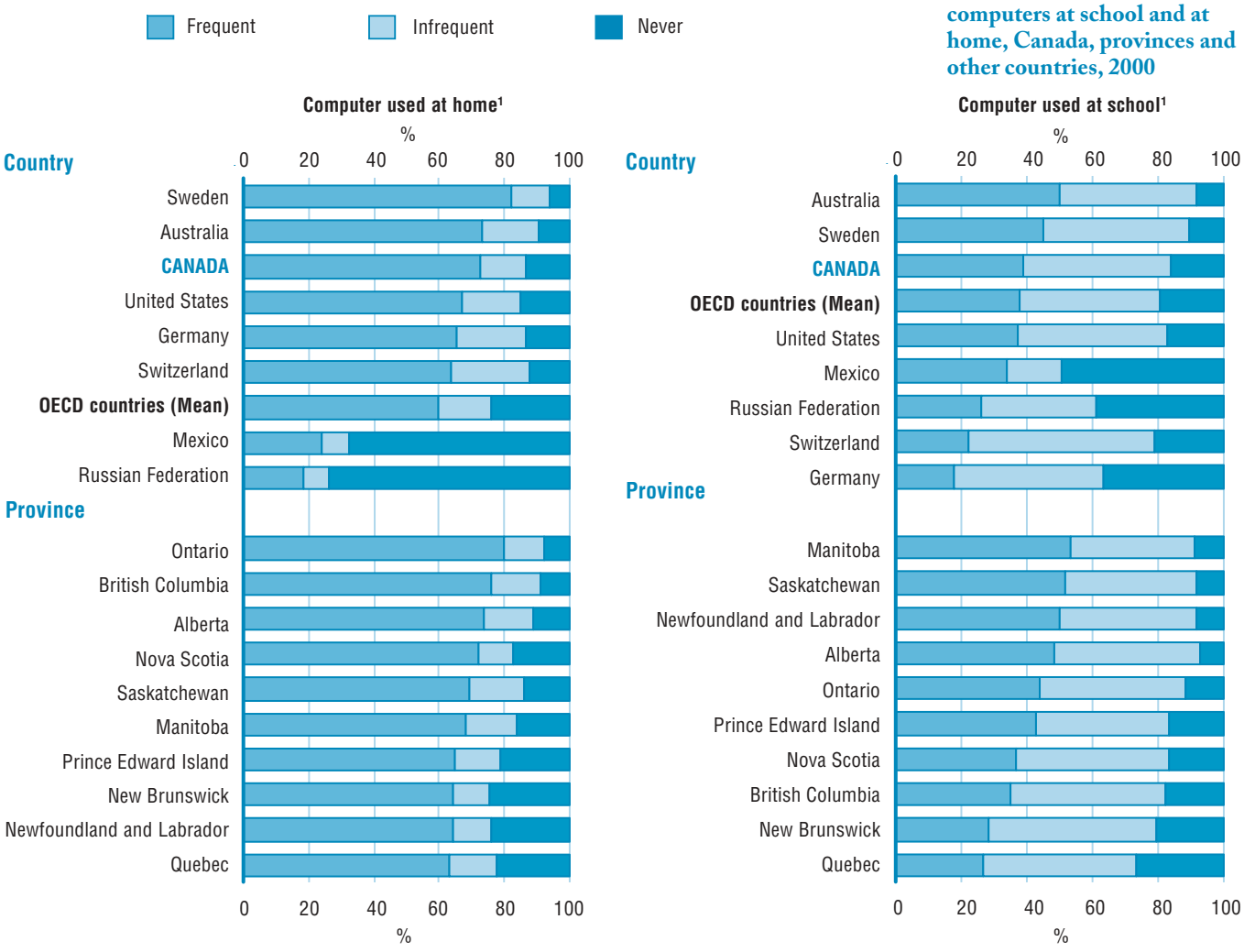
Student use of computers at home and at school

In most countries, students reported they used computers more frequently at home than at school.

Across most countries reported here, students said they used computers more frequently at home than at school (Figure C5.4 and Table C5.3). In some cases, the differences were substantial. In Canada, 72% of students reported frequent use of computers at home compared to 39% who reported frequent use at school. On average across OECD countries, 60% of students reported frequent use of home computers compared to 38% of school computers.

Figure C5.4

Percentage of 15-year-old students reporting use of computers at school and at home, Canada, provinces and other countries, 2000



1. Frequent: Computer used almost every day or a few times each week.
   Infrequent: Computer used between once a week and once a month or less than once a month.
   Never: Computer never used.

Source:
Table C5.3.

Overall, both Canada and Australia had very favourable computer-student ratios, 7:1 and 6:1, respectively; principals in both countries reported that about 80% of their school computers were connected to the Internet; and, about the same percentage of students in Canada and Australia, 73%, reported frequent use of computers in the home. However, 50% of Australian students reported frequent use of computers at school compared to 39% of Canadian students. Further analysis could provide insights into cost-effective ICT strategies for Canadian schools (Figure C5.3, Table C5.1 and Table C5.3).

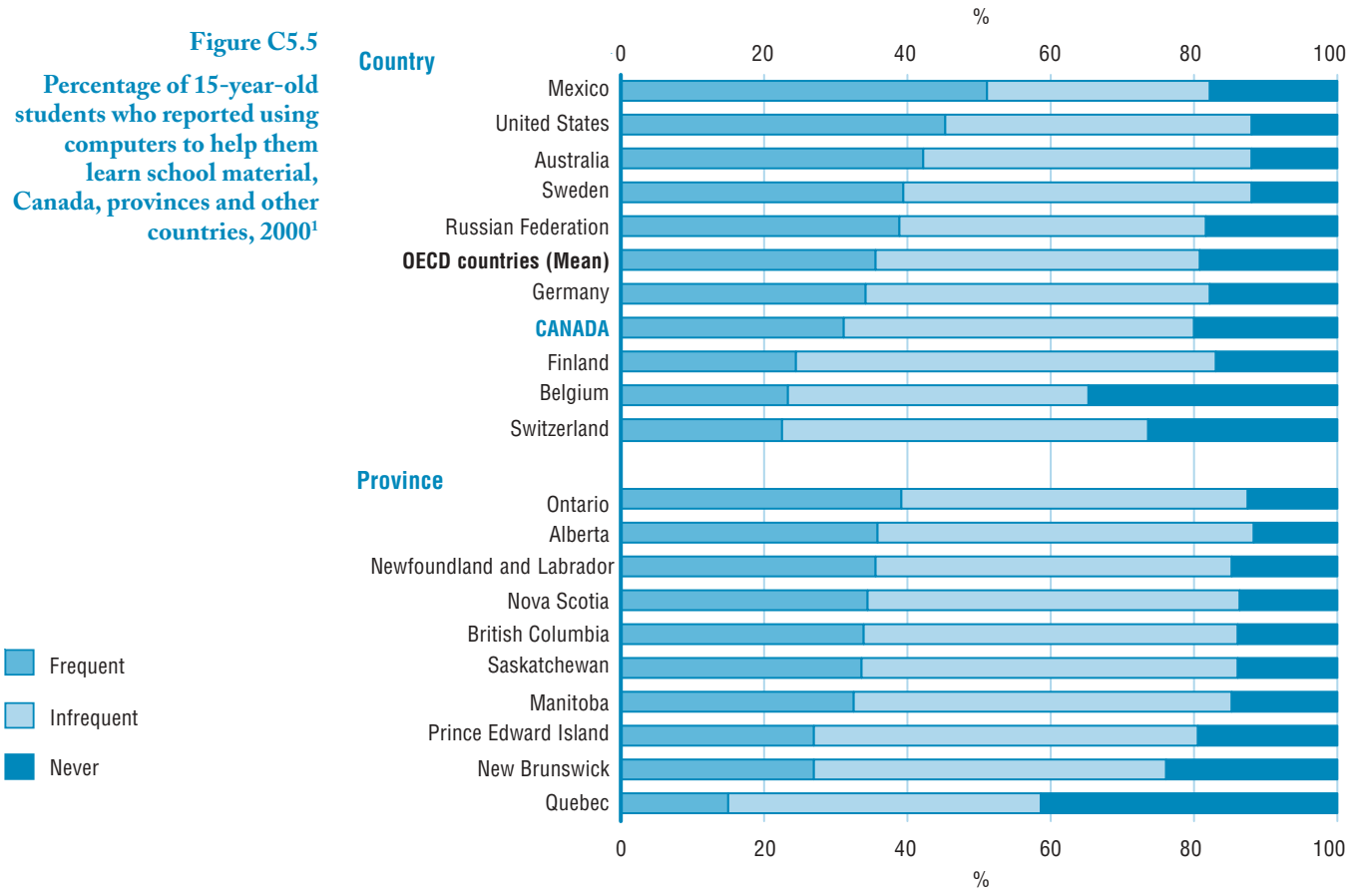
Student use of computers to support education

Only about a third of Canadian students reported frequent use of computers to support their school work and another 20% reported they never used computers to help them learn school material.

While information technology is more available and more frequently used in schools and the home than it used to be, this does not guarantee that computers are used for educational purposes such as researching a topic on the Internet or writing a report. Across OECD countries, an average of 35% of 15-year-olds reported they used computers on a frequent basis whereas 19% reported they never used computers to support their school learning (Figure C5.5 and Table C5.4).

Figure C5.5

Percentage of 15-year-old students who reported using computers to help them learn school material, Canada, provinces and other countries, 2000[1]



1. Frequent: Computer used almost every day or a few times each week to help learn school material.
Infrequent: Computer used between once a week and once a month or less than once a month.
Never: Computer never used to help learn school material.

Source:
Table C5.4.

While more than three quarters of Canadian 15-year-olds reported they had frequent access to computers at school and the home, only about a third reported frequent use of computers to support their school work and 20% said they never used computers to help them learn school material. Among provinces, 39% of Ontario students reported frequent use of computers to support their learning and 13% reported they never used computers for school work. In Quebec, the results were reversed: 15% reported frequent use of computers to support school work while 41% said they never used computers to help them learn school material.

Differences in male-female access and use of computers

Across OECD countries, there were no significant differences between males and females in terms of the availability of computers. In most countries, however, more males than females frequently used computers at school (Figure C5.6 and Table C5.5). Across OECD countries, 42% of males compared to 35% of females reported frequent use of computers at school. In Canada, the proportions were 45% and 34%, respectively.

Across OECD countries, males and females had about the same access to computers at school; but more males than females frequently used computers at school in most countries.

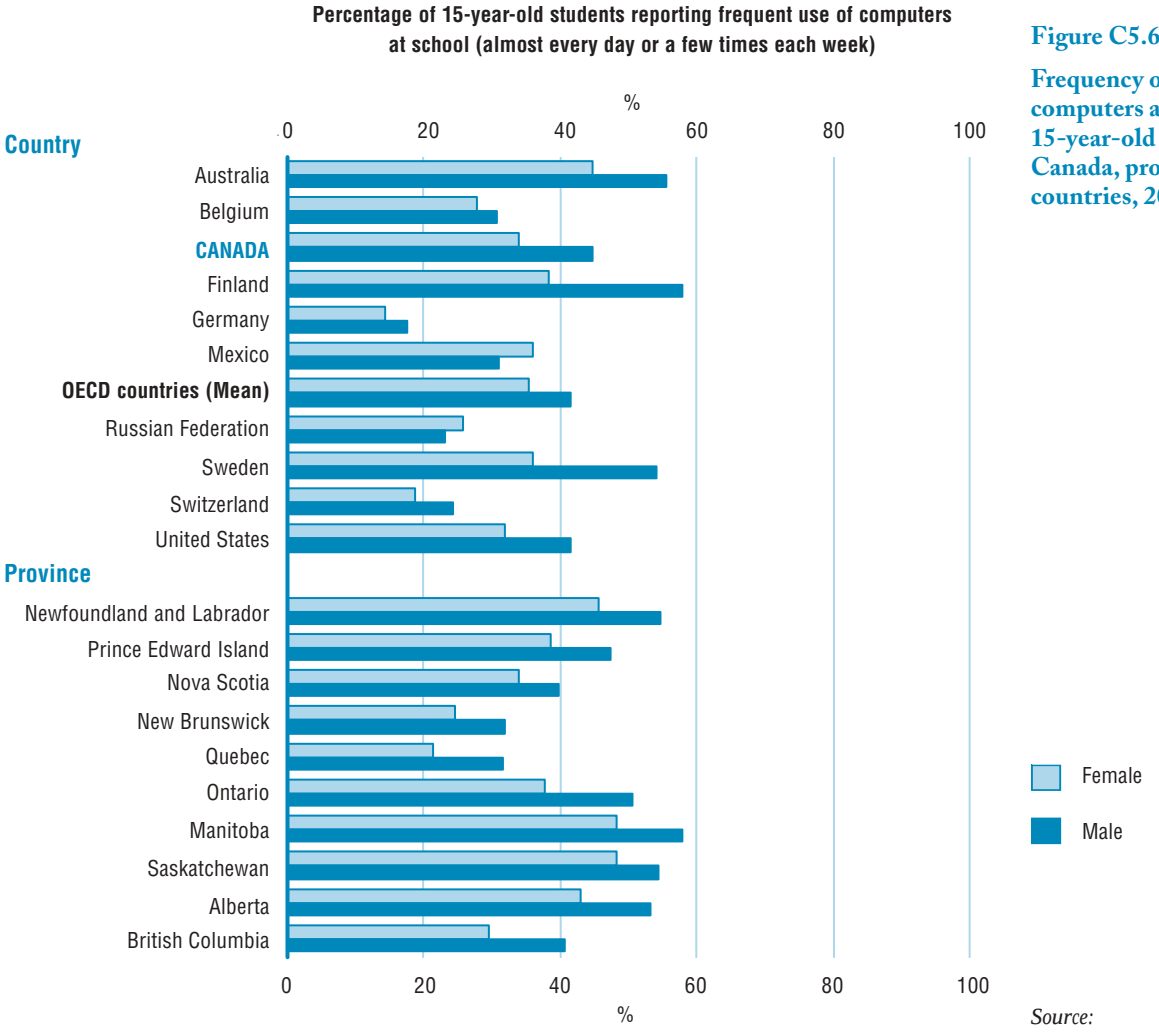


Figure C5.6

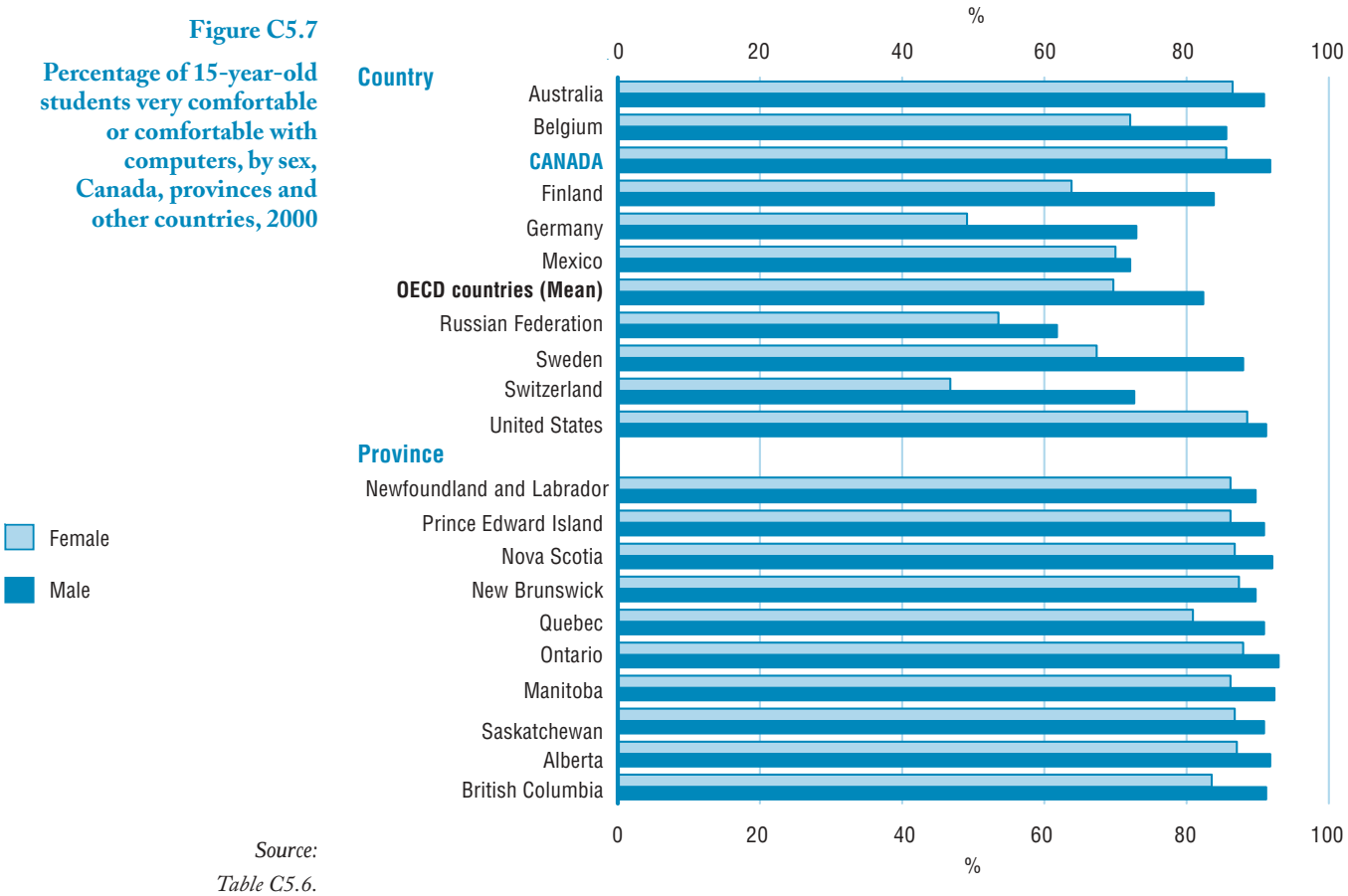
Frequency of use of computers at school by sex, 15-year-old students, Canada, provinces and other countries, 2000

Source:
Table C5.5.

Similarly, in all countries, more males reported being very comfortable or comfortable using a computer (Figure C5.7 and Table C5.6). However, in Australia, Canada and the United States, more than 80% of both sexes reported being very comfortable or comfortable using a computer; this pattern is repeated across all provinces in Canada.

Figure C5.7

Percentage of 15-year-old students very comfortable or comfortable with computers, by sex, Canada, provinces and other countries, 2000



Source:
Table C5.6.

Reference

Organisation for Economic Co-operation and Development 2002. *Education at a Glance: OECD Indicators, 2002*.

Student achievement

Context

C6

This indicator reports on the achievement of students in three key areas—reading, mathematics and science—and looks at the influence of socio-economic status, sex and language on achievement.

The ability to read, understand and use information is important for learning in school and throughout life. Reading literacy has an impact on an individual's ability to participate in society and to understand important public issues. Literacy is also the foundation for skills needed for Canada to compete effectively in a global marketplace.

In recent years, there has been a growing realization that the ability to use and apply key mathematics and science concepts is now necessary across a wide range of occupations and by citizens in their daily lives. As a result, jurisdictions have revised and strengthened their mathematics and science curricula to help ensure that all students are equipped with these important skills.

A key indicator of educational progress in Canada is the extent to which schools can attain high achievement levels while at the same time eliminating achievement gaps between various sub-groups of students. It is important to note that these achievement results capture the sum of all learning since birth and, to some extent intergenerational effects.

Findings

Reading

This indicator draws on data from the PISA (Reading) undertaken in 2000 (PISA 2000). The study assessed 15-year-old students on reading performance. Two measures of reading achievement are presented: average reading performance of students across jurisdictions and the percentage of students attaining different levels of proficiency. It is important to note that these achievement results capture the sum of all learning since birth and, to some extent intergenerational effects.

Average scores in reading

In PISA 2000, only one country, Finland, scored significantly higher than Canada.

Canada's 15-year-olds performed at a high level compared to their counterparts in other countries (Figure C6.1 and Table C6.1). For the combined reading literacy scale (comprised of results on three sub-tests), only Finland scored higher than Canada. Other countries whose average scores were not statistically different from Canada are New Zealand, Australia, Ireland and Japan. Canada, along with Japan, outperformed other countries comprising the G-7 industrialized countries: United States, United Kingdom, France, Italy and Germany. This is the highest Canada has ranked in any international assessment carried out over the past 15 years.

Figure C6.1

Comparison of Canada's mean scores on the PISA reading literacy combined scale and subscales with the provinces and selected countries, 2000

		Reading subscales		
	Reading literacy combined scale	Retrieving information	Interpreting texts	Reflection and evaluation
Average score higher than Canada[1,2]	**Alberta** Finland	Finland **Alberta**	Finland **Alberta**	**Alberta**
Average about the same as Canada	**British Columbia** **Quebec** **CANADA** **Ontario** **Manitoba** **Saskatchewan** New Zealand Australia Ireland Japan	Australia **British Columbia** New Zealand **Quebec** **CANADA** Republic of Korea **Ontario** **Saskatchewan** **Manitoba** Japan Ireland United Kingdom	**Quebec** **British Columbia** **CANADA** **Ontario** Australia Ireland New Zealand **Manitoba** **Saskatchewan** Republic of Korea	**British Columbia** **Ontario** **CANADA** **Saskatchewan** United Kingdom **Manitoba** **Quebec** Ireland Japan
Average lower than Canada	Republic of Korea United Kingdom **Nova Scotia** **Prince Edward Island** **Newfoundland and Labrador** Sweden Austria Belgium Iceland Norway France United States **New Brunswick** **OECD average** Denmark Switzerland Spain Czech Republic Italy Germany Liechtenstein Hungary Poland Greece Portugal Russian Federation Latvia Luxembourg Mexico Brazil	**Nova Scotia** Sweden France Belgium **Newfoundland and Labrador** **Prince Edward Island** Norway Austria Iceland United States **OECD average** Switzerland Denmark **New Brunswick** Liechtenstein Italy Spain Germany Czech Republic Hungary Poland Portugal Latvia Russian Federation Greece Luxembourg Mexico Brazil	Sweden Japan **Nova Scotia** Iceland United Kingdom **Prince Edward Island** Belgium **Newfoundland and Labrador** Austria France Norway United States **OECD average** **New Brunswick** Czech Republic Switzerland Denmark Spain Italy Germany Liechtenstein Poland Hungary Greece Portugal Russian Federation Latvia Luxembourg Mexico Brazil	**Nova Scotia** Finland New Zealand **Newfoundland and Labrador** **Prince Edward Island** Australia Republic of Korea Austria Sweden **New Brunswick** United States Norway Spain **OECD average** Iceland Denmark Belgium France Greece Switzerland Czech Republic Italy Hungary Portugal Germany Poland Liechtenstein Latvia Russian Federation Mexico

1. 95% confidence intervals are used to determine if average scores for countries and provinces are higher, the same as, or lower than the average score for Canada. See Table C6.1 for display of means and standard errors.
2. Countries are ordered within each category by average score.

Sources: *Table C6.1 and Table C6.2.*

The overall results of the PISA 2000 reading assessment are comprised of three reading subscales: retrieving information, interpreting texts and reflection and evaluation. Canada was particularly strong in the third subscale (Figure C6.1 and Table C6.2). This third scale measures students' ability to relate text to their knowledge, ideas and experience.

Among the ten provinces, Alberta's relative performance was very strong. Alberta's score for the combined reading literacy scale was higher than the Canadian average and, along with Finland, ranked at the very top. Average scores for British Columbia, Quebec, Ontario, Manitoba and Saskatchewan were not statistically different from the Canadian average on the combined scale. Nova Scotia, Prince Edward Island, and Newfoundland and Labrador scored below the Canadian average on the combined scale, but they all ranked above the OECD average. New Brunswick's average score was about the same as to the OECD average (Figure C6.1 and Table C6.2).

Alberta's score on the combined reading literacy scale was higher than the Canadian average and ranked at about the same level as Finland.

Alberta students also performed well on the three reading subscales, scoring significantly higher than all provinces and countries on the third subscale: reflection and evaluation. All provinces performed relatively well on this scale, indicating an area of strength across the country.

Proficiency in reading

Countries throughout the world are striving to develop students with top reading skills and to reduce the number of students with poor reading skills. In Canada, 17% of students scored at the top reading level (Level 5) and about 10% at the lowest (Level 1 or below). Compared to other countries, both Finland and Canada recorded a high percentage of students at the top reading level with a relatively low percentage at the lowest reading levels (Figure C6.2 and Table C6.1).

Canada recorded a high percentage of students at the top reading level with a relatively low percentage at the lowest reading levels.

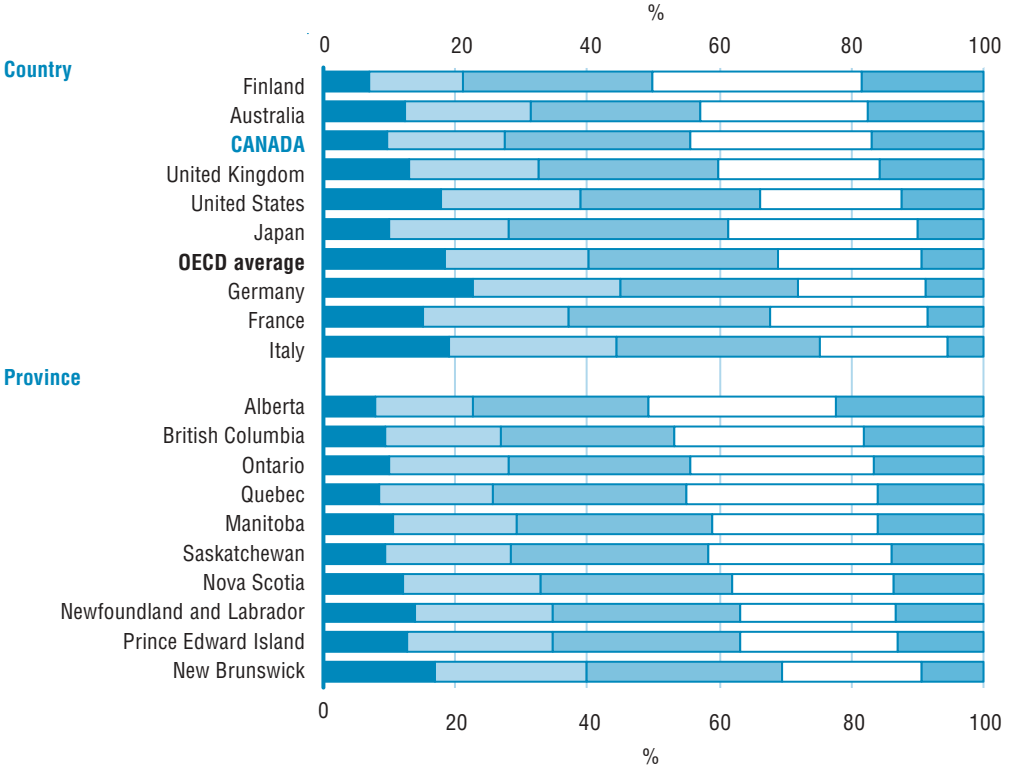


Figure C6.2

Distribution of 15-year-old students by the PISA reading proficiency level, Canada, provinces and selected countries[1,2], 2000

1. Level 5 is the top reading level and Level 1 or below is the lowest reading level. Jurisdictions are presented in descending order by the percentage of students attaining Level 5.
2. "Level 1 or below" combines two levels: Level 1 and below Level 1.

Source:

Table C6.1.

Generally speaking, jurisdictions with a high percentage of top readers had lower proportions of students with weak reading skills. Exceptions to this pattern included New Zealand, Australia and the United Kingdom, which had a high percentage of top readers but also had a larger than expected number of poor readers. Other exceptions are Japan and the Republic of Korea which had low proportions of students at both the top and bottom ends of the reading scale.

In Alberta, British Columbia, Quebec, Ontario and Manitoba, more than 15% of students placed at the top reading level.

Five provinces placed more than 15% of students in Level 5, with Alberta leading (about 23%). Half of the provinces had more than 10% of students with poor reading scores (Level 1 or below). Newfoundland and Labrador, Nova Scotia, Prince Edward Island and New Brunswick had a higher proportion of poor readers than did the other provinces.

Mathematics

Data on the performance of Canadian students between the ages of 13 and 16 in mathematics are drawn from three assessments: TIMSS 1999, PISA 2000 and SAIP 2001. Fifteen-year-old students in 32 countries and ten provinces participated in PISA. Grade 8 students (age 14) in 38 countries participated in TIMSS. Finally, 13 and 16-year-old students in all provinces and territories, with the exception of 16-year-olds in Quebec, participated in SAIP. Provincial results for TIMSS 1999 can be reported for five provinces: Alberta, British Columbia, Newfoundland and Labrador, Ontario and Quebec. (See Appendix 2 for more details.)

Three measures of mathematics performance are presented here: average performance levels within Canada and other countries; changes over time in average performance; and percentage of students attaining different levels of mathematics proficiency.

Average scores in mathematics

Of the 32 countries that participated in PISA 2000 (mathematics), only two scored significantly higher than Canada.

In PISA 2000 (Mathematics), Japan and the Republic of Korea were the only countries scoring significantly higher than Canada in mathematics (Table C6.3). Canada's average score was about the same as New Zealand, Finland, Australia, Switzerland, and the United Kingdom. Canada's average score was significantly higher than France, United States, Germany and Italy—all G-7 countries. Alberta and Quebec students scored significantly higher than the Canadian average and all other countries except Japan and Korea. Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick scored below the Canadian average but higher than the OECD average.

Quebec scored higher than the Canadian average for both PISA 2000 and TIMSS 1999.

In TIMSS 1999, average scores for Singapore, Republic of Korea, Taiwan, Hong Kong, Japan and Belgium (Flemish) were statistically higher than those of Canada. Ten other countries performed at about Canada's level (Table C6.3). Quebec students scored at about the same level as the top performing countries. Mean scores for Alberta and British Columbia were about the same as the Canadian mean. Mean scores for Newfoundland and Labrador and Ontario were lower but well above the international average.

Quebec scored higher than the Canadian average for both PISA 2000 and TIMSS 1999, as did Japan and the Republic of Korea.

Canada was one of the few countries in which mathematics performance improved between 1995 and 1999.

A key purpose of TIMSS 1999 was to measure changes in performance in relation to TIMSS 1995. Canada was one of the few countries in which mathematics performance improved between 1995 and 1999, largely because of improvement in Ontario over the period (Figure C6.3 and Table C6.4).

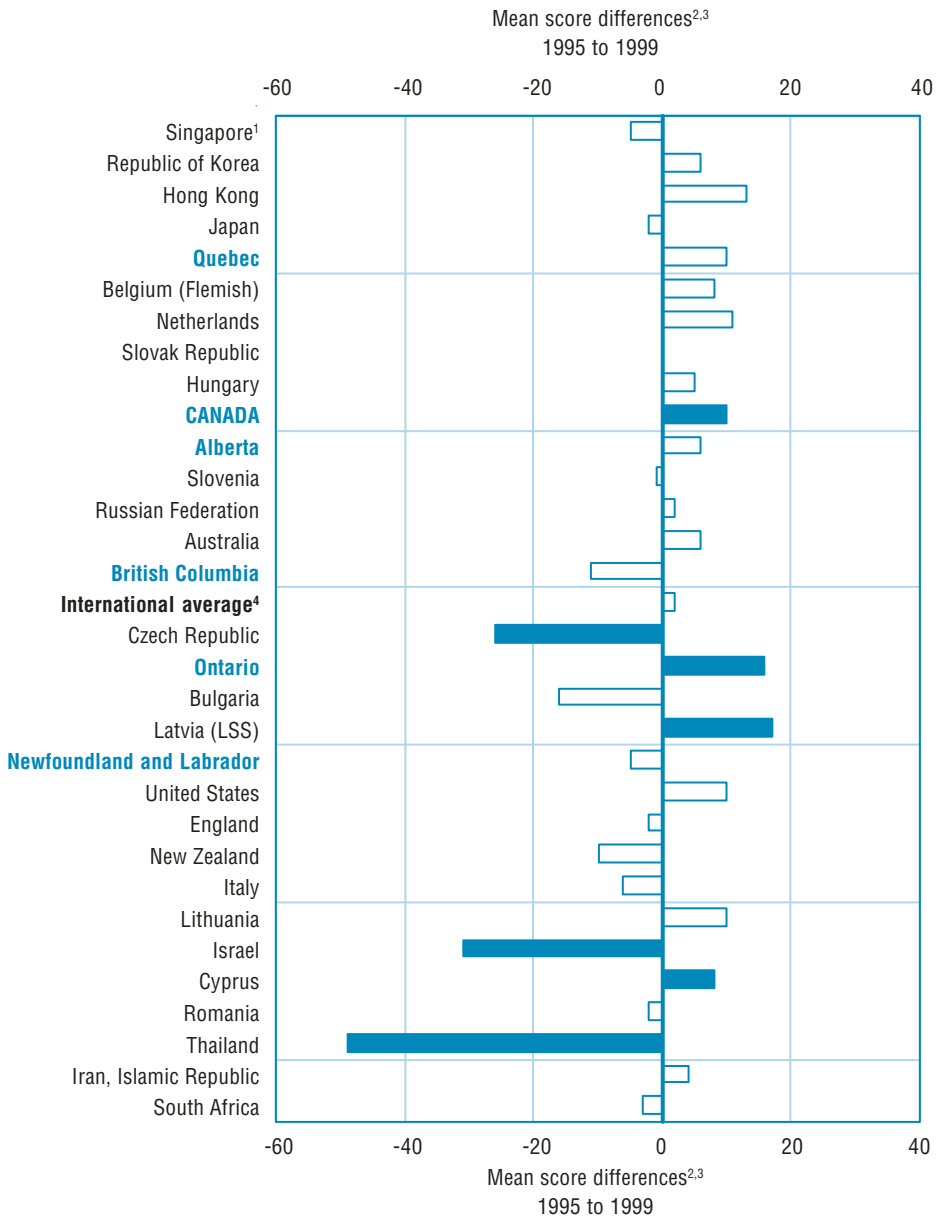


Figure C6.3

Changes in mean scores in the TIMSS mathematics assessments of grade 8 students between 1995 and 1999, Canada, provinces and selected countries

1. Jurisdictions ordered by 1999 mean scores. Test scale mean is 500 with a standard deviation of 100.
2. Positive difference indicates 1999 mean is greater than 1995 mean.
3. Solid bar indicates difference is statistically significant (95% confidence interval).
4. International average calculated using countries that participated in both years.

Source:

Table C6.4.

Proficiency in mathematics

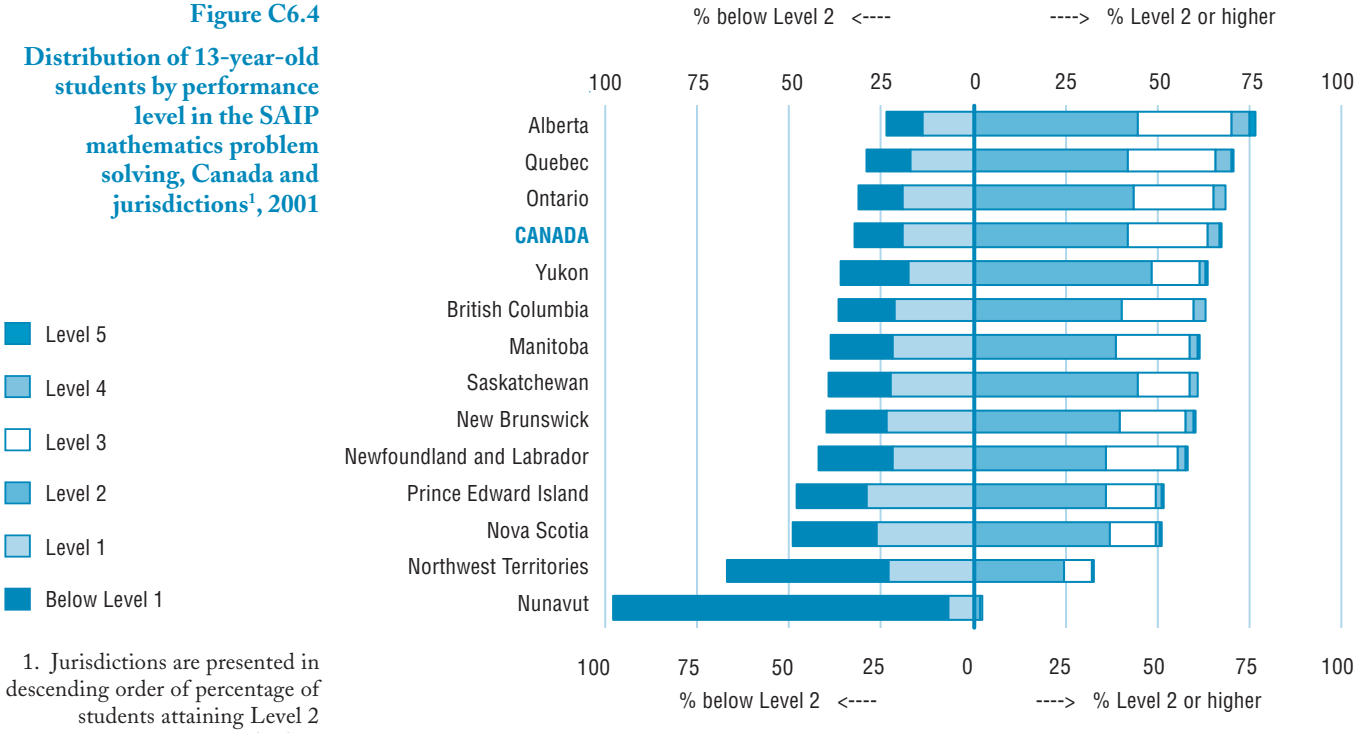
SAIP 2001 reported mathematics results for 13- and 16-year-old students across Canada's provinces and territories (excluding Quebec 16-year-olds). The mathematics assessment is divided into two major components, one dealing with mathematics content and the other dealing with problem solving. Unlike PISA and TIMSS, SAIP assesses mathematics problem solving as a separate domain. Overall, Canadian performance patterns between the two domains of mathematics were similar.

About 68% of 13-year-olds in Canada attained the desired performance level for mathematics (problem solving) in SAIP 2001.

For both age groups, jurisdictions with a higher percentage of top scoring students had fewer students at low proficiency levels. About 68% of 13-year-olds in Canada attained performance Level 2 or higher, the desired level for 13-year-olds (Figure C6.4 and Table C6.5). There was considerable variation across Canada in the percentage of 13-year-olds reaching this desired level, from 70% or more in Alberta and Quebec to under 60% in several provinces and territories.

Figure C6.4

Distribution of 13-year-old students by performance level in the SAIP mathematics problem solving, Canada and jurisdictions[1], 2001



1. Jurisdictions are presented in descending order of percentage of students attaining Level 2 or higher.

Source:

Table C6.5.

Slightly under half of Canada's 16-year-olds attained the desired performance level for their age group in mathematics problem solving.

Only about 47% of 16-year-olds in Canada attained performance Level 3 or higher, the desired level for 16-year-olds (Figure C6.5 and Table C6.6). Similar percentages are reported for mathematics content, the other domain tested. As with the younger age group, there was considerable variation among jurisdictions. Low scores for Nunavut should be interpreted with caution as many students are educated in Inuktitut in the elementary years and the test was administered in English or French.

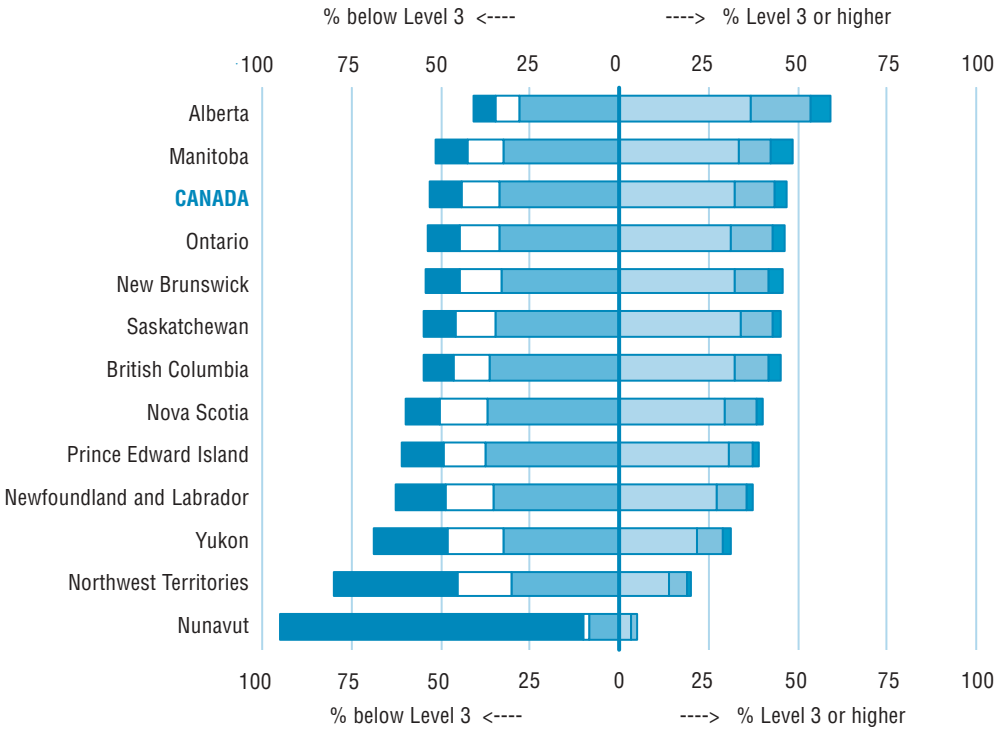


Figure C6.5

Distribution of 16-year-old students by performance level in the SAIP mathematics problem solving, Canada and jurisdictions[1,2], 2001

1. Jurisdictions are presented in descending order of percentage of students attaining Level 3 or higher.
2. Quebec 16-year-olds did not participate in the assessment.

Source:

Table C6.6.

In summary, looking across the various assessments, students in Alberta, Quebec, Japan and the Republic of Korea recorded relatively high proficiency in mathematics. Ontario made strong gains, affording an opportunity to study the factors leading to improved mathematics skills.

Science

This indicator draws on data from three recent assessments of science performance targeting 13- to 16-year-olds: TIMSS 1999, PISA 2000 and SAIP 1999. Fifteen-year-old students in 32 countries and ten provinces participated in PISA. Grade 8 students (14 years of age) across 38 countries were in TIMSS. And all provinces and territories participated in SAIP. Provincial results for TIMSS can be reported for five provinces: Alberta, British Columbia, Newfoundland and Labrador, Ontario and Quebec. (See Appendix 2 for more details.)

Three measures of science performance are presented: average performance levels within Canada and across various countries; changes over time in mean performance; and percentage of students reaching different levels of science proficiency.

Average scores in science

In PISA 2000 (Science) only three countries scored significantly higher than Canada.

In PISA 2000, the Republic of Korea, Japan and Finland were the only countries scoring significantly higher than Canada on the science assessment (Table C6.7). Canada's average score was about the same as the United Kingdom, New Zealand and Australia. Canada outperformed 23 countries including France, United States, Germany and Italy. Within Canada, Alberta and Quebec scored higher than the Canadian average and at about the same level as the top performing countries. British

Columbia, Manitoba, Ontario and Saskatchewan scored at about the same level as the Canadian average while Newfoundland and Labrador, Prince Edward Island and Nova Scotia were below the Canadian average but above the OECD average. New Brunswick's score was about the same as the OECD average.

In TIMSS 1999 (science), 5 of the 38 participating countries scored significantly higher than Canada.

Taiwan, Singapore, Hungary, Japan and the Republic of Korea, scored significantly higher than Canada in the science component of TIMSS 1999 (Table C6.7). Eleven countries scored at about the same level as Canada, ahead of the 21 other countries. Alberta placed at the same level as the top group of countries. British Columbia and Quebec scored about the same as the Canadian average.

Alberta, along with Japan and the Republic of Korea, scored higher than the Canadian average in the science component of both PISA 2000 and TIMSS 1999.

In the science component of TIMSS, Canada was one of the few countries with improved scores between 1995 and 1999.

Canada was one of the few countries in which average scores improved between TIMSS 1995 and TIMSS 1999 (Figure C6.6 and Table C6.8). Among the five provinces for which both 1995 and 1999 provincial results are available, Alberta, Quebec and Ontario showed statistically significant improvements.

Figure C6.6

Changes in mean scores in the TIMSS science assessments of grade 8 students between 1995 and 1999, Canada, provinces and selected countries

1. Jurisdictions ordered by 1999 mean scores. Test scale mean is 500 with a standard deviation of 100.
2. Positive difference indicates 1999 mean is greater than 1995 mean.
3. Solid bar indicates difference is statistically significant (95% confidence interval).
4. International average calculated using countries that participated in both years.

Source:

Table C6.8.

Proficiency in science

About three-quarters of both 13- and 16-year-old students attained the desired performance level for their age group in SAIP Science 1999.

The SAIP Science 1999 study reported results for 13- and 16-year-old students from all provinces and territories. The assessment consisted of two parts: a written assessment and a practical "hands on" assessment. Results for only the written assessment are discussed here as data are not available for all jurisdictions for the practical component.

About 73% of 13-year-olds across Canada attained Level 2 or higher in science, which is the desired level for 13-year-olds (Figure C6.7 and Table C6.9). Jurisdictional results for students reaching this level ranged between 18% in Nunavut and 83% in Alberta. In eight jurisdictions (Alberta, British Columbia, Saskatchewan, Prince Edward Island, Ontario, Manitoba, Yukon and Quebec), 70% or more of students attained the performance level for their age group (Level 2).

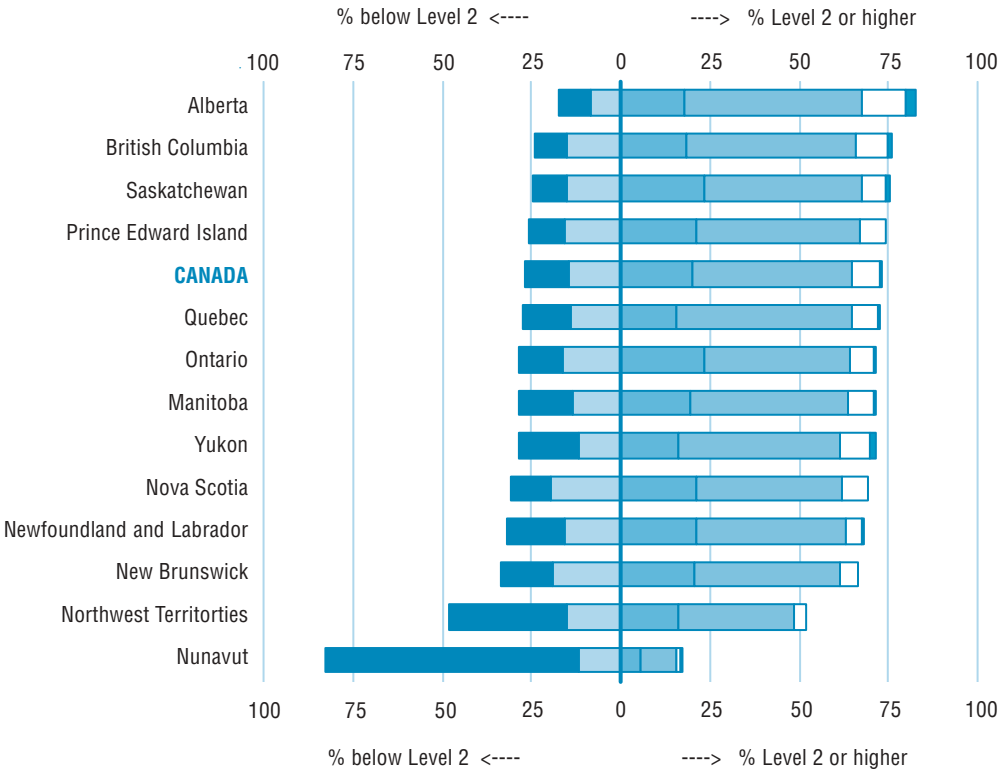


Figure C6.7

Distribution of 13-year-old students by performance level in the SAIP science written component, Canada and jurisdictions[1] , 1999

1. Jurisdictions are presented in descending order of percentage of students attaining Level 2 or higher.

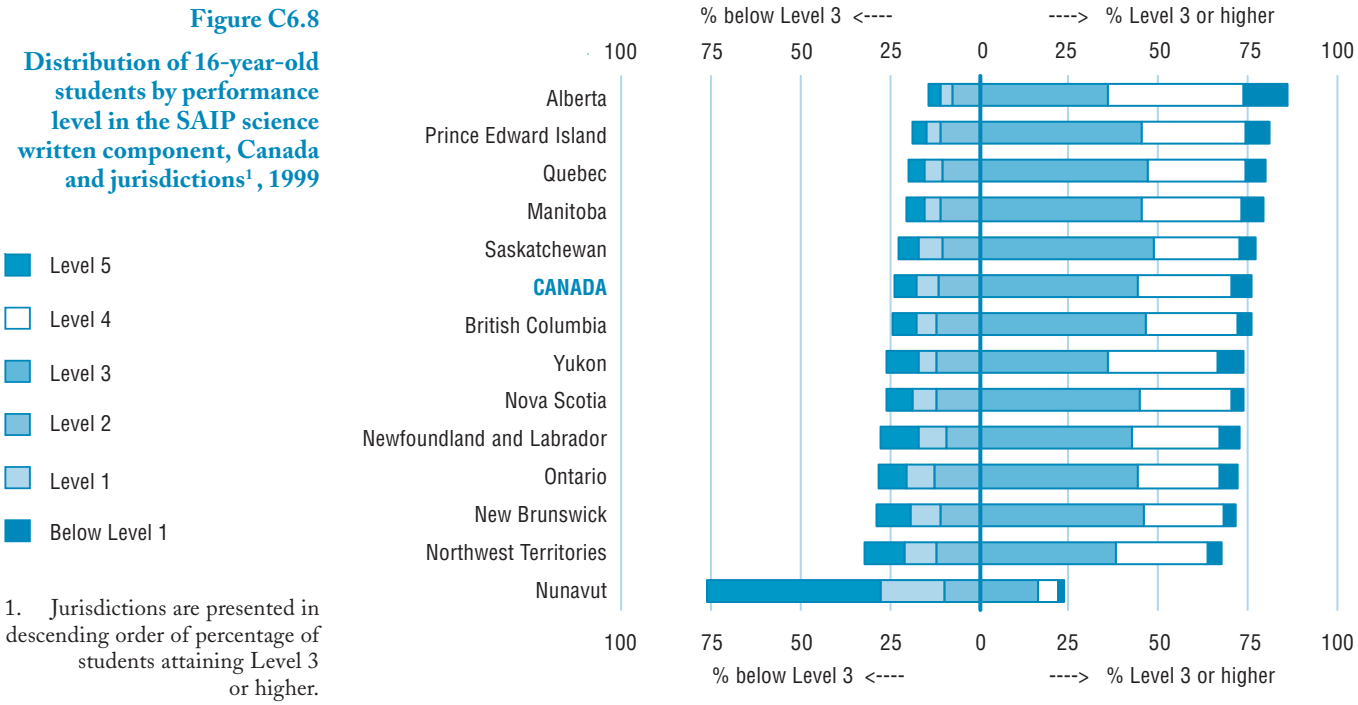
Source:

Table C6.9.

A similar proportion (76%) of 16-year-olds attained Level 3 or higher—the desired level for this age group (Figure C6.8 and Table C6.10). In Alberta, Prince Edward Island, Quebec and Manitoba, about 80% reached this level or higher. Low scores for Nunavut should be interpreted with caution as many students are educated in Inuktitut in the elementary years and the test was administered in English and French.

Figure C6.8

Distribution of 16-year-old students by performance level in the SAIP science written component, Canada and jurisdictions[1], 1999



1. Jurisdictions are presented in descending order of percentage of students attaining Level 3 or higher.

Source:

Table C6.10.

Equity and student achievement

Three measures of achievement equity are presented here: performance of students in relation to the socio-economic status (SES) of their parents; performance of males and females; and performance of students enrolled in minority French and English language programs. Data from four studies form the basis of this section: PISA 2000, TIMSS 1999, SAIP 1999 (Science) and SAIP 2001 (Mathematics).

Achievement and socio-economic status

Canada and Finland show greater equity in reading achievement across socio-economic groups than many other countries.

The relationship between SES and reading achievement in various countries is displayed in Figure C6.9. The slope of each line is a measure of the extent to which inequalities in academic achievement due to socio-economic status exist within a country. Steeper gradients indicate that student performance varies more by SES or more inequality; flatter gradients indicate a weaker relationship between socio-economic background and student performance or less inequality. Ideally, countries strive to attain flat lines placed high on the chart; this would indicate that all students attain top reading scores, regardless of socio-economic status.

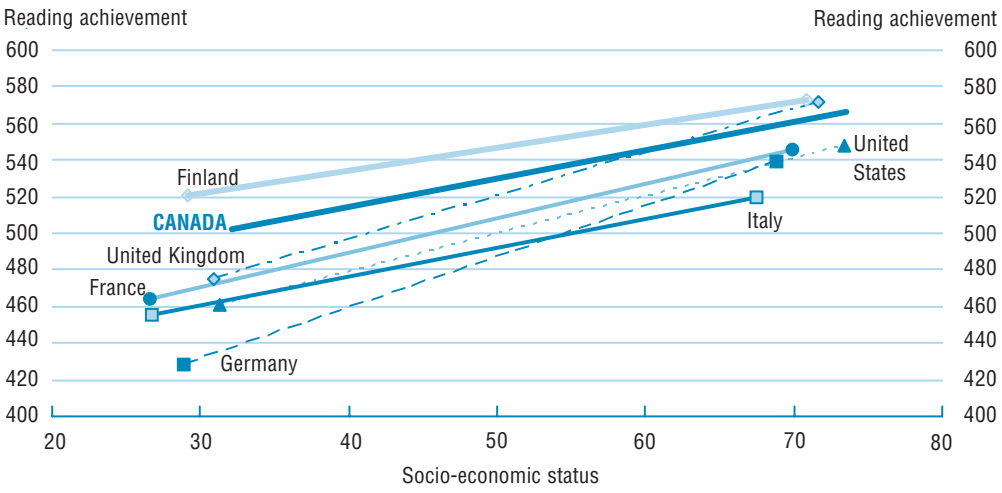


Figure C6.9

Reading proficiency on the PISA combined reading literacy scale by family socio-economic status, G-7 countries and Finland[1,2], PISA, 2000

1. Data for Japan are not included in this table due to a high percentage of missing data.
2. Socio-economic status (SES) is derived from student responses to questions on parental occupation. Values for the SES index, developed by the OECD, range from 0 to 90. The higher the index value, the higher the occupational status of a student's parents.

Sources:

OECD (2001). Knowledge and Skills for Life. First Results from PISA 2000. Excel data tables.

PISA Canada (2001). Measuring Up: The Performance of Canada's Youth in Reading, Mathematics and Science, OECD PISA Study—First Results for Canadians Aged 15.

Canada, like Finland, had both a relatively flat socio-economic gradient and relatively high scores in reading across socio-economic groups. Germany, on the other hand, had the steepest gradient, indicating the greatest variation in student reading performance across socio-economic groups (Figure C6.9 and Table C6.11).

Achievement scores for students with different socio-economic status showed less variation in Canada than they did in many other countries.

The relationship between socio-economic status and achievement can also be examined by comparing average scores of students from families with the highest socio-economic status with the average scores of students from families with the lowest socio-economic status. Among the 14 countries included in this analysis, Canada, along with Finland, exhibited less variation in reading achievement between these two groups than did other countries. Results were similar for mathematics and science achievement as measured by PISA 2000.

Within Canada, Saskatchewan exhibited less variation in reading achievement by family SES than did other provinces and almost all countries. Alberta students performed well across socio-economic groupings: average scores for Alberta students from families with the lowest SES were higher than average scores in Canada for students with similar backgrounds.

All countries and provinces showed a definite relationship between SES and educational outcomes. These findings are significant, however, in that they suggest it is possible for school systems to attain high overall achievement levels with relatively small achievement gaps by family SES. Canada emerged as one of the world leaders on this indicator.

Achievement for males and females

In PISA 2000 (Reading), females outperformed their male counterparts in all provinces and in all participating countries.

PISA 2000 (reading) revealed that 15-year-old females performed better than their male counterparts in all provinces and participating countries; these results reflect similar findings reported in other studies of reading and gender (Figure C6.10).

Figure C6.10
Differences in performance between males and females in various assessments, Canada and selected countries

	Sex with highest average score								
	Reading	Mathematics				Science			
	PISA 2000	PISA 2000	TIMSS 1999	SAIP 2001[3]	SAIP 2001[3]	PISA 2000	TIMSS 1999	SAIP 1999[4]	SAIP 1999[4]
	15-year-olds	15-year-olds	Grade 8 (14-year-olds – Canada)	13-year-olds	16-year-olds	15-year-olds	Grade 8 (14-year-olds – Canada)	13-year-olds	16-year-olds
CANADA	**Females**	**Males**	**ND[1]**	**Females**	**ND**	**ND**	**Males**	**ND**	**ND**
International average	**Females**	**Males**	**Males**	[2]		**ND**	**Males**		
France	Females	Males				ND			
United States	Females	ND	ND			ND	Males		
United Kingdom	Females	ND				ND			
Germany	Females	Males				ND			
Japan	Females	ND	ND			ND	ND		
Italy	Females	ND	ND			ND	ND		
Russian Federation	Females	ND	ND			Females	Males		
Australia	Females	ND	ND			ND			
Belgium	Females	ND				ND			
Finland	Females	ND	ND			ND	ND		
Mexico	Females	ND				ND			
Sweden	Females	ND				ND			
Switzerland	Females	ND				ND			

1. ND (no difference) indicates no statistical difference between scores (95% confidence intervals).
2. Shading indicates jurisdiction did not participate in the study.
3. SAIP 2001: Based on percentage of students attaining Level 2 or higher (13-year-olds) or Level 3 or higher (16-year-olds) in Mathematics Problem Solving.
4. SAIP 1999: Based on percentage of students attaining Level 2 or higher (13-year-olds) or Level 3 or higher (16-year-olds) in Science Written Assessment.

Sources: *CMEC (2000). School Achievement Indicators Program (SAIP). Science 1999.*
CMEC (2002). School Achievement Indicators Program (SAIP). Mathematics 2001.
IEA Math (2000). TIMSS 1999. International Mathematics Report.
IEA Science (2000). TIMSS 1999. International Science Report.
OECD (2001). Knowledge and Skills for Life. First Results from PISA 2000. Excel data tables.
TIMSS-Canada Report (2000). Robitaille, David and Taylor, Alan. Volume 5: "New Findings for a New Century".

Whereas a reading performance gap between females and males emerged consistently across provinces and countries, gender differences in mathematics and science performance were slight and more variable. International averages for the mathematics assessment in both PISA 2000 and TIMSS 1999 show that 14- and 15-year-old males scored somewhat higher than females. At the pan-Canadian level, males scored higher in PISA, but no significant differences in mathematics scores were reported for TIMSS. In mathematics (problem solving), SAIP reported higher scores for 13-year-old females but no differences among 16-year-olds.

There were no consistent, significant differences in mathematics or science performance between males and females across the range of assessments.

In science, the results were also mixed. PISA reported no gender differences across all countries, but with TIMSS, males scored higher. Canada's results reflect the international norms for PISA and TIMSS. No gender differences in science achievement were reported for SAIP 2001.

Overall, it appears that for mathematics and science, both nationally and internationally, achievement gaps between males and females are small. The same cannot be said for reading achievement; the results point to a need to improve the reading proficiency levels of young males.

Achievement and language of the school system

The performance of students in English and French school systems in five provinces (Nova Scotia, New Brunswick, Quebec, Ontario and Manitoba) are reported from the four major assessment studies. The focus is on the performance of the minority language group (students in the French language school system in Nova Scotia, New Brunswick, Ontario and Manitoba and students in the English language school system in Quebec) relative to the majority language group.

In reading and science, the pattern is clear from the three assessments (PISA 2000, TIMSS 1999 and SAIP 1999 and 2001): students in the minority francophone school systems outside of Quebec performed at lower levels than did students in the majority anglophone school system in the same province. In Quebec there were no significant score differences between French and English school systems (Figure C6.11).

In reading and science, students in the francophone school systems outside of Quebec performed at lower levels than did their English counterparts.

Figure C6.11

Performance of students of the minority language group relative to the majority language group in various assessments, selected provinces[1]

	Language group with highest score								
	Reading	Mathematics				Science			
	PISA 2000	PISA 2000	TIMSS 1999	SAIP 2001[4]	SAIP 2001[4]	PISA 2000	TIMSS 1999	SAIP 1999[5]	SAIP 1999[5]
	15-year-olds	15-year-olds	Grade 8 (14-year-olds – Canada)	13-year-olds	16-year-olds	15-year-olds	Grade 8 (14-year-olds – Canada)	13-year-olds	16-year-olds
Nova Scotia	Anglophone	ND[2]	[3]	ND	ND	Anglophone		Anglophone	Anglophone
New Brunswick	Anglophone	ND		Francophone	Francophone	Anglophone		Anglophone	Anglophone
Quebec	ND	ND		ND		ND		ND	ND
Ontario	Anglophone	Anglophone	ND	ND	ND	Anglophone	Anglophone	Anglophone	Anglophone
Manitoba	Anglophone	ND		Francophone	ND	Anglophone		Anglophone	Anglophone

1. This chart focuses on students in Francophone school systems in Nova Scotia, New Brunswick, Ontario and Manitoba, relative to the Anglophone majority and students in the Anglophone system in Quebec relative to the Francophone majority in that province.
2. ND (no difference) indicates no statistical difference between scores (95% confidence intervals).
3. Shading indicates provincial results are not available.
4. SAIP 2001: Based on Mathematics problem solving: Level 2 or higher (13-year-olds); Level 3 or higher (16-year-olds).
5. SAIP 1999: Based on Science written assessment: Level 2 or higher (13-year-olds); Level 3 or higher (16-year-olds).

Sources: *CMEC (2000). School Achievement Indicators Program (SAIP). Science 1999.*
CMEC (2002). School Achievement Indicators Program (SAIP). Mathematics 2001.
IEA Math (2000). TIMSS 1999. International Mathematics Report.
IEA Science (2000). TIMSS 1999. International Science Report.
OECD (2001). Knowledge and Skills for Life. First Results from PISA 2000. Excel data tables.
PISA Canada (2001). Measuring Up: The Performance of Canada's Youth in Reading, Mathematics and Science, OECD PISA Study—First Results for Canadians Aged 15.

In mathematics, there were no differences between the two language school systems, with three exceptions: Ontario anglophone students scored higher in PISA 2000, New Brunswick francophone students scored higher in SAIP 2001, and Manitoba 13-year-old francophone students scored higher in SAIP 2001.

The main language spoken in the home and the language spoken in the community no doubt contribute to performance differences between language school systems. Further research could help to understand the role schools play in amplifying or attenuating these differences.

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CMEC (2000). School Achievement Indicators Program (SAIP). *Science 1999*. Council of Ministers of Education, Canada. Toronto.

CMEC (2002). School Achievement Indicators Program (SAIP). *Mathematics 2001*. Council of Ministers of Education, Canada. Toronto.

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IEA Science (2000). *TIMSS 1999. International Science Report*. International Association for the Evaluation of Educational Achievement. Boston College. Chestnut Hill, MA.

OECD (2001). *Knowledge and Skills for Life. First Results from PISA 2000*. Excel data tables. Organisation for Economic Co-operation and Development. Paris.

PISA Canada (2001). *Measuring Up: The Performance of Canada's Youth in Reading, Mathematics and Science, OECD PISA Study – First Results for Canadians Aged 15*. Human Resources Development Canada, Council of Ministers of Education, Canada and Statistics Canada. Ottawa. December 2001.

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Secondary school graduation

Context

C7

This indicator presents information on recent trends in high school graduation rates. It also highlights the decline in high school leaver rates and compares high school leavers and graduates.

"The skills and knowledge acquired through secondary education are valuable human capital—the foundation for workplace experiences, for additional learning and life skills."[1] High school graduation is not only a requirement for entry into most forms of postsecondary education, but is also a valuable credential in its own right. People with less than a high school education have relatively low labour force participation rates and high unemployment rates.

Graduation rates are influenced by labour market conditions. A strong labour market with plentiful job opportunities may attract youth prior to high school completion. In a weak labour market, youth may be more inclined to complete secondary school as they anticipate difficulties in finding a job. Graduation rates also vary depending on the graduation requirements. Entrance requirements for postsecondary education may be linked to completion of specific courses rather than to high school graduation itself.

High school graduation rates have historically been used as a basic indicator of educational outcomes. The trend in these rates over time is seen as an indicator of access to education and, more indirectly, as a measure of achievement. Comparisons across jurisdictions may indicate the relative effectiveness of systems in attaining what is universally acknowledged as an important educational milestone. Similarly, international comparisons benchmark performance at the pan-Canadian level to that of other countries.

Findings

Secondary school graduation rates

High school graduation rates can be produced from both administrative data (information acquired from schools, school boards, or ministries or departments of education) and from survey data (surveys of individuals). Generally, these two sources yield somewhat different estimates of graduation rates due to the methodology and coverage differences (see Appendix 2). Both sources show increases in the graduation rate over the past decade. This section uses administrative data.

1. *At a Crossroads: First Results for the 18- to 20-year-old Cohort of the Youth in Transition Survey*, Human Resources Development Canada and Statistics Canada, 2002.

In 2000, Canada's graduation rate was well below those of Japan, Germany and France.

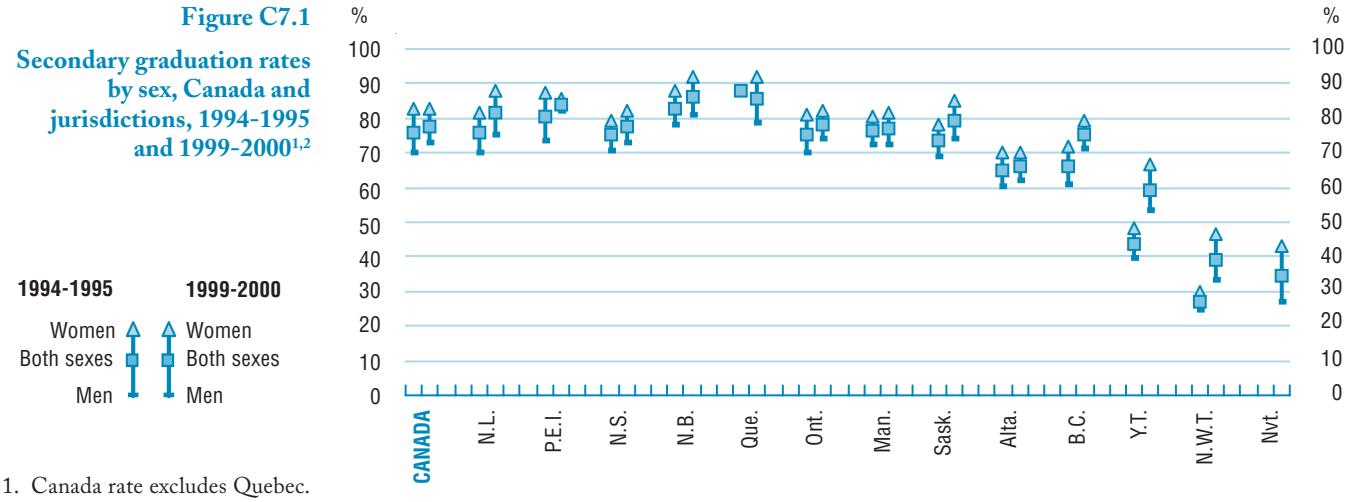
The pan-Canadian graduation rate in 2000 was 78%—just above the OECD average of 77%. Relative to the G-7 countries, Canada's graduation rate in 2000 was well below the rates for Japan, Germany and France (Table C7.1). This may indicate that further steps are required to encourage students in Canada to complete high school. However, graduation requirements vary considerably both within Canada and internationally as do definitions of "high school graduate".

Graduation rates rose in all jurisdictions between 1995 and 2000.

Graduation rates increased across the country between 1995 and 2000 (Figure C7.1 and Table C7.2). The pan-Canadian rate rose slightly from 76% to 78%. Yukon had the largest increase, up 16 percentage points to reach 59%, greatly reducing the gap between its rate and those of the provinces. Graduation rates for both Northwest Territories (39%) and Nunavut (35%) improved significantly over the rate of 27% in 1995. British Columbia's rate increased nine percentage points, bringing its rate close to the pan-Canadian average from well below that average in 1995. Other jurisdictions with sizable increases in their graduation rate were Newfoundland and Labrador and Saskatchewan. Increases in graduation rates are generally interpreted as a reflection of improved performance of school systems. However, in this report we have not examined the factors that might contribute to higher graduation rates.

Figure C7.1

Secondary graduation rates by sex, Canada and jurisdictions, 1994-1995 and 1999-2000[1,2]



1. Canada rate excludes Quebec.
2. Quebec and Ontario data for 1999-2000 are estimates.

Source:

Table C7.2.

Female graduation rates remained higher than those of males, but the gap between them narrowed in the latter half of the 1990s.

In 2000, as in 1995, graduation rates were higher for females (83%) than males (73%) (Figure C7.1 and Table C7.1). However, the gender gap was even larger (13 percentage points) in 1995. The narrowing of the gap was most pronounced in Prince Edward Island. The gender gap also decreased in Ontario and Alberta where the graduation rate rose for males and changed little for females. In Quebec, the rate edged up for males and fell for females. The gap also narrowed in British Columbia. On the other hand, the gender gap widened in New Brunswick, Saskatchewan, Yukon and Northwest Territories.

Secondary school graduation rates are one of many indicators that point to the better performance of females in education. This phenomenon is not unique to Canada; it has become the norm across OECD countries, with the graduation rate for females averaging six percentage points higher than that for males. Among G-7 countries,

Canada's gender gap of 10 percentage points is second highest after Italy's. While the United States has virtually no gender gap, its graduation rates are lowest among G-7 countries.

In the last half of the 1990s, the typical-age graduation rate rose and the after-typical-age graduation rate fell.

Overall graduation rates can be broken down into two components: the typical-age graduation rate, based on those graduating at the typical age of graduation or younger; and the after-typical-age graduation rate, based on those graduating after the typical age of graduation.[2] Graduation at the typical age or less generally equates with starting school at the prescribed time and completing and graduating without interruptions or repetition of grades or of significant numbers of courses. This decomposition shows the contribution to the overall rate of those graduating "on-time" versus those graduating at a later age.

Between 1995 and 2000, the typical-age rate rose from 55% to 61% (Figure C7.2 and Table C7.2). Over the same period, the after-typical-age rate decreased from 21% to 17%.

It may be that "stay in school" programs and policies encourage students to not only stay in school but to complete their studies on time. The higher typical-age graduation rate may also reflect more efficiency within school systems. The "stay in school" programs may also lead to more people completing high school after the typical age outside the secondary system, which is not being captured by these data.

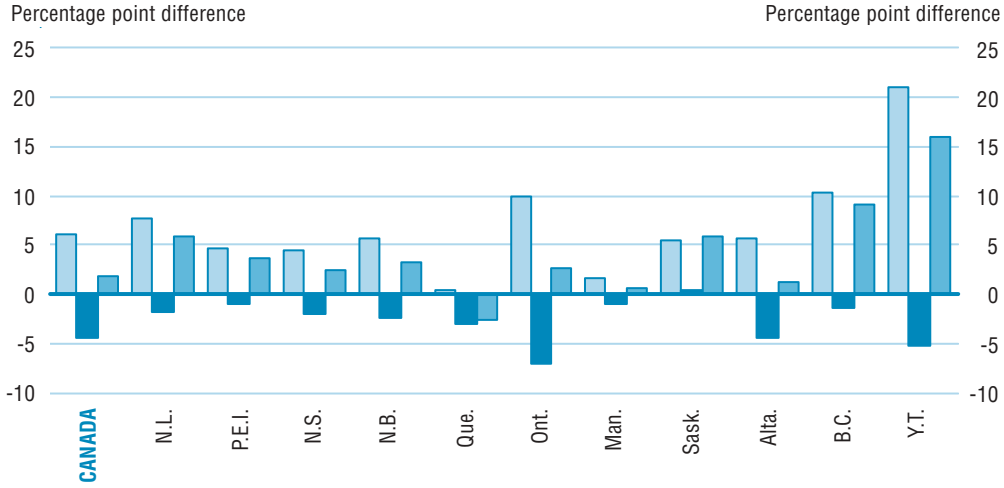


Figure C7.2

Differences in overall, typical-age and after-typical-age graduation rates, Canada and jurisdictions, 1994-1995 and 1999-2000[1,2]

1. Canada rate excludes Quebec.
2. Quebec and Ontario data for 1999-2000 are estimates.

Source:

Table C7.2.

2. It should be noted that the administrative data pertain to graduations from the regular school system only, and not the "second chance" programs. Hence, these rates are only a measure of after-typical-age graduations in the regular school system and reveal nothing about the level or trend in after-age-graduations in the "second chance" system.

The after-typical-age graduation rate (17% in 2000) remained an appreciable component of the overall graduation rate and points to the importance of efforts to encourage persistence and staying in school. This is especially the case in Nunavut, where the after-typical-age group represented about two-thirds of graduations (22% after-typical-age versus 13% typical age) and in Northwest Territories where they represented almost one-third of graduations (12% after-typical-age versus 27% typical age) (Figure C7.2 and Table C7.2).

In 2000, the after-typical-age rate was lowest in Yukon and Newfoundland and Labrador (5%). Both Quebec and Ontario had after-typical-age graduation rates in 2000 that were above the pan-Canadian average. In the case of Ontario, the Ontario Academic Credits (OAC) program, which some students require an extra year to complete, is likely a contributing factor. The OAC program is being phased out, with its last year in 2002-2003.

High school leavers

This section presents data from two surveys of young adults: the 1991 School Leavers Survey and the 1999 Youth in Transition Survey (YITS). The following focuses on high school leaver rates among 20-year-olds and differences in the characteristics of high school leavers and graduates aged 18 to 20.

During the 1990s, the pan-Canadian high school leaver rate fell from 18% to 12%.

In 1991, 18% of 20-year-olds had left high school without graduating. By 1999, this proportion had dropped to 12% (Table C7.3). This drop is consistent with the increases in graduation rates observed from the administrative data. Moreover, the rate was appreciably lower in 1999 in all jurisdictions, representing significant progress by school systems over a relatively short period. The largest reductions took place in New Brunswick, Newfoundland and Labrador, Saskatchewan and Nova Scotia. Provinces in Atlantic Canada experienced the largest average decline. While they had among the highest rates in 1991, they displayed among the lowest rates in 1999, with the exception of Prince Edward Island.

Despite the overall gains, high school leaver rates remained higher for 20-year-old men than for women (15% versus 9%). Rates for females were very low (5% or less) in Nova Scotia, New Brunswick and Saskatchewan. In all Atlantic provinces and in Saskatchewan, rates for males were at least twice those of females.

Characteristics of high school leavers in their final year of high school

The higher the level of a parent's education, the more likely a student is to complete high school.

Many studies point to a positive relationship between social variables such as parental education and occupation and the education outcomes of children (Table C7.4). The YITS shows that the proportion of high school graduates with at least one parent who had completed some type of postsecondary education (57%) was twice that of leavers (28%). Conversely, the proportion of leavers with parents who had not completed high school was three times that of graduates (27% versus 9%).

Although the majority of both high school graduates and leavers lived in a two-parent family during high school, a greater percentage of leavers lived with only one parent. Overall, 32% of high school leavers, compared with 16% of graduates, lived with one parent.

Most high school leavers reported that they had at least a "C" grade average in their last year of high school.

While high school leavers obtained lower grades in their last year of high school compared to graduates, not all leavers reported poor performance in school. About half (48%) reported a "B" grade average (70% to 79%) or better and another 35% a "C" (60% to 69%).

Indicators of school engagement reveal that high school leavers were less involved in school and school activities than were graduates. Only 48% of leavers reported completing their homework most or all of the time, compared to 80% of graduates. Leavers also spent less time on their homework: 63% of leavers, but only 37% of graduates, spent less than three hours a week on homework. Participation in school-based extracurricular activities was also lower among leavers than among graduates (37% versus 62%).

Youth who left high school without graduating were more likely not to work, or to work 30 hours or more in a week, than were graduates.

During the last year of high school approximately six out of every ten youth worked for pay. Those who worked a modest number of hours (1 to 19 hours weekly) were the least likely to leave school without graduating, and those who worked long hours (30 or more a week) were the most likely.

Compared to graduates, a greater proportion of leavers either did not work at all (48% of leavers versus 37% of graduates) or worked 30 or more hours a week (13% for leavers versus 5% among graduates).

More than one-quarter of all female leavers had at least one dependent child.

While only a small proportion (3%) of all 18- to 20-year-olds indicated they had dependent children, this proportion rose to 28% for female leavers. The rate was much lower for female graduates (3%), male leavers (5%) and male graduates (less than 1%).

Reference

At a Crossroads: First Results for the 18- to 20-year-old Cohort of the Youth in Transition Survey, Human Resources Development Canada and Statistics Canada, 2002.

Chapter D

D

Chapter D figures

Chapter D figures

Postsecondary education

Introduction

Postsecondary education can have a direct impact on people's ability to compete in the labour market, on the types of jobs they obtain, and the remuneration they receive. Progress in the sciences and technology is linked to a strong research and development (R&D) sector, drawing on the abilities of highly-trained individuals. Formal education, either at the "typical" age of study, or later, as an adult learner, is key to providing people with the opportunities to develop the knowledge and skills needed in the knowledge economy. This chapter examines the postsecondary sector in Canada at all levels: trade-vocational and registered apprenticeship, college, and university.

Indicator **D1** provides information on student enrolment in trade-vocational, registered apprenticeship, college, and university programs, as well as reporting on gender differences.

Trends in participation in adult education and training are considered in Indicator **D2**, along with information about who provides and who pays for training.

Indicator **D3** looks at university and college educators. In addition to showing how many educators there are in Canada and the jurisdictions, it also examines gender distribution and the age breakdown of educators as a group, compared to the overall population.

Indicator **D4** presents contextual, financial, and output indicators for university R&D.

Postsecondary completions for trade-vocational and registered apprenticeship programs, college diplomas, and university degrees are the topic of Indicator **D5**. Also covered are completions and graduation rates by gender, and, at the university level, by field of study.

Indicator **D6** measures the educational attainment of Canadians by age and gender.

Enrolment in postsecondary education

Context

With rising secondary school graduation rates, many industrialized countries have come to view participation in postsecondary education as an important prerequisite for working and further learning.

In Canada, postsecondary programs are offered through community colleges, universities, and private institutions (information on enrolment at private business colleges is not included in this indicator—see Appendix 2). Changes in enrolment at each of these levels, over time, provide information on the skills and knowledge that entrants to the labour force are likely to possess, as well as helping postsecondary institutions and policy makers assess the demand on the system and how best to meet it. Data on the balance between male and female participation, and how that has shifted over time, help determine what steps, if any, may be needed to encourage higher levels of participation among both males and females.

This indicator reports on student enrolment in trade-vocational, registered apprenticeship programs, colleges, and universities.

D1

Findings

Enrolment in trade-vocational programs

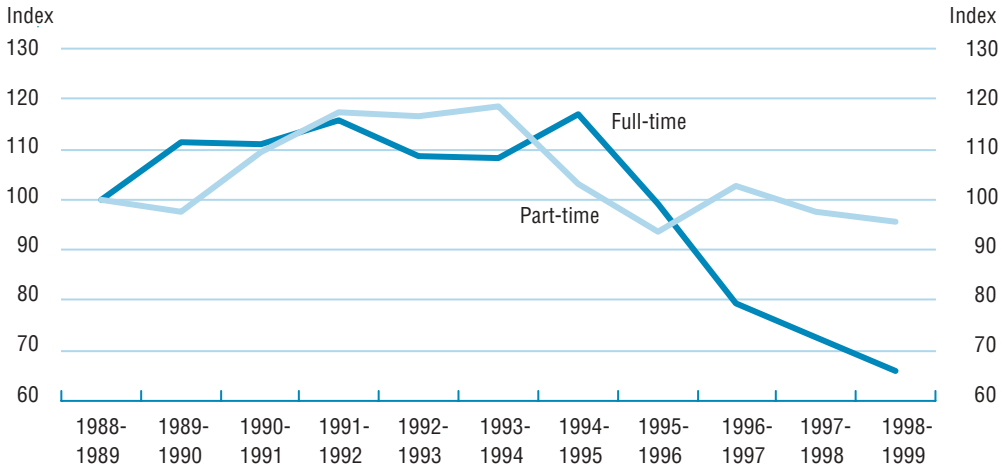
The majority of students in trade vocational programs were enrolled in academic upgrading programs, in pre-employment/pre-apprenticeship programs and in the in-class portion of registered apprenticeship programs (Table D1.1). The proportion of enrolments in pre-employment/pre-apprenticeship programs declined from 33% in 1988-1989 to 17% in 1998-1999 while the proportion in special training projects/other programs increased from 3% to 12% over the same period.

Between 1988-1989 and 1998-1999, full-time enrolment in Canada decreased 34%. Part-time enrolment decreased slightly, by 4% (Figure D1.1 and Table D1.2). Full-time enrolment actually increased until 1994-1995, but then declined sharply. Similarly, after peaking in 1993-1994, part-time enrolment began to fall.

Between 1988-1989 and 1998-1999, enrolment in trade-vocational programs decreased among both full- and part-time students.

Figure D1.1

Indices of trade-vocational enrolment by registration status, Canada, 1988-1989 to 1998-1999 (1988-1989=100)



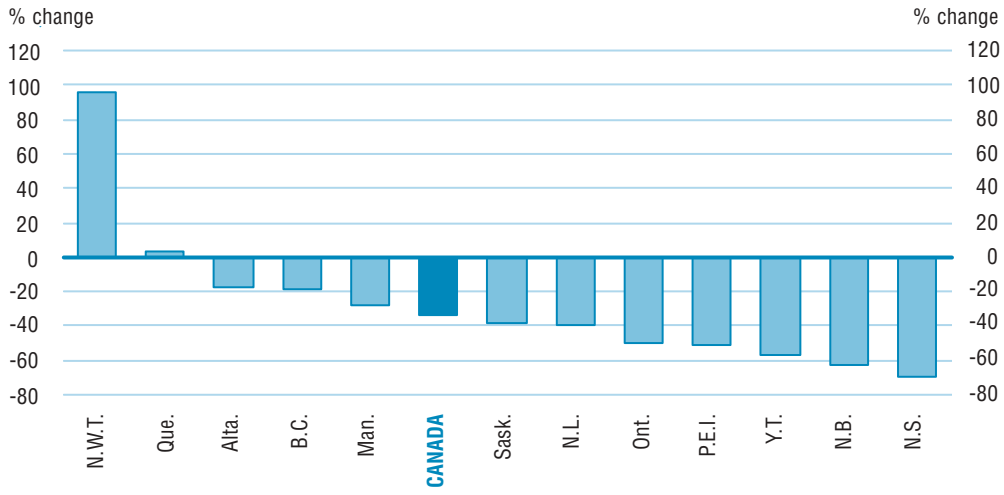
Source:
Table D1.2.

Only Quebec and Northwest Territories reported increases in full-time enrolment over the ten-year period (Figure D1.2). Recent re-classification of some trade-vocational programs to college programs in several provinces contributed to the decrease in those provinces.

The proportion of women among full-time students rose from 41% to 50% during the 1990s (Table D1.3). Most of that change was attributable to Ontario, where the proportion of women increased from 26% to 54%. There were other, less dramatic, increases in Newfoundland and Labrador, Prince Edward Island, Nova Scotia, and Northwest Territories.

Figure D1.2

Percentage change in full-time trade-vocational enrolment, Canada and jurisdictions, 1988-1989 to 1998-1999



Source:
Table D1.3.

The percentage of females in part-time enrolment decreased overall, from 41% to 31%. Only Nova Scotia, Saskatchewan and Northwest Territories showed increases.

Registered apprenticeship

The apprenticeship training system has played a major role over the past century in enabling business and industry in Canada to remain competitive. A series of key measures on apprenticeship enrolment is presented here.

In 2000, there were 201,600 registered apprentices in Canada, about the same as in 1991. Building construction, metal fabrication, and motor vehicle/heavy equipment trades each accounted for over 40,000 of registered apprentices. Over half of apprentices in 2000 were registered in Ontario and Quebec, with another 30% in Alberta and British Columbia (Tables D1.4 and D1.5). This likely reflects the distribution of the population.

Females now represent 9% of the total number of registered apprentices, more than double their share in 1991.

Between 1991 and 2000, the proportion of women among registered apprentices in all trades increased from 4% to 9%. Although the number of female registered apprentices remains small, there was a significant increase in the percentage of female apprentices in all trades. Females made up the majority of registered apprentices in the food and service trades in 2000, and represent over one-third of registered apprentices in the "Other trades" category (Figure D1.3 and Table D1.5).

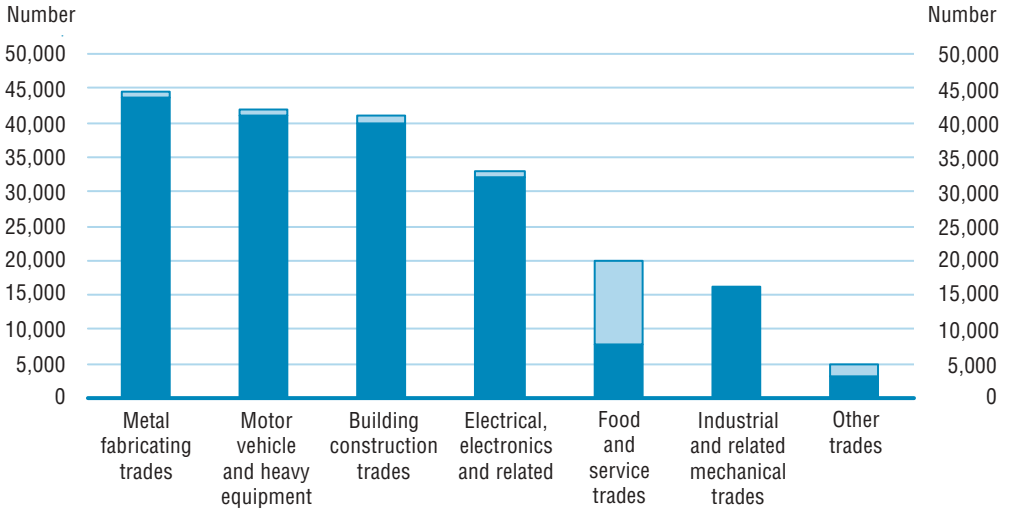


Figure D1.3

Number of registered apprentices by trade groups and sex, Canada, 2000

Source:
Table D1.5.

Just over half of all registered apprentices in 2000 were in their twenties. Although registered apprentices under age 20 represented only 5% of all registered apprentices in 2000, the number of registered apprentices in this age group had more than doubled since 1992. The number of registered apprentices over age 40 also increased significantly (Table D1.6).

The number of registered apprentices under age 20 increased significantly during the 1990s.

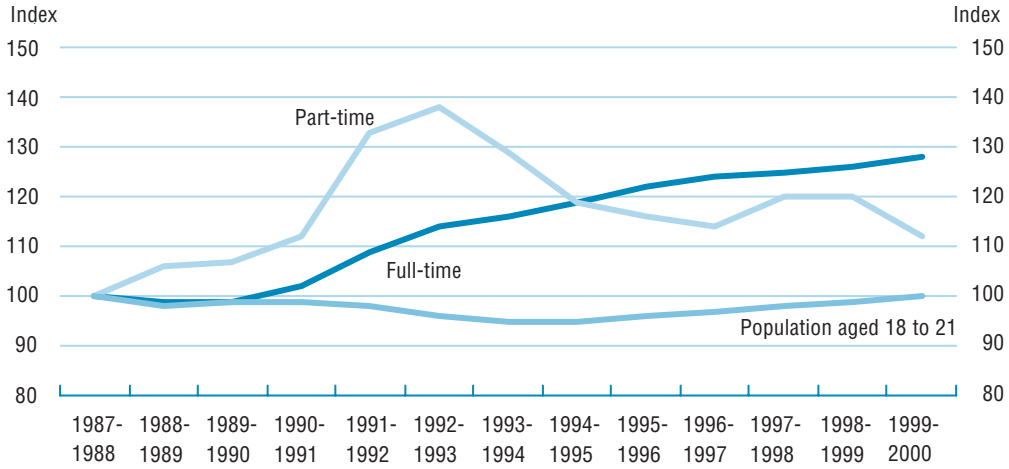
College enrolment

In Canada as a whole, full-time college enrolment increased by 28% between 1987-1988 and 1999-2000. Part-time enrolment rose substantially in the early 1990s, but has generally declined since then. Still, part-time enrolment was about 12% higher in 1999-2000 than in 1987-1988. Over the same time period, the population aged 18 to 21 has stayed relatively stable (Figure D1.4 and Table D1.7).

Between 1987-1988 and 1999-2000, full-time enrolment in community colleges increased by 28% and part-time enrolment rose by 12%.

Figure D1.4

Indices of college enrolment by registration status, and population aged 18 to 21, Canada, 1987-1988 to 1999-2000 (1987-1988=100)



Source:
Table D1.7.

Full-time enrolment in career technical programs grew by about 40% for the country as a whole during the 1990s, from 213,700 in 1989-1990 to 300,000 in 1999-2000 (Table D1.8). Enrolments increased significantly in Atlantic Canada, likely due in part to changes in entrance requirements, which led to a number of programs being re-classified from trade-vocational to college programs.

For university transfer programs, full-time enrolment increased slightly for Canada as a whole between 1989-1990 and 1999-2000. Although there were large increases in Manitoba, Alberta and British Columbia, these gains were offset by a decline in Quebec. Approximately one-quarter of college students in Canada are enrolled in university transfer programs.

Male students represented 46% of all full-time students enrolled in college in 1999-2000, the same as in 1989-1990. Among the jurisdictions, the percentage of males ranged from 17% in Northwest Territories and 27% in Nunavut to 57% in Newfoundland and Labrador. Males represented 45% or less of enrolments in Quebec, Manitoba, Saskatchewan, Alberta, British Columbia, Yukon, Northwest Territories, and Nunavut (Figure D1.5 and Table D1.9). The percentage of full-time male students increased between 1989-1990 and 1999-2000 in the Atlantic provinces and Ontario, declined in Alberta and Northwest Territories, and showed little change in the other jurisdictions. For the jurisdictions with data on part-time students, the percentage of males rose significantly in five jurisdictions and declined in two.

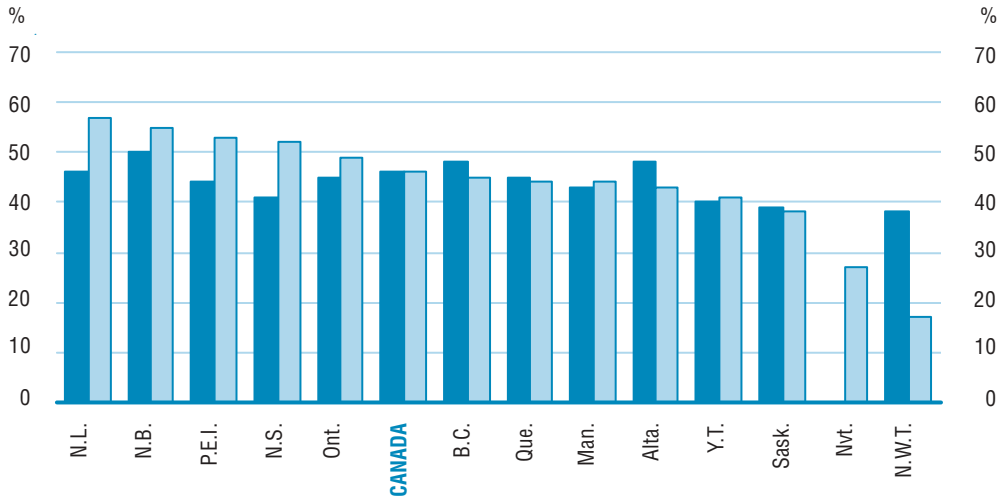


Figure D1.5

Percentage of males among full-time college enrolment, Canada and jurisdictions, 1989-1990 and 1999-2000

Note: Jurisdictions ranked by percentage of males in 1999-2000.

Source:

Table D1.9.

University enrolment

Between 1988-1989 and 1998-1999, full-time enrolment at Canadian universities increased, while part-time enrolment dropped.

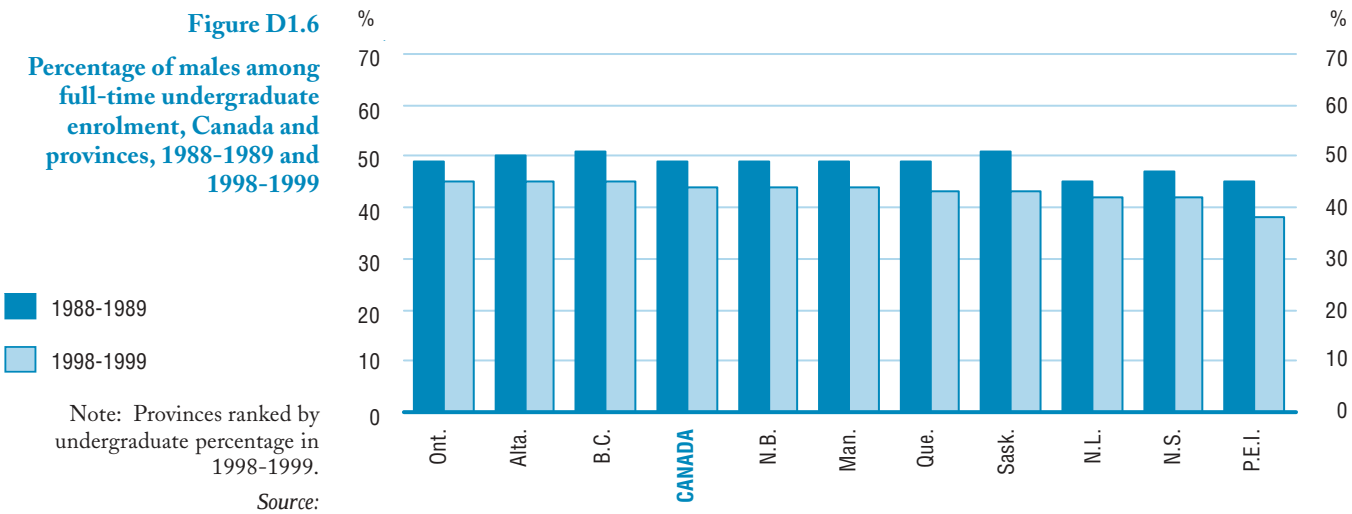
Between 1988-1989 and 1998-1999, full-time enrolment at Canadian universities increased by 16%, from 499,500 students to 580,400. Growth was stronger between 1988-1989 and 1992-1993 than in the latter part of the decade. Part-time enrolment has been falling since 1992-1993, with an overall decrease over the decade between 1988-1989 and 1998-1999. These enrolment trends are reflected in all provinces except Alberta and British Columbia, where the part-time enrolment has increased along with full-time enrolment (Table D1.10). British Columbia reported the strongest growth in full-time enrolment.

Women are now in the majority in full-time undergraduate studies.

Women have traditionally had higher participation rates than men in part-time undergraduate studies, but are now also in the majority in full-time undergraduate studies. In graduate studies, female enrolment almost equals that of males. Men's share of undergraduate enrolment decreased from 49% to 44% over the 1990s. While still in the majority for graduate enrolment, men's share dropped from 59% to 52% over the same period. Decreases in the percentage of males at the undergraduate and graduate levels are found in all provinces; the only exception is a very small increase at the graduate level in Prince Edward Island (Figure D1.6 and Table D1.11). (For information on the distribution of male and female students by field of study, see Indicator D5.)

Figure D1.6

Percentage of males among full-time undergraduate enrolment, Canada and provinces, 1988-1989 and 1998-1999



Note: Provinces ranked by undergraduate percentage in 1998-1999.

Source:

Table D1.11.

Adult education and training

Context

This indicator examines patterns in adult education and training, including participation trends and information on who provides training.

D2

Adult education and skills are important in a pan-Canadian education context for several reasons. First, as Canada shifts increasingly from a resource-based to a knowledge-based economy, the workplace skills required are evolving rapidly. Population aging means that fewer young people are entering the work force; this increases the pressure on adult learning to meet the changing needs of the labour market. As the skills required by the workplace increase, less-skilled workers may be left on the sidelines, and become economically vulnerable. Adult education and training can help these workers to update their skills. In addition, the impacts of adult education and training reach far beyond the economic sphere, to improved job satisfaction, better income equality, and improved health outcomes. Second, despite Canada's high postsecondary participation rates, studies such as the International Adult Literacy Survey show that many adult Canadians have low literacy levels. Continuing education is the main avenue for increasing adult literacy.

Findings

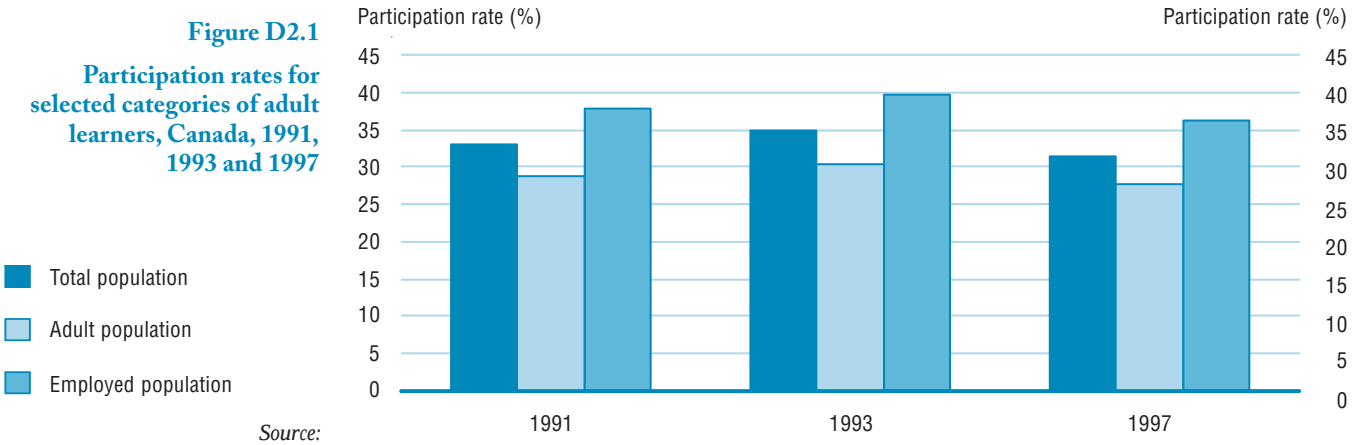
Incidence and trends of adult education and training

Close to 28% of adult Canadians participated in adult education and training in 1997[1], the most recent year for which results are available from the Adult Education and Training Survey (AETS) (Figure D2.1 and Table D2.1). Three quarters of participants took a course or program for job-related reasons.

1. Results from the next AETS will be available in 2004.

Figure D2.1

Participation rates for selected categories of adult learners, Canada, 1991, 1993 and 1997



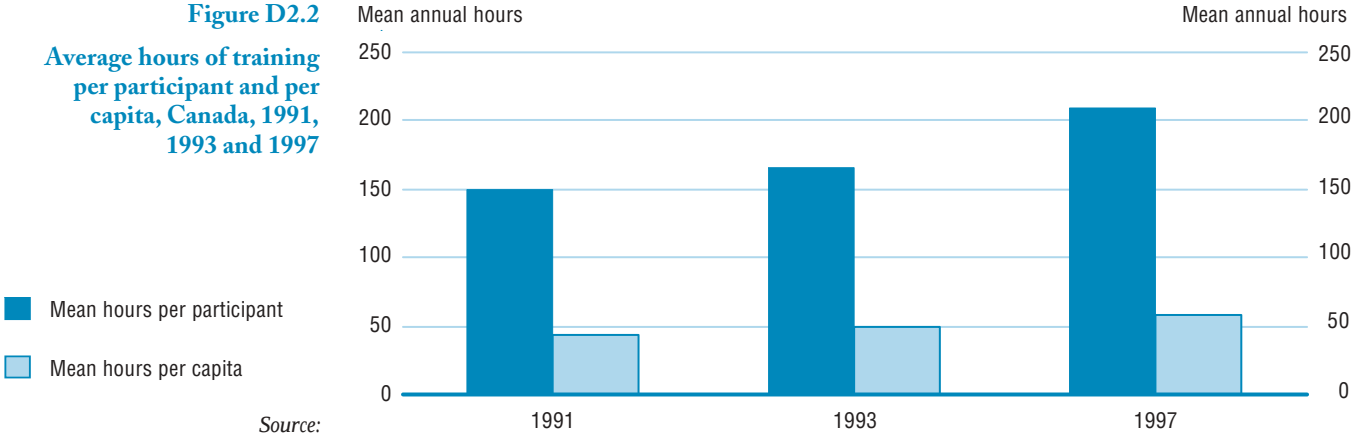
Source:
Table D2.1.

Although overall participation rates declined slightly during the 1990s, the number of hours spent on adult education and training increased.

The rate of participation in adult education activities did not increase in the 1990s. In fact, a slight decline was recorded between 1993 and 1997, a surprising result given growing policy attention to lifelong learning and the move to a knowledge economy with a greater need for new or updated education and skills. Despite the decline in the participation rate, hours spent on adult education and training increased steadily in the 1990s—an important consideration since studies have shown that course duration has a major bearing on impact. Average annual hours of continuing education per participant increased from 149 hours in 1991 to 209 hours in 1997 (Figure D2.2 and Table D2.2). Indeed, despite the dip in participation rates, average annual hours of training per capita increased over the 1990s.

Figure D2.2

Average hours of training per participant and per capita, Canada, 1991, 1993 and 1997

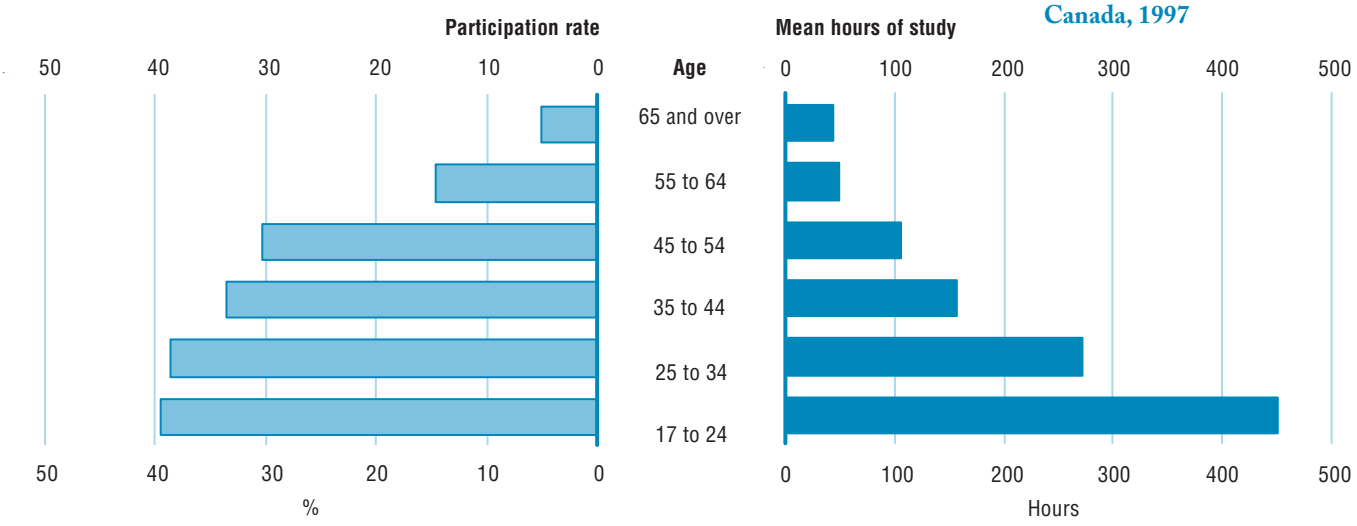


Source:
Table D2.2.

There were large differences in adult training participation rates across the country in 1997: from 19% in Newfoundland and Labrador to 32% in British Columbia. All provinces except Newfoundland and Labrador, Prince Edward Island, New Brunswick, and Quebec had participation rates at or above the pan-Canadian average. But once again, participation rates do not reflect training intensity. Newfoundland and Labrador and Quebec, two provinces with relatively low participation rates, recorded the highest annual average hours of training per participant (307 hours per participant in Newfoundland and Labrador and 234 in Quebec, compared with the pan-Canadian average of 209).

Figure D2.3

Incidence and intensity of training by age group, Canada, 1997



Source:
Table D2.3.

In 1997, the overall participation rate by gender was similar: 27% for men and 29% for women (Statistics Canada 2001). By age, the participation rate declined slowly from early adulthood up to age 55, then fell off sharply. The average annual hours of training per capita declined even more precipitously by age.

Level of education is a strong predictor of participation in education and training. The odds of participating in a learning activity for those with a university degree were 7.5 times higher than the odds for a Canadian without a high school diploma. But this is partly a reflection of different patterns by age and labour market circumstances. When these factors are controlled for, the odds ratio drops to 5.1—still an important difference (Statistics Canada 2001).

People who are employed are more likely to participate in education or training activities than those who are unemployed.

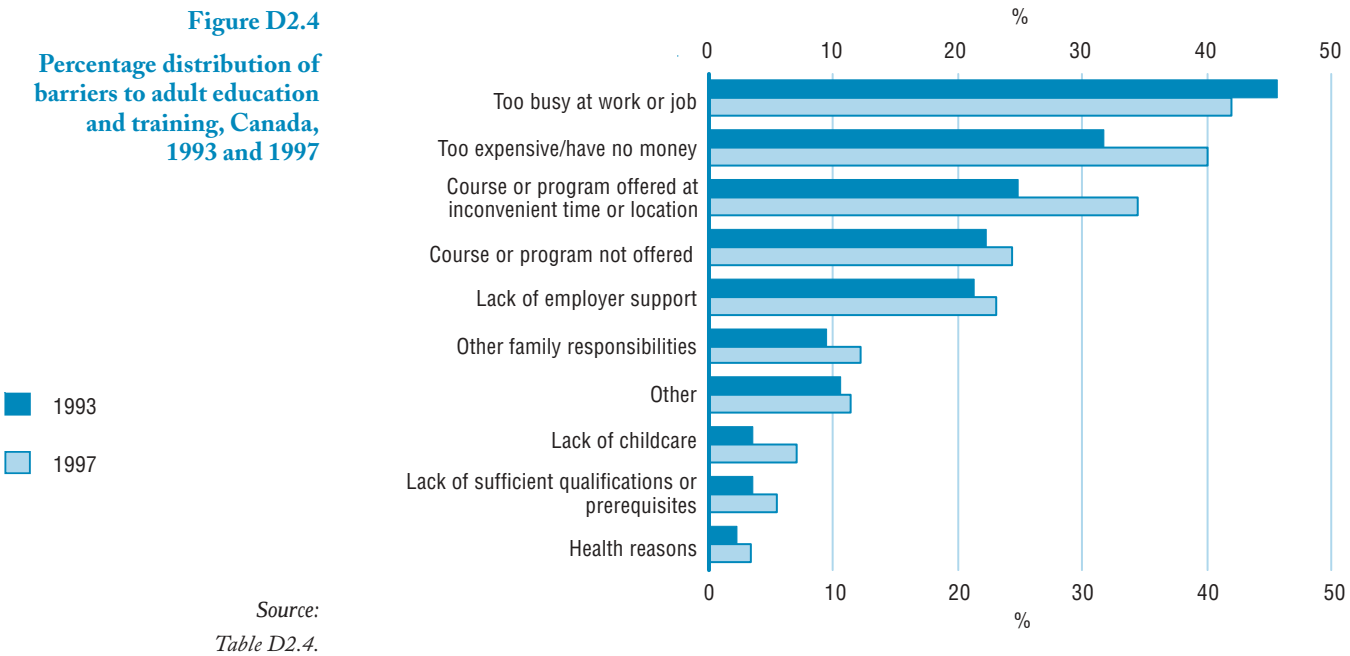
While 29% of the employed participated in an adult education or training activity in 1997, only 20% of the unemployed did so. The self-employed—a group that grew significantly in the 1990s—are under-represented in adult education and training.

Not everyone who wants or needs job-related training has access to it. In 1997, 1.5 million people (or 7% of Canadians aged 17 and over excluding full-time students) reported that they did not take some needed job-related training (Sussman 2002). While some of these people may have simply decided not to participate in training that was available, the high number of respondents suggests that access issues may play a role.

About 11% of all 35- to 44-year-olds felt they had unmet job-related training needs, higher than the proportion reported for other age groups. Similarly, the rate was above average for people with preschool children. Although university graduates tend to receive more training than people with lower levels of schooling, they also reported above-average unmet job-related training needs—11% compared with 9% for those with some postsecondary and 5% for high school graduates with no postsecondary education. Being too busy at work and expense were cited most frequently as reasons for not taking needed job-related training (Figure D2.4).

Figure D2.4

Percentage distribution of barriers to adult education and training, Canada, 1993 and 1997



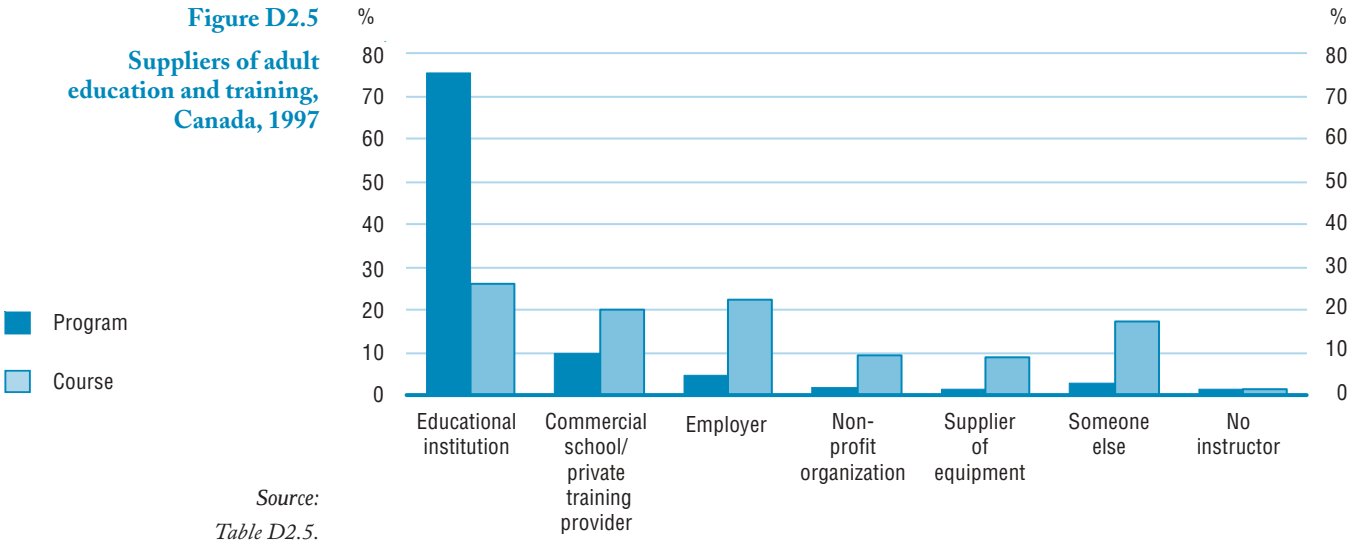
Source:
Table D2.4.

Who provides and who pays for training

An important distinction must be drawn between courses and programs when the providers of adult education and training are considered. (Programs are made up of several courses.) Public education institutions offered three-quarters of all programs in 1997 (Figure D2.5 and Table D2.5). Employers play a relatively larger role in the provision of courses—one in every five courses taken in 1997. If the focus is narrowed to job-related courses, their share rises to one in three. Apart from who provides the training, there is the important issue of who pays. Employers paid for fees and tuition for 59% of employees registered in a program and for 87% of those who took a course. They also paid for materials and provided paid time off and premises to a large proportion of trainees (Figure D2.6).

Figure D2.5

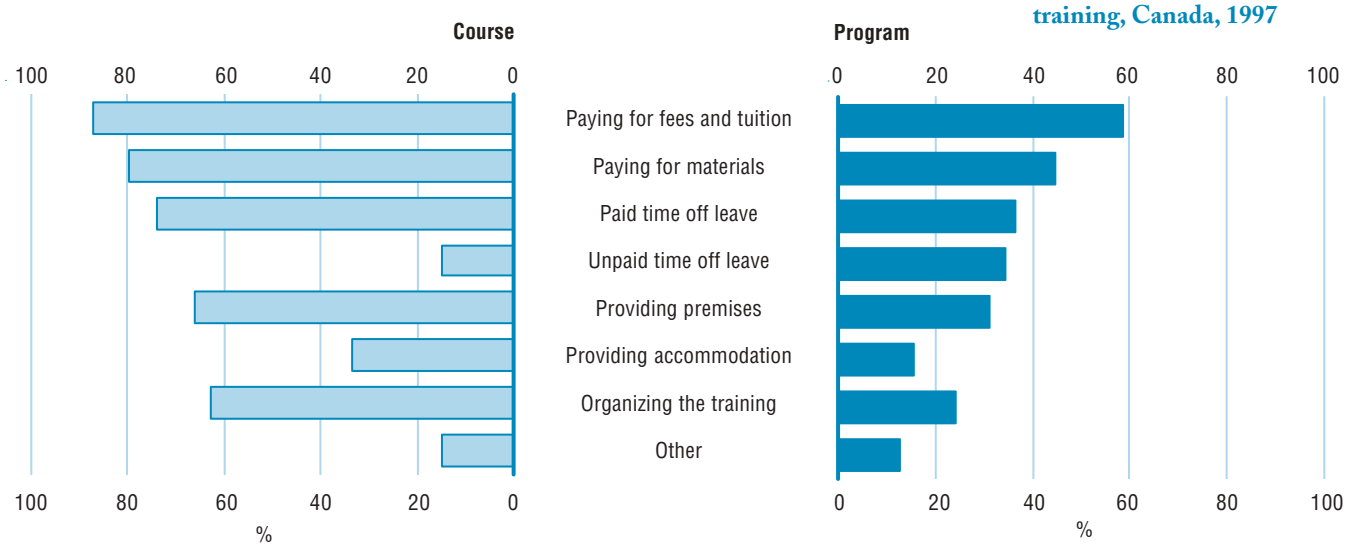
Suppliers of adult education and training, Canada, 1997



Source:
Table D2.5.

Figure D2.6

Nature of employer support for adult education and training, Canada, 1997



Source:
Table D2.6.

Employees are most likely to receive employer-sponsored training if they work for a medium or large firm in a white-collar occupation.

Some employers sponsor more education and training than others, and some employee groups receive more formal training than others. There are quite marked differences throughout the working population in who receives formal employer-sponsored training (Statistics Canada, 2001). For example, the odds of receiving employer-sponsored training among workers in medium and large firms in 1997 were twice the odds for workers in small firms (informal training, which was not measured, may be more common in small business settings). Also, employers' willingness to pay for training varies by industry. The odds of workers in utilities, public administration and finance receiving employer-sponsored training in 1997 were three to four times those of workers in construction. Employees in the public sector in general were more likely than those in the private sector to have their education supported by their employer (35% compared with 20%).

Similarly, employers are more inclined to sponsor white-collar workers. In 1997, the odds of professionals and managers participating in employer-sponsored education or training were 2.6 times the odds for blue-collar workers.

References

Statistics Canada, *A Report on Adult Education and Training in Canada: Learning a Living*, Cat. No. 81-586-XPE, 2001.

Sussman, Deborah, *Barriers to job-related training*, Perspectives on Labour and Income, March 2002, p. 25-32.

Human resources

Context

This indicator presents information on the number of college and university educators, and provides breakdowns by age and sex.

Postsecondary educators represent an important group within Canadian society. Significant changes in the demographic characteristics of this workforce can have profound implications for policy. Canada is now in the midst of such a change, with a large number of educators approaching retirement age. (These issues are examined for elementary-secondary educators in Indicator C3.)

The issue of ageing staff is a central concern facing the management of universities and community colleges. The group of educators who are now preparing for retirement were hired in the 1970s, at a time of significant growth in the postsecondary system. As the youth population declined in the 1980s, slowing enrolment growth meant fewer educators were hired during this period. Looking ahead, large numbers of teachers hired during the 1970s enrolment boom are in a position to retire over the next decade, and the population of 19- to 24-year-olds is projected to increase (see Indicator A1).

D3

Another important issue in postsecondary institutions is the male–female ratio among faculty. Male educators have traditionally been in the majority in universities and colleges. In response to the *Employment Equity Act* of 1985, which regulated hiring practices among federal contractors (including postsecondary institutions), universities and colleges put in place a variety of formal procedures to ensure equitable hiring practices. This indicator examines the balance between males and females, both in terms of age groups and, at the university level, academic rank.

Findings

Number of college and university educators

The number of full-time college educators increased by half over the 1990s, while the number of full-time university educators declined somewhat.

The number of full-time college educators increased by 50% between 1989-1990 and 1999-2000, from 18,500 to 27,800. The increase in the number of female educators was particularly significant. During this period, full-time college enrolment increased by 29%. For jurisdictions for which data are available for both time periods, the situation varied greatly, with increases in Newfoundland and Labrador, New Brunswick, Manitoba, Saskatchewan, and Northwest Territories, and decreases in Prince Edward Island, Nova Scotia, Ontario, and British Columbia. The number of educators remained about the same in Alberta (Table D3.1). Full-time enrolment increased in all jurisdictions, over the same time period, except Saskatchewan and Northwest Territories (see Indicator D1).

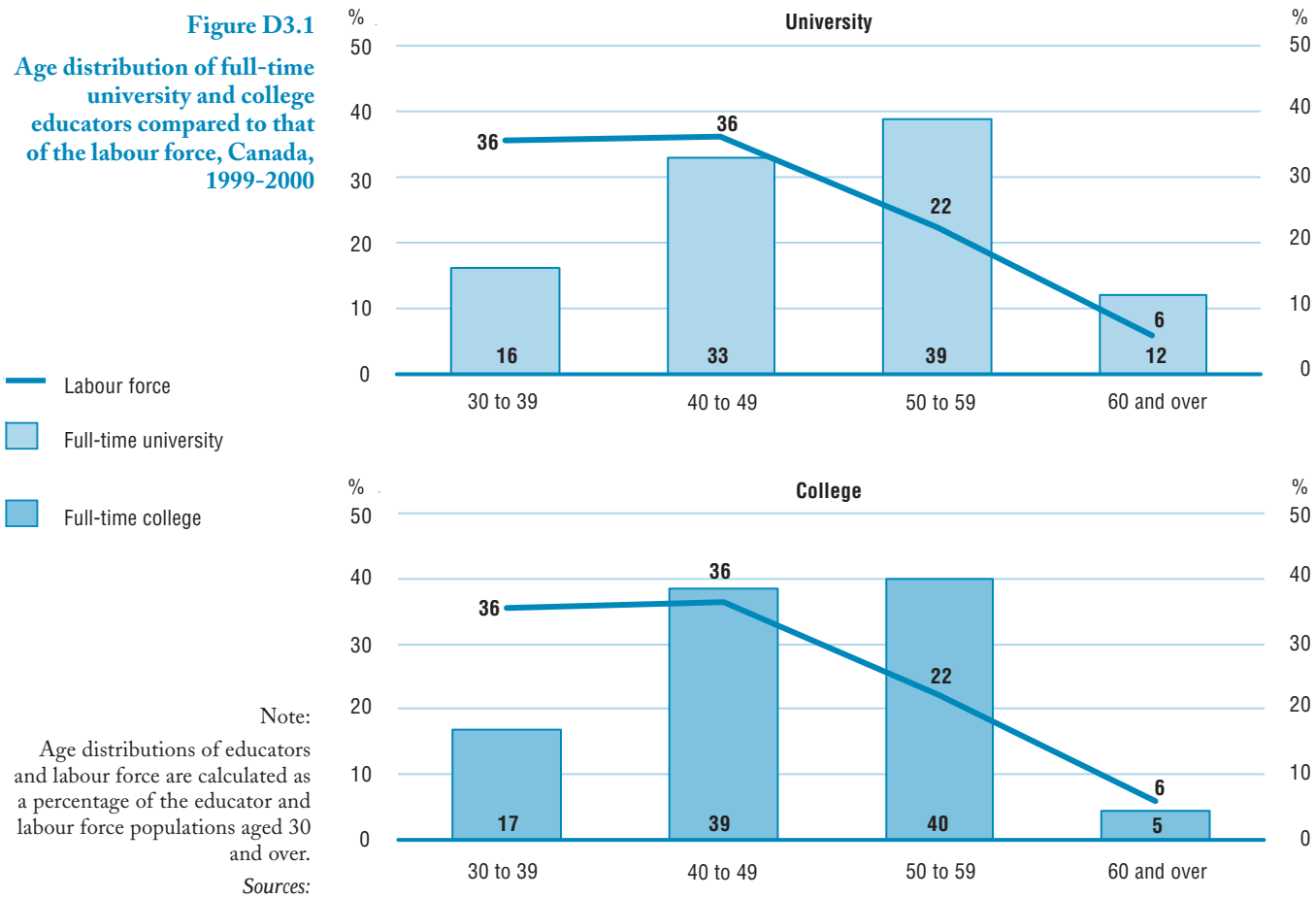
The number of full-time university educators in 1999-2000 was down slightly from ten years earlier, while full-time enrolment increased by 16%. Prince Edward Island and British Columbia were the only provinces that saw an increase in the number of full-time university educators. All other provinces experienced a decrease, though in several provinces it was slight (Table D3.2). Full-time enrolment increased in all jurisdictions during the 1990s (see Indicator D1).

Age of college and university educators

Postsecondary educators as a group are significantly older than the overall work force.

Figure D3.1 shows that in 1999-2000, 39% of university faculty were aged 50 to 59, compared to 22% of the overall labour force. Similarly, 12% of university educators were 60 years of age or older, double the percentage in the overall labour force. Only 16% of university educators were aged 30 to 39, compared to 36% of the labour force. The age distribution of full-time college educators was similar to that of university educators, with a large percentage aged 50 to 59, and a small cohort aged 30 to 39. One difference is that only 5% of college educators work into their 60s—virtually the same percentage as for the overall labour force.

Figure D3.1
Age distribution of full-time university and college educators compared to that of the labour force, Canada, 1999-2000



Note:
Age distributions of educators and labour force are calculated as a percentage of the educator and labour force populations aged 30 and over.

Sources:
Labour Force Survey, Statistics Canada; Tables D3.3 and D3.4.

In Canada, the median age of full-time university and college educators in 1999-2000 was 50 and 45 respectively. Among university faculty, the percentage over the age of 50 ranged from a low of 34% in Prince Edward Island to a high of 56% in Newfoundland and Labrador. The age distribution of college educators was more variable across jurisdictions, with the percentage aged 50 and over ranging from 25% in Newfoundland and Labrador to 53% in Ontario and British Columbia (Tables D3.3 and D3.4).

Gender distribution

Women accounted for 40% of full-time college faculty in 1999-2000, up from 35% ten years earlier (Table D3.1). The percentage of female educators varied a good deal across jurisdictions, from approximately one-third in Prince Edward Island, Nova Scotia, and Alberta to two-thirds in Nunavut, with women making up the majority of college educators in all three territories (Figure D3.2).

The majority of postsecondary educators are men, although the percentage of female educators rose during the 1990s.

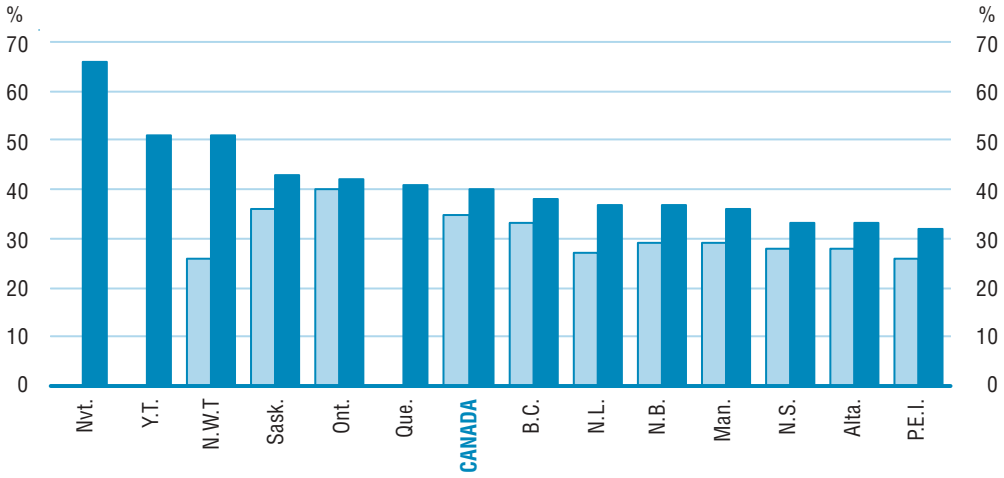


Figure D3.2

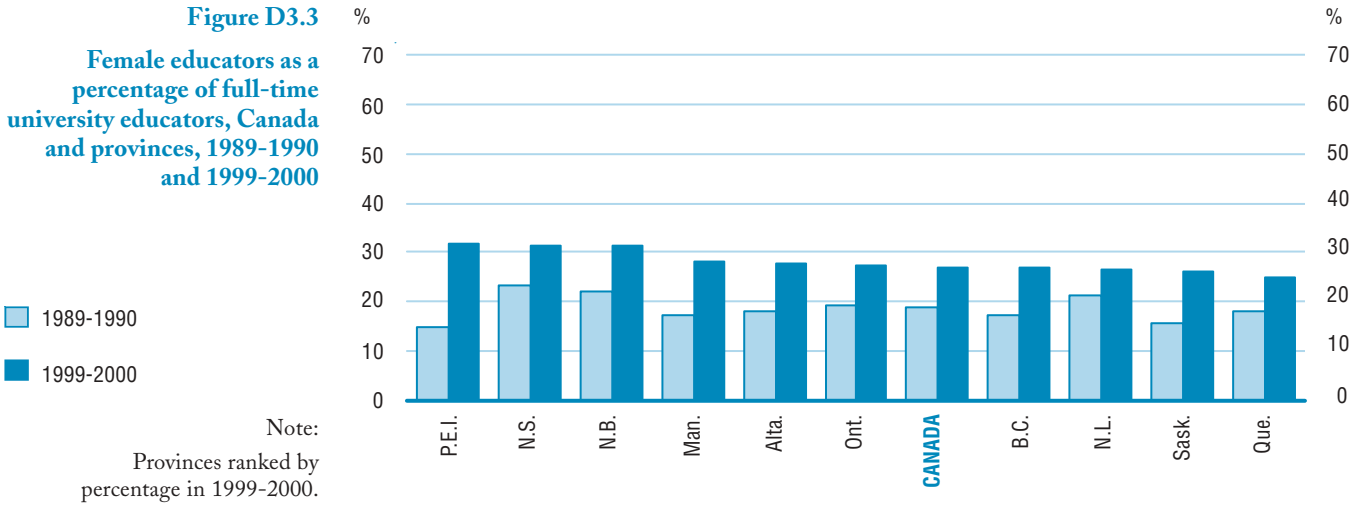
Female educators as a percentage of full-time college educators, Canada and jurisdictions, 1989-1990 and 1999-2000

Note:
Jurisdictions ranked by percentage in 1999-2000.

Source:
Table D3.1.

Figure D3.3

Female educators as a percentage of full-time university educators, Canada and provinces, 1989-1990 and 1999-2000



Note:
Provinces ranked by percentage in 1999-2000.

Source:
Table D3.2.

Women accounted for 27% of full-time university educators by 1999-2000, up from 19% ten years earlier (Figure D3.3 and Table D3.2). There are fewer women at higher ranks, with women accounting for 14% of full professors, 30% of associate professors, and 44% of other ranks. Nevertheless, the percentage of women among full professors doubled in the 10-year period. The potential exists for significant changes in the years ahead, as current senior faculty retire, since women now account for increased percentages of the feeder groups for the senior positions. The percentage of women among full professors across the provinces in 1999-2000 ranged from 10% in Newfoundland and Labrador to 19% in New Brunswick. In all jurisdictions the proportion of female faculty increased, with the largest increases of 17 percentage points in Prince Edward Island and 11 percentage points in Manitoba.

Research and development

Context

This indicator presents contextual, financial, and output information for university research and development. Similar data are not currently available for the college or trade-vocational sectors.

D4

Around the world, there is growing recognition that research and development (R&D) and the innovations that they bring about are critical to continued improvements in our quality of life. The federal government and provincial/territorial governments have agreed to work together to move Canada into the top five OECD countries in terms of research[1] by 2010.

R&D in Canada is carried out in a number of sectors: business, federal and provincial governments, postsecondary education, and the private non-profit sector. Within this broader context, universities are important centres of R&D because systematic, scientifically-based investigation is a core function of faculty research and an integral part of training students. This work can then be built on to develop market-ready products and processes. At the pan-Canadian level, the university sector is the second largest contributor of R&D after business. In most provinces, universities represent the primary source of such efforts.

Specific issues facing each province in relation to university R&D vary, but common threads include: finding mechanisms to fund both the direct and indirect costs of research; supporting the supply and retention of highly qualified researchers; transferring new ideas and knowledge from the university sector into the public and commercial domains; and supporting the research capacity of smaller universities.

Increasingly, policy makers, academic institutions, and the public are interested in the outputs of university R&D activities and their economic and social impacts. Because methods for accurately conceptualizing and capturing the impact of R&D are still being developed, the output section of this indicator is limited to describing some of the outputs of university R&D, namely intellectual property that can be further developed into products and processes with public and commercial applicability.[2]

1. *Research, science and technology ministers agree on principles of action to speed up the transition to an innovation and knowledge-based economy*. Industry Canada news release. http://www.ic.gc.ca.
2. The outputs of university R&D also consist of scientific and technical knowledge, which is disseminated freely, mostly in the form of publications in the academic literature. As Statistics Canada does not collect data on these types of outputs, they are not reported here.

Findings

R&D as a sector, and within universities

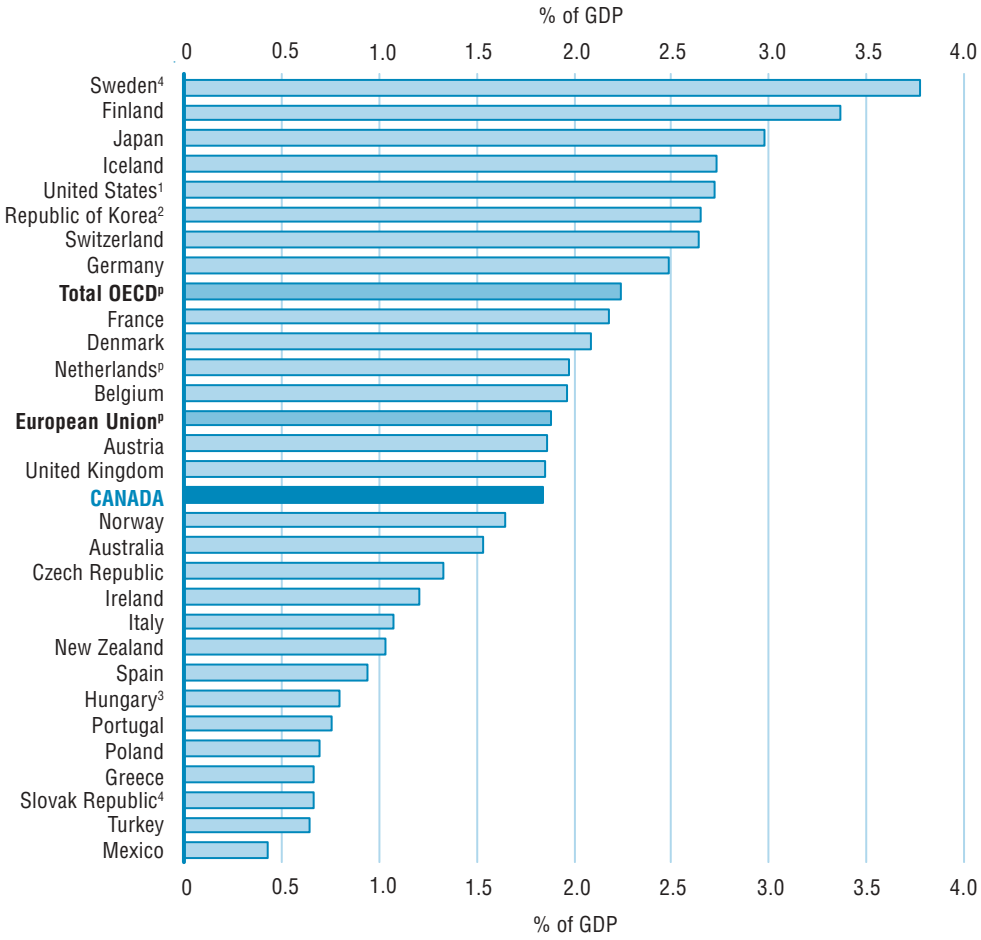
In 2000, Canada placed 15th among OECD countries in terms of its investment in overall R&D activity. It has set a goal of placing among the top five by 2010.

In 2000, Canada spent 1.8% of GDP on R&D, compared with an OECD average of 2.2% (Table D4.1). Canada placed 15th among all OECD countries in terms of expenditures on R&D as a percentage of GDP (Figure D4.1 and Table D4.1). During the 1990s, although Canada was the only G-7 country to achieve an increase in its ratio of R&D expenditures to GDP, it continued to rank behind all G-7 countries other than Italy, as well as leading OECD countries such as Sweden, Finland and the Republic of Korea—competitor countries that in the recent decade or so have turned their focus on R&D as a key driver of economic growth (Table D4.2).

The ratio of R&D expenditures to GDP was higher in Quebec (2.3%) and Ontario (2.1%) than in the other jurisdictions. Quebec's ratio was above the OECD mean (2.2%) as well. Most other jurisdictions in Canada devoted about 1% of their GDP to R&D activities. Nova Scotia spent 1.5% of GDP on R&D (Figure D4.2 and Table D4.2). The proportion of GDP devoted to R&D was higher in 2000 than it was at the beginning of the 1990s in almost all of the jurisdictions, with the exception of Manitoba where it remained the same, and Newfoundland and Labrador, New Brunswick, and Alberta where it dipped slightly (Table D4.2).

Figure D4.1

Total domestic expenditures on R&D as percentage of GDP, Canada in relation to all OECD countries, 2000 (or latest available year)



1. Excludes most or all capital expenditures.
2. Excludes R&D in the social sciences and humanities.
3. Defence excluded (all or mostly).
4. Underestimated.

Source:
Table D4.1.

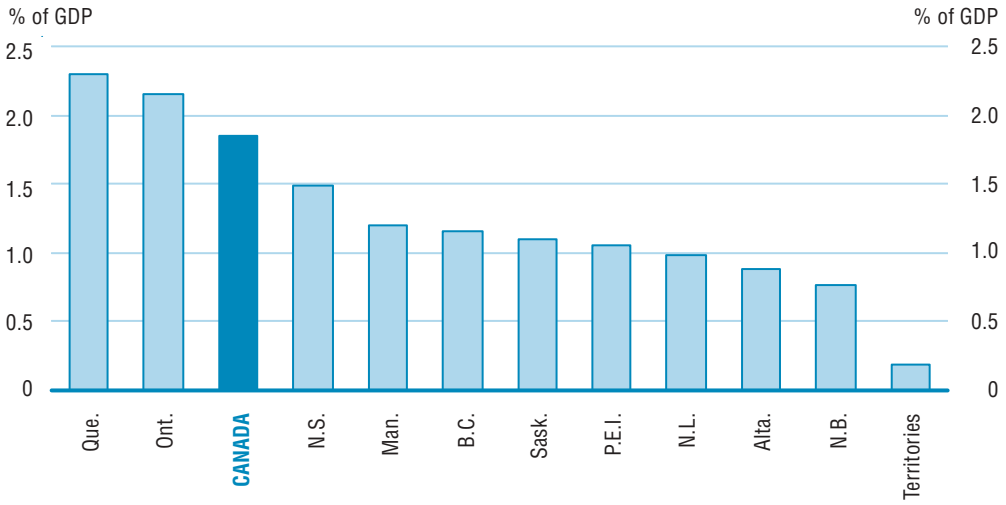


Figure D4.2

Total domestic expenditures on R&D as a percentage of GDP (national or jurisdictional), Canada and jurisdictions, 2000

Notes:

Quebec and Ontario figures exclude federal government expenditures allocated in the National Capital Region.

Data are not available by individual territory.

Source:

Table D4.2.

The university sector is the second largest contributor to R&D at the Canada level, but is the primary contributor in most provinces.

The university sector is the single largest contributor to R&D in all but four provinces. In Quebec, Ontario, and British Columbia, the business sector registers as the major R&D contributor, and in Prince Edward Island, the federal government accounts for a slightly larger percentage of R&D than the university sector. In Newfoundland and Labrador, Nova Scotia, New Brunswick, and Saskatchewan, universities accounted for over 50% of the R&D undertaken in 2000. In Prince Edward Island, Manitoba, and Alberta, the university sector was responsible for between 40% and 50%. Despite the dominance of the business sector in Quebec, Ontario, and British Columbia, universities in these provinces, as in all provinces, still contributed a larger share of R&D than did the university sector in the other G-7 countries except Italy and the leading OECD countries (Table D4.3).

Within a province's overall R&D activities, the role played by universities depends on many factors. Chief among these are the province's involvement in R&D in general; the importance of other R&D sectors such as industry (which in turn is often tied to the structure of the economy); the distribution of R&D among basic research, applied research and development; and levels of academic research funding.

R&D contributed by universities

Since 1991, the amount of R&D contributed by universities in Canada, as measured by the expenditures that universities make on R&D, has increased, with most of this growth occurring during the latter half of the decade.

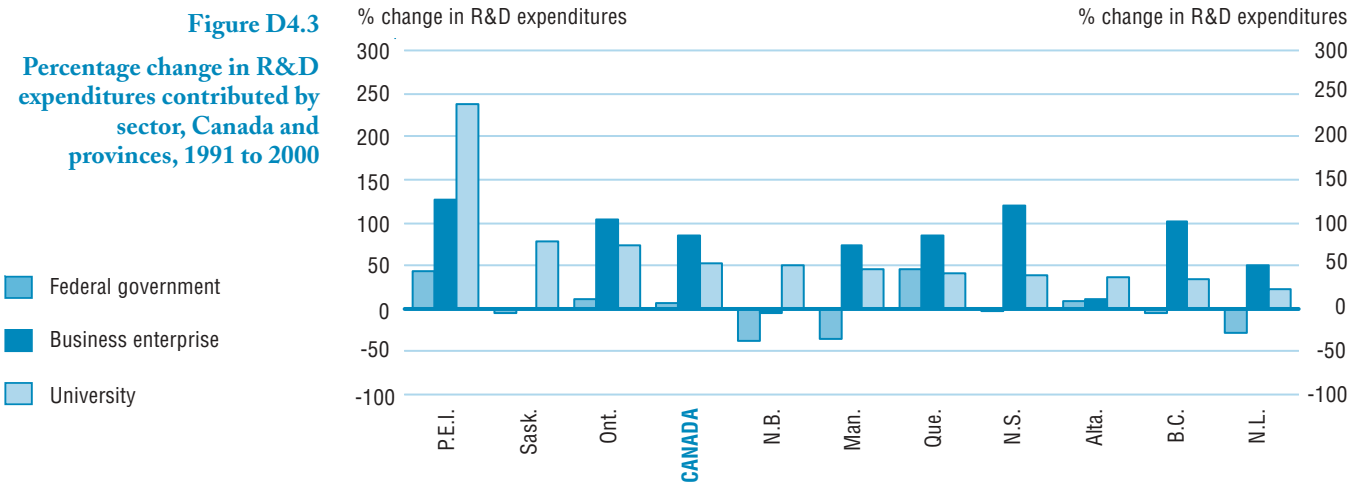
In 1991, universities across Canada contributed $3.8 billion (in 2001 constant dollars) worth of R&D. By 2000, R&D in the university sector had risen 53% to $5.8 billion, with most of this growth occurring in the latter half of the 1990s[3]. R&D in the university sector grew at a lower rate than in the business sector (86%), but faster than the R&D contributed by the federal government (7%) (Figure D4.3 and Table D4.4).

All provinces registered increases in the amount of R&D contributed by universities over the 1990s, with Prince Edward Island, Ontario, and Saskatchewan growing substantially faster than the pan-Canadian average. Between 1991 and 2000, four provinces registered faster growth in the university sector than in either the business sector or the federal government: Prince Edward Island, New Brunswick (where expenditures by both the federal government and business sector decreased), Saskatchewan, and Alberta (Figure D4.3 and Table D4.4).

3. Statistics Canada. 2003. *Estimates of Canadian research and development expenditures (GERD), Canada, 1991 to 2002 and by province 1991 to 2000.* Catalogue No. 88F0006XIE2002015.

Figure D4.3

Percentage change in R&D expenditures contributed by sector, Canada and provinces, 1991 to 2000



Notes: Quebec and Ontario figures exclude federal government expenditures allocated in the National Capital Region.

Expenditures contributed by the provincial governments and private non-profit sector are not shown here because of the relatively smaller role that they play in conducting R&D in Canada.

Provinces are ranked by percentage change in university expenditure.

Source:

Table D4.4.

While Canada invests a smaller proportion of its resources in total R&D activity than almost all of the other G-7 countries (Table D4.2), its ratio of university expenditures on R&D to GDP is slightly higher than that of other G-7 countries. Some of the leading OECD countries, in terms of their investment in R&D, such as Sweden and Finland, invest a higher proportion of their resources in university R&D than does Canada (Table D4.5).

Sources of funds for university R&D

Universities are the largest financial supporters of their own research, accounting for 50% of funding from all sources in 2000, followed by the federal government, through sponsorship of university R&D, which accounted for 22% (Table D4.6). Funds from the universities mainly cover the indirect costs of R&D and faculty salaries that are not covered by external funding awards.

The two revenue streams behind university financing of their own research activities include general university funds—essentially block grants that are used to support R&D activity—and universities' own revenue sources—revenue generated by the university from the sale of goods and services other than direct sponsorship of R&D (see Appendix 2 for further explanation of these categories of funding as well as the glossary entry for sources of funds for university R&D).

Universities' own revenue sources were one of the fastest growing funding sources of university R&D activities over the 1990s; by 2000 those sources accounted for 22% of total funding.

When only funding sources external to the university are considered (business, governments, private non-profits and foreign sources), the federal government through sponsorship of R&D projects is the largest contributor accounting for $1.3 billion of funding in 2000. The amount of funding provided by the federal government increased by 38% between 1991 and 2000 (Figure D4.4 and Table D4.6). Beginning in 1997, university R&D began to benefit from reinvestment by the federal government through both granting councils and the introduction of new initiatives such as the Canada Foundation for Innovation (CFI).

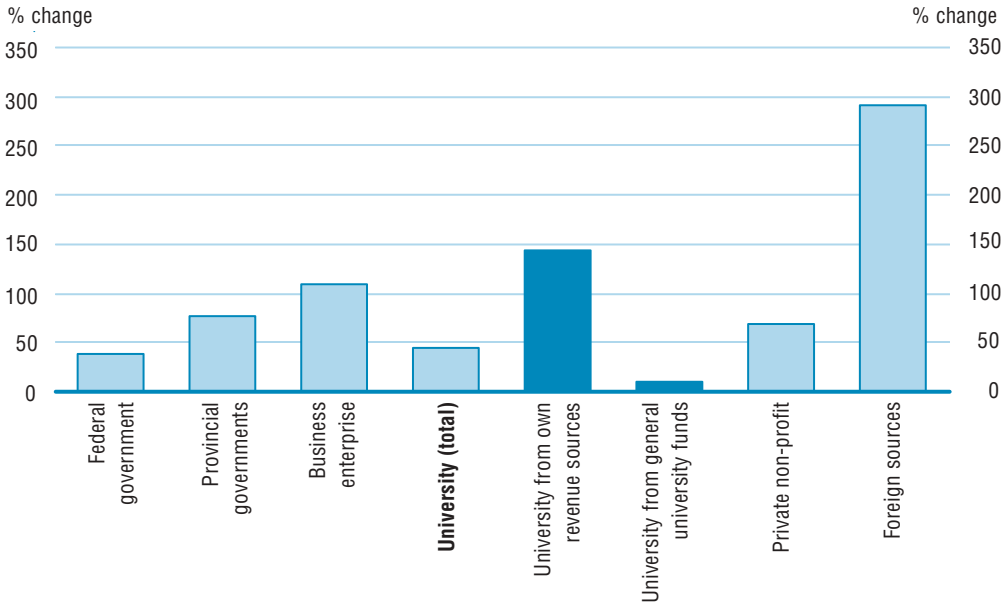


Figure D4.4

Percentage change in university R&D funding by source, Canada, 1991 to 2000

Source:
Table D4.6.

Among external sources, the largest increases in funding came from the foreign sector, although it increased over a relatively small base, and the business sector (Figure D4.4). Funding from the business sector slightly more than doubled, a growth rate just a little slower than the funding from universities' own revenue sources.

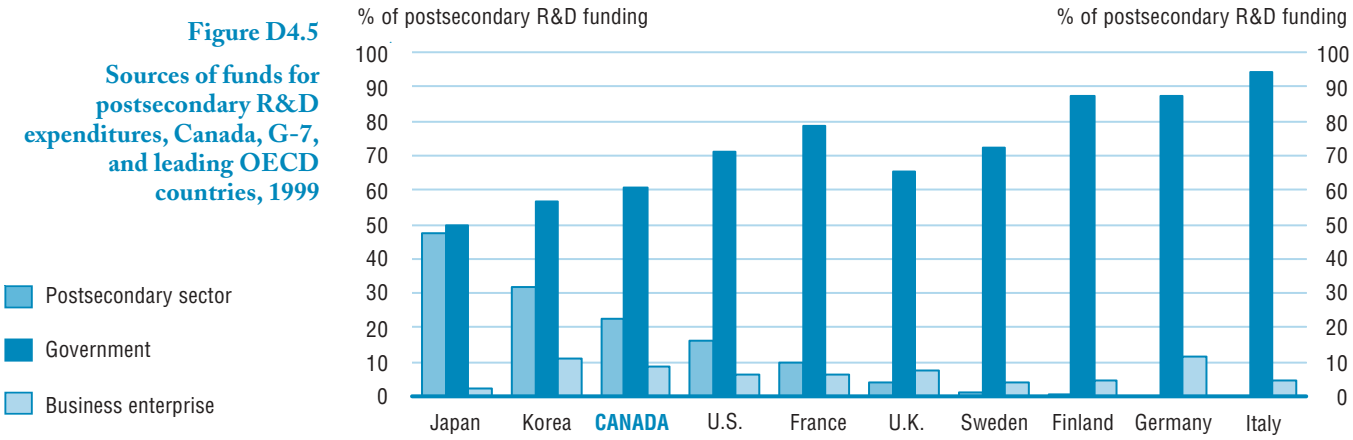
On a pan-Canadian level, funding trends differ by province (Table D4.6). Over the 1990s, universities in most provinces were successful in attracting higher amounts of federally sponsored research funding. In Nova Scotia and British Columbia, while the dollar value of federally sponsored research funding declined, total sponsored research still increased, mainly as a result of strong increases in private funding.

Internationally, governments' share of R&D funding for postsecondary education declined between 1991 and 1999.

Among the industrialized countries, governments contribute the largest share of R&D funding for universities. However, that share dropped by over 10 percentage points between 1991 and 1999 in Canada, France, the United States, and Sweden. It also declined by over 5 percentage points in Germany and the United Kingdom. In comparison to other G-7 countries, governments in Canada play a relatively smaller role in financing university R&D and universities in Canada rely more on their own revenue sources than do American universities (Figure D4.5 and Table D4.7).

Figure D4.5

Sources of funds for postsecondary R&D expenditures, Canada, G-7, and leading OECD countries, 1999



Notes: The government category includes direct government funding and general university funds.

Funding from the private non-profit sector and foreign sources are not shown here because of the small role that they generally play in financing R&D in the postsecondary sector (although these sectors play a relatively larger role in the UK and Sweden).

For Italy and Germany, funds from the postsecondary sector are included in other categories.

For Italy and Germany, the government category includes funds from other sources.

Countries are ranked by percentage of funds coming from the postsecondary education sector.

Source:
Table D4.7.

R&D contributed by universities by field of study

In Canada, the largest proportion of university R&D occurs in the natural sciences and engineering. However, during the 1990s, health sciences grew at a faster rate.

An indicator of university R&D priorities is the distribution of R&D activity across broad disciplines or fields of study. In 2000, the largest proportion of R&D expenditures on a pan-Canadian basis went to natural sciences and engineering (43%), followed by health science (36%) and then the social sciences and humanities (21%) (Table D4.8). Between 1991 and 2000, R&D expenditures in the health sciences grew faster than the other fields.

Outputs of university R&D

Discoveries, ideas, products, processes, and commercial and social uses are important outputs of the university R&D process.

The sale or licensing of the products of university R&D, such as patents, technology, and equity in spin-off companies, are increasingly important revenue sources to universities (see also Indicator B3, private spending on education). The data presented in this section and in Table D4.9 deal with the flow of inventions from the academic R&D process into the public domain. Data are presented for each step involved in developing an invention for commercial application. The initial step is the recognition of public/commercial potential of an invention and disclosure of this potential to the university, followed by the protection of the invention through patenting. Subsequently, the invention may be brought to market either through the licensing of the invention or the creation of a spin-off company.

The data presented in this section reflect patents, licenses, and spin-off companies held or owned by universities. The data do not reflect the independent holdings of faculty members. Also it is important to note that when universities contribute sponsored research for private sector companies, the outputs of this research are often owned solely by the private company sponsors and are thereby not reflected in the data presented here. For these reasons this indicator does not provide a full reflection of the outcomes of university research.

The Atlantic provinces and the West account for a relatively high percentage of most R&D outputs in relation to their share of the sponsored research funds in Canada. For example, although British Columbia universities received only 9% of the sponsored research funds in Canada, they accounted for 20% of all inventions disclosed in fiscal 1998-1999, 39% of all new inventions protected, 30% of all patents held, and 30% of all spin-off companies (Table D4.9).

There are regional differences in how inventions are brought to market. Quebec universities tend to license their inventions rather than create new companies, as they account for 22% of active licenses executed by universities in Canada but only 9% of all spin-off companies based on university R&D. This pattern also applies to universities in the Prairie provinces. In contrast there seems to be a tendency towards the creation of spin-off companies rather than licensing in British Columbia, Ontario and Atlantic Canada. The apparent preference in British Columbia for the creation of spin-off companies may be due in part to the types of technologies created there.

The licensing of inventions generates revenues for universities. These revenues are normally shared with the creators of the inventions and distributed to academic units. In fiscal year 1998-1999, universities received $19 million in licensing royalties, or the equivalent of 1% of sponsored research funding, money that is being used by universities to support research and teaching.

Universities in Canada have created a cumulative total of 454 spin-off companies (by 1999 only 26 of these had been closed). These companies generate economic benefits to both the universities, through equity holdings, and society as a whole, by creating employment and generating taxable revenues. Note that these 454 spin-off companies reflect only those that have been started in formal arrangements with the university. They do not include other spin-off companies such as those started independently by university faculty or students.

Federal funding for R&D in community colleges and related institutions

R&D is conducted throughout the postsecondary education system, not just in universities. R&D in institutions such as community colleges and technical institutes is a recent, yet growing phenomenon. While several government policies acknowledge the growing importance of community colleges and technical institutes in R&D and the particular challenges they face, comprehensive, pan-Canadian statistics on R&D conducted in these institutions are not available. The following is a brief outline of federal funding programs for R&D in community colleges.

The CFI is a federal granting agency. It invests funds in the form of matching grants, in partnership with the institutions and their funding partners from the public, private, and voluntary sectors. The CFI provides funding for up to 40% of the eligible costs of the projects it supports. Colleges that are recognized as eligible by the CFI can apply (along with universities, hospitals, and not-for profit organizations). While CFI is not the only federal granting agency that invests in R&D at the college level, it is the only one that targets some of its funding towards colleges, and it invests more money annually at the college level than other federal granting bodies. At present, approximately 60 Canadian colleges have been designated as "eligible" according to CFI guidelines. Competitions for this funding are run annually. Only projects with a total cost of $100,000 or more (representing a minimum CFI contribution of $40,000) are considered. In 2001, colleges were granted approximately $7 million in R&D funding through this program.

The Industrial Research Assistance Program of the National Research Council (NRC-IRAP) provides Canadian small and medium sized enterprises with funding for technical and research assistance or access to expertise, resources, and services. In 2002-2003, 10% (or $2.2 million) of the NRC-IRAP contribution to organizations was granted to colleges.

The Social Sciences and Humanities Research Council (SSHRC) allows eligible colleges to apply for funding, however no specific fund is designated for colleges. Eligible colleges are defined as postsecondary institutions with no university affiliation or which do not grant degrees (e.g., university colleges are excluded). The amount of funding that SSHRC provided to colleges in the last three fiscal years was $53,000 in 2000-2001, $85,000 in 2001-2002, and $70,000 in 2002-2003. These amounts represent an average of 0.05% of their total funding over the last 3 fiscal years.

The Natural Sciences and Engineering Research Council (NSERC) also allows colleges to apply for funding, but stipulates that college applicants must be partnered with a university as co-applicants. To date, four colleges have been recognized as eligible to apply for this fund. NSERC does not have a specific fund designated for colleges.

Postsecondary completions and graduation rates

Context

This indicator presents trends in the number of completions and graduation rates for postsecondary institutions and programs.

D5

Trends in postsecondary completions and graduation rates offer insights into the response of the Canadian education systems to changes in the demand for skills in the labour market. This indicator covers a broad spectrum of postsecondary programs, from theoretical and research-based graduate programs at the university level to practical job-related apprenticeship training.

The balance between male and female graduates is one measure of equity, and information is presented here on the relative percentages of male and female graduates for registered apprenticeship and university programs.

Comparisons with other OECD countries provide information on Canada's position in an increasingly global economy.

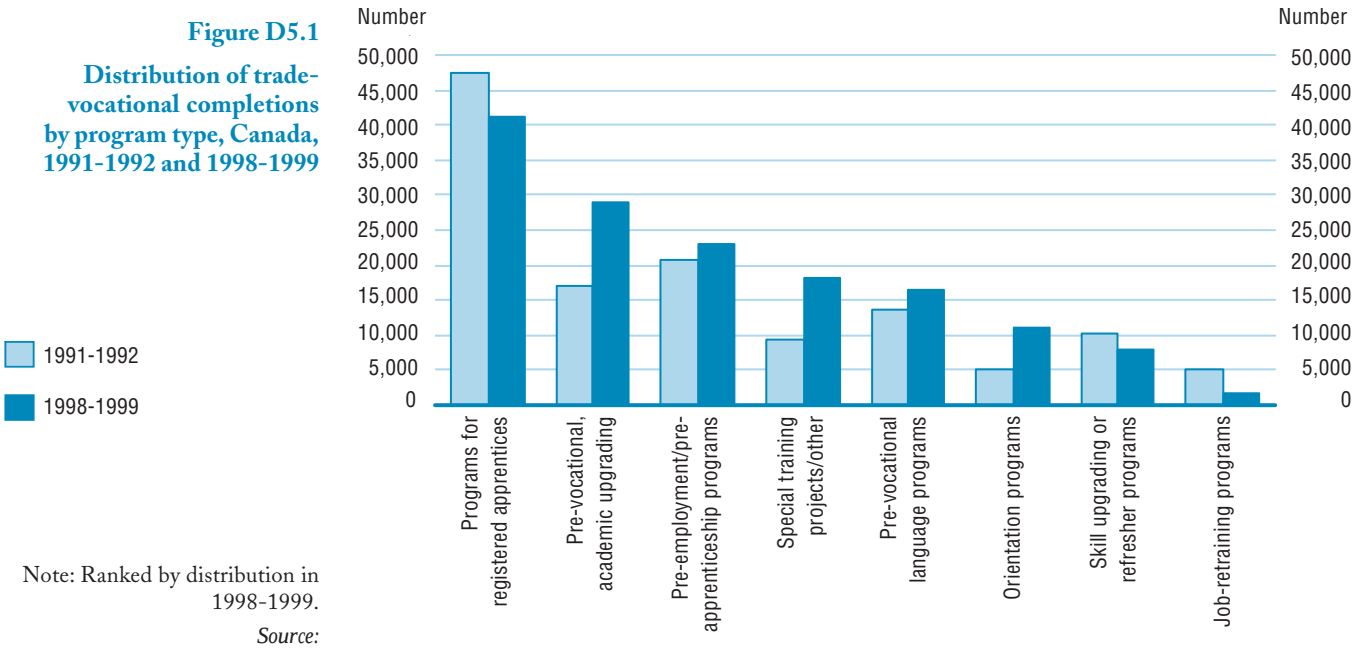
Findings

Trade-vocational and registered apprenticeship training

In 1998-1999, 148,000 people completed trade-vocational programs. Over half of these graduates had taken pre-employment/pre-apprenticeship or registered apprenticeship programs. The next most popular type of program in 1998-1999 was pre-vocational academic upgrading, with 29,000 completions. Another 17,000 completed pre-vocational language training programs (Figure D5.1 and Table D5.1).

Figure D5.1

Distribution of trade-vocational completions by program type, Canada, 1991-1992 and 1998-1999



Note: Ranked by distribution in 1998-1999.

Source:

Table D5.1.

Between 1991-1992 and 1998-1999, the number of trade-vocational completions increased by 15%. The number of pre-employment/pre-apprenticeship graduates rose by 11%, but registered apprenticeships actually fell by 13%.

The pre-vocational academic upgrading programs were the main contributor to overall growth to trade-related training, up from 17,000 in 1991-1992 to 29,000 in 1998-1999—equivalent to 57% of the net increase in trade-vocational completions over this period.

The apprenticeship branches of provincial and territorial governments reported 18,000 individuals completing registered apprenticeship programs in 2000, down 7% from 1991 (Table D5.2). Over the 1990s, the number of individuals completing registered apprenticeship programs declined in all provinces east of Saskatchewan, with the exception of Prince Edward Island (up 30%). On the other hand, increases were recorded throughout the west and in the territories.

With the exception of food services, registered apprenticeship training is overwhelmingly male dominated, though female apprentice completions are slowly rising.

Between 1991 and 2000, the trade group with the largest increase in registered apprenticeship completions was the food and service trades, up 40%. This was also the only trade where the majority of completers were women, at 72% of the total in 2000. Although the other trades are overwhelmingly male dominated, the proportion of women rose in every case. Overall, the proportion of women among registered apprenticeship graduates doubled during the 1990s, rising from 6% to 12% (Table D5.3).

In 2000, motor vehicle and heavy equipment trades were the largest trade group, accounting for 26% of that year's graduates. Close behind were the metal fabricating trades with 23% (Figure D5.2). Over the decade, the number of motor vehicle and heavy equipment apprenticeships remained essentially unchanged, but the metal fabricating trades completions rose 11%. Building construction trades, electrical and electronic trades and industrial and related mechanical trades all experienced declines over the 1990s.

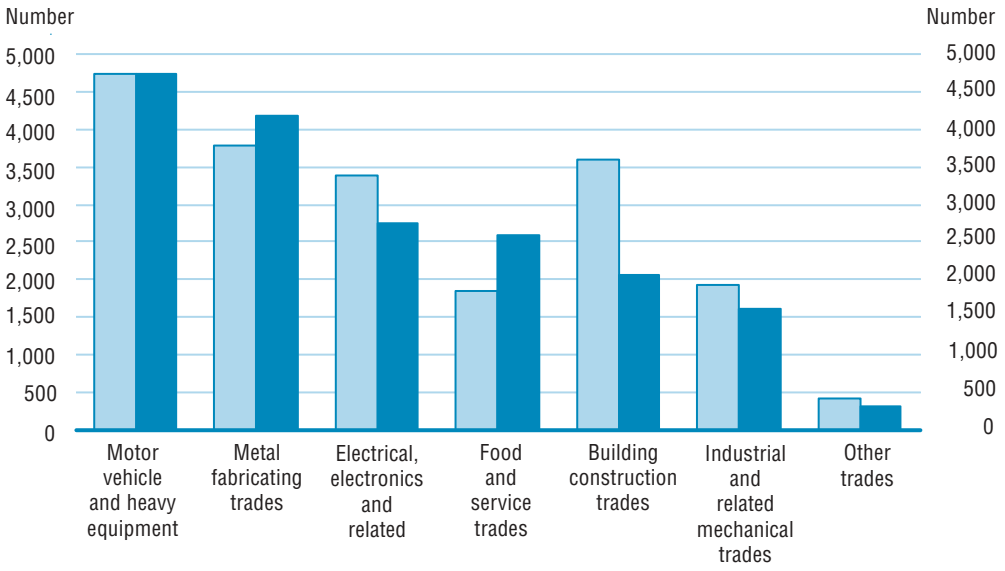


Figure D5.2

Registered apprenticeship completions by trade group, Canada, 1991 and 2000

Note: Trades ranked according to number of completions in 2000.

Source:

Table D5.3.

College diplomas and certificates

Community college graduation rates show the number of graduates (of all ages) as a proportion of the population aged 21, the typical age of graduation. In 1976, college graduation rates across Canada averaged 12%. By 1989, the rate had reached 20%. It continued to climb during the 1990s, to 28% in 1998 (Figure D5.3 and Table D5.4).

The graduation rates presented here should not be confused with a graduation rate showing graduates as a proportion of enrolment. The 28% graduation rate in 1998 means that the number of college graduates that year represented 28% of the population aged 21. Obviously, not all students graduate at the "typical" age and only a portion of the population aged 21 is attending college, but this measure provides an indication of involvement in education. For more information, see Appendix 2.

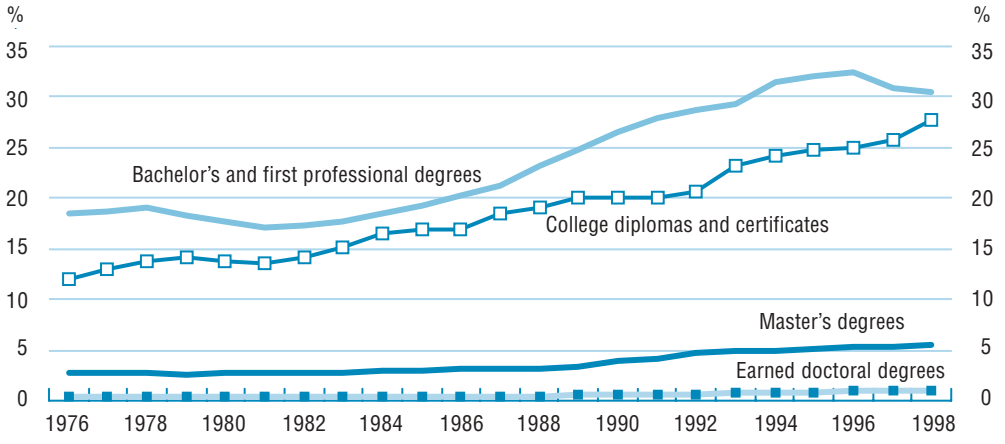


Figure D5.3

Graduation rates for college diplomas and certificates, and university degrees, Canada, 1976 to 1998

Note: Graduation rate: total number of graduates divided by population at typical age of graduation.

Source:

Table D5.4.

Between 1991 and 1998, college graduation rates rose substantially in the Atlantic provinces, Ontario and Yukon.

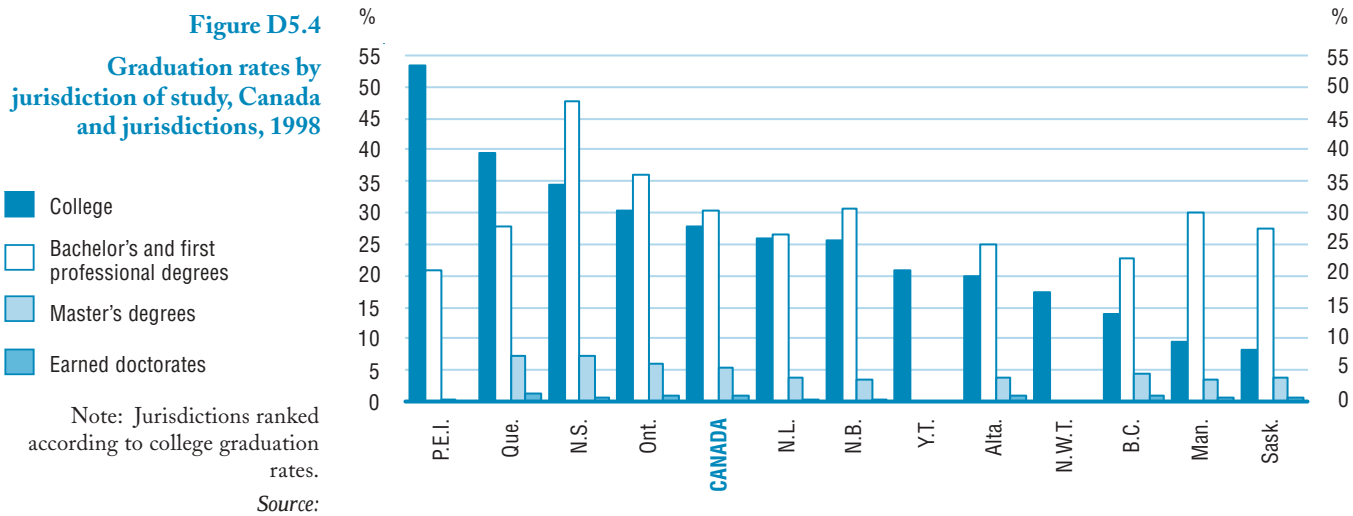
In the Atlantic provinces, college graduation rates rose steeply from 1991 to 1998. Part of the increase stems from the introduction of high school as a prerequisite for a number of programs, resulting in their classification as college programs; previously, they were considered as trade-vocational. Substantial increases were also recorded in Ontario and Yukon (Table D5.5).

In 1998, the highest college graduation rates were reported for Prince Edward Island at 53%. Other jurisdictions with relatively high rates include Quebec (40%), Nova Scotia (34%) and Ontario (30%). The lowest rates were in Saskatchewan (8%) and Manitoba (9%) (Figure D5.4).

Jurisdictional differences related to average age, institutional transfer arrangements and the type of institutions themselves can have a material effect on the graduation rates, and care should be exercised in making comparisons.

Figure D5.4

Graduation rates by jurisdiction of study, Canada and jurisdictions, 1998



Note: Jurisdictions ranked according to college graduation rates.

Source:

Table D5.5.

University degrees

Graduation rates for bachelor's degrees levelled off at about 30% in the late 1990s.

Parallel to the increases at the college level, graduation rates from bachelor's and first professional degree programs rose steeply in the 1970s and 1980s. In 1976, the rate for Canada as a whole was 18%. By 1991, it had reached 28%. The rate climbed further to 32% in 1995 and hovered around that mark until 1998.

At the jurisdictional level, university graduation rates are calculated two ways: One set is based on the province of study, the other on the province or territory of residence. Graduation rates are calculated by dividing the number of graduates by the population at the "typical" age of graduation, using the population age 22 for undergraduate degrees, age 24 for master's degrees and age 27 for doctorates. This measure should not be confused with a graduation rate showing graduates as a proportion of enrolment. (For more information, see the above comments on college graduation rates and Appendix 2.)

Based on the province of study, Nova Scotia posted the highest bachelor's graduation rate in 1998, (48%), followed by Ontario (36%). The lowest rates were in Prince Edward Island (21%), British Columbia (23%) and Alberta (25%). Graduation rates based on province of study will tend to be higher for provinces with a relatively large number of universities and, to provide a balanced picture, it is also useful to examine graduation rates based on jurisdiction of residence.

Rates based on jurisdiction of residence in 1998 ranged from 23% in British Columbia to 37% in Nova Scotia; the range is considerably lower than for rates based on province of study. The graduation rates for Yukon and the Northwest Territories were 18% and 8%, respectively. The territories showed the greatest increases in bachelor's level graduation rates during the 1990s, doubling in Northwest Territories and tripling in Yukon. In the provinces, the largest 1991-1998 increases were in Newfoundland and Labrador, up from 24% to 33% (Table D5.6).

Jurisdictional differences related to average age, institutional transfer arrangements and the type of institutions themselves can have a material effect on the graduation rates, and care should be exercised in making comparisons.

From 1976 to 1989, the graduation rate at the master's level was 3% based on province of study. The rate rose rapidly over the next few years and has been 5% since 1992. The number of new master's graduates effectively doubled between 1976 and 1998.

The graduation rate for doctoral students almost doubled in the 1990s.

The graduation rate for doctoral students stayed almost the same, at 0.4% to 0.5%, up to 1990, then almost doubled to 0.9% in the next eight years. In the late 1990s, about 4,000 doctorates were awarded each year.

Master's graduation rates have remained fairly flat for most jurisdictions in the 1990s, although the rate in Newfoundland and Labrador doubled from 2% in 1991 to 4% in 1998. In Quebec, the master's graduation rate increased from 5% to 7% over the same period. The graduation rate for doctorates increased in all nine provinces offering this degree, with Quebec doubling their rate from 0.6% to 1.2%.

Graduation rates for women have increased at a faster rate than for men at the undergraduate and master's level. Close to 60% of all university degrees awarded in 1998 were to women.

From 1988 to 1998, university graduation rates generally rose for both men and women across all fields of study and all levels of education (Figure D5.5 and Table D5.7). However, growth was uneven. At the undergraduate level, for example, the graduation rate increased 11 percentage points for women compared with 4 percentage points for men.

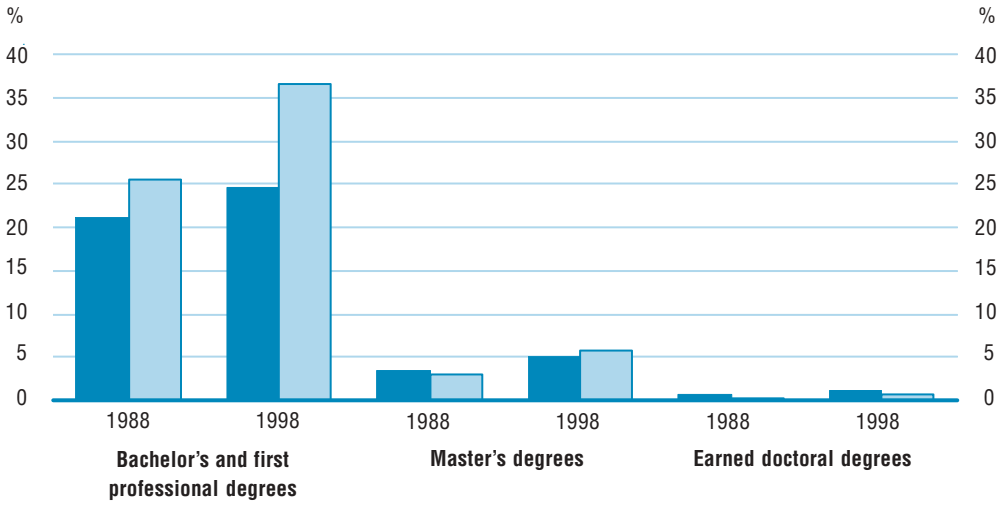


Figure D5.5

University graduation rates by level of degree and sex, Canada, 1988 and 1998

Source:
Table D5.7.

In 1988, the bachelor graduation rate for women was already above the rate for men; ten years later, the gender gap had increased. Specifically, the rate for women was 26% in 1988, compared with 21% for men. By 1998, the rates had risen to 37% and 25%, respectively.

At the master's level, the female graduation rate almost doubled in seven years, rising from 3% in 1991 to 6% in 1998. By 1998, the rate for women had surpassed that of men (5%).

The graduation rate for doctoral students was still higher among men than women in 1998, when they stood at 1.2% and 0.7%, respectively. For both men and women, the rates doubled in the seven years leading up to 1998.

Field of study

In 1998, the university graduation rate was 7% in the physical and applied sciences compared with 22% in the humanities and social sciences (Table D5.7). Graduation rates were higher for females than males in all of the broad disciplines in the humanities and social sciences; for example, education, fine and applied arts, and so on. However, the graduation rates for males remained higher in the physical, natural and applied sciences.

The number of women graduating from the humanities and social sciences in 1998 (66,000) was almost equal to the total number of men graduating from all fields (72,000). The number of male graduates increased between 1988 and 1998 in all fields of study except mathematics and physical sciences, but the increases were smaller than those for female graduates (Tables D5.8 and D5.9). There were more male than female graduates in the physical, natural and applied sciences, with the exception of agricultural and biological sciences. In most provinces, the majority of 1998 graduates were women. In Prince Edward Island, 67% of graduates were women.

In 1998, the grouping "Social sciences balance" was the field of study with the most graduates in Canada, followed by "Education" and "Commerce, management and administration" (Table D5.9). The grouping "Social sciences balance" was the leading field of study in every province except Prince Edward Island, where it was "Agriculture and biological sciences", Quebec, where it was "Commerce, management and administration", and Alberta, where it was "Education".

In Canada and across OECD countries, the largest concentration of college and university graduates is in the combined fields of social sciences, business and law.

In *Education at a Glance 2002*, the OECD reported on the distribution of graduates across 11 broad fields of study. The analysis distinguishes between Tertiary Type A (roughly, university) and Tertiary Type B (roughly, community college) graduates. See Appendix 2 for more information.

One broad field of study covering the social sciences, business and law, accounted for 37% of Tertiary Type A graduates in Canada in 2000, and 29% of Tertiary Type B graduates (Table D5.10). The OECD averages were slightly lower, at 34% and 26%, respectively.

Comparisons across countries reveal interesting differences. For example, across OECD countries, an average of 13% of all Type A graduates had studied in engineering, manufacturing and construction, and 15% of Type B graduates. In Canada, the corresponding proportions are 8% and 17%.

Educational attainment of the population aged 25 to 64

Context

This indicator measures the educational attainment of Canadians for different age groups and by sex.

Canada's economic prosperity and competitiveness is very much contingent upon the skills of its work force. Educational attainment, or the highest level of education completed, is one means of measuring this aspect of human capital. Indirectly, trends in attainment rates may also reflect changes in access to education and the equity of education systems. Indicator C7 presents information on high school graduation and Indicator D5 addresses postsecondary completions. Changes to educational attainment are also attributable to net international migration.

As older workers retire and are replaced by younger, more educated workers, the educational level of the labour force rises. Shifts in the educational profile of the labour force provide insights into the impact of the retirement of different age cohorts, and the demands for skills being placed on youth. The Adult Literacy and Lifeskills Survey, results from which are expected to be released in 2004, will provide a more detailed picture of adult skills.

D6

Findings

Highly educated working-age population

In 2001, over half of Canada's working-age population had postsecondary credentials.

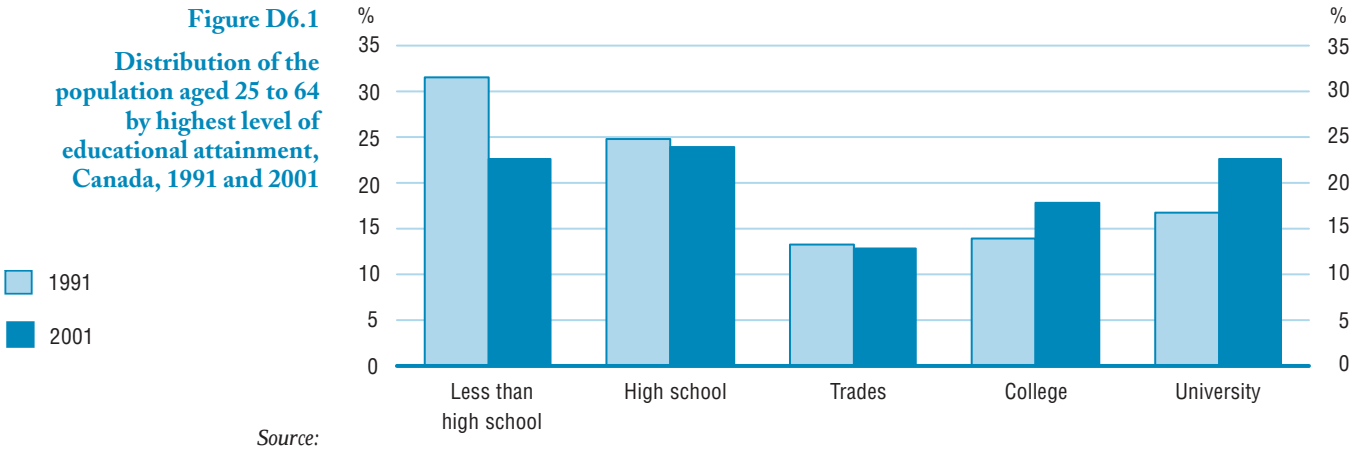
The analysis that follows draws on 2001 Census results for the population aged 25 to 64, referred to here as the working-age population. From a life-cycle perspective, this age band roughly covers people who are old enough to have completed their education, but still young enough to work. (The labour force participation rate falls off after age 55. Still, about half the population aged 55 to 64 continues to be active in the labour market.)

The trend to higher education in the past decade has had a profound impact on the educational profile of the population aged 25 to 64. Indeed, the 2001 Census marked the first time that a majority of the working-age population had postsecondary credentials.

However, the growth was uneven across the different levels of postsecondary education (Figure D6.1). For example, 23% of the population aged 25 to 64 had a university education in 2001, up from 17% a decade earlier.

Figure D6.1

Distribution of the population aged 25 to 64 by highest level of educational attainment, Canada, 1991 and 2001



Source:
Table D6.1.

The proportion with a college diploma also increased during the 1990s, but not as much: from 14% to 18%. In contrast, 13% had a trade certificate in 2001, unchanged from 1991.

More men with college and university

In 2001, just over 4.3 million men aged 25 to 64 had a qualification above the high school level. Their proportion rose substantially, from 47% in 1991 to 54% in 2001.

More specifically, the proportion with a college diploma increased from 11% to 15%. The share with university credentials increased from 18% to 23%.

The one level of postsecondary certification that showed a decline, albeit slight, among men was trades. In 1991, 17.4% of working-age men had a trade certificate. By 2001, this had slipped to 16.6%. To some extent, this may reflect the upgrading of certain programs to the college level (Figure D6.2 and Table D6.2).

Greatest growth for women was at the university level

In 2001, women accounted for a little over half of Canada's working-age university graduates.

In 1991, almost three million women aged 25 to 64, or 41% of the total, had a trade, college or university education. By 2001, this had jumped to almost 4.4 million, or 53%.

While the proportion of women in this age group with a trade certificate remained stable at 9% through the decade, 21% had a college certificate or diploma, up from 16% a decade earlier. And 23% had graduated from a university, also up from 16%.

As a result of this growth, women in 2001 accounted for 51% of all working-age university graduates and 59% of all college graduates.

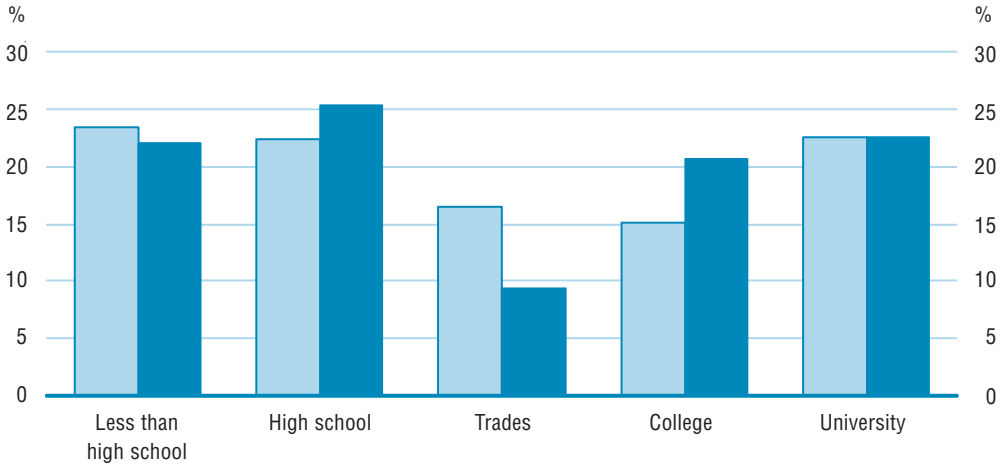


Figure D6.2

Distribution of the population aged 25 to 64 by highest level of educational attainment and sex, Canada, 2001

Source:
Table D6.2.

In contrast, the trades continued to be dominated by males: 64% of all working-age trades graduates in 2001 were men (Figure D6.2 and Table D6.2).

More than one million very highly qualified people of working age

The number of individuals aged 25 to 64 with a university education above the bachelor's level surpassed one million for the first time in 2001.

In total, 1.1 million people aged 25 to 64 had doctorates, master's degrees and other qualifications above the bachelor's level, such as degrees in law, medicine, dentistry and veterinary science. This was a 50% increase from 750,000 in 1991 (Figure D6.3).

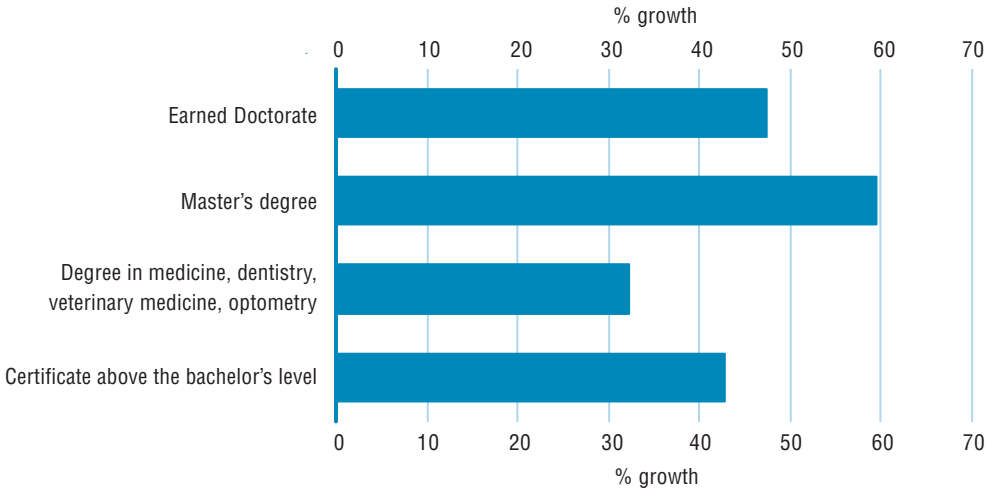


Figure D6.3

Growth in the very highly qualified population aged 25 to 64, Canada, 1991 to 2001

Source:
Table D6.3.

All very highly qualified levels experienced growth over the past decade. The largest increases occurred at the master's level, up 60% to 580,000 in 2001. About 109,000 Canadians had earned doctorates in 2001, up 48%.

These individuals represented 7% of the working-age population, up from 5% a decade earlier.

Canada a world leader in education

In 2000, Canada had a higher proportion of its working-age population with college or university credentials than any other OECD country.

Canada ranks fourth overall in the proportion of its working-age population with a university degree, according to an annual study done by the OECD.

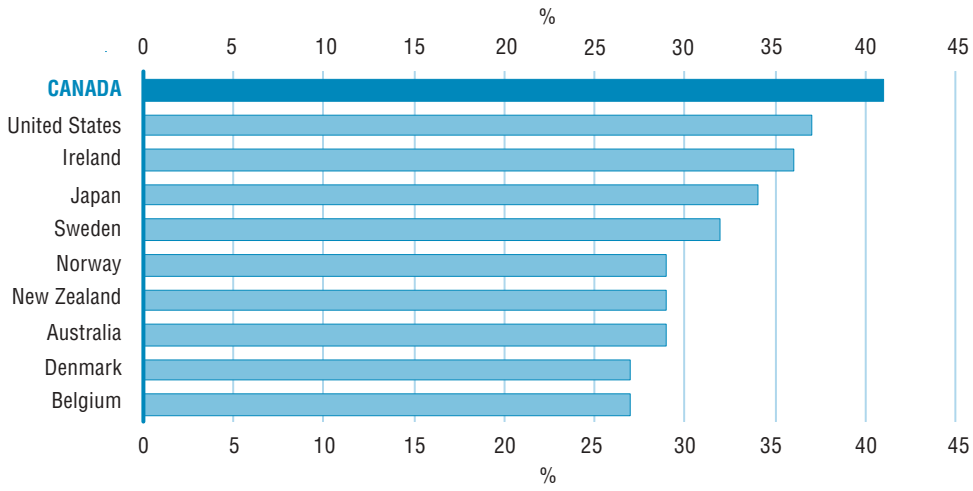
In 2000, 20% of Canada's population aged 25 to 64 had a university education. In comparison, 28% of the working-age population in the United States had a university education, as did 26% in Norway and 21% in the Netherlands.

About 21% of Canada's working-age population had college credentials in 2000, second only to Ireland (22%).

No other OECD nation had a higher proportion of its population aged 25 to 64 with either a college or university credential than Canada (Figure D6.4). In 2000, 41% of Canada's population aged 25 to 64 had either a college or university education, compared with 37% in the United States, 36% in Ireland and 34% in Japan.

Figure D6.4

Proportion of the population aged 25 to 64 with college or university qualifications, top ten OECD countries, 2000



Source: Table D6.4.

In many countries, one form of education, either university or college, is highly prevalent. Canada offers two parallel systems of education after high school, both of which require a high school certificate for admission and play a key role in the development of knowledge and skills.

Newcomers to the working-age population: Not as many but better educated

The population aged 25 to 34 in 2001 is the most highly educated ever: 61% of them have credentials beyond the secondary level.

Canada depends on young entrants to the working-age population to replenish the knowledge and skills that are lost when older workers retire, and to bring new skills to the economy.

Trends in education become dramatically apparent when examining the census results for the youngest people likely to have completed their studies, those aged 25 to 34.

There were nearly 4 million individuals in this age group in 2001. About 1 million, or 28%, were university graduates. More than 800,000 or 21% were college graduates, and half a million (12%) were qualified in a trade. In all, 61% of the population aged 25 to 34 had credentials beyond the secondary level (Figure D6.5).

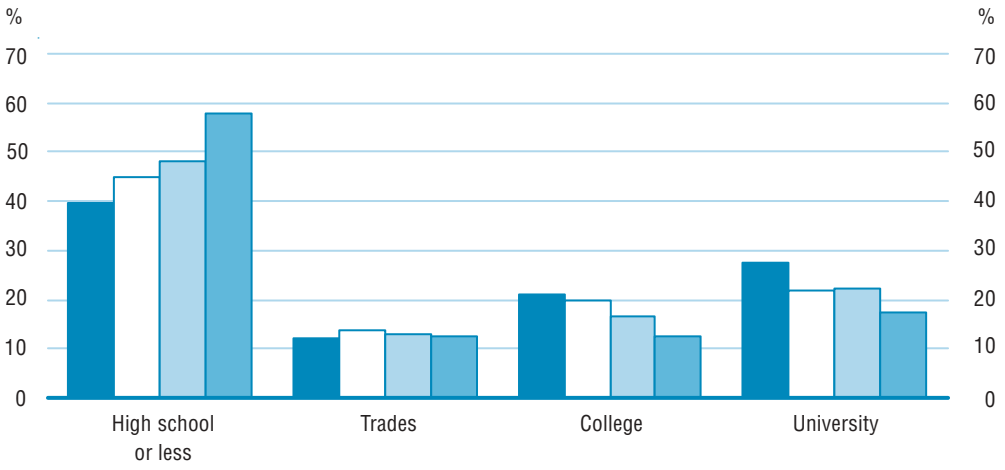


Figure D6.5

Distribution of the population aged 25 to 64 by highest level of educational attainment and age group, Canada, 2001

Source:
Table D6.5.

On the other hand, the size of this age group dropped by more than 800,000 during the 1990s. In 2001, people aged 25 to 34 represented just under one in four people in the working-age population, down from one in three a decade earlier.

Even though a large proportion of the younger age group had postsecondary education, the average age of postsecondary graduates in the working-age population has increased. In 1991, for example, 30% of all university graduates in the working-age population were age 45 or over. By 2001, this had jumped to 40%.

Similarly, 25% of the working-age population with a college certificate in 1991 were 45 or over; in 2001, their share was up to 37%.

The trades had an even greater share among those aged 45 and over, a reflection of the lack of recent growth in this category. In 1991, 34% of trade certificate graduates of working age were 45 or over. By 2001, this had increased to 44%.

Immigrants of the 1990s: Contributing to Canada's skills

The immigrants of the 1990s are much more highly educated than earlier immigrants: 62% had credentials beyond the secondary level.

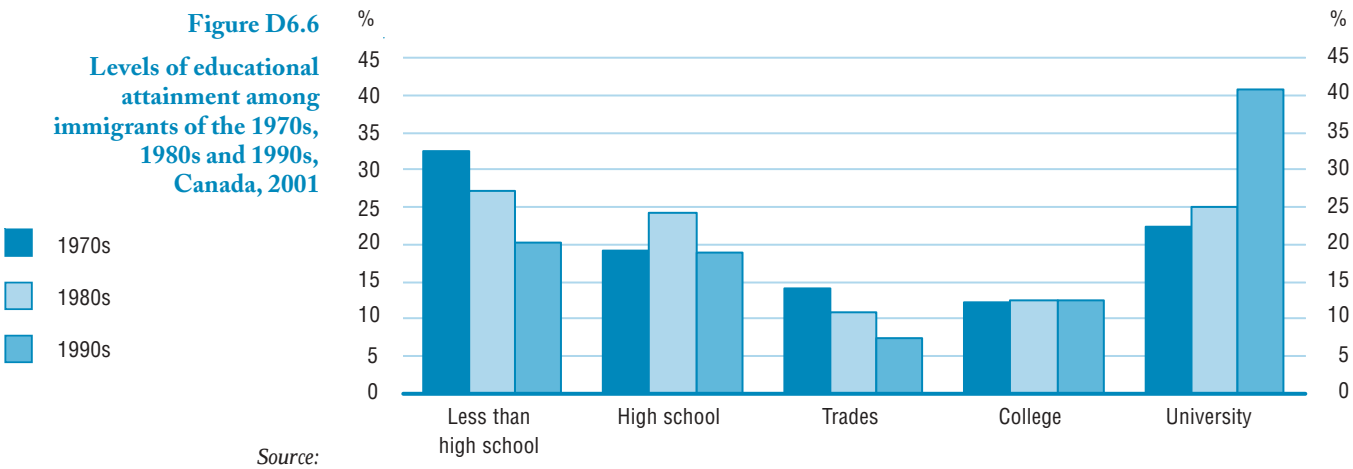
The educational profile of the Canadian working-age population has benefited greatly from the contribution made by immigrants of the 1990s.

Fully 41% of working-age immigrants who arrived in the 1990s were university trained in 2001. Another 13% had a college diploma and 8% a trade certificate.

In all, 62% had qualifications above the secondary level as of Census Day 2001. This compares to 48% for immigrants of the 1980s and 1970s (Figure D6.6).

Figure D6.6

Levels of educational attainment among immigrants of the 1970s, 1980s and 1990s, Canada, 2001



Source:
Table D6.6.

Among these recent immigrants, both sexes tended to be highly educated. About 45% of men and 37% of women had a university degree in 2001. For the rest of the working-age population, 23% of both men and women were university graduates.

The proportion of immigrants with a college diploma has been stable at about 12% for the last three decades.

However, the proportion with trade qualifications dropped from 14% of immigrants who arrived in the 1970s to 11% in the 1980s, and down to 8% in the 1990s.

Similarly, the proportion with secondary school or less declined from 52% of immigrants who arrived in the 1970s and 1980s to 39% in the 1990s.

Aboriginal identity population: Improving the education profile

The educational attainment of the Aboriginal population has increased substantially between 1996 and 2001.

Between 1996 and 2001, Census years with comparable data, the education profile improved noticeably among individuals aged 25 to 64 who identified themselves as a member of an Aboriginal group.

In 2001, the proportion of Aboriginal people with a high school diploma increased from 21% to 23%, while the share of those with postsecondary qualifications increased from 33% to 39% (Figure D6.7).

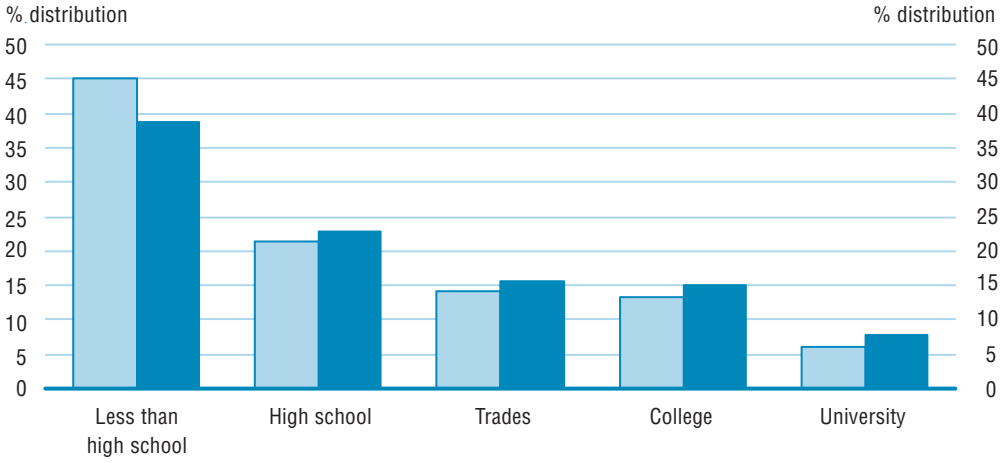


Figure D6.7

Distribution of the Aboriginal population aged 25 to 64 by highest level of educational attainment, Canada, 1996 and 2001

Source:
Table D6.7.

More specifically, the proportion with a trade certificate increased from 14% to 16%. Similarly, college diploma holders increased their share of the working-age population from 13% to 15%. About 8% were university graduates, up from 6% five years earlier.

About 39% had less than high school education, down substantially from 45% five years earlier.

These changes have helped close the gap somewhat between the educational profile of the Aboriginal and non-Aboriginal population. In particular, the proportion with a trade certificate in 2001 was higher among Aboriginal people, where they represented 16% of the working-age population, compared with 13% in the non-Aboriginal population. The proportions with college qualifications were also close, 15% among Aboriginal people and 18% among non-Aboriginal people.

However, the gap in university graduates remained wide. In 1996, 6% of Aboriginal people aged 25 to 64 had a university education. This increased to 8% in 2001.

Canada's fastest growing regions attract university graduates

University graduates tend to concentrate in the four major urban regions in Canada—Montréal, the extended Golden Horseshoe, the Calgary–Edmonton corridor and Lower Mainland British Columbia.

Canada's fastest growing regions—Montréal, the extended Golden Horseshoe, the Calgary–Edmonton corridor and Lower Mainland British Columbia—were home to 63% of the country's working-age university graduates in 2001. In comparison, these four regions accounted for only 52% of the total population aged 25 to 64.

About 29% of university graduates lived in the extended Golden Horseshoe, another 15% in Montréal, 11% in Lower Mainland British Columbia and 8% in the Calgary–Edmonton corridor.

In the extended Golden Horseshoe, 28% of the population aged 25 to 64 had a university education. Immigrants of the 1990s accounted for 14% of the region's university-educated. About 3% had moved in from another province during the last five years.

In Lower Mainland British Columbia, 28% of all the population aged 25 to 64 had a university education and, as in the Golden Horseshoe, 14% were recent immigrants to Canada. However, 6% of graduates in Lower Mainland British Columbia had moved from different provinces during the previous five years, double the proportion in the Golden Horseshoe.

In the Montréal region, 26% of the working-age population was university-educated. About 8% of university graduates were immigrants. About 2% of Montréal's university graduates had moved in from other provinces during the past five years.

One-quarter of the 25 to 64 year old population in the Calgary–Edmonton corridor had a university qualification. This region was most dependent on other provinces for its university graduates: 12% of the region's graduates had moved in during the past five years.

In comparison, 7% of the working-age population in the Calgary–Edmonton corridor as a whole had arrived from other provinces in the past five years. Recent immigrants made up 8% of its university-educated population.

Chapter E

E

Chapter E figures

Transitions and outcomes

Introduction

The transition from secondary school to the postsecondary world and into the labour market is a critical stage in the life cycle. New surveys are beginning to shed light on youth pathways through these important years. While more research is needed, it is clear that the pathways are varied and complex.

The measurement of outcomes of the education systems is essential in evaluating their performance. It is difficult to disentangle the role of the education systems from that of the communities and myriad other factors. New surveys and research are making inroads into this complex issue. In future editions of *Education Indicators in Canada*, it will be possible to expand the array of outcome measures.

Chapter E consists of two indicators.

Indicator E1 addresses transitions to postsecondary education and the labour market. Survey and administrative data are used to trace education and work patterns year by year, from age 15 to adulthood.

Indicator E2, labour market outcomes, examines unemployment rates and earnings for different levels of educational attainment, in Canada and abroad.

Transitions to postsecondary education and the labour market

Context

This indicator considers the transition from high school to postsecondary education and from education to the labour market, in 1991 and 2001, for Canada and the provinces.

A score of factors influence the level of participation in postsecondary education and the transition from school to the labour market. They include availability of educational programs, accessibility of financial support, labour market conditions, and real and perceived benefits of education. In Canada, the different education systems in each jurisdiction also play a role in the education path followed by students.

This indicator looks at the transition made by the population aged 15 to 29 between levels of education and between school and the labour market. At age 15, over 95% of the population are students; by age 29, over 90% of the population have left the formal school systems. The indicator compares the pace of the transition between 1991 and 2001 and shows the proportion of students who combine work and school during the school year. It highlights the major differences in pathways that are due to differences in the education systems among provinces.

E1

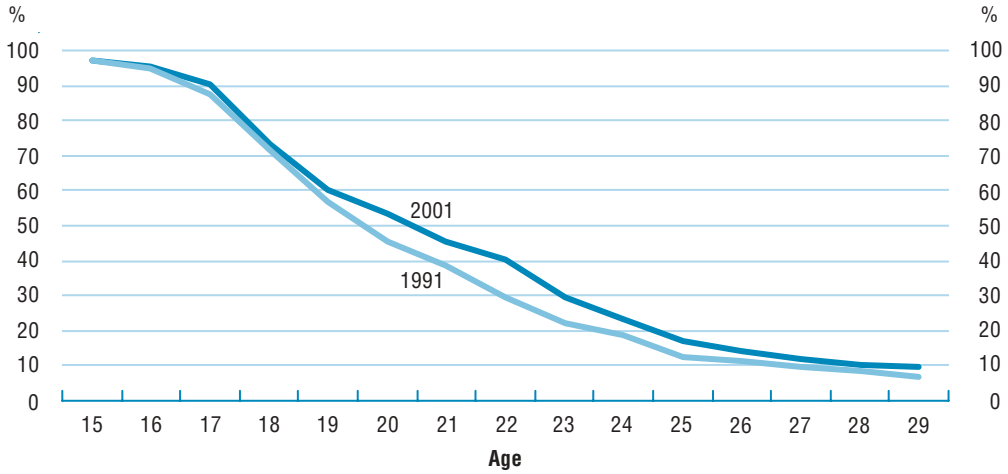
Findings

Canada

Based on the Labour Force Survey data, Canadians globally spent about an additional 0.5 years in school in 2001 compared with 1991 and, hence, finished school 0.5 years later. At each age from 17 to 29, the education participation rates were higher in 2001 than in 1991 (Figure E1.1). The differences were most pronounced between the ages of 20 and 23. At age 22 for instance, the participation rate was 40% in 2001 compared to 30% in 1991 (Table E1.1).

Figure E1.1

Total participation rate in education, Canada, 1991 and 2001



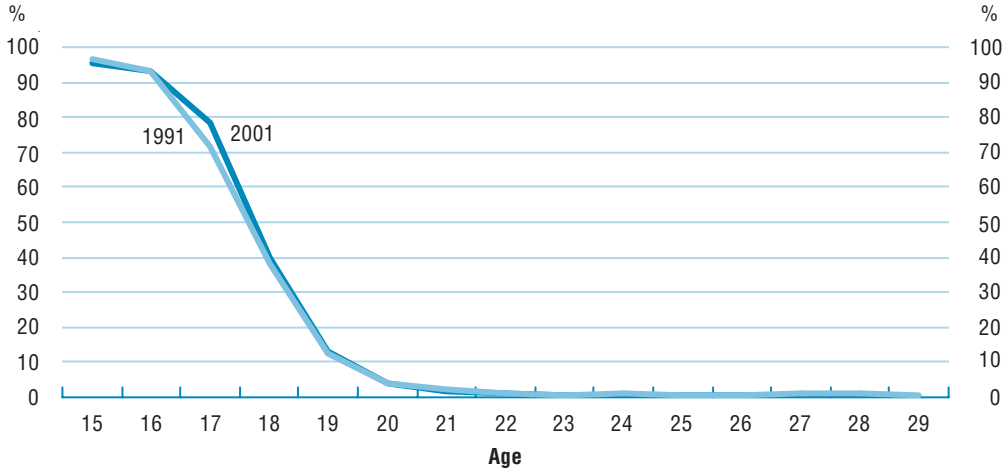
Source:
Table E1.1.

Canadians spent more time in postsecondary education in 2001 than in 1991.

Most of the increase in the education participation rates resulted in a better-educated population, but part of it may have been because attaining the same education level took longer in 2001 than in 1991. For example, at age 17, participation rates increased at the secondary level, from 72% in 1991 to 78% in 2001 (Figure E1.2). At the same time, they declined from 14% to 11% at the college level and from 2% to 1% at the university level. Similarly, at age 19, the participation rate increased at the college level but declined at the university level (Figures E1.3 and E1.4).

Figure E1.2

Participation rate at the secondary level, Canada, 1991 and 2001



Source:
Table E1.1.

At older ages, the trend to more education is clear. After age 19, participation rates were higher in 2001 than in 1991 at both the college and university levels. Between the ages of 19 and 23, college participation rates were between 4 and 6 percentage points higher in 2001 than in 1991. University attendance rates by young adults aged 20 to 25 rose by 2 to 5 percentage points over the decade.

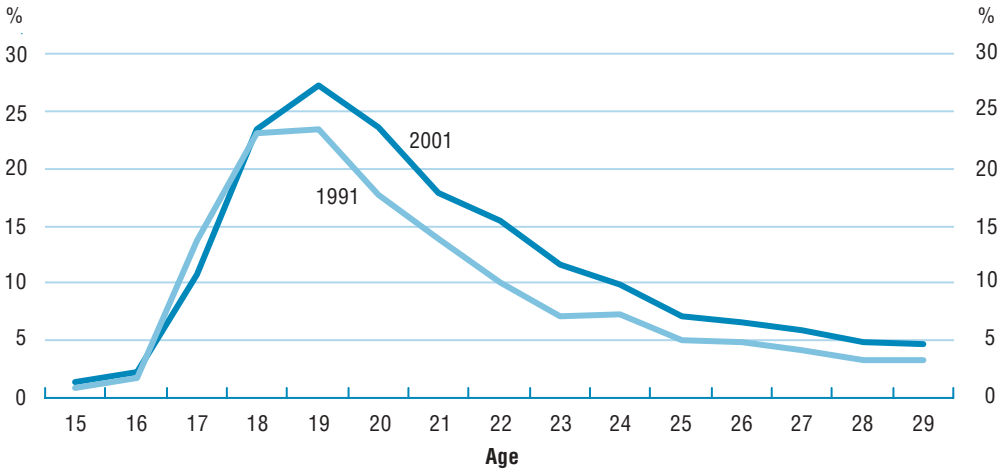


Figure E1.3

Participation rate at the college level, Canada, 1991 and 2001

Source:
Table E1.1.

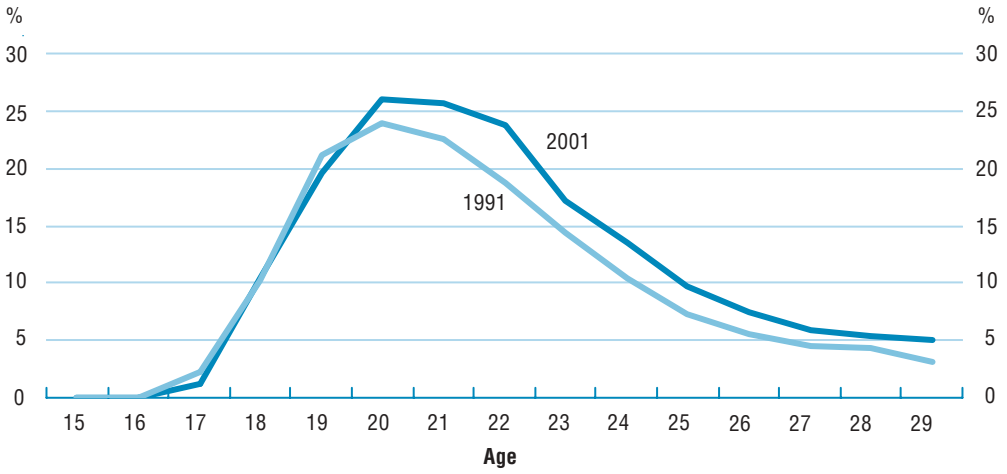


Figure E1.4

Participation rate at the university level, Canada, 1991 and 2001

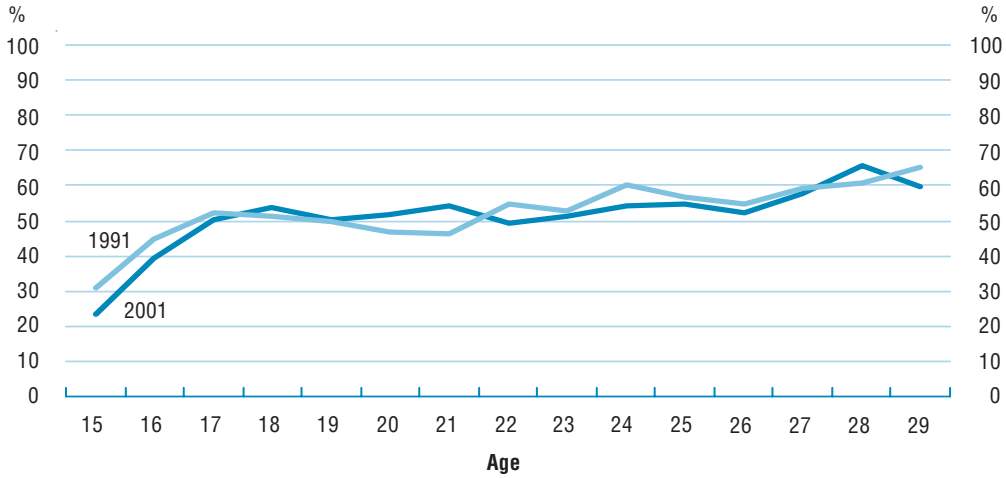
Source:
Table E1.1.

About half of students combine work with education, a proportion that has not varied much between 1991 and 2001 (Figure E1.5 and Table E1.2). The proportions are lower at ages 15 and 16 and increase somewhat with age. Slightly higher proportions of college than university students combine work and study.

Table E1.3 looks at education and labour market activities together to provide a sense of the pace of transition between education and the labour market.

Figure E1.5

Proportion of students who combine studies and work by age, Canada, 1991 and 2001



Source:
Table E1.2.

Most 15-year-olds are attending school at the elementary-secondary level and not working; this combination accounts for 73% of that age group. Another 23% are both attending at that level and working.

By age 18, the distribution has become much more spread across the education/labour force categories, reflecting that transitions are under way: 23% of all 18-year-olds are attending elementary-secondary school and working, 17% are at that level and not working, 12% are college students with a job, 11% are college students without a job and 19% are working non-students.

At age 20, university accounts for a peak share of the population: 12% are attending and working, another 14% are attending but not working. Among all of the education/labour force combinations, the largest group at age 20 is the employed non-student category, with 34% of the population.

At age 25, 83% of the population have completed their education: among them, 83% are working, 7% are looking for work and 10% are not in the labour force. Among 25-year-olds studying at the university or college level, a majority are also working.

Provinces

The main difference in the education systems between provinces is that the elementary-secondary level is shorter in Quebec (but students have to attend CEGEP before entering university) and longer in Ontario than in the other jurisdictions.

There are variations in education expectancy across provinces (Figure E1.6). A 15-year-old can expect to spend more time in the formal education system in Newfoundland and Labrador, Nova Scotia and Ontario, and less in Prince Edward Island and Manitoba.

The main differences between the school systems in each province relate to the shorter elementary-secondary schooling and the necessary passage through CEGEP prior to accessing university in Quebec, and the additional year of schooling (Grade 13) in Ontario for those destined for university. Fifteen-year-old students would expect to spend about 3.1 additional years at the secondary level in all provinces except Ontario, where they would spend on average 3.7 years, and Quebec where they would spend only 2.2 years. The elimination of Ontario Academic Credits (OAC), a.k.a. Grade 13, is expected to bring the amount of time spent at the secondary level in Ontario in line with the other provinces that have a 12-year elementary-secondary system. After the 2003-2004 school year, OAC courses will no longer be offered in Ontario schools.

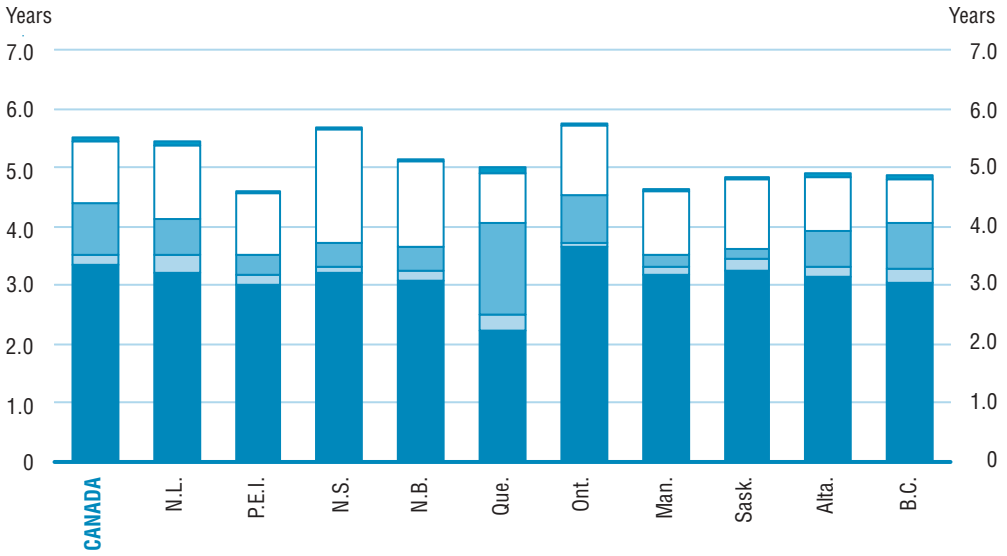


Figure E1.6

Expected years of schooling at age 15 by level of education, Canada and provinces, 1998-1999

Source:
Table E1.4.

Other institutional differences between provinces refer mainly to the relative importance of the various types of institutions and programs. For example, participation in trade-vocational education averages 0.2 year in most jurisdictions. However, the average is higher in Newfoundland and Labrador, Quebec, Saskatchewan and British Columbia. In Newfoundland and Labrador, 4% of the population between the ages of 20 and 24 participate in trade-vocational education (Table E1.4).

Outside Quebec, Ontario and British Columbia is where participation rates in the college sector are the highest. In British Columbia, this is because of the dual function of this sector in this province, as a provider of recognized professional and technical skills and as a preparation for university through university transfer credits, especially in areas of the province remote from university access.

The high enrolments in both colleges and trade schools tip the balance between the various providers of postsecondary education in Quebec and British Columbia. While in all other provinces, most postsecondary education is spent in universities, in these two provinces, it is spent in colleges and trades training centres.

Enrolment rates in university programs are the highest in Nova Scotia, the only province where a third of young people aged 19 to 21 attend university. This is largely due to the sizeable relative inflow of students from other provinces (29% of 1995 graduates from universities in Nova Scotia had moved from other provinces to study)[1].

Small proportions of students participate in graduate studies. The propensity to pursue education in graduate schools is highest in Quebec where 3% of young people aged 24 and 25 are enrolled in a graduate-level program (Table E1.4).

1. National Graduates Survey, 1997.

Labour market outcomes

Context

This indicator shows the labour market outcomes of education in terms of unemployment and earnings.

An important goal of education is the development of responsible citizens who are able to participate as effective workers in a modern knowledge-based economy and society.

This indicator focuses on two important labour market outcomes by examining differences in unemployment rates and earnings by level of educational attainment in Canada and other industrialized countries. It looks also at these differences for younger cohorts, providing indications as to how youth with different levels of education are coping in the transition from school to work.

These measures can help students and educators understand the benefits of higher education and can point to segments of the population where policy intervention may be needed.

Findings

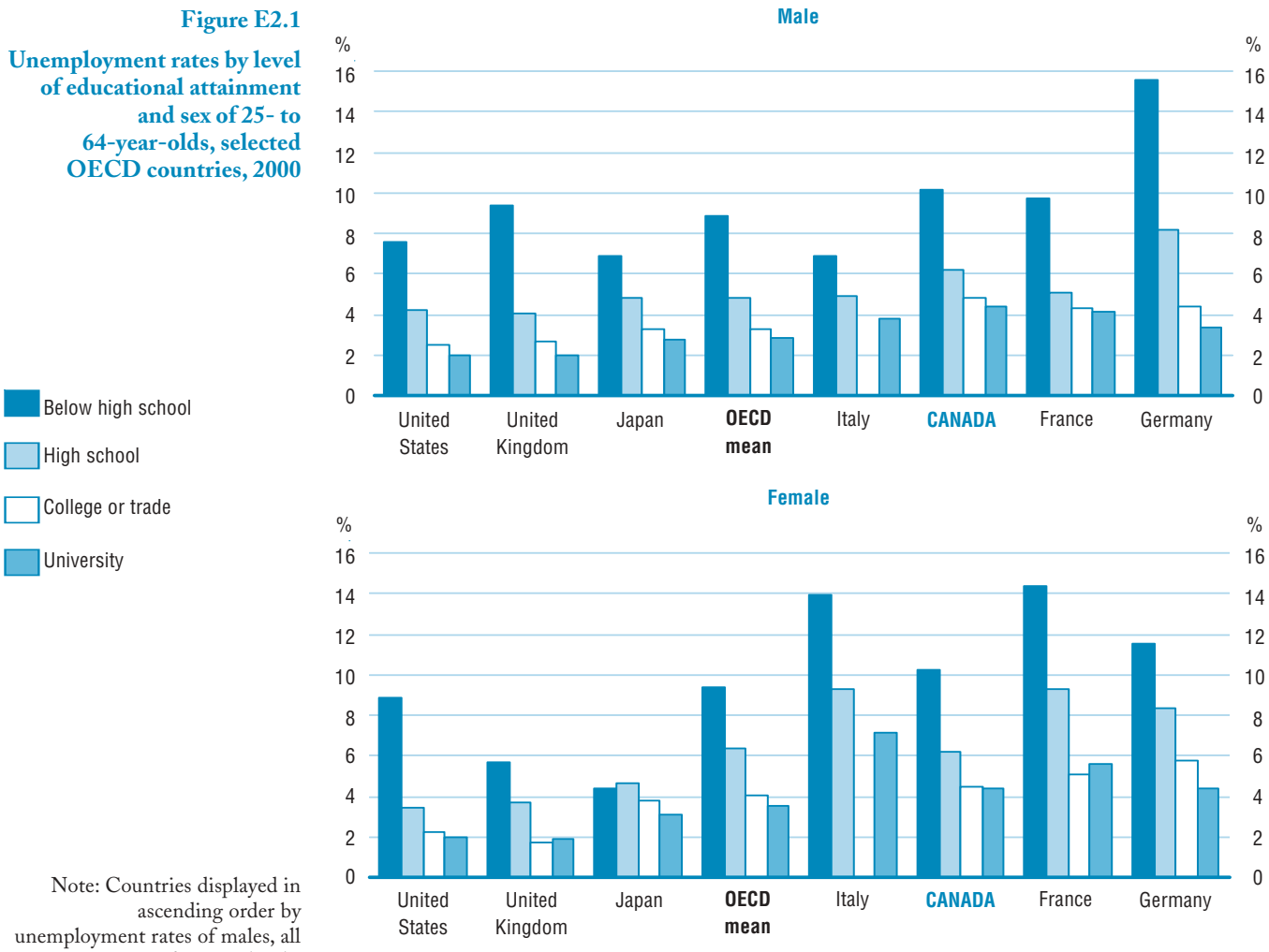
Industrialized countries

E2

Across OECD countries in 2000, the unemployment rates for both men and women aged 25 to 64 were around three times higher for those without high school graduation than for those with university education.

The disparities in unemployment rates among both men and women aged 25 to 64 by level of educational attainment are significant. Across OECD countries in 2000, an average of 5% of men and 6% of women were unemployed. However, the unemployment rate for men who did not complete high school was 9%, compared to 3% for men with university education. For women, the rates ranged from 9% for those without high school graduation to 4% for those with university education. In Canada, the unemployment rates were 10% for both men and women without high school graduation compared to 4% for university graduates (Figure E2.1 and Table E2.1).

Figure E2.1
Unemployment rates by level of educational attainment and sex of 25- to 64-year-olds, selected OECD countries, 2000



Note: Countries displayed in ascending order by unemployment rates of males, all education levels.

Source:
Table E2.1.

Canada and the provinces

In Canada, unemployment rates are lower and less subject to economic fluctuations for university graduates.

In Canada, the early 1990s were marked by a recession that peaked in 1993 with unemployment rates reaching 11%. The economy recovered in the second half of the 1990s, and unemployment rates gradually dropped to 7% by 2000 (Figure E2.2 and Table E2.2).

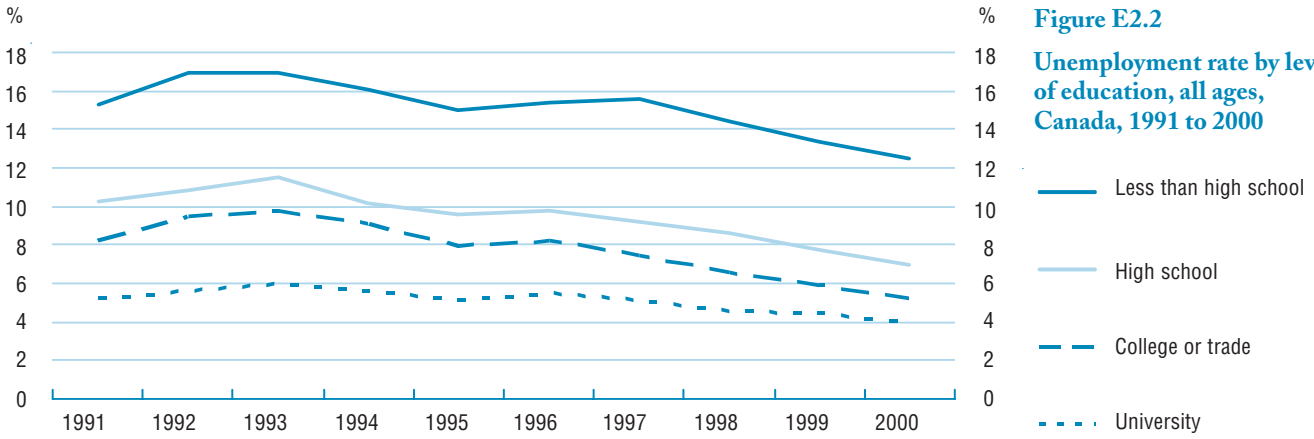


Figure E2.2

Unemployment rate by level of education, all ages, Canada, 1991 to 2000

Source:
Table E2.2.

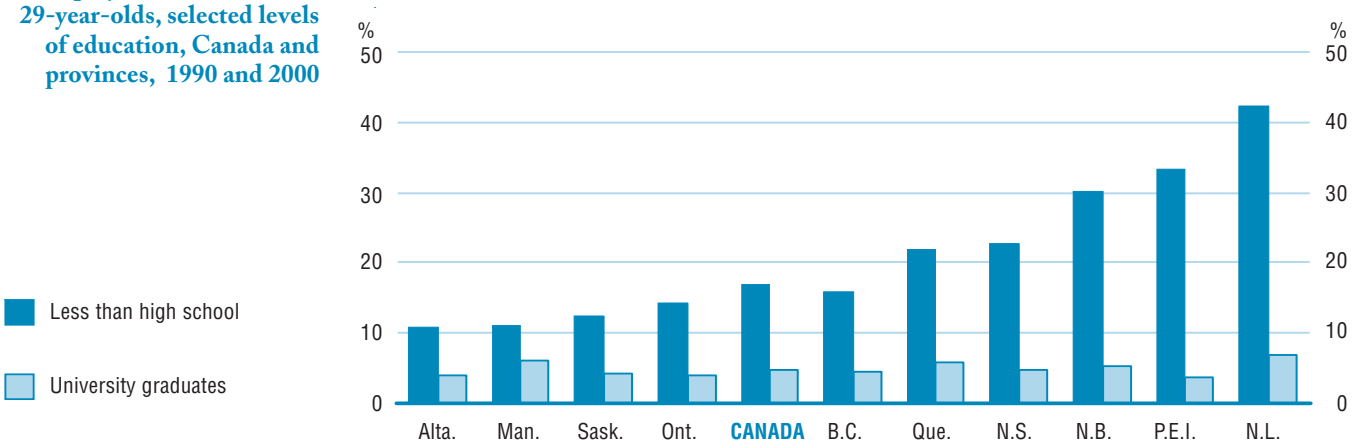
While unemployment rates were high for all individuals in the early 1990s, those with higher education fared best. At the peak of the recession, the unemployment rate for Canadians without high school completion was 17% compared to 6% for university graduates. By 2000, the unemployment rate had dropped to 12% for those with less than high school, 4% for university graduates, and 5% for college and trade graduates.

In 2000, the unemployment rate for Canadian workers aged 25 to 29 with less than high school was more than three times higher than those with university education.

In 2000, the unemployment rate for 25- to 29-year-olds with less than high school stood at 17% compared to 5% for university graduates (Figure E2.3 and Table E2.3). In 2000, the provincial differences in unemployment rates of university-trained 25- to 29-year-olds were relatively narrow, from 4% in British Columbia, Alberta, Saskatchewan and Ontario to 7% in Newfoundland and Labrador. On the other hand, unemployment rates for those who did not complete high school ranged from 11% in Alberta and Manitoba to over 30% in New Brunswick, Prince Edward Island and Newfoundland and Labrador. Youth with low educational attainments are the most at risk of economic marginalization, especially in weaker labour markets.

Figure E2.3

Unemployment rate of 25- to 29-year-olds, selected levels of education, Canada and provinces, 1990 and 2000



Source:
Table E2.3.

Education and earnings

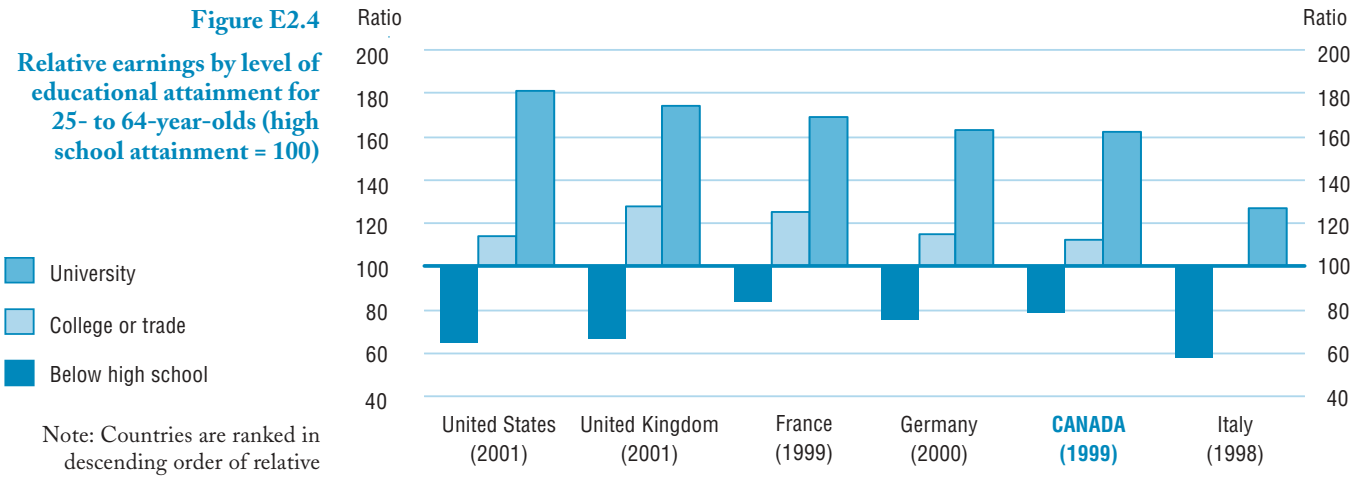
Higher education is a gateway to higher earnings. More than 60% of people in the lowest earnings category did not have more than a high school education in 2000, while more than 60% of those in the top category had a university degree.

Educational attainment has a strong impact on earnings. For individuals, the expectations of higher incomes are an incentive to invest in further education.

For the year 1999 in Canada, the mean earnings (before taxes) were 62% higher for university graduates and 12% higher for college or trade graduates than for individuals with high school diplomas (Figure 2.4 and Table E2.4). Those who did not complete high school earned 21% less than those who did. Comparable differences exist across industrialized countries (Figure E2.4).

Figure E2.4

Relative earnings by level of educational attainment for 25- to 64-year-olds (high school attainment = 100)



Note: Countries are ranked in descending order of relative earnings for the population with university education.

Source:
Table E2.4.

In 2000, differences in mean earnings by level of education increased with age and peaked in the 50 to 54 age group (Figure E2.5). They are particularly important between university graduates and other workers. In the age group 25 to 29, university graduates earned an average of $31,000, or about a third more than those with less than high school who earned $21,000. In the 50 to 54 age group, university-trained workers earned an average of $61,000, more than twice the earnings of workers with less than high school ($29,000).

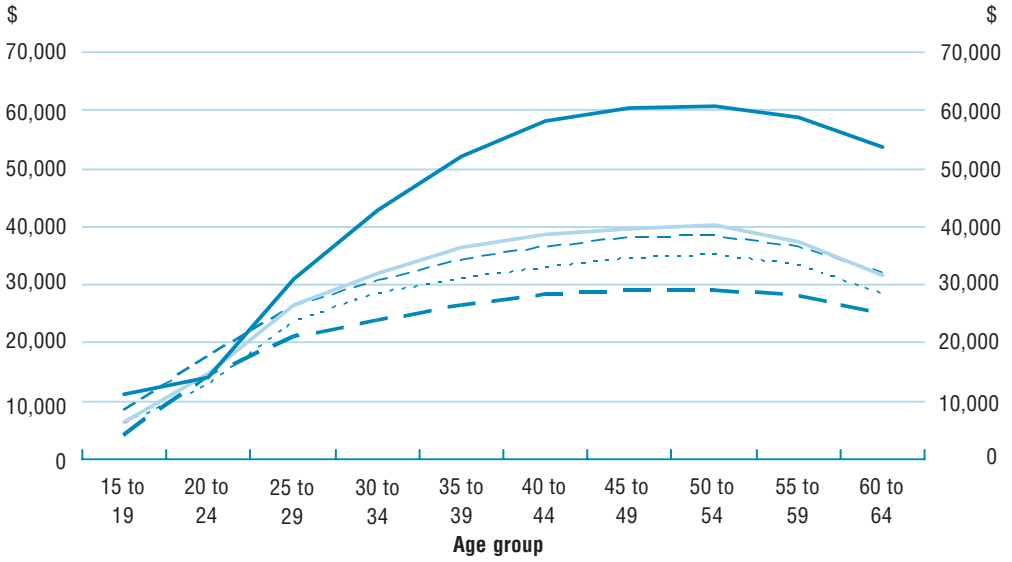


Figure E2.5

Average employment income by age group and education level, all workers, Canada, 2000

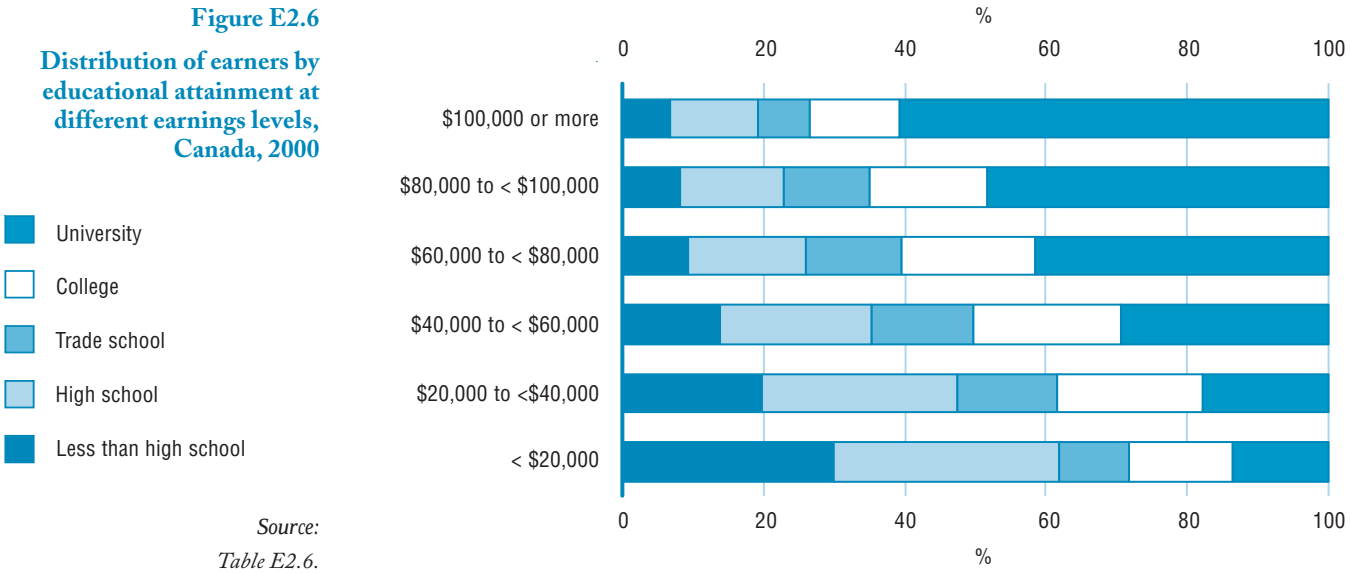
Source:

Table E2.5.

In 2000, more than 60% of earners in the lowest earnings category (less than $20,000) had no more than a high school education. However, more than 60% of earners in the top category ($100,000 or more) had a university degree (Figure E2.6).

Figure E2.6

Distribution of earners by educational attainment at different earnings levels, Canada, 2000



Source:
Table E2.6.

Appendices

Structure of education and training in Canada

In Canada, education is the responsibility of the ten provinces and three territories. While educational structures and institutions across the country are similar in many ways, they have been developed by each jurisdiction to respond to the particular circumstances, geographical situation, and historical and cultural heritage of the population they serve. This appendix describes the various structures and organization of education and training in Canada today.

Pre-elementary programs

Pre-elementary programs—pre-Grade 1 education offered by public, private, and federal schools, as well as schools for the visually and hearing impaired—are available to children, typically 4 or 5 years of age, in all jurisdictions.

Most jurisdictions offer one year of public pre-elementary programs, with Quebec, Ontario, Manitoba, Saskatchewan, and Alberta offering additional years (see Figure 1). In most jurisdictions, pre-elementary programs in the year before Grade 1 are offered to children who turn 5 years of age by a certain date in the school year as specified in jurisdictional legislation. In most jurisdictions, attendance in these programs is optional, although in Newfoundland and Labrador, Nova Scotia, and New Brunswick it is mandatory. The intensity of these programs varies by jurisdiction, some offering full-day programs, some offering half-day programs, and some offering both.

In Quebec, one additional year of pre-elementary programming is publicly available to some 4-year-olds with disabilities or from low-income families. In Ontario, the provision of an additional year of pre-elementary (for 4-year-olds) is dependent on the choice of the local school board to do so, with funding coming from the Ministry of Education. In Ontario almost all school boards provide this program for their students. In Manitoba, one additional year of pre-elementary programming is offered at the discretion of each school division with two school divisions currently providing this program, which is not funded by the Department of Education. Two additional years of pre-elementary programming are funded in schools in Saskatchewan communities where a significant portion of pre-school children are not ready to participate fully in the learning opportunities offered to kindergarten and Grade 1 students. These programs are not mandatory and not universal. Alberta also offers two additional fully funded years of pre-elementary programming, targeted to students with disabilities or to those who are considered talented/gifted.

Appendix 1

In addition to publicly provided programs, private schools in all jurisdictions also offer one or more years of pre-elementary programming. However, it is important to note that private day-care programs or early childhood education programs are not offered as part of the formal education system and are not included in the data presented in this report on pre-elementary programs.

Elementary and secondary education

Public education is provided free to all Canadian citizens and permanent residents until the end of secondary school—normally at age 18. The ages for compulsory schooling vary from one jurisdiction to another; generally, schooling is required from age 6 or 7 as of a certain date as specified in jurisdictional legislation (age 5 in New Brunswick and British Columbia) to age 16. In New Brunswick, since July 1, 1999, schooling is compulsory to the age of 18 or until graduation, with all students who were in the system as of that date affected by the new regulation. In early 2003, Alberta endorsed a bill increasing the mandatory age of schooling from 16 to 17 years of age, with the change expected to become law later in the year.

In most jurisdictions, elementary-secondary education consists of 13 years of study (from kindergarten to Grade 12). The only exceptions are Quebec and Ontario. Quebec's system has 12 years—kindergarten, 6 years of elementary school, and 5 years of secondary school. Ontario has an additional year of kindergarten (see above), and high school ends in Grade 13 (Ontario Academic Credit). Following a major change in policy, 2002–2003 will be the last year for Grade 13 in Ontario. One immediate consequence of this change will be the "double cohort" of students entering the postsecondary system in 2003–2004 (comprising the last graduating class from the old system with the extra year and the first graduating class from the new system).

The elementary-secondary continuum is broken up into different grade combinations in different jurisdictions so that the point of transition between elementary and secondary school varies from jurisdiction to jurisdiction (see Figure 1).

The organization of grades in schools varies by jurisdiction and can also vary at the local level within a jurisdiction. Elementary schools cover the first six to eight years of compulsory schooling. Afterwards, children may proceed to a middle school or junior high/intermediate school that usually covers Grade 6 or 7 to Grade 8 or 9, or they may go directly to a secondary education program. In many northern and rural communities, one school building may house all grades (kindergarten to Grade 11/12).

A great variety of programs—vocational (job training) as well as academic—is offered at the secondary level. Some jurisdictions offer dual credit courses that simultaneously give students both high school and postsecondary credits.

Secondary school diplomas are granted to students who pass the compulsory and optional courses of their programs.

Public funding at the pre-elementary and elementary-secondary levels comes either directly from the provincial/territorial government (e.g., New Brunswick, Ontario) or through a mix of provincial transfers and local taxes collected either by the local government or by school boards with taxing powers (e.g., Saskatchewan, Quebec). Private school funding comes primarily from fees and endowments, except in Quebec, which also provides funds for private schools (which have discretion over admission criteria). The federal government pays for the tuition fees of Aboriginal children and for children of employees who live on Federal Crown lands (National Defence, Agriculture and Transport).

Postsecondary education

Once secondary school has been successfully completed, students may apply to a college career program or to a university. Traditionally, enrolment in trade-vocational programs, such as apprenticeship or other programs geared towards preparation for employment in an occupation or trade, did not require graduation from secondary school. However, requirements are evolving so that more and more programs, especially in trades dealing with advanced technology or having implications for public safety, are now requiring high school graduation.

Apprenticeship training involves a contract between an apprentice and an employer, registered with the jurisdiction, in which the employer provides the apprentice with training and experience for a trade. Programs vary in length from two to five years, depending on the trade. Registered apprenticeship combines on-the-job experience with four- to eight-week periods of in-class training each year of the program. In most jurisdictions the in-class portion is usually taken at a postsecondary institution during the apprenticeship training. However, in Quebec, the in-class training is taken prior to beginning an apprenticeship program.

Currently there are approximately 170 registered trades in Canada, each with specific standards and training requirements as set down by each jurisdiction. In some of these 170 registered trades, apprenticeship certification is compulsory for entry into and practice of the trade, while in others, although it indicates the level of competence a holder has, apprenticeship certification is voluntary and one can practise the trade without it. Compulsory and voluntary trades vary by jurisdiction; however, there are similarities across jurisdictions in that compulsory trades commonly include those with advanced technology or that involve public safety. In 45 of the 170 registered trades, the provinces have agreed on interprovincial standards. In these 45 trades, candidates who achieve a standard agreed upon among the provinces qualify for the interprovincial Red Seal and are allowed to work anywhere in Canada without further training or examination.

In this publication, data relating to trade-vocational programs in Quebec that are administered at the elementary-secondary level are reported at that level.

Postsecondary education is available in both government-supported and private institutions, some of which award degrees. A major distinction at an institutional level across all jurisdictions is made between "degree-granting" and "non-degree-granting" institutions. Degree-granting institutions—both public and private—have authority under provincial legislation to grant degrees, and include universities, university colleges, and some community colleges.

Universities typically offer four-year undergraduate programs leading to bachelor's degrees. Advanced degrees include master's degrees, generally requiring two years of study after a first degree, and doctoral degrees, requiring three to five years of postgraduate study and research as well as a dissertation. Not all universities offer advanced degrees, particularly at the doctoral level. In addition to universities, university colleges are recognized degree-granting institutions that offer three- to four-year bachelor's programs. Both universities and university colleges also offer programs leading to diplomas and certificates, but the primary emphasis is on degree programs. Additionally, a number of jurisdictions have begun to give limited degree-granting authority to community colleges. These institutions still offer diploma and certificate programs. The degree programs offered by these institutions are either two-year associate degrees or three- to four-year applied degrees in a particular area of speciality of the institution.

A university or other institution may also be affiliated or federated with another university. Federated institutions are degree-granting institutions responsible for their own administration, but under the federation agreement the granting of degrees rests with the parent institution. Affiliated institutions are ones with limited or no degree-granting authority, and in which the granting of degrees rests with the parent institution. A number of colleges have authority to offer divinity degrees, but are not in the full sense recognized degree-granting institutions.

While the majority of degree-granting institutions are public, private institutions exist in a number of provinces. For many years, there have been private institutions that offer programs in divinity. Increasingly, there are private institutions that offer degree programs in liberal arts, business, and trades.

The systems of public non-degree-granting institutions in Canada for the most part were created by provincial and territorial governments in the 1960s to provide labour market preparation programs as alternatives to the more theoretically oriented programs of universities. Depending on the province or territory, they are called colleges, regional colleges, centres, colleges of applied arts and technology, community colleges, institutes, schools, or, in Quebec, collèges d'enseignement général et professionnel (CEGEPs).

Public non-degree-granting institutions offer vocationally oriented programs in a wide range of semi-professional and technical fields, leading to diplomas and certificates and, in the case of Quebec, to diplomas and attestations. Diplomas are generally granted for successful completion of two- and three-year programs (three-year programs in Quebec), while certificate programs usually take up to one year. In Quebec, attestations are awarded for the completion of shorter technical programs, and are generally viewed as the equivalent to certificates awarded in other jurisdictions.

In Quebec, students wishing to go on to university are generally required to successfully complete a two-year pre-university program offered by CEGEPs. In some circumstances, students with a technical-stream CEGEP diploma of college studies may undertake university studies.

Several college systems offer university transfer programs—typically the first two years of a university undergraduate program, usually in cooperation with a university, at which the remainder of the program would be completed.

Private non-degree-granting institutions are subject to varying degrees of government regulation and can be classified in terms of the extent of government oversight. Recognized institutions are those that have been given authority to grant academic credentials by provincial or territorial governments through charters or legislation that provide mechanisms to ensure institutional and program quality. Non-recognized, but licensed, institutions are primarily monitored by governments with a view to consumer protection rather than institutional or program quality. Finally, non-recognized, non-licensed institutions are private institutions that are not regulated by government.

Private non-degree-granting institutions may be called colleges, institutes, schools, or academies depending on the jurisdiction. Credentials issued include diplomas and certificates, with a tendency for programs to be much shorter and more intensive than programs in public institutions. In Quebec, private subsidized institutions may also offer two-year pre-university programs and three-year technical programs.

The source of funds at the postsecondary level will depend on the nature of the institution. For universities and public non-degree granting institutions, public funding comes either directly from the federal (mostly for sponsored research) or provincial/territorial (mostly in the form of operating and capital grants) governments. Private funding for those institutions is made up of tuition and other fees, donations (including bequests), investment, and non-government grants and contracts. Private non-degree-granting institutions receive very little or no public funding, except indirectly through support to students; funding for these private institutions comes mostly from tuition fees.

For a more detailed overview of postsecondary systems in Canada, see http://www.cicic.ca/postsec/vol1.overview.en.stm.

Figure 1

Levels within elementry-secondary schools, by jurisdiction

1. Prince Edward Island introduced its pre-elemetary program in 2000-2001.
2. 2002-2003 is the last year for the Ontario Academic Course (13th year of high-school).

Methodological notes

Chapter A:
A portrait of the school-age population

Indicator A1: Population size

The school-age population is defined here as comprising all individuals between the ages of 5 and 24, regardless of whether they are in school or not. This is the age range during which most people undertake their formal education. In Canada, mandatory school attendance is typically required of children aged 6 to 16, except in New Brunswick, which extended the age requirement to 18. Many students continue their schooling beyond the mandatory age.

The population figures for 2001 are post-censal estimates based on the 1996 Census counts adjusted for net undercoverage. The figures for 1991 and 1996 are based on the 1991 and 1996 Censuses also adjusted for net undercoverage. The 2006 to 2026 projections have been developed starting with the population estimates as of July 1, 2000, and using assumptions on the future course of fertility and mortality, as well as international and interjurisdictional in- and out-migrations (medium-growth scenario).

Interjurisdictional migration is the movement of population from one province or territory to another, involving a permanent change in residence. A person who takes up residence in another province/territory is an out-migrant with reference to the province/territory of origin and an in-migrant with respect to the province/territory of destination. Net migration is the difference between in- and out-migrants.

The medium-growth scenario assumes that fertility and immigration remain at their current levels throughout the projections period. It also assumes that Ontario, Alberta and British Columbia gain population through interjurisdictional migrations and that all other jurisdictions lose population through interjurisdictional migrations.

Appendix 2

Although commonly used for planning purposes, population projections should be used with caution as they are based on assumptions about the future course of demographic components. For instance, the main determinant of the school-age population, fertility, may not remain stable over the next 25 years as assumed. Furthermore, projections at the jurisdictional level should be approached with more caution because interjurisdictional migration, a component that is very volatile and difficult to forecast, has a major impact on population change in the provinces and territories.

For more detailed information, consult Statistics Canada's *Population projections for Canada, provinces and territories*, Catalogue No. 91-520-XPB, available at http://dissemination.statcan.ca/english/IPS/Data/91-520-XPB.htm.

Indicator A2: Cultural diversity

No notes.

Indicator A3: Family background

No notes.

Indicator A4: Low income

The low-income cutoffs (LICOs) represent an income threshold where a family is likely to spend 20% more of its income on food, shelter and clothing than the average family, leaving less income available for other expenses such as health, education, transportation and recreation. LICOs are calculated for families and communities of different sizes.

There is no internationally accepted standard for the measurement of poverty, nor is there an official definition of poverty in Canada. The LICOs produced by Statistics Canada provide one of many possible measures to monitor trends in the relative economic well-being of Canadian families. LICOs are updated annually to reflect increases in the cost of living. They are also updated periodically to reflect changes in family spending patterns. Over the longer term, with rising standards of living, the average Canadian family has spent a decreasing proportion of its total income on food, shelter and clothing. LICOs are adjusted accordingly, which means that they are a relative rather than an absolute measure of economic well-being.

LICOs are calculated using before-tax and after-tax income. The data presented in this report are based on after-tax LICOs because after-tax income is a better reflection of what a family has at its disposal to spend on basics and other commodities. The after-tax LICOs for 2000 are as follows:

After-tax low income cutoffs (1992 base) for economic families and unattached individuals, Canada, 2000

Family size	Size of area of residence Rural areas	Less than 30,000*	30,000 to 99,999	100,000 to 499,999	500,000 and over
1 person	9,947	11,498	12,583	12,780	15,172
2 persons	12,138	14,030	15,353	15,594	18,513
3 persons	15,352	17,745	19,419	19,723	23,415
4 persons	19,120	22,101	24,186	24,565	29,163
5 persons	21,371	24,701	27,031	27,456	32,595
6 persons	23,622	27,301	29,877	30,346	36,027
7 or more persons	25,872	29,902	32,722	33,237	39,459

* Includes cities with a population between 15,000 and 30,000 and small urban areas (less than 15,000).

Low-income rates are calculated for families with all members of an economic family having the same low-income status. An economic family is defined as a group of two or more persons related by blood, marriage, common-law, or adoption and living in the same dwelling.

The numbers in the tables may not equal the overall population count because of missing values on some of the response items.

The Survey of Labour and Income Dynamics (SLID) is designed to follow individuals for six years. Thus, six is the maximum number of consecutive years for which the income of a given family may be estimated using SLID.

Chapter B:

Financing education systems

General

Where amounts are shown in a table for more than one year, all amounts are given in 2001 constant dollars. Where a table includes only one year of data, all amounts are shown in current dollars.

Some ministries/departments of education and training may notice differences between their expenditure data and those presented here. In order to ensure international comparability, certain adjustments have been made, which may include

- Exclusion of debt charges
- Country and jurisdictional inflation adjustment factors
- Conversion of country and jurisdictional reporting time frames to a common annual format
- Inclusion of federal government spending on education in each jurisdiction for Department of National Defence and Aboriginal schools
- Inclusion of spending by households on education
- All departmental (all orders of government) spending on education in each jurisdiction above and beyond the ministries/departments of education and training

Public expenditures shown in this chapter include (see notes under Indicator B2)

- Direct purchases by governments of educational resources (e.g., direct payments of teachers' salaries by a central or regional education ministry/department, direct payments by a municipality to building contractors for construction of school buildings, procurement of textbooks by a jurisdiction or regional authority for subsequent distribution to local authorities or schools)
- Direct payments by government agencies to educational institutions that have the responsibility of purchasing educational resources themselves (e.g., government block grants to universities, which they use to compensate personnel, a government subsidy to a private school and government payments under contract to a private firm undertaking educational research)
- Direct expenditures designated for capital projects (e.g., building expansions or construction, laboratory equipment in support of research and development)
- Public to private transfers (e.g., financial aid in the form of government scholarships and grants, special public subsidies [such as for transport, medical expenses, studies abroad], family allowances or child allowances that are contingent on student status, student loans)

Private expenditures, by households or other private entities (commercial and not-for-profit), shown in this chapter include

- Fees paid to educational institutions (e.g., tuition, registration, laboratory, lodging, meals and other services provided to students by the institution). [Note that Statistics Canada surveys only institutions and, therefore, costs for off-campus housing not provided by the institution are not included in the total amount spent.]

- Financial aid to students or households coming from private sources (e.g., scholarships from business firms and religious and other non-profit organizations)
- Direct payments by private entities to educational institutions (e.g., contributions or subsidies to vocational–technical schools, contracts let to universities for research or other services, grants to educational institutions from non-profit organizations, charitable donations (other than from households), expenditures by private employers for apprenticeship training and other school and work-based educational programs)

Because of changes in methodology for a number of source surveys introduced beginning with the 1997-1998 school year, data from earlier years are not reported in this publication for some measures.

Data are not included for private education programs for pre-junior kindergarten children for which there is no provincial regulation. Data are not included for expenditures relating to private business colleges. Enrolment data are not available for private business colleges, and the related expenditures have been excluded in the interests of comparability.

The last two years of data shown in Tables B1.1, B1.2, B1.3, B1.5, B2.2, B2.3, B2.4, B2.5 and B2.6 are estimates or preliminary data. The public component is based on planned spending as published in the jurisdictional public accounts. The private component at the pre-elementary and elementary levels is based primarily on private school enrolments and the education price index. Public institutions have a small portion of funding from private sources, which is derived from year to year by extrapolation. At the postsecondary level, estimates of private expenditures are derived using the latest enrolment estimates and non-public expenditure trends.

Indicator B1: Total expenditure on education

Per-student expenditures for students in Yukon and Northwest Territories are considered too unreliable to be published.

Comparisons of per student expenditures between Canada and the other G-7 countries were done at the university level. At other levels, either the data were not available or their comparability was questionable.

Indicator B2: Public and private expenditure on education

Public accounts data from Public Institutions Division (PID), used in Table B2.1 in order to permit comparisons of spending across government programs, are not directly comparable to data from the other sources used in this indicator, which are derived from survey data. PID standardizes individual governments' accounts to provide consistent and comparable statistics. As a result, these statistics may differ from the figures published in individual government financial statements, and differ slightly from other data given here for public expenditures.

Data on expenditures per student are not presented in this indicator. The enrolment data used to calculate per-student spending cover both public and private schools (with the exception of private business colleges). Although some private schools receive public funding, this is not the case for all private schools, and it is not possible to separate out students on whom no public funds are expended from the overall enrolment totals, making it difficult to provide an accurate picture of per-student spending for public expenditures.

Provincial governments support college- and university-related activities in a variety of ways. They provide direct operating, capital, and other special purpose grants to institutions; financial aid to students; and research funding to faculty members. In addition to these direct expenditures, jurisdictions maintain ministries/departments and agencies to administer their college- and university-related programs and to develop public policy. The cost of all these programs and activities represents the total provincial and territorial government expenditures on college- and university-related activity.

In Table B2.1, *Social services* include social assistance, workers' compensation benefits, employee pension plan benefits, veterans' benefits and changes in equity, other social services and motor vehicle accident compensation. *Health* expenditures include hospital care, medical care, preventive care and other health services. *Other education expenditures* refers to special retraining and to spending that cannot otherwise be categorized, such as spending for language instruction to newcomers, training in Canada's official languages, spending on language training for employees of the Government of Canada and payments by Indian and Northern Affairs on capital facilities and maintenance allocated to education.

Private revenues at universities, defined as revenue obtained from any source other than government, has, for the purposes of this indicator, been categorized as (1) student fees, (2) non-government grants and contracts, donations, and bequests, (3) the sale of services and products, (4) investment, and (5) miscellaneous. All proportions may not add up exactly to 100 due to rounding. In 1999-2000, the Financial Information of Universities and Colleges survey began collecting data on the endowment fund of institutions. In order to maintain comparability with previous years, the revenue reported in the endowment fund was removed from the total revenue in 1999-2000.

Indicator B3: Allocation of resources

In highlighting differences across provinces and territories, it should be noted that the proportion of spending between current and capital expenditures will vary somewhat from year to year, depending on whether new schools were built or major repairs to existing buildings undertaken. Changes to accounting procedures, such as a shift from purchase to leasing, may also affect the balance between capital and current spending, as may one-time school closings or the consolidation of school districts or boards.

Indicator B4: Student debt

Survey information collected from graduates on student loans includes the amounts owed to both federal and provincial student loan programs as well as the amount owed to other sources. Results presented in this report refer to borrowing from government student loan programs only. Borrowing from private sources is not included.

Debt levels refer to accumulated debt incurred at all levels of study. Debt levels for the 1990 and 1995 graduating classes have been expressed in terms of 1995 constant dollars in order to reflect the year in which the debts were incurred for 1995 graduates, and to permit an examination of changes between the two graduating classes.

Provincial data refer to the province of study, which may differ from the province of residence two and five years after graduation. The Canada totals include data for the territories. Separate estimates for the territories were suppressed because of high sampling errors.

Chapter C:

Elementary-secondary education

Indicator C1: Home to school transitions: Early childhood development and learning

The statistical information in this section is derived from the National Longitudinal Survey of Children and Youth (NLSCY), primarily from Cycle 3, which was conducted in 1998-1999.

It focuses on children aged 4 and 5, and is based on a nationally representative sample. The population of 4- and 5-year-olds in 1998-1999 was about 760,000.

Most of the information in this section is taken from the NLSCY Parent Questionnaire, which contains the responses of the person most knowledgeable (usually the mother) about the 4- and 5-year-olds being surveyed. For several dimensions and sub-categories, the survey relies on the perceptions of the adult most familiar with the child in order to provide an indication of the child's general development and health.

The Peabody Picture Vocabulary Test (PPVT) is administered to 4- and 5-year-olds. This test measures children's receptive language skills or the verbal component of intelligence. It is a "normed" test; that is, participants' performances are reported and scored relative to that of an overall population. A range of scores is considered a reflection of a "normal" level of ability, taking the age of the child into consideration. Scores below the lower threshold of this range reflect a "delayed" receptive vocabulary, and scores above the higher threshold demonstrate "advanced" receptive vocabulary.

The PPVT is scaled to an average of 100. The range of "normal" receptive vocabulary measured by the PPVT covers scores from 85 to 115. A score below 85 is considered a "delayed" score, and a score above 115 is considered an "advanced" score. Scoring is adjusted to reflect different abilities of 4- and 5-year-olds.

Further references are Gillian Doherty, "Zero to Six: The Basis for School Readiness," May 1997, and Barbara A. Morrongiello, "Tapping School Readiness in the NLSCY: Measurement Issues and Solutions," September 1997, both published as Applied Research Branch Research Papers, Human Resources Development Canada (http://www.hrdc-drhc.gc.ca/sp-ps/arb-dgra/publications/research/).

Indicator C2: Elementary-secondary school participation

Pre-elementary programs include all pre-grade 1 programs offered by public, private, federal schools and schools for the visually and hearing impaired. It does not include early childhood education programs outside the formal education system. Programs are mandatory or optional, full-time or part-time.

Elementary-secondary enrolment is defined as the head count of students enrolled in elementary and secondary schools on September 30 of the school year (October 31 in Ontario). Coverage extends to students in public and private schools, federal schools and schools for the visually and hearing impaired. Students enrolled in pre-elementary programs offered by these schools are also included.

In all jurisdictions except Quebec and Ontario, the 17-year-old cohort corresponds to those typically entering the last year of secondary schooling. In Quebec, 16-year-olds are those typically in the last year of secondary education. In Ontario, the typical age of entry into the last year of schooling is 18 for those intending to pursue university education and taking the extra year of OAC credits, and 17 for those not taking the extra year. Seventeen-year-olds in Quebec and 18-year-olds in other jurisdictions except Ontario represent the group enrolled one year after typical on-time completion.

The enrolment rate for a particular level of education, or a particular age group is defined as the total enrolment expressed as a percentage of a specified age group. For example, the pre-elementary enrolment rate is the number of individuals enrolled in pre-elementary education divided by the population of 4- and 5-year-olds. The population of a particular age group is the number of persons who are that age on July 1 of the year in question.

Indicator C3: Human resources

Data on educators in public schools are collected from provincial administrative files and provide educators' main characteristics: age, sex, employment status, position and grade level.

Educators are grouped into two categories: teaching educators and non-teaching educators. Non-teaching educators are assigned to sub-categories based on position and specialty.

Teaching educators include all personnel responsible for instructing pupils, including regular classroom teachers; relief, supply, itinerant, or resource teachers; other school instructional staff; school aides; and teaching and research assistants.

Non-teaching educators include specialized personnel who provide curriculum support services to pupils. In many cases, these are employees who have obtained a teaching certificate but have accepted another position within the education system. They include principals, guidance counsellors, librarians and other administrators responsible for educational policies. This category also includes personnel who have no teacher training and who are not directly responsible for instructing pupils but who provide health and social support services to pupils. Administrative support staff is also included in this category.

The pupil–educator ratio is calculated using full-time equivalent enrolment in Grades 1 to 12 (and OAC in Ontario) and ungraded programs, plus pre-elementary full-time equivalent enrolment, divided by the full-time equivalent number of educators, both teaching and non-teaching.

The pupil–educator ratio should not be taken as a measure of classroom size. Average classroom size depends not only on the number of teachers and students but also on the hours of instructional time per week received by students, the per-teacher hours worked, and the division of time between classroom instruction and other activities such as course preparation and marking. Indicators on class size, while not presented in this report, will be included in future reports.

Indicator C4: School characteristics

Data on elementary and secondary schools are obtained from the survey on elementary and secondary school enrolments. The survey includes public schools, private schools, federal schools, and schools for the visually or hearing impaired. The survey reports enrolments as of September 30 (October 31 in Ontario).

Schools are classified as elementary schools if they offer either Grade 6 and under or a majority of years at the elementary level. Secondary schools offer either Grade 7 and over or a majority of years at the secondary level.

Indicator C5: Information and communications technologies (ICT) in schools

Data for this indicator are derived from the Programme for International Student Assessment (PISA) undertaken by OECD during 2000. In addition to a written test, which was completed by samples of 15-year-old students in 32 countries, 15-year-olds in 25 countries completed a student questionnaire. Students' responses to questions on the frequency of use of computers and the Internet at school derive from this student background questionnaire. A second background questionnaire on computer familiarity was also completed by students in 20 countries. This questionnaire explored students' interest in computers, self-assessment of student's attitudes and ability to work with computers, and use of and experience with computers.

The principals of the schools in which students were assessed also completed a questionnaire on the characteristics of their schools. Data presented here relating to the availability of computers, including the number of students per computer, derive from principals' responses to this questionnaire.

The average number of students per computer, or the student–computer ratio, is often used as a proxy for the extent to which technology is accessible to students. In PISA 2000, principals of schools in which 15-year-olds were enrolled were asked how many computers were available in the entire school. A ratio of students per computer was then calculated by dividing the total number of computers by the total number of students enrolled in each school.

The number of computers reported by schools includes both newer and older models. Schools usually keep older computers for use as word processors and other stand-alone functions, while newer computers are typically networked and, where possible, linked to the Internet.

For several of the measures, student responses to PISA questionnaires are clustered into three categories: "Frequent," "Infrequent," and "Never." "Frequent" availability represents those students who reported that a computer was available for their use almost every day or a few times each week. "Infrequent" availability represents students who reported that a computer was available between once a week and once a month, or less than once a month. "Never" represents those students who reported that a computer was never available for their use.

Schools in which 15-year-olds were surveyed as part of PISA 2000 span a variety of grade-level configurations.

The countries selected to appear here include the G-8 (United States, Canada, United Kingdom, France, Germany, Italy, Japan and the Russian Federation) and several other countries that provide useful reference points: Mexico (part of the North American Free Trade Agreement), Finland (top-ranking PISA 2000 reading scores), Belgium and Switzerland (official languages), and Sweden (social policies). For certain measures data are not available for all countries.

Indicator C6: Student achievement

The following three studies of student achievement were conducted in Canada from 1999 to 2001, the time between the publication of the last PCEIP report and the preparation of this report:

- School Achievement Indicators Program (SAIP). Mathematics 2001 and Science 1999, 13- and 16-year-olds. Council of Ministers of Education, Canada (CMEC).
- Third International Mathematics and Science Study (TIMSS). Mathematics and Science 1999, Grade 8. International Association for the Evaluation of Educational Achievement (IEA).
- Programme for International Student Assessment (PISA). Reading 2000, Mathematics 2000, and Science 2000, 15-year-olds. Organisation for Economic Co-operation and Development (OECD).

Data used in this section are derived primarily from the following nine tests:

Reading[1]

PISA 2000 (15-year-olds)

Mathematics

TIMSS 1999 (Grade 8 – 14-year-olds)

PISA 2000 (15-year-olds)

SAIP 2001 (problem solving – 13-year-olds)

SAIP 2001 (problem solving – 16-year-olds)

Science

TIMSS 1999 (Grade 8 – 14-year-olds)

PISA 2000 (15-year-olds)

SAIP 1999 (written component – 13-year-olds)

SAIP 1999 (written component – 16-year-olds)

1. SAIP also assesses reading on a cyclical basis. However the results of the last SAIP reading assessment are not included in this report as they were already reported in the 1999 edition.

School Achievement Indicators Program (SAIP)

For all SAIP assessments, development teams composed of representatives from provinces and territories jointly establish curriculum frameworks and assessment criteria. These frameworks are intended to reflect the commonly accepted knowledge and skills students should acquire during their elementary and secondary education in Canada. A detailed description of SAIP is found at http://www.cmec.ca.

SAIP Science 1999: The science assessment was in two parts: a written assessment and a practical tasks assessment. Only results for the written assessment are discussed in this report, as data are not available for all jurisdictions for the practical component. The written assessment measured student understanding in the following areas: knowledge and concepts of science, nature of science and the relationship of science to technology and societal issues.

A major strength of SAIP is that student performance is reported in relation to five proficiency levels, Level 1 being the lowest and Level 5 the highest. For the science written assessment, students at Level 1 can complete basic cognitive tasks, such as describing physical properties of objects or identifying various technologies important to society. At Level 5, students can complete complex tasks, such as relating properties of substances to their molecular structure or showing the influence of world views on science and technology. The assessment instrument was the same for all students who participated. Thus, direct comparisons between 13- and 16-year olds can be made.

Developers of SAIP defined Level 2 as the expected performance level for 13-year-olds and Level 3 as the expected performance level for 16-year-olds. Students reaching Level 2 in the science written component are able to, for example, classify substances according to their properties and identify technologies that influence science. Students at Level 3 can, for example, use chemical properties to compare and classify substances and identify areas where science knowledge and technologies address societal problems.

In this report, the SAIP results are presented at the overall jurisdictional level, which differs from the approach used in the SAIP publications, where for some jurisdictions, the results are presented separately for the Francophone and Anglophone school populations. The Council of Ministers of Education, Canada (CMEC) generated the total jurisdictional statistics by weighting the French and English results according to the size of each population and combining the two.

Changes in student performance in the SAIP science written assessment between 1996 and 1999 are not reported in this document, as technical documentation was not complete at the time of writing.

SAIP Mathematics 2001: The assessment framework for mathematics had two major components: skills related to mathematics content and skills related to problem solving. Only results for problem solving are reported here, with the content results available directly from the SAIP Mathematics 2001 report at http://www.cmec.ca. The strands chosen to measure students' skills in mathematical content assess numbers and operations, algebra and functions, measurement and geometry and data management and statistics. The strands chosen to measure students' skills in problem solving assess performance on a range of problems dealing with the ability to use numbers and symbols, to reason and to construct proofs, to provide information and make inferences from databases, to pursue evaluation strategies, and to demonstrate communication skills. In Quebec, only 13-year-olds participated in the SAIP Mathematics 2001 assessment.

For problem solving, students at Level 1 can solve one-step problems using a limited range of whole numbers, whereas students at Level 5 can create original algorithms

to find solutions to multi-step problems using the full range of numbers. The assessment instrument was the same for all students who participated. Thus, direct comparisons between 13- and 16-year-olds can be made.

As they did for the science component, the developers of SAIP set age-dependent performance levels: Level 2 for 13-year-olds, and Level 3 for 16-year-olds. Students reaching Level 2 can, for example, select appropriate algorithms to solve multi-step problems using a range of whole numbers or one-step problems using rational numbers. At Level 3, students can, for example, choose from two algorithms to find a solution to multi-step problems using a limited range of rational numbers.

In this report, the SAIP results are presented at the overall jurisdictional level, which differs from the approach used in the SAIP publications, where for some jurisdictions, the results are presented separately for the Francophone and Anglophone school populations. CMEC generated the total jurisdictional statistics by weighting the French and English results according to the size of each population and combining the two.

Changes in student performance between 1996 and 1999 are not reported here as technical documentation was not complete at the time of writing.

Third International Mathematics and Science Study (TIMSS)

Figures and tables in this report come from Canadian and international reports published as part of TIMSS 1999. A detailed description of TIMSS appears at http://www.curricstudies.educ.ubc.ca/wprojects/TIMSS/.

For TIMSS 1999, the target population was all students enrolled in the upper of the two adjacent grades that contain the largest proportion of 13-year-olds at the time of testing; this was expected to be the eighth grade in most countries. The mean age for Canada was 14.0.

Thirty-eight countries took part in TIMSS 1999; twenty-six had also participated in TIMSS 1995. Five provinces—Alberta, British Columbia, Newfoundland and Labrador, Ontario, and Quebec—elected to over-sample so that reliable estimates could be reported for these provinces. The test-development process for TIMSS placed a heavy emphasis on ensuring that the tests reflected the curricula of participating countries.

Mathematics: The TIMSS 1999 mathematics test is designed along two categories. The content category consists of: fractions and number sense; measurement; data representation, analysis, and probability; and geometry and algebra. The performance category consists of knowing and using routine procedures, using complex procedures, investigating and solving problems, and communicating and reasoning.

Science: The TIMSS 1999 science test is also designed along two categories. The content category consists of earth science, life science, physics, chemistry, environment and resource issues, scientific enquiry, and the nature of science. The performance category consists of understanding simple information; understanding complex information; theorizing, analyzing, and solving problems; using tools, routine procedures, and science processes; and investigating the natural world.

The 1995 test data were rescaled, using item response theory, so that comparisons could be made with 1999. Readers may, therefore, notice some differences between the 1995 data displayed in TIMSS 1995 and TIMSS 1999 reports. These differences did not to any significant degree affect the overall results or the rank ordering of countries.

Programme for International Student Assessment (PISA)

Figures and tables appearing in this section are based on data published by OECD and by Statistics Canada. A detailed description of PISA and related findings appear at http://www.cmec.ca/pisa/2000/CanadaReport.en.pdf.

PISA defines reading, mathematics, and science not only in terms of mastery of the school curriculum, but also in terms of the knowledge and skills needed for full participation in society. PISA uses the term "literacy" to reflect the practical, or applied, aspects of learning.

Reading literacy was the major focus of PISA 2000. Reading literacy is defined as the ability to understand, use, and reflect on written texts in order to achieve one's goals, to develop one's knowledge and potential, and to participate effectively in society. This OECD definition goes beyond the notion that reading literacy means decoding written material and literal comprehension; reading incorporates understanding and reflecting on texts. The term "literacy" involves the ability of individuals to use written information to fulfil their goals, and the consequent ability of complex modern societies to use written information to function effectively.

Reading literacy is measured on three scales. A "retrieving information" scale reports on students' ability to locate information in a text. An "interpreting texts" scale reports on the ability to construct meaning and draw inferences from written information. A "reflection and evaluation" scale reports on students' ability to relate text to their knowledge, ideas, and experiences. In addition, a combined reading literacy scale summarizes the results from the three reading literacy scales.

Mathematical literacy is defined in PISA as the capacity to identify, understand, and engage in mathematics, and to make well-founded judgments about the role that mathematics plays in an individual's current and future private life, occupational life, social life with peers and relatives, and life as a constructive, concerned, and reflective citizen.

Mathematical literacy is used here to indicate the ability to put mathematical knowledge and skills to functional use rather than only mastering them within a school curriculum. To "engage in" mathematics includes not only physical or social actions (such as deciding how much change to give someone in a shop) but also wider uses, including taking a point of view and appreciating things expressed mathematically (such as having an opinion about a government's spending plans). Mathematical literacy also implies the ability to pose and solve mathematical problems in a variety of situations, as well as the inclination to do so, which often relies on personal traits such as self-confidence and curiosity.

Scientific literacy refers to the ability to think scientifically in a world in which science and technology shape lives. Such literacy requires an understanding of scientific concepts as well as an ability to apply a scientific perspective. PISA defines scientific literacy as the capacity to use scientific knowledge, to identify questions, and to draw evidence-based conclusions in order to understand and make decisions about the natural world and the changes made to it through human activity.

Socio-economic index of occupational status is derived from students' responses on parental occupation. The index captures the attributes of occupations that convert parents' education into income. The index is based on either the father's or the mother's occupation, whichever is the higher. Values on the index range from 0 to 90; low values represent low socio-economic status, and high values represent high socio-economic status.

Indicator C7: Secondary school graduation

This section reports on secondary school graduation rates using administrative data (i.e. information acquired from schools, school boards, or ministries/departments of education). It should be noted that graduation rates based on administrative data differ from those based on household survey data. Generally, graduation rates obtained from surveys of individuals are higher than those obtained from administrative records. Administrative data tend to underestimate the true graduation rate since they do not include people who complete high school outside the regular secondary school systems. Data on graduations from some secondary programs are not uniformly available across jurisdictions, and General Education Diplomas (GED), adult basic upgrading and education, and graduation from adult day school, which take place outside regular secondary school programs, are in most instances not included.

On the other hand, measures based on surveys of individuals may overestimate the percentage of graduates owing to self-reporting bias, and failure on the part of some respondents to distinguish between completing high school and graduation (receiving certification). Another source of difference at a jurisdictional level is that the survey estimates generally refer to residents of a jurisdiction at the time of the survey, including interprovincial migrants and immigrants who obtained their education in another jurisdiction or outside Canada. Administrative data, however, refer only to those enrolled in the school system of the particular jurisdiction.

Despite these differences in graduation rates, the data from each source have strengths. Presenting both together paints a clearer picture of high school graduates and leavers. The administrative data are not subject to sampling errors associated with survey data, and hence can be examined at a greater level of detail, such as gender and age. In addition, the administrative data yield regular time series, which are well suited to monitoring trends over time. Survey-based data are useful to gather background information on the characteristics of both graduates and high school leavers. This information offers insights into the reasons for leaving school and helps to inform strategies aimed at retaining students and encouraging them to complete school. Also, surveys that are longitudinal in design can examine the impact of completing or not completing school on a wide variety of social and labour market outcomes later in life.

In this report we focus on graduation (that is, obtaining a high school certificate) as distinct from completion (finishing the final year of high school with or without obtaining the certificate). Completion rates may be examined in future PCEIP reports.

Graduation rates based on administrative data. These rates are calculated by Statistics Canada based on data reported to them by ministries/departments of education and training, together with population estimates produced by the Demography Division at Statistics Canada. The data that are reported are guided by a standard set of definitions (see below) and the rates for individual jurisdictions are considered to be comparable. The graduation rates reported by OECD (Table C7.1) are based on the same methodologies and definitions. Rates are defined below at the pan-Canadian level and are defined analogously for each jurisdiction:

Graduation rate =

(sum of graduates of all ages) /

(sum of the population at the typical age of graduation)

Typical-age graduation rate =

(sum of graduates whose age is equal to or less than the typical age of graduation) /

(sum of the population at the typical age of graduation)

After-typical-age graduation rate =

(sum of graduates whose age is greater than the typical age of graduation) /

(sum of the population at the typical age of graduation)

Where

Typical age of graduation is the age at which persons complete high school if they start at the prescribed age and experience no repetition or interruption in their schooling. The typical age of graduation is 18 for all jurisdictions except Quebec, where it is 17.

Secondary school graduate: Secondary school graduation refers to completion of grade 12 (OAC in Ontario) in all jurisdictions except Quebec (Secondary V). Secondary school graduate statistics are presented for academic years.

Population at the typical age of graduation is obtained from population estimates produced by the Demography Division, Statistics Canada.

Survey-based estimates of high school leaver rates: Estimates of high school leaver rates for 1991 are based on the School Leavers Survey and for 1999 are based on Cycle One of the Youth in Transition Survey (YITS). Both of these surveys studied youth aged 18 to 20 and the design and content of YITS allows for some comparison to be made between the two surveys.

The following definitions apply:

Graduation rate for age cohort y =

(estimate of graduates in age cohort y) /

(estimate of the population in age cohort y)

High school leaver rate for cohort y =

(estimate of the number of high school leavers in cohort y) /

(estimate of the population in age cohort y)

Where

Graduates are respondents reporting that they graduated from high school by December of the reference year (1991 or 1999).

High school leavers are respondents who were not enrolled in high school and had not completed the requirements for a high school diploma by December of the reference year.

Chapter D:

Postsecondary education

Indicator D1: Enrolment in postsecondary education

Trade-vocational enrolments show only enrolments reported by publicly funded postsecondary institutions in Canada; enrolments in private postsecondary training institutes are not included.

The number of apprentices is based on data provided by provincial/territorial apprenticeship branches and includes all individuals registered in an apprenticeship program, regardless of whether or not they had been enrolled in any formal classroom training during the year.

Provincial and territorial governments coordinate apprenticeship programs in their jurisdiction. Most of the training time for an apprentice is spent on the job working with experienced tradespeople, usually over a period of 3 to 4 years. A portion of the apprenticeship program is spent in formal classroom instruction, typically offered in a college or vocational school. When this occurs, the training institute reports apprenticeship enrolments in the in-class portion only.

Enrolment data for university transfer programs include enrolment in university college programs.

Indicator D2: Adult education and training

No notes.

Indicator D3: Human resources

No notes.

Indicator D4: Research and development

Expenditures for Research and development (R&D) performed by the federal government in the National Capital Region are excluded from the Quebec and Ontario data for total domestic expenditures on R&D. This is a standard practice followed by Statistics Canada as not all expenditures made by an R&D unit are spent in the region of its physical location (e.g., supplies may be purchased from regions outside the unit's location). In the case of the National Capital Region, labour moves freely between Quebec and Ontario so that even wages and salaries paid by an R&D unit are partly spent outside the area of location. Further information on the approach, along with the actual expenditures, is available in Statistics Canada's service bulletin *Science Statistics* (Catalogue No. 88-001-XIB).

University expenditures on R&D are estimated by the Science Innovation and Electronic Information Division of Statistics Canada by adding the sponsored research expenditures reported by universities in the annual Financial Information of Universities and Colleges Survey to the estimations of the indirect expenditures generated by the reported sponsored research. This technique reflects recent changes made in the methods used by Statistics Canada to better estimate university R&D expenditures, first used during the 1998 estimation procedure and applied to the historical data going back to 1988. Further details are available in *Estimation of Research and Development Expenditures in the Higher Education Sector 1999-2000* (Catalogue No. 88F0006XIE, No. 14), available from Statistics Canada's Web site as part of their free products.

General university funds represent government transfers (or block grants) to universities that are used to support R&D activity. Although these funds represent indirect government spending on R&D, in pan-Canadian statistics they are allocated to university funding for R&D because of the difficulty of categorizing these funds as provincial or federal. In international data, these funds are included as part of overall government funding.

While the R&D financial data are for universities and affiliated institutions (including research hospitals), the data on the outputs/commercialization activities of university research are exclusive of university-affiliated research hospitals. Data for these hospitals have not been included as their response rate in the data source used here (1999 Survey of Intellectual Property Commercialization in the Higher Education Sector) was only moderate, and the results cannot be said to reflect all research hospitals.

The source for internationally comparative statistics on R&D is the OECD. Although OECD is working to improve the international reporting of R&D statistics, comparability issues exist as noted in the international tables and figures presented here. Because of these comparability issues, it is important that the reader exercise caution in interpreting these statistics.

OECD guidelines cover the postsecondary education sector defined as all universities, colleges of technology, and other institutes of postsecondary education, whatever their source of finance or legal status. As pan-Canadian data on R&D in community colleges and similar institutions are not available as part of the current Statistics Canada data collection program, pan-Canadian data reflect R&D activity in universities and affiliated institutions only. However, OECD indicates that this difference is too small to affect the comparability of international indicators. To reflect this difference, however, pan-Canadian tables and figures make reference to the university sector, while international tables make reference to the postsecondary education sector.

Table and Figure D4.1 compare Canada to all OECD countries. To facilitate the international discussion, subsequent comparisons make use of the G-7 and Sweden, Finland, and Korea—non-G-7 competitor countries to Canada that are leaders among the OECD countries in terms of the level of resources that they devote to R&D and that thereby serve as useful reference points.

The deflator used to convert current R&D expenditures to constant dollars is the GDP implicit price index, which differs from the Consumer Price Index (CPI) used in Chapter B (see Appendix 6, Basic reference statistics).

Indicator D5: Postsecondary completions and graduation rates

The Enhanced Student Information System (ESIS)—a single and comprehensive survey of postsecondary programs, enrolments, and graduations—is being implemented, and, in most of the country, institutions are already reporting in ESIS format. Initial start-up problems with ESIS have limited the data available for this publication.

OECD classifies graduates in two categories: Tertiary Type A programs (ISCED 5A) are largely theory based, typically last four or more years, and are usually, but not always, offered in universities. These programs include second degree programs like a master's degree. Tertiary Type B programs (ISCED 5B) are typically shorter than those of Tertiary Type A and focus on practical, technical, or occupational skills for direct entry into the labour market. They have a minimum duration of two years.

For college and university programs, graduation rates have been calculated by relating the number of graduates to the size of the population at a typical graduation age. For apprenticeship and vocational graduations, there is no expected age at graduation, and, consequently, graduation rates have not been calculated. The typical ages at graduation that have been used in this publication are:

- College: 21
- Undergraduate: 22
- Master's: 24
- Doctorate: 27

The determination of the typical age of graduation by level is based on graduation data from the University Student Information System (USIS). Statistics Canada is reviewing the typical graduation age by level, with the result that they will likely be revised in the near future.

University graduation rates have been calculated in two ways. Table D5.5 shows rates by province of study, where the graduates from universities within a province are compared to the population of that province at the typical age of graduation. Table D5.6 shows rates by jurisdiction of residence, where graduates are linked to their province or territory of residence, which may or may not be the province they studied in, and the population of their home jurisdiction is used as the denominator. Rates at the Canada level will differ between the two measures because the rate by province of study includes students who reside outside Canada, as well as students for whom no jurisdiction of residence is identified through the survey data. Canadian students who obtain a degree from a foreign institution are excluded from both measures.

Indicator D6: Educational attainment of the population aged 25 to 64

Educational attainment measures an individual's highest level of completed schooling and is sometimes used as a proxy measure of human capital. OECD has defined human capital as the knowledge, skills, competencies and attributes embodied in individuals that facilitates the creation of personal, social and economic well-being.

Pan-Canadian comparisons of educational attainment are based on the Census. The international comparisons of educational attainment presented here are based on OECD's *Education at a Glance, 2002*. In turn, the data that Canada submits to the OECD are from the Labour Force Survey (LFS). Levels of education derived from the Census and Labour Force Survey are as follows:

- Less than high school: persons who did not graduate from high school
- High school: high school graduates with no further education, or with some postsecondary education, but with no degree, certificate or diploma
- Trade vocational: persons with a trade certificate or diploma from vocational or apprenticeship training
- College: persons with a non-university certificate or diploma from a community college, CEGEP, or school of nursing
- University: persons with a bachelor's degree, university degree or certificate above bachelor's degree, or a certificate below bachelor's degree.

The order of these categories reflects education pathways that require increasing time commitments to schooling. Each person is classified according to the highest level completed. For example, a person holding both a college diploma and a university degree would be counted in the university category.

The three highest categories are at times merged to form a broad group of "postsecondary graduates" or persons with "qualifications above the secondary level." Trade certificates are included, even though completion of secondary school may not have been a prerequisite. However, the trades category includes registered apprenticeships obtained after a combination of classroom and on-the-job training that may take up to five years to complete. This is a significant educational investment to achieve a highly specialized skill.

In the Census, education information is gathered for the population aged 15 and over. Most young people aged 15 to 24 are still in school, so their current level of education understates the skills they will ultimately bring to the labour market. Therefore, the discussion on levels of education is primarily about the population aged 25 to 64. From a life-cycle perspective, the age group 25 to 64 roughly covers people who are old enough to have completed their formal education, but young enough to work. (The average age of retirement has been estimated at about 61, using LFS data.)

The concordance between the educational attainment levels presented in Indicator D6 and those reported by OECD, based on the 1997 International Standard Classification for Education (ISCED97), is as follows:

PCEIP educational attainment levels	OECD levels based on ISCED97
Less than high school	0, 1, 2
High school	3
Trade-vocational	4
College	5B
University	5A / 6

It should be noted that the mapping of educational attainment data from the LFS into ISCED levels is not exact, as the LFS questions were designed before the introduction of ISCED 97 and hence do not allow for some differentiations made under ISCED. For example, two types of programs are offered by CEGEPs in Quebec—two-year pre-university programs, which have been classified at the ISCED 4 level, and three-year career-oriented programs, classified at the ISCED 5B level. As the LFS questionnaire does not distinguish these separate streams within CEGEPs, both streams have been included in the college category for this publication and also in the educational attainment data, which is reported to OECD as ISCED 5B. Hence, in data published by OECD, Canadian attainment levels are slightly overstated at the ISCED 5B level and understated at the ISCED 4 level.

Chapter E:

Transitions and outcomes

Indicator E1: Transitions to postsecondary education and labour market

For the comparisons between 1991 and 2001 (Tables E1.1 and E1.2) and Table E1.3, data from the LFS on school attendance and employment activities were used. Provincial differences (Table E1.4) were analyzed using administrative data collected from ministries/departments of education and institutions and population estimates produced by Statistics Canada's Demography Division.

As the distribution of the youth population by single year of age is truncated at age 25 in the postsecondary education data, the number of students over age 25 was divided by the population aged 26 to 35 and the ratios were divided by ten to obtain the average participation rates for persons over age 25. The secondary education data were truncated at age 20, but no similar adjustment was made.

Education expectancy reflects the average duration of formal education in which a 15-year-old person can expect to enrol over his or her lifetime. It is calculated by adding the enrolment rates for each single year of age from age 15 onward.

Education expectancies calculated here do not take account of full- and part-time participation rates. They therefore overestimate the true education expectancies.

The participation rates and education expectancy were calculated based on province of study. Net migration to study out of a given province tends to lower the participation rates and education expectancy in that province. Conversely, net migration to a given province tends to push up participation rates and education expectancy. The effect of migration is likely to be felt more deeply in smaller provinces.

Indicator E2: Labour market outcomes

The Canadian data used in this section are from the LFS and the Census of Population carried out by Statistics Canada. International data are drawn from the OECD publication *Education at a Glance, 2002*.

Glossary

A

Aboriginal identity:

Refers to those persons who reported identifying with at least one Aboriginal group, i.e. North American Indian, Métis or Inuit (Eskimo), and/or those who reported being a Treaty Indian or a Registered Indian as defined by the *Indian Act* of Canada and/or who were members of an Indian Band or First Nation. In 1991 and previous Censuses, Aboriginal persons were determined using the ethnic origin question (ancestry). The 1996 Census included a question on the individual's own perception of his or her Aboriginal identity. The 2001 Census question is the same as the one used in 1996.

Academic rank:

This refers to a classification of university teaching staff according to level of academic appointment. Generally, the ranking consists of "full professor" at the top, followed by "associate professor". The "other" category refers to assistant professors, lecturers, and instructors.

After-typical-age graduation rate:

At the secondary school level, the after-typical-age graduation rate is calculated by relating the number of graduates whose age is greater than the typical age of graduation to the population at the typical age of graduation. The typical age of graduation is the age at which persons complete high school if they start at the prescribed age and experience no repetition or interruption in their schooling. The typical age of graduation is 18 for all jurisdictions except Quebec, where it is 17.

Average enrolment:

The total enrolment in elementary-secondary schools in a jurisdiction as of September 30 (October 31 for Ontario), divided by the total number of elementary-secondary schools in that jurisdiction.

Average number of students per school:

The total enrolment in elementary-secondary schools in a jurisdiction as of September 30 (October 31 for Ontario), divided by the total number of elementary-secondary schools in that jurisdiction.

Appendix 3

Average school size:

The total enrolment in elementary-secondary schools in a jurisdiction as of September 30 (October 31 for Ontario), divided by the total number of elementary-secondary schools in that jurisdiction.

B

Birth rate:

Number of births per 1,000 population.

C

Capital expenditure:

Expenditures used to purchase assets intended to last longer than one year. It is also a measure of the value of capital acquired during the year in question. These expenditures include spending for the construction, renovation or major repair of buildings and to replace or purchase new equipment.

Career technical programs (by registration status):

These programs, which are offered at community colleges, prepare students to enter occupations at a level between that of the university-trained professional and the skilled tradesperson. Secondary school completion or equivalent is a normal prerequisite for entry. These programs require at least one school year of 24 weeks or more for completion. Most take two or three years and some take longer. One-year programs lead to a certificate and the longer ones lead to a diploma.

> *Full-time/part-time*: A classification of enrolment as either full time or part time is made according to institutional definitions. Since standard pan-Canadian definitions of full-time and part-time enrolment do not exist, it can be expected that the definitions used by institutions will vary somewhat.

Census division (CD):

A Census geographical unit comprised of a group of neighbouring municipalities joined together for the purposes of regional planning and managing common services (such as police or ambulance services). These groupings are established under laws in effect in certain provinces and territories of Canada. For example, a census division might correspond to a county, a regional municipality or a regional district. In other provinces and territories where laws do not provide for such areas, Statistics Canada defines equivalent areas for statistical reporting purposes in cooperation with these provinces and territories.

Census metropolitan area (CMA):

A Census geographical unit consisting of one or more adjacent municipalities centred on a large urban area (known as the urban core). The census population count of the urban core is at least 100,000 to form a census metropolitan area (CMA). To be included in the CMA, other adjacent municipalities must have a high degree of integration with the central urban area, as measured by commuting flows derived from census place of work data. Once an area becomes a CMA, it is retained as a CMA even if the population of its urban core declines below 100,000.

College enrolment (by registration status):

Includes enrolment in career-technical and university transfer and university college programs of postsecondary non-university institutions as well as enrolment in radiography, medical technology, health records and registered nursing programs in hospital schools.

> *Full-time/part-time*: A classification of enrolment as either full time or part time is made according to institutional definitions. Since standard pan-Canadian definitions of full-time and part-time enrolment do not exist, it can be expected that the definitions used by institutions will vary somewhat.

Common-law:

Refers to two people of the opposite sex or of the same sex who live together as a couple, but who are not legally married to each other.

Community college:

Refers to community colleges, CEGEPs, technical institutes, hospital and regional schools of nursing, and establishments providing technological training in specialized fields. In counting the number of institutions, hospital schools of radiography, medical technology and health records are included.

Compensation of staff (educators and other staff):

Expenditure on compensation of staff includes gross salaries (before deduction of taxes, contributions for retirement or health care plans, and other contributions or premiums for social insurance or other purposes), plus expenditure on retirement (actual or imputed expenditure by employers or third parties to finance retirement benefits for current educational personnel) and other non-salary compensation (fringe benefits).

Constant dollars:

Constant dollars are derived by applying a price deflator to convert expenditures displayed in a time series to a price level that existed at a certain point in time (the base year) (see Appendix 6). Constant dollars eliminate the changes in the purchasing power of the dollar over time. The result is a series as it would exist if the dollar had a purchasing power equal to the purchasing power in the base year.

Current expenditure:

Expenditures which an institution purchases and consumes within a year and which the institution purchases on an on-going basis. Examples of current expenditures include costs directly attributable to instruction such as salaries, instructional aids, administrative support, teacher development, and costs for other educators such as counsellors. In this report current expenditures are categorized further into:

> *Compensation of staff (educators and other staff):* Expenditure on compensation of staff includes gross salaries (before deduction of taxes, contributions for retirement or health care plans, and other contributions or premiums for social insurance or other purposes), plus expenditure on retirement (actual or imputed expenditure by employers or third parties to finance retirement benefits for current educational personnel) and other non-salary compensation (fringe benefits).

Other current expenditures: Covers all non-salary related items such as spending on tuition fees and books, spending attributable to research and development, utilities, school services under contract, building operations and maintenance staff and so on. Other non-salary costs include those related to the maintenance of buildings as well as supplementary costs such as lunch programs and transportation.

E

Earnings or employment income:

Refers to total income received as wages and salaries, net income from a non-farm unincorporated business and/or professional practice, and/or net farm self-employment income.

Education expectancy:

Average duration of formal education in which a 15-year-old person can expect to enrol over his or her lifetime. It is calculated by adding the enrolment rates for each single year of age from age 15 onward.

Educational attainment:

Measures an individual's highest level of completed schooling, and is sometimes used as a proxy measure of human capital. Levels of educational attainment derived from the Census and Labour Force Survey are as follows:

Less than high school: persons who did not graduate from high school.

High school: high school graduates with no further education, or with some postsecondary education, but with no degree, certificate or diploma.

Trade-vocational: persons with a trades certificate or diploma from a vocational or apprenticeship training.

College: persons with non-university certificate or diploma from a community college, CEGEP, school of nursing.

University: persons with a bachelors degree, university degree or certificate above bachelors, or certificate below bachelors degree.

Elementary-secondary enrolment:

The head count of students enrolled in elementary and secondary schools on September 30 of the school year (October 31 in Ontario). Coverage extends to students in public and private schools, federal schools and schools for the visually and hearing impaired, including students enrolled in pre-elementary programs offered by these schools.

Elementary schools:

Include public, private, and federal schools, and schools for the visually and hearing impaired. Schools are classified as elementary if they provide Grade 6 and under or a majority of elementary grades.

Elementary-secondary schools:

Include public, private, and federal schools, and schools for the visually and hearing impaired. Schools are classified as elementary if they provide Grade 6 and under or a majority of elementary grades, and secondary if they offer Grade 7 and over or a majority of secondary grades.

Enrolment rate:

The enrolment rate for a particular level of education, or a particular age group is defined as the total enrolment expressed as a percentage of a specified age group. For example, the pre-elementary enrolment rate is the number of individuals enrolled in pre-elementary education divided by the population of 4- and 5-year-olds. The enrolment rate for 4-year-olds has been expressed as the total enrolment of 4-year-olds divided by the total 4-year-old population. The population of a particular age group is the number of persons who are that age on July 1 of the year in question.

F

Federal schools:

Include schools administered directly by the federal government, overseas schools operated by the Department of National Defence for dependants of Canadian Forces personnel, and schools operated by Indian and Northern Affairs Canada or by band councils.

Fertility rate:

Number of births per woman.

The four major urban regions in Canada:

Montréal and adjacent region, the extended Golden Horseshoe, the Calgary–Edmonton corridor, and the Lower Mainland and southern Vancouver Island. These regions are not part of Statistics Canada's standard geography units. They were defined based on population growth and density for analytical purposes for the first release of the 2001 Census results.

The extended Golden Horseshoe consists of the urban centres of Oshawa, Toronto, Hamilton, St. Catherines–Niagara, Kitchener, Guelph, and Barrie.

The Montréal and adjacent region includes Montréal, Salaberry-de-Valleyfield, Saint-Jean-sur-Richelieu, Saint-Hyacinthe, Sorel, Joliette, and Lachute.

The Lower Mainland and southern Vancouver Island consists of the urban centres of Vancouver, Abbotsford, and Chilliwack on the mainland, and Victoria, Duncan, Nanaimo, and Parksville on Vancouver Island.

The Calgary–Edmonton corridor stretches from Calgary in the south to Edmonton in the north and includes Leduc, Red Deer, and Wetaskiwin.

Full-time college educators:

This refers to all teaching staff, academic administrators, guidance counsellors employed full-time, as defined by the institution, with a contract of seven months or more. Educators on leave, presidents and principals are excluded. Teaching staff who spend at least 50% of their time teaching at the college level are classified as college educators; those who spend more than 50% of their time teaching at the trade-vocational level are classified as trade educators.

Full-time university educators:

All academic staff and senior administrators whose term of appointment is not less than 12 months. Presidents and vice-presidents are excluded.

G

G-7:

A group of the leading seven industrialized countries: Canada, France, Germany, Italy, Japan, United Kingdom, and the United States. The group remained at seven until Russia, who had attended G-7 meetings as an observer throughout the 1990s, was invited to formalize this relationship in 1997 (hence the group became the G-8).

G-8:

A group of the leading eight industrialized countries: Canada, France, Germany, Italy, Japan, Russian Federation, United Kingdom, and the United States.

Gender gap (salary):

The average salary of females as a percentage of the average salary of males.

Graduates:

Postsecondary level: Students who completed the requirements for degrees, diplomas or certificates from university, college or other postsecondary programs during the calendar year of their graduation. Only graduates from public postsecondary institutions are included.

Secondary school (from administrative data): Students who obtain a secondary school graduation certificate. Does not include people who complete high school outside the regular secondary school systems. Data on graduations from some secondary programs are not uniformly available across jurisdictions, and General Education Diplomas (GED), adult basic upgrading and education, and graduation from adult day school, which take place outside regular secondary school programs, are in most instances not included. See Appendix 2 (Methodological notes) for a discussion of the differences between graduation rates calculated from administrative data and population surveys.

Graduate enrolment (by registration status):

This includes university students in master's and doctoral degree programs or in graduate diploma and certificate programs. Full-time graduate enrolment also includes hospital residents, and since 1980, interns.

Full-time/part-time enrolment: A classification of enrolment as either full time or part time is made according to institutional definitions. Since standard pan-Canadian definitions of full-time and part-time enrolment do not exist, it can be expected that the definitions used by institutions will vary somewhat.

Graduation rates:

For college and university programs, graduation rates have been calculated by relating the number of graduates to the size of the population at a typical graduation age. For apprenticeship and vocational graduations, there is no expected age at graduation, and, consequently, graduation rates have not been calculated. The typical ages at graduation that have been used in this publication are:

- College: 21
- Undergraduate: 22
- Master's: 24
- Doctorate: 27

At the elementary-secondary level, graduation rates are calculated by relating the number of graduates of all ages to the population at the typical age of graduation, where the typical age of graduation is the age at which persons complete high school if they start at the prescribed age and experience no repetition or interruption in their schooling. The typical age of graduation is 18 for all jurisdictions except Quebec, where it is 17.

Gross Domestic Product (GDP):

Represents the total market value of a country's (or province/territory's) goods and services produced over the year.

H

High school leaver:

High school leavers are those who were not enrolled in high school and had not completed the requirements for a high school diploma.

High school leaver rate:

The high school leaver rate is the proportion of youth in a specified age group who have not completed their secondary education, and are not working toward its completion. In this report, the high school leaver rate is calculated for youth at 20 years of age because some were continuing their education after the typical age of graduation. This approach accounts for the "second chance" system in Canadian jurisdictions, whereby some youth who leave high school without completing their secondary education return to complete their studies at a later date.

Home language:

Refers to the language spoken most often or on a regular basis at home by the individual at the time of the census. In this report data are presented for persons of school age for whom the home language is neither English nor French.

Households:

Refers to a person or a group of persons (other than foreign residents) who occupy a private dwelling and do not have a usual place of residence elsewhere in Canada.

Human capital:

The knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being (this definition has been developed by the OECD and used for the purposes of this report).

I

Immigrants:

Refers to people who are, or have been, landed immigrants in Canada. A landed immigrant is a person who has been granted the right to live in Canada permanently by immigration authorities. Some immigrants have resided in Canada for a number of years, while others have arrived recently.

Index:

Annual cumulative percentage changes in a variable from a given base year, expressed as an index with the base year equal to 100. An index value of 140, for example, 10 years after the base year, would indicate a 40% increase in the variable over that time period.

Indirect costs of research:

Those costs that are incurred by an institution by virtue of the fact that researchers conduct sponsored or intramural research with the support of the institution. They are expenditures that cannot be identified readily and specifically with a particular project, instructional or other activity of the institution. Examples include the costs of the office of research or intellectual property management services, departmental administration, utilities, physical plant operation and maintenance, library, laboratory furniture and permanent equipment.

Intellectual property:

Discoveries, ideas and the like that can be protected for commercial gain. Includes inventions, computer software or databases, literary, artistic, dramatic or musical works, books, papers, educational materials, industrial designs, trademarks, integrated circuit topographies, new plant varieties, and know-how.

Inventions:

A subset of the overall intellectual property that includes any patentable product, process, machine, manufacture or composition of matter, or any new and useful improvement of any of these, such as new uses of known compounds.

L

Labour force:

The portion of the civilian, non-institutional population 15 years of age and over who form the pool of available workers in Canada. To be considered a member of the labour force, an individual must be working (either full-time or part-time) or unemployed but actively looking for work.

Labour force participation rate:

The participation rate represents the labour force expressed as a percentage of the population 15 years of age and over.

License:

An agreement with the client to use the institution's intellectual property for a fee or other consideration, for example equity in the company.

Licensing royalties:

Income generated from licensing (see "license").

Literacy:

The OECD initiated the Programme for International Student Assessment (PISA) to provide policy-oriented international indicators of the skills and knowledge of 15-year-old students. PISA assesses youth in three domains: reading literacy, mathematical literacy, and scientific literacy. These domains are defined in PISA as:

> *Reading literacy* is the ability to understand, use, and reflect on written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society.
>
> *Mathematical literacy* is the capacity to identify, understand and engage in mathematics, and to make well-founded judgments about the role that mathematics plays in an individual's current and future private life, occupational life, social life with peers and relatives, and as a constructive, concerned and reflective citizen.
>
> *Scientific literacy* is defined as the capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions in order to understand and help make decisions about the natural world and the changes made to it through human activity.

Lone parent:

Guardians and adults, regardless of marital status, without a partner but with children in their care.

Low income:

The income level, conveyed by Statistics Canada's low-income cutoffs (LICOs), at which a family may be in "straitened circumstances" because it has to spend significantly more of its income on the basics (food, shelter and clothing), than does the average family. The LICOs depend on family and community size.

Low-income cutoffs (LICOs):

Represent an income threshold where a family is likely to spend 20% more of its income on food, shelter and clothing than the average family, leaving less income available for other expenses such as health, education, transportation and recreation. LICOs are calculated for families and communities of different sizes.

M

Medium growth scenario:

Assumes that fertility and immigration remain at their current levels throughout the projections period. It also assumes that Ontario, Alberta and British Columbia gain population through interjurisdictional migrations and that all other jurisdictions lose population through interjurisdictional migrations.

O

Organisation for Economic Co-operation and Development (OECD):

A multidisciplinary international body made up of 30 member countries that offers a structure/forum for governments to consult and co-operate with each other in order to develop and refine economic and social policy. While the OECD does not set rules and regulations to settle disputes like other international bodies, it encourages the negotiation of agreements and the promotion of legal codes in certain sectors. Its work can lead to binding and non-binding agreements between the member countries to act in a formal way. The OECD is best known for its publications and statistics. Its 30 member countries are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Russia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.

P

Participation rates:

This is calculated by taking the total enrolment of a particular level of education as a percentage of a specified population group.

Patent:

A government document providing protection for an invention so that it cannot be made, used, or sold without the permission of the patent holder. Patents for a single invention are usually taken in various countries, as the rights conferred by a patent are limited to the country in which it is granted.

Per capita expenditure:

This measure divides the spending on education in Canada, or in a province or territory, by the total population, to show how much is spent on education per person.

Per student expenditure:

This measure divides the spending on education in Canada, or in a province or territory, by the total enrolment at a given level of education, to show how much is spent on education per student at that level. Total enrolment includes full- and part-time students. This measure makes use of full-time equivalents which converts the number of part-time students into a full-time equivalent by dividing the number of part-time students by 3.5.

Pre-elementary programs:

Pre-Grade 1 programs offered by public, private and federal schools, as well as schools for the visually and hearing impaired, generally targeting children 4 or 5 years of age. It does not include early childhood education programs outside the formal education system.

Private business colleges:

Private schools, licensed or not by a jurisdiction, providing professional and vocational training for profit.

Private expenditures:

Expenditures on education by households or other private entities (commercial and not-for-profit) consisting of:

- Fees paid to educational institutions (e.g., for tuition, registration, laboratory, lodging, meals and for other services provided to students by the institution). Note that Statistics Canada surveys only institutions and, therefore, costs for off-campus housing not provided by the institution are not included in the total amount spent.
- Financial aid to students or households coming from private sources (e.g., scholarships from business firms and religious and other non-profit organizations).
- Direct payments by private entities to educational institutions (e.g., contributions or subsidies to vocational-technical schools, contracts let to universities for research or other services, grants to educational institutions from non-profit organizations, charitable donations [other than from households], expenditures by private employers for apprenticeship training and other school and work-based educational programs).

Private schools:

Operated and administered by individuals or groups. They may be either denominational or non-denominational.

Private revenues at universities:

Revenue obtained from any source other than government, categorized as:

Student fees: Payments obtained from students directly in the form of tuition and other fees.

Non-government grants and contracts, donations and bequests: Financial support received by colleges and universities from donors, wills from grants and contracts from sources other than government, the latter provided with specific stipulations.

Sales: Revenue from sales of services and products by the institution.

Investment: Revenue from dividends, bonds, mortgages, short-term notes and bank interest.

Miscellaneous revenue of colleges and universities: Commissions, royalties and fees from the use of institution-owned rights or properties, fees for services rendered, library and other similar fines, rentals, net gain or loss on the sale of fixed assets and any type of revenue not identified under other forms of revenue.

Public expenditures:

Refer to total current and capital expenditures at all levels of government. Public expenditures include:

- Direct purchases by governments of educational resources (e.g., direct payments of teachers' salaries by a central or regional education ministry, direct payments by a municipality to building contractors for construction of school buildings, procurement of textbooks by a jurisdiction or regional authority for subsequent distribution to local authorities or schools).
- Direct payments by government agencies to educational institutions that have the responsibility of purchasing educational resources themselves (e.g., government block grants to universities which they use to compensate personnel, a government subsidy to a private school, and government payments under contract to a private firm undertaking educational research).

- Direct expenditures designated for capital projects (e.g., building expansions or construction, laboratory equipment in support of research and development).
- Public to private transfers (e.g., financial aid in the form of government scholarships and grants, special public subsidies [such as for transport, medical expenses, studies abroad], family allowances or child allowances that are contingent on student status, student loans).

Note that public expenditures on education as presented in Table B2.1 are not consistent with this definition as they are derived from a different data source in order to permit comparisons of spending across governmental programs. See methodology notes in Appendix 2 for Chapter B, and B2 in particular, for further details.

Public schools:

Established and operated by local school authorities pursuant to the public schools legislation of the province or territory. Also included in this category are Protestant and Roman Catholic separate schools and schools operated in Canada by National Defence within the framework of the public schools system.

Purchasing power parities (PPPs):

The currency exchange rates that equalise the purchasing power of different currencies. This means that a given sum of money, when converted into different currencies at the PPP rates, will buy the same basket of goods and services in all countries. In other words, PPPs are the rates of currency conversion that eliminate the differences in price levels among countries. The PPPs used in this report are given in Appendix 6. PPP rates are not equivalent to general currency exchange rates.

R

Registered apprentices:

Based on data provided by provincial/territorial apprenticeship branches and include all individuals registered in an apprenticeship program, regardless of whether or not they had been enrolled in any formal classroom training during the year.

Registered apprenticeship completions:

Refers to those who received a Red Seal or provincial certificate for completing both the in-class and on-the-job training required by apprenticeship programs. The Red Seal or Interprovincial Standards Program was introduced in the late 1950s to make it easier for skilled workers to move across Canada without having to re-qualify in a trade when entering employment in a new province. This compares to a provincial certificate which is valid only for the province in which it is issued. The Red Seal is available in 45 trades at this time, in trades such as cabinet maker, machinist, motor vehicle body repair, roofer, bricklayer and welder.

Registered apprenticeship programs:

A program based on a contract registered with the province/territory, between the apprentice and the employer, in which the employer agrees to provide an opportunity to obtain the experience and skill required for a trade. Programs vary in length from two to five years, depending on the trade. Registered apprenticeship combines on-the-job experience with four- to eight-week periods of in-class training. In most jurisdictions, the in-class portion is usually taken at a postsecondary institution during

the apprenticeship training. In Quebec, however, the in-class training is taken prior to beginning the apprenticeship program. Depending on the jurisdiction and trade, graduates of apprenticeship programs can receive both a Certificate of Apprenticeship and a Certificate of Qualification.

S

School-age population:

Comprises all individuals between the ages of 5 and 24, regardless of whether they are in school or not. This is the age range at which most people undertake their formal education.

Schools for the visually or hearing impaired:

Provide special facilities and training for visually or hearing impaired students. Most of these institutions are under direct provincial or territorial government administration.

Secondary schools:

Include public, private and federal schools, and schools for the visually and hearing impaired. Schools are classified as secondary if they offer either Grade 7 and over, or a majority of years at the secondary level.

Socio-economic status (SES):

In this report, SES is estimated by combining the International Socio-Economic Index of Occupational Status (ISEI) with information on the highest level of education among a student's parents, family assets, educational resources at home and family cultural assets. Within PISA, ISEI is calculated based on students' answers to questions about their parents' occupations.

Sources of funds for university R&D are categorized as:

Federal government: Through the Natural Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Research Council (SSHRC), the Canadian Institutes of Health Research (CIHR), the Canada Foundation for Innovation and federal departments and agencies.

Provincial governments: Including municipal governments.

Business enterprises: Including donations, bequests and contracts from individuals and businesses.

Private non-profit organizations: Including donations, bequests, and contracts from foundations and not-for-profit organizations.

Foreign sources: Funding entities located abroad.

Universities: Universities fund their own R&D using two revenue streams:

> *General university funds:* These represent government transfers (or block grants) to universities that are used to support R&D activity. Although in essence these funds represent indirect government spending on R&D, for the purposes of pan-Canadian statistics they are allocated to university funding due to the difficulty of categorizing these funds as provincial or federal. However in international comparisons, these funds are included as indirect government funding at the overall government level.

Own revenue sources: This refers to self-generated revenue of universities from sources such as tuition fees, investment income, revenue from sales of services and products by the institution and license and patent incomes.

Spin-off company:

A new company created based on university R&D in which the university has an ongoing interest, established for one or more of the following reasons: (1) to license the institution's technology; (2) to fund research at the institution in order to develop technology that will be licensed by the company; (3) to provide a service that was originally offered through the institution's department or unit. Only companies started in a formal arrangement with the university are included (in other words, companies started independently by faculty members or students are not covered).

Sponsorship of university R&D:

Refers to university research that is supported either in the form of a grant or by means of a contract from a source external to the institution. Funding sources include government, business enterprises, and donors.

Step family:

A family in which at least one of the children in the household is from a previous relationship of one of the parents.

Student–computer ratio:

Total number of students enrolled in a school divided by the total number of computers in the school. This report uses data on this measure from PISA which in turn reports this ratio for schools in which 15-year-olds are enrolled.

T

Total expenditure:

Combined public and private expenditures on education.

Trades:

There are approximately 170 registered trades in Canada, each with specific standards and training requirements as set down by each province and territory. Provinces designate each trade as "compulsory" or "voluntary". In order to work in a compulsory trade an individual must either be registered as an apprentice or have the proper certification through completion of apprenticeship training. Voluntary trades also have apprenticeship programs, but registration as an apprentice or certification is not mandatory in order to work in the trade.

Trade-vocational enrolment (by registration status):

Covers students enrolled in the in-class portion of apprenticeship programs, pre-employment/pre-apprenticeship programs, academic and skill upgrading programs, language training, job readiness and orientation to work programs and special training. Trade-vocational enrolments only show enrolments reported by publicly-funded postsecondary institutions in Canada; enrolments in private post-secondary training institutes are not included.

Full-time/part-time enrolment: Enrolment in programs of 25 weeks or more is identified as full time, while enrolment in programs of 24 weeks or less is considered part time. A large portion of the in-class training for apprenticeship programs is structured in study blocks of four to eight weeks, and would be classified as part time, even though the length of the apprenticeship program itself may be from two to five years. However, some jurisdictions, notably Ontario, identified the total weeks of in-class training over the whole apprenticeship period, and as a result, a large portion of the registered apprenticeship enrolments are included in the full-time data rather than the part-time. Full-time enrolment includes, for example, most of the pre-employment/pre-apprenticeship programs and some of the longer programs in academic upgrading, language and job readiness training. Part-time enrolment includes, in addition to the registered apprenticeship programs, most of the programs in skill-upgrading, orientation, job readiness and special training.

Trade-vocational programs:

Trade-vocational programs at community colleges and similar institutions are those that do not require secondary school completion and do not include continuing education or general interest programs. They include the following programs:

Pre-employment/pre-apprenticeship programs: Provide basic training in a particular trade, offering entry-level skills for employment. These programs also offer the knowledge and skills required to enter an apprenticeship program.

Registered apprenticeship programs: A program based on a contract registered with the province/territory, between the apprentice and the employer, in which the employer agrees to provide an opportunity to obtain the experience and skill required for a trade. Programs vary in length from two to five years, depending on the trade. Registered apprenticeship combines on-the-job experience with six- to eight-week periods of in-class training. In most jurisdictions, the in-class portion is usually taken at a postsecondary institution during the apprenticeship training. In Quebec, however, the in-class training is taken prior to beginning the apprenticeship program. Depending on the jurisdiction and trade, graduates of apprenticeship programs can receive both a Certificate of Apprenticeship and a Certificate of Qualification.

Pre-vocational academic upgrading or basic training for skill development (BTSD programs): Designed to help individuals obtain or upgrade prerequisites in basic education to qualify for further training or employment. They are aimed at improving the students' knowledge in the basic subjects of mathematics, English or French, and the general sciences.

Pre-vocational language programs: These programs offer a basic knowledge of English or French. As second language programs, they are primarily aimed at recent immigrants and others whose first language is neither English nor French.

Skill upgrading or refresher programs: Designed to instruct students in new occupational methods and techniques. Students in these programs have prior training and work experience in their occupation, but require further training, in order that they may keep pace with rapid changes in their field often brought on by new technology.

Job readiness training (JRT): Designed to increase the employability of students wanting to enter or re-enter the labour force. The program assists students by providing them with career exploration, job search, life skills and basic academic training.

Orientation programs: Designed to guide students into trade or vocational occupations and provide them with job search skills. These programs are not designed to teach the skills necessary for specific employment but to provide the student with sufficient knowledge to pursue an occupation. Programs included in this category are career exploration, employment orientation for women, introduction to non-traditional occupations, industrial orientation.

Special training and other programs: Includes training programs designed for the specific needs of particular groups, industries or communities. These programs offer classroom or on-the-job training, as well as both in combination, to counter skill shortages in the labour market. Also included in this group are trade-vocational and preparatory programs that do not fall into any other major category type.

Typical-age graduation rate:

At the secondary school level this is calculated by relating the number of graduates whose age is equal to or less than the typical age of graduation to the population at the typical age of graduation. The typical age of graduation is the age at which persons complete high school if they start at the prescribed age and experience no repetition or interruption in their schooling. The typical age of graduation is 18 for all jurisdictions except Quebec, where it is 17.

U

Undergraduate enrolment (by registration status):

University students in bachelor's and first professional degree programs, undergraduate diploma and certificate programs, and non-university courses offered in universities. In the 1970s full-time undergraduate enrolment also included medical interns. Since 1980, interns have been classified as graduate students.

Full-time/part-time enrolment: A classification of enrolment as either full time or part time is made according to institutional definitions. Since standard pan-Canadian definitions of full-time and part-time enrolment do not exist, it can be expected that the definitions used by institutions will vary somewhat.

Undergraduate university tuition fees:

Undergraduate tuition fees charged to full-time Canadian students over the academic year, September to April. The undergraduate faculties used in the calculations are Agriculture, Architecture, Arts, Commerce, Dentistry, Education, Engineering, Household Sciences, Law, Medicine, Music and Science.

Unemployment rate:

Shows the unemployed as a proportion of the labour force. The unemployed persons are those who, during the reference week, were available for work and were either on temporary layoff, had looked for work in the past four weeks or had a job to start within the next four weeks. The labour force is made up of the employed and the unemployed.

Universities:

These include:

Universities: Independent institutions granting degrees in at least arts and sciences.

Colleges of theology: Independent institutions granting degrees only in theology.

Liberal arts colleges: Independent institutions granting degrees in only in arts.

Other: Independent institutions granting degrees in specialized fields other than theology (such as engineering, fine arts).

University college programs:

These refer to degree-granting programs offered by community colleges. These differ from university transfer programs also offered by some community colleges, as the college offers the degree-granting program in its entirety (that is, all the years of the degree-granting program). Community colleges offering these programs are able to do so as they have been awarded degree-granting powers in certain fields or programs of study by the jurisdiction. University college programs exist in British Columbia and to a lesser extent in Alberta. Statistics on university college enrolment are not captured and reported by Statistics Canada as part of its university statistics program, but rather with its college statistics. As of the date of production of this report, data on university college graduation were not available. However these degrees will be captured by the Enhanced Student Information System (ESIS).

University transfer programs (by registration status):

Programs of postsecondary non-university institutions that require secondary school completion to enter, and which provide a student with standing equivalent to the first or second year of a university degree program with which a student can apply for admission to subsequent senior years at a degree-granting institution. The "général" programs of the Quebec CEGEPs, completion of which is a prerequisite for entry into Quebec universities, are included in this classification.

Full-time/part-time enrolment: A classification of enrolment as either full time or part time is made according to institutional definitions. Since standard pan-Canadian definitions of full-time and part-time enrolment do not exist, it can be expected that the definitions used by institutions will vary somewhat.

V

Visible minority:

Refers to the visible minority group to which the respondent belongs. The *Employment Equity Act* defines visible minorities as "persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour".

Data sources used in this publication

This appendix contains an alphabetical listing of all data sources used in this publication. An overview of each data source is provided along with contact information from which readers can obtain further details.

Adult Education and Training Survey (AETS)

Centre for Education Statistics, Statistics Canada

Survey objectives: Although the objectives of the AETS have evolved over time, the objectives of the 1998 survey are indicative of its general intentions:

- Measure the incidence of adult education and training in Canada in a comprehensive manner;
- Provide a socio-economic and demographic profile of individuals who participate and do not participate in adult education and training;
- Profile the types, duration and location of training and education that individuals receive;
- Profile employer involvement in the training and education process;
- Identify barriers faced by individuals who wish to take some form of education and training but cannot.

Target population: The population is defined as people 17 years of age and over living in the ten provinces, excluding inmates of institutions such as prisons, hospitals, and long-term care facilities, residents of Indian reserves, and full-time members of the armed forces. However, in order to retain a focus on learners no longer in initial education, all full-time students were excluded except those sponsored by an employer, those over the age of 19 enrolled in an elementary or secondary education program, and those over the age of 24 enrolled in a postsecondary education program.

Sample size: Final sample sizes for AETS data reported in this publication are:

1991: 45,000
1993: 41,000
1997: 33,000

Data collection method: The survey was conducted as a supplement to the Labour Force Survey in January 1992, 1994 and 1998, with respondents asked to identify the education and/or training they received in the previous calendar year. Information is collected for one randomly selected member of the household aged 17 or older. Proxy responses are not permitted.

Survey frequency: 1984, 1986, 1990, 1992, 1994, 1998 and 2003.

Reference period: 1991, 1993 and 1997.

Historical continuity: Although data has been collected since 1984, the questionnaire structure and survey procedures were improved beginning in 1992. A major element of the redesign was the change in the collection methodology resulting in the elimination of proxy responses. The 1994 AETS and the 1998 AETS were conducted based on the same methodology as the 1992 survey with only minor modifications to the questionnaire. Consequently, historical comparisons should only be considered for surveys conducted since 1992.

Contact: Client Services
Centre for Education Statistics,
Statistics Canada
Toll-free: 1-800-307-3382
(613) 951-7608
Email: educationstats@statcan.ca

Annual College and Related Institutions Educational Staff Survey

Centre for Education Statistics, Statistics Canada

Survey objectives: Data are collected on full- and part-time educational staff of community colleges and public trade-vocational schools across Canada. Staff attributes collected include gender, date of birth, position, years of teaching experience, full- or part-time employment status, salary, field of principal subject taught, and employment relationship with the reporting institution (contract or indeterminate position).

Target population: All educational staff involved in teaching credit and non-credit courses at community colleges and public trade-vocational schools in the provinces and territories. Included are: teaching staff (including those on leave and visiting teaching staff), senior academic staff with or without teaching responsibilities (e.g., department heads, division heads, chairpersons, deans), and career counsellors who as part of their job, help students make decisions about academic programs.

Sample size: Census.

Data collection method: Statistics on the educational staff in community colleges and public trade-vocational schools are drawn from the administrative records of these institutions. In most cases, institutions submit individual record data either directly to Statistics Canada or to their ministry/department of education or training, which in turn reports to Statistics Canada. Aggregate level data are collected from those institutions that are not able to provide individual record data.

Survey frequency: Annual, since 1976.

Reference period: 1989-1990 and 1999-2000.

Contact: Client Services
Centre for Education Statistics,
Statistics Canada
Toll-free: 1-800-307-3382
(613) 951-7608
Email: educationstats@statcan.ca

Annual Demographic Statistics, 2001

Statistics Canada Catalogue No. 91-213-XPB

Demography Division, Statistics Canada

The 2001 edition of this publication provides the most recent population estimates and projections up to 2006 by age group and sex, plus data on births, deaths and migrations. It groups the information by province and territory, census metropolitan area and census division, and also provides data on census families and marriages and divorces. A CD-ROM, included with the publication, contains a historical time series, which dates back to 1971 for provinces and territories, and to 1986 for census divisions and census metropolitan areas.

Basic Science and Technology Statistics, 1995 and 2001

Organisation for Economic Co-operation and Development (OECD)

This publication provides recent basic statistics on the resources devoted to R&D in OECD countries. The statistical series are presented for the last seven years for which data are available and cover, inter alia, expenditure by source of funds, type of costs, personnel by occupation and/or level of qualification, at the national level by performance sector, for enterprises by industry, and for higher education by field of science. The publication also provides information on the output of science and technology activities relating to the technology balance of payments.

Census of Population

Census Operations Division, Statistics Canada

Survey objective: To provide a detailed portrait at a single point in time on the demographic, social, and economic conditions of the population, and on its housing units.

Target population: The Census covers the entire Canadian population, defined as Canadian citizens (by birth or by naturalization), landed immigrants, and non-permanent residents together with family members who live with them. Non-permanent residents are persons living in Canada who have a Minister's permit, a student or employment authorization, or who are claiming refugee status. The Census does not count foreign residents (government representatives of another country attached to an embassy or other diplomatic body in Canada and their families, members of the Armed Forces of another country stationed in Canada and their families, and persons temporarily visiting). The Census also counts Canadian citizens and landed immigrants who are temporarily outside the country on Census Day. This includes federal and provincial government employees working outside Canada, Canadian embassy staff posted to other countries, members of the Canadian Armed Forces stationed abroad, and all Canadian crew members of merchant vessels.

Sample size: All members of the Canadian population are enumerated and surveyed. Four out of five households will receive the short form of the Census questionnaire while the remaining one in five will receive a long form. The short form contains seven questions: the respondent's name, sex, age, marital status, common-law status, family and household relationships, and mother tongue. The long form includes the same questions from the short questionnaire plus 52 additional questions.

Data collection method: In order to achieve its objectives, the Census enumerates every household in Canada. Two methods of data collection are employed: self-enumeration and canvasser enumeration. For self-enumeration, a census representative drops off a questionnaire at each household during the two weeks before Census Day. An adult or responsible member of the household is asked to complete the questionnaire on Census Day for all members of the household, and then to mail the questionnaire in a pre-addressed envelope. In 2001, approximately 98% of households were self-enumerated. In the case of canvasser enumeration, a census representative visits the household and completes a questionnaire for the household by interview. This method is normally used in remote and northern areas of the country, and on most Indian reserves. The canvasser enumeration method is also used in certain urban areas where it is considered highly possible that respondents would be unlikely to return a questionnaire. Approximately 2% of households were enumerated in the 2001 Census using the canvasser enumeration method.

Survey frequency: Every five years with the next Census to be conducted in 2006.

Reference period: 1991, 1996 and 2001.

Historical continuity: In 1991 and previous censuses, Aboriginal persons were determined using the ethnic origin question (ancestry). Beginning in 1996, a question was added on the individual's own perception of his or her Aboriginal identity. Caution should be exercised in analyzing trends for Aboriginal peoples based on Census data for 1991 and earlier. In terms of Aboriginal self-identity, it should be noted that patterns are changing. In recent years, a growing number of people who had not previously identified with an Aboriginal group are now doing so. Changes in Aboriginal participation in the Census over time also result in comparability issues.

Contact: Statistics Canada
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Community College Student Information System (CCSIS)

Centre for Education Statistics, Statistics Canada

Survey objectives: This database provides enrolment and graduate statistics for postsecondary programs of community colleges. Various demographic and program-related characteristics of students and graduates are also available.

Target population: This database covers all students registered for programs that are eligible for academic credit in a postsecondary diploma, certificate, or university transfer/university level program in community colleges in the provinces and territories. A secondary school completion or equivalent is the normal prerequisite for entry into the postsecondary programs covered by this survey. The "général" program at Quebec institutions, the completion of which is a prerequisite for entry into universities, is included. Students registered in co-op programs who are on a work assignment at the time of the survey are included in the enrolment counts as are students registered for diplomas or certificates awarded by a professional body, if such programs form part of the regular offerings of the institution.

Sample size: Census.

Data collection method: Enrolment and graduate statistics of community colleges are drawn from the administrative records of these institutions. Community colleges may send individual record data directly to Statistics Canada or to ministries/departments of education and training, which in turn send it to Statistics Canada.

Survey frequency: Annual, since 1969.

Reference period: Enrolment data are shown in this publication for 1987-1988 to 1999-2000. Enrolment data is collected as of October 31 of the academic year and is used as a proxy for the total number of students enrolled during a complete academic year. Graduate data are shown for the years 1976 to 1998. The reference period for graduate data is from August 1 of the previous year to July 31 of the current year.

Historical continuity: The Enhanced Student Information System (ESIS), initially implemented in 2000, has begun to replace current postsecondary enrolment and graduate surveys, including the CCSIS, with a single survey. Although institutions in most parts of the country are already reporting under ESIS, initial start-up problems have limited the data available for this publication. While ESIS has been designed to continue the work of the postsecondary enrolment and graduation surveys, it will address their shortcomings and providing additional policy-relevant information.

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Consumer Finances, Survey of (SCF)

Income Statistics Division, Statistics Canada

Survey objectives: SCF was conducted annually up to the 1997 reference year to obtain work experience and income information from Canadian households. The survey provides up-to-date information on the distribution and sources of income, before and after taxes, for families and individuals. It was the source for estimates of income and low income in the population.

Target population: SCF includes all individuals aged 15 and over residing in households in the ten provinces, with income (i.e., earnings, investment income, government transfer payments, retirement income, or other income) during the reference year. It excludes residents of the territories, residents of Indian Reserves, full-time members of the Canadian Armed Forces and residents of institutions (e.g., prisons, hospitals, and long-term care facilities).

Sample size: The SCF sample consists of two-thirds of the Labour Force Survey (LFS) sample. In 1997 SCF had 53,000 responses from persons 15 years and over.

Data collection method: Income questionnaires were mailed to two-thirds of the households selected for the LFS. After the administration of the LFS, persons 15 years of age and over gave detailed income information for the previous calendar year from the mailed questionnaires that they were asked to complete prior to the interview.

Survey frequency: Annual. The Survey of Labour and Income Dynamics (SLID) replaced SCF as of the 1998 reference year.

Reference period: 1990 and 1995.

Historical continuity: SLID replaced SCF as of the 1998 reference year. Results from SLID and SCF have been compared in detail to assess the differences and the impact on time-series consistency. Essentially, the two surveys tell the same story with respect to low income and income distribution.

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Education at a Glance, 2002

Organisation for Economic Co-operation and Development (OECD)

Education at a Glance – OECD Indicators is an annual publication of the OECD that was first published in 1992. It contains data and analysis for over 30 indicators that provide insights into the functioning of education systems including the operation, evolution, and impact of education, and that reflect emerging issues on national policy agendas. The OECD indicators allow international comparisons that help countries to see their systems in light of other countries' performances.

Elementary-Secondary Educational Staff Survey

Centre for Education Statistics, Statistics Canada

Survey objectives: To collect information on the main characteristics of educators: age, sex, employment status, position, and grade level.

Target population: All personnel responsible for instructing students, including regular classroom teachers, relief, supply, itinerant or resource teachers, other school instructional staff, school aides, teaching and research assistants. Also includes specialized personnel who are not involved in teaching students but who provide curriculum support services to students. These include principals, guidance counsellors, librarians and other administrators responsible for educational policies. Also included are personnel who have no teacher training and who are not directly responsible for instructing pupils but provide health and social support services to pupils. Administrative support staff is also included.

Sample size: Census.

Data collection method: Data are derived from the administrative files of the ministries/departments of education.

Survey frequency: Annual, since 1972-1973.

Reference period: 1989-1990 to 1999-2000. The data are collected as of September 30.

Historical continuity: The survey was revised in 1978 and 1986.

Contact: Client Services
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Elementary-Secondary School Enrolment Survey

Centre for Education Statistics, Statistics Canada

Survey objectives: Pre-elementary and elementary-secondary enrolment data are collected by type of school (public and private schools, schools for the visually and hearing impaired, and federal schools, including Department of National Defence schools overseas). The data are broken down by age and gender, and by grade and gender.

Target population: Students in the provinces and territories enrolled in public schools, private schools, schools for the visually and hearing impaired, and federal schools (including Department of National Defence schools overseas).

Sample size: Census.

Data collection method: Data pertaining to public schools are derived from the administrative files of the ministries/departments of education and some federal departments. Some ministries/departments supply both private and public school data, while in other jurisdictions Statistics Canada surveys the institutions directly.

Survey frequency: Annual, since 1973-1974.

Reference period: Data shown in this publication are for 1989-1990 to 1999-2000. The data are collected as of September 30 (October 31 in Ontario) of each year.

Contact: Client Services
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Estimates of Canadian research and development expenditures (GERD), Canada, 1991 to 2002, and by province 1991 to 2000

Statistics Canada Catalogue No. 88F0006XIE2002015

Science, Innovation and Electronic Information Division, Statistics Canada

This publication presents the national gross domestic expenditures on research and development (GERD) from 1991 to 2002, as well as the provincial GERD from 1991 to 2000.

Estimates of Population by Age and Sex for Canada, the Provinces and the Territories

Demography Division, Statistics Canada

This estimates program is used in the calculation of demographic, social, and economic indicators (e.g., fertility rates, unemployment rates, school enrolment rates) in which the population, or a part thereof, serves as the denominator. In addition, the data is used in the preparation of population projections by Statistics Canada, where estimates of population by age and sex are used as the base population.

Contact: Statistics Canada
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Estimation of research and development expenditures in the higher education sector, 2000-2001

Statistics Canada Catalogue No. 88F0006XIE2002014

Science, Innovation and Electronic Information Division, Statistics Canada

This publication provides an explanation of the estimation procedures used to calculate research and development expenditures in the higher education sector for 2000-2001.

Federal Government Expenditures in Support of Education, Survey of

Centre for Education Statistics, Statistics Canada

Survey objectives: This survey collects data on direct federal government financial support for education at all levels by department and by province/territory. The result is a data set on actual and estimated federal spending on education. These data are also used to reconcile financial data from other sources. For example, these data provide a basis for verification of grant data as reported by institutions and for the consolidation of education expenditures.

Target population: Federal departments and agencies that are part of the *Public Service Staff Relations Act* and the *Financial Administration Act*.

Sample size: Census.

Data collection method: Data are collected through a standard questionnaire sent to all federal departments and agencies that are part of the *Public Service Staff Relations Act* and the *Financial Administration Act*. The data collected are coded according to Statistics Canada's standard classification of accounts.

Survey frequency: Annually beginning in 1982-1983.

Reference period: 1997-1998 to 1999-2000.

Contact: Client Services
Centre for Education Statistics,
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Financial Information of Universities and Colleges Survey

Centre for Education Statistics, Statistics Canada

Survey objectives: Detailed data are collected on the revenue and expenditures of universities and degree-granting institutions in Canada. This survey is similar to the Survey of Financial Statistics of Community Colleges and Vocational Schools, but the university survey includes information on research and development expenditures—in fact, it is the principal source of R&D expenditures estimates in the university sector as they are reported in Canada and reported internationally for Canada.

Target population: All degree-granting universities and university-colleges in Canada.

Sample size: Census.

Data collection method: This survey is run in association with the Canadian Association of University Business Officers (CAUBO). CAUBO is responsible for sending the data collection questionnaires to all its members while Statistics Canada sends the questionnaire to non-CAUBO institutions that grant degrees, which in total represent just 1% of total reported revenue and expenditures. Financial experts at each institution complete the survey. Statistics Canada compiles the data from all institutions (CAUBO and non-CAUBO). Ontario universities report through their own financial organization, the Committee of Finance Officers, that then sends a single file to Statistics Canada for mapping into the database.

Survey frequency: Annually, since 1972-1973.

Reference period: 1997-1998 to 1999-2000.

Contact: Client Services
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Financial Statistics of Community Colleges and Vocational Schools

Centre for Education Statistics, Statistics Canada

Survey objectives: Detailed revenue and expenditure data are collected from community colleges and public trade-vocational schools. Supporting information is also collected to enable the breakdown of revenues by source of funds, expenditures by function (e.g., instruction) and by detailed classification (e.g., instructor salaries).

Target population: All community colleges and public trade-vocational institutions in the provinces and territories that offer educational programs at the postsecondary level and/or trade-vocational level (private institutions that only offer courses at the trade-vocational level however are not covered).

Sample size: Census.

Data collection method: The sources of these data are the administrative records of all community colleges and public trade-vocational schools in the provinces and territories. Statistics Canada collects the required data either directly from the community colleges and public vocational schools themselves or from their responsible ministry/department of education/training.

Survey frequency: Annually, since 1982.

Reference period: 1997-1998 to 1999-2000.

Contact: Client Services
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Financial Statistics of Private Elementary and Secondary Schools, Survey of

Centre for Education Statistics, Statistics Canada

Survey objectives: This survey collects financial data from private elementary and secondary schools in Canada on school revenues by source of funds (e.g., tuition fees), expenditures by function (e.g., administration, instruction) and by detailed classification (e.g., teachers, salaries). This survey is also used to estimate private school expenditures for years when no survey is conducted.

Target population: Private elementary and secondary schools in the provinces and territories.

Sample size: Census.

Data collection method: The data are drawn from the administrative files of private schools.

Survey frequency: Every three years including 2000-2001. The next data collection will be in 2003-2004, with data estimated in the intermediate years.

Reference period: 1997-1998 to 1999-2000.

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Household Spending, Survey of (SHS)

Income Statistics Division, Statistics Canada

Survey objective: Collects information on the budget of Canadian households including expenditures, income, and changes in assets and debts over the 12-month period from January 1 to December 31 of the reference year. Also gathers information about dwelling characteristics and the household equipment owned by households as of December 31 of the reference year. The survey is used as a data source for a number of Statistics Canada products including the setting of low-income cutoffs.

Target population: Households in Canada of all sizes, be it an individual or a family. The following groups are excluded from the survey: persons living on Indian reserves or Crown lands, official representatives of foreign countries living in Canada and their families, members of religious and other communal colonies, people living in residences for senior citizens, persons living full time in institutions (for example, inmates of penal institutions or chronic care patients living in hospitals and nursing homes), and members of the Canadian armed forces living in military camps.

The population of the territories is included in the 1997, 1998, and 1999 reference years and every second year thereafter starting with 2001. In the territories, individuals living in very small communities (generally consisting of fewer than 100 households) or in unorganized areas are excluded from the target population.

Sample size: The final sample size for the data presented in this publication is 15,000 households in 2000.

Data collection method: Interviews with a selected household member (the member of the household mainly responsible for its financial maintenance) on the finances of the entire household are conducted within the first three months of the year following the survey's reference year. For example, the 2000 SHS was conducted from January to March 2001.

Survey frequency: Annual, starting with 1997 reference year.

Reference period: 2000.

Historical continuity: The SHS integrates most of the content found in the Family Expenditure Survey (FAMEX) and the Household Facilities and Equipment Survey. The last FAMEX survey covered the 1996 reference year, with the first SHS having been conducted for the 1997 reference year. Many data from these two surveys are comparable to the SHS data. However some differences related to the methodology, to data quality and to the definitions must be considered before comparing the data.

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Intellectual Property Commercialization in the Higher Education Sector, Survey of

Science, Innovation and Electronic Information Division, Statistics Canada

Survey objectives: To collect information on the process of intellectual property management (identifying, protecting, promoting and/or commercializing intellectual property) in Canadian degree-granting universities and colleges and their affiliated research hospitals.

Target population: Degree-granting universities and colleges and their affiliated research hospitals.

Sample size: Census.

Data collection method: In May 1999, the survey questionnaire was sent out to all members of the Association of Universities and Colleges of Canada, all members of the Association of Canadian Teaching Hospitals, and all other Canadian hospitals reporting R&D activity on the Annual Hospital Survey.

Survey frequency:

- 1998 (covering fiscal year ending between April 1, 1997, and March 31, 1998)
- 1999 (covering fiscal year ending between April 1, 1998, and March 31, 1999)
- 2001 (covering fiscal year ending between April 1, 2000, and March 31, 2001)

Reference period: Fiscal year 1998-1999 (ending between April 1, 1998, and March 31, 1999).

Historical continuity: Overall data quality is better in the 1999 survey due to more complete reporting by the major universities. As a result, a comparison of the results from the 1998 and 1999 surveys show increases, believed to be due to more complete reporting rather than increased activity.

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Labour Force Survey (LFS)

Labour Statistics Division, Statistics Canada

Survey objectives: To collect labour force information from the civilian, working-age population of Canada in order to provide estimates of the number and characteristics of the employed, unemployed, and persons not in the labour force. The data collected is used to publish monthly standard labour market indicators. In addition, data are collected on a wide range of variables concerning the respondents' household, family, and individual characteristics including educational attainment and school attendance.

Target population: The LFS covers the civilian, non-institutionalized population 15 years of age and over. Excluded from the survey's coverage are residents of the Yukon, Northwest Territories and Nunavut, persons living on Indian reserves, full-time members of the Canadian Armed Forces and inmates of institutions (e.g., hospitals, prisons, and long-term care facilities). Basic demographic information is also collected for all members of the selected household, regardless of age.

Sample size: The number of households sampled across the country has varied over the years as a result of varying levels of funding and improvements in sample design. The sample size has been approximately 54,000 households (or about 100,000 persons) since July 1995.

Data collection method: Each sampled household is interviewed once per month for six months. Data collection for the LFS is carried out each month during the week following the LFS reference week, which is normally the week containing the 15th day of the month. Demographic information is collected for all persons in a household for whom the selected dwelling is the usual place of residence. Labour force information is collected for all civilian household members aged 15 and over. Respondent burden is minimized for the elderly (age 70 and older) by carrying forward their responses from the initial interview to the subsequent five months in the survey. Proxy interviews are allowed for the LFS.

Survey Frequency: Monthly. Data are available from 1966.

Reference period: 1990 to 2001.

Historical Continuity: The survey underwent major redesign in 1976 and 1997, however most data are historically consistent. The 1997 redesign resulted primarily in the addition of new questions relating to labour conditions and a restructured question flow in order to take advantage of computer-assisted interviewing software. In addition, the 1990 LFS questionnaire introduced revised questions on the educational attainment variable and therefore these data are not directly comparable to those collected prior to 1990. Beginning with the 1990 survey, data on primary and secondary education reflects the highest grade completed rather than attended. A question on high school graduation was also added as prior to 1990, for those whose highest level was Grade 11 to 13, no attempt was made to determine if the respondent actually graduated. Also with the 1990 questionnaire, any education that could be counted towards a degree, certificate or diploma from an educational institution is taken as postsecondary education. Prior to this revision, postsecondary education was limited to education that normally requires high school graduation (thereby failing to pick-up on much trade-vocational education as this does not always require high school education). Finally the changes introduced with the 1990 questionnaire allow more information to be collected on the type of postsecondary education.

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Main Science and Technology Indicators, 1998, 2001, 2002

Organisation for Economic Co-operation and Development (OECD)

This biannual publication provides a set of indicators that reflect the level and structure of the efforts undertaken by OECD member countries and eight non-member economies (Argentina, China, Israel, Romania, Russian Federation, Singapore, Slovenia, Chinese Taipei) in the field of science and technology. The indicators cover the resources devoted to R&D, patent families, technology balance of payments and international trade in highly R&D-intensive industries. Also presented are the underlying economic series used to calculate these indicators. Series are presented for a reference year and for the last six years for which data are available.

Minority and Second Language Education, Elementary and Secondary Levels

Centre for Education Statistics, Statistics Canada

Survey objectives: This survey collects enrolment information on minority and second language programs offered in public and private elementary and secondary schools. Enrolment information is not only collected by type of program but also by grade, level of study, and percent of school week spent in studying the second language.

Target population: Information on three levels of language programs are collected: Minority Language Instruction (Francophone schools outside of Quebec, Anglophone schools in Quebec), Second Language Immersion (more than 25% of instruction is in second language), and Second Language Instruction (less than 25% of instruction is in second language). School coverage extends to public and private elementary and secondary schools in the provinces and territories and schools operated by the Department of National Defence in Canada and overseas.

Sample size: Census.

Data collection method: Administrative data for all public schools are sent by the respective ministry/department of education. For private schools, some ministries/departments of education supply this information as well, whereas in other jurisdictions a survey is mailed to each institution.

Reference period: 1997-1998 to 1999-2000. The data are collected as of September 30 of the school year.

Survey frequency: Annual, since 1973-1974.

Contact: Client Services
Centre for Education Statistics,
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National Graduates Survey (NGS)

Centre for Education Statistics, Statistics Canada

Survey objectives: The NGS is designed to measure the labour market outcomes of graduates from university, community college, and trade-vocational programs two and five years after graduation.

Target population: Persons who completed the requirements for degrees, diplomas, or certificates from public universities, community colleges, and trade-vocational programs in Canada. Specifically, the types of graduates included are:

- graduates of university programs leading to bachelor's, master's, or doctorate degrees or specialized certificates or diplomas;
- graduates of postsecondary programs (of at least one year in duration and normally requiring secondary school completion or equivalent for admission) in Colleges of Applied Arts and Technology (CAAT), Collèges d'enseignement general et professionnel (CEGEP), community colleges, technical schools, or similar institutions;

- graduates of pre-employment programs (with a normal duration of at least three months) which lead to a certificate or diploma at the skilled trade level and are offered at trade-vocational schools, as well as many community colleges and technical institutes.

Excluded from the definition of graduates are:

- graduates from private postsecondary institutions such as computer training schools or commercial secretarial schools;
- individuals who completed continuing education courses, at universities and colleges, that do not lead to degrees or diplomas;
- individuals who completed part-time trade courses, such as adult education evening courses, while employed full time;
- individuals who completed vocational programs that were not in the skilled trades and/or were less than three months in duration;
- individuals in apprenticeship programs.

Sample size: The data reported in this publication are based on the following final sample sizes:

- 31,000 persons for the graduating class of 1990 (surveyed two and five years after graduation);
- 29,000 persons for the graduating class of 1995 (surveyed two and five years after graduation).

Data collection method: Interviews are used to collect information from graduates. Proxy answers are not permitted.

Reference period: Data presented in this publication are for the graduating class of 1990, two and five years after graduation, and for the class of 1995, two and five years after graduation.

Survey frequency: To date, four graduating classes have been surveyed two and five years after graduation: 1982, 1986, 1990 and 1995. The graduating class of 2000 was surveyed for the first time, two years after graduation, in 2002.

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National Longitudinal Survey of Children and Youth (NLSCY)

Special Surveys Division, Statistics Canada

Survey objectives: NLSCY is a longitudinal survey, designed to follow the same group of children over several years to study their development and well-being from birth to early adulthood. The NLSCY sample permits results to be reported for the general population of 0- to 5-year-olds in addition to the longitudinal results. The study is designed to collect information about factors influencing a child's social, emotional and behavioural development and to monitor the impact of these factors on the child's development over time. The survey covers a comprehensive range of topics including the health of children, information on their physical development, learning and behaviour as well as data on their social environment (family, friends, schools and communities).

Target population:. The non-institutionalized, civilian child population in Canada's 10 provinces. The children sampled by the NLSCY do not include people living on Indian reserves or Crown lands, residents of institutions, full-time members of the Canadian Armed Forces, and residents of some remote regions.

Sample size: The sample size for Cycle 3 was 8,800 4- and 5-year-olds.

Data collection method: In addition to an interview with the person most knowledgeable about the child (most often the mother), the NLSCY uses a variety of methods to collect information on child development and functioning. Starting in Grade 2, measures of mathematics and reading skills are administered to children in their schools. Preschool children are given a test of vocabulary skills in the household. All of these measures are administered with the informed consent of the person most knowledgeable about the child. Children older than 10 years of age complete questionnaires about themselves and their school experiences. Questionnaires are also completed by the child's school teacher and principal addressing such areas as the child's education, behaviour at school, and classroom and school environment.

Survey frequency: Biennial, starting in 1994-1995.

Reference period: The data reported in this publication are for 4- and 5-year-olds participating in Cycle 3 (1998-1999).

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Population projections for Canada, provinces and territories 2000-2026

Statistics Canada Catalogue No. 91-520-XPB

This publication presents projections based on the population estimates as of July 1, 2000. The projections take into account recent and emerging demographic trends in fertility, mortality, international migration (immigration and emigration), non-permanent residents, and internal migration. A range of scenarios by age and sex are provided to 2026 for Canada, provinces and territories; and to 2051 for Canada.

Programme for International Student Assessment (PISA)

Organisation for Economic Co-operation and Development (OECD)

Survey objectives: PISA, a collaborative effort among OECD member countries, assesses youth outcomes in three domains—reading literacy, mathematical literacy, and scientific literacy—through common international tests. The PISA assessment is intended to go beyond the testing of school-based curriculum in order to assess to what degree students approaching the end of their compulsory education have mastered the knowledge and skills in each of the literacy domains that are essential for full participation in society. More specifically PISA aims to answer the following questions:

- How well are young adults prepared to meet the challenges of the future?
- Are they able to analyze, reason and communicate their ideas effectively?
- Do they have the capacity to continue learning throughout life?
- Are some kinds of teaching and school organization more effective than others?

Target population: Individuals 15 years of age (those born in 1984), who were attending school in one of the ten provinces of Canada. Students of schools located on Indian reserves were excluded, as were students of schools for those with severe learning disabilities, schools for blind and deaf students, and students who were being home-schooled. The territories choose not to participate in PISA 2000. Internationally, 32 countries participated in PISA.

Sample size: In most countries, between 4,500 and 10,000 15-year-olds participated in PISA for a total of over 250,000 students. In Canada, 30,000 students from 1,200 schools in the ten provinces participated. This large Canadian sample was needed to produce reliable estimates for each province and for both the English and French language school systems in Manitoba, Ontario, Quebec, New Brunswick and Nova Scotia. (Sample sizes by jurisdiction are available in the Canadian report on PISA, available at http://www.cmec.ca).

Data collection: The PISA 2000 survey included a direct assessment of students' skills through reading, mathematics, and science tests, with each student taking a two-hour long assessment consisting of different combinations of test items. The 2000 PISA assessment focussed mainly on reading, with mathematics and science as minor testing domains. As a result, there were fewer mathematics and science items included and these items were administered to a sub-sample of the PISA participants. The reading test items supported three sub-scores in retrieving information, interpreting texts, and reflection and evaluation, whereas mathematics and science each had only one score.

Students also completed a 20-minute questionnaire focussing on factors contributing to student achievement and a 3-minute questionnaire focussing on information technology. In addition, PISA 2000 included a questionnaire, which was administered to school principals, to collect information about the characteristics of participating schools.

Students in Canada who participated in PISA also participated in a 30-minute questionnaire for the Youth in Transition Survey (YITS) (see the entry in this Appendix for more details).

The PISA assessment was administered in school, during regular school hours, in April and May 2000.

Survey frequency: Every 3 years with major testing domains as follows:

- 2000: reading;
- 2003: mathematics;
- 2006: science.

Reference period: The data shown in this report are from the 2000 PISA.

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Provincial Expenditures on Education in Reform and Correctional Institutions

Centre for Education Statistics, Statistics Canada

Survey objectives: The survey is used to supplement data collected from the Provincial Public Accounts on provincial/territorial expenditures on education, which are used in the determination of total consolidated expenditures on education in Canada and published in various Statistics Canada publications.

Target population: Reform and correctional institutions in the provinces and territories.

Sample size: Census.

Data collection method: Derived from administrative files.

Survey frequency: Annual, since 1970-1971.

Reference period: 1997-1998 to 1999-2000.

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Public Institutions Division

Statistics Canada

Public Institutions Division's statistical program is designed to measure and analyze the economic dimensions of the public sector of Canada, including its profile.

The economic dimensions consist of revenues and expenditures, assets and liabilities, debt and employment-related statistics of public sector entities. In order to measure properly the public sector, the Division must maintain an up-to-date profile of the public sector universe. The public sector includes all entities such as government departments, establishments or funds, which political authorities at all levels use to implement their social and economic policies. Government business enterprises are also part of the public sector universe.

The public sector does not include supra-national bodies such as agencies of the United Nations or other international organizations that may exist and operate within Canada.

Registered Apprenticeship Information System

Centre for Education Statistics, Statistics Canada

Survey objectives: The purpose of this survey is to obtain information on the number of apprentices registered in each province and territory and trade qualifiers receiving certification with and without Interprovincial Standard Red Seal.

Target population: All persons registered with a province or territory taking apprenticeship training and trade qualifiers receiving certification with and without Interprovincial Standard Red Seal.

Sample size: Census.

Data collection method: This information is taken from the administrative files of the apprenticeship training branch of each province and territory. Individual record data is sent by the provinces and territories to Statistics Canada.

Survey frequency: Annual. Since 1991, individual record data have been collected. From 1980 to 1990, aggregate data by trades was collected.

Reference period: The data shown in this report are for 1991 and 2000.

Historical continuity: The survey collected aggregate data from 1980 to 1990, and included information on the number of new registrations, total registrations, leavers, completions and certificates. In 1991 individual record information began to be requested and additional information on gender and age was obtained.

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Report on the Demographic Situation in Canada, 2000-2001

Statistics Canada Catalogue No. 91-209-XPE

Part I of this annual publication is traditionally devoted to recent demographic trends occurring in Canada. Changes in the main phenomena affecting the Canadian population—fertility, mortality, marriage and divorce, international migration and internal migration—are presented, analysed and discussed in order for the reader to be able to quickly understand the meaning of these ongoing changes. The second part of this report is devoted to original studies on important questions related to the Canadian population.

School Achievement Indicators Program (SAIP)

Council of Ministers of Education, Canada (CMEC)

Survey objectives: The provinces and territories, through the CMEC, have developed SAIP to assess the performance of 13- and 16-year-old students in mathematics content and mathematics problem-solving, reading and writing, and science. SAIP presents achievement results for Canada as a whole and for each participating province and territory. SAIP also provides results for the English and French school systems within a jurisdiction. Beginning with the 1999 science assessment, SAIP began to collect contextual information on student performance to help interpret and explain the achievement results.

Target population: Students in the 10 provinces and 3 territories aged 13 and 16 (i.e., those students who reached their 13th or 16th birthdays between September 1 and August 31 of the previous year).

Sample size: The following table presents the sample sizes for the data shown in this report:

Assessment	13-year-olds	16-year-olds	Total
2001 Mathematics problem solving	11,000	8,000	19,000
1999 Science written	12,000	11,000	23,000

Quebec 16-year-olds did not participate in the mathematics 2001 assessment. More detailed sample sizes by jurisdiction are available in the SAIP reports, available at http://www.cmec.ca.

Data collection method: For all SAIP assessments, development teams composed of representatives from provinces and territories jointly establish curriculum frameworks and assessment criteria. These

frameworks and criteria are intended to reflect the commonly accepted knowledge and skills students should acquire during their elementary and secondary education.

The mathematics assessment had two components: a content component (the results of which are not reported in this publication) and a problem-solving component. The problem-solving component involved six scenarios, each comprised of five problems.

The science assessment was in two parts: a written assessment and a practical tasks assessment (the results of the practical task assessment are not reported in this publication). Students' knowledge of science concepts and their application to society around them, as well as their understanding of the nature of science, were measured by responses to multiple-choice and short, written-response questions.

For both assessments, student performance is reported in relation to five proficiency levels, Level 1 being the lowest and Level 5 the highest. Developers of SAIP define Level 2 as the expected performance level for 13-year-olds, and Level 3 as the expected performance level for 16-year-olds.

In each assessment, both age groups write components of the same test. Thus direct comparisons between 13- and 16-year-olds can be made.

In addition, all students also complete a student background questionnaire (approximately 30 minutes in length) on the opportunities students have to learn the subject being tested and on their attitudes toward this subject, as well as other information on their interests and activities. The teacher and principal each complete a separate questionnaire focusing on additional contextual information.

SAIP tests are administered during April and May.

Survey frequency: SAIP is a cyclical program of student assessment with the following schedule:

Mathematics	Reading and Writing	Science
1993	1994	1996
1997	1998	1999
2001	2002 (writing)	2004

Reference period: Data presented in this report are from:

- Mathematics 2001 (problem-solving, 13- and 16-year-olds);
- Science 1999 (written component, 13- and 16-year-olds).

Historical continuity:

Mathematics: Sound statistical comparisons can be made between 1997 and 2001 assessments. However, because of changes in assessment design, the 1993 results are not directly comparable with those of subsequent mathematics assessments.

Science: Between 1996 and 1999, changes to the assessment and scoring procedures were kept to a minimum for the written assessment. In the sampling procedure, student selection was modified slightly from the 1996 assessment. In 1999, students were selected without any exclusion, while in 1996, students could be excluded before the final sample was drawn. In 1999, school administrators, together with school staff could consider that a student had very limited abilities in science and that it would serve no purpose to have the student write the assessment. If the student could not make a reasonable attempt at answering any of the Level 1 questions included in the *Information Bulletin for Schools*, the school could exempt the student and designate him or her as below Level 1. It is therefore likely that more students were included in the 1999 sample that would be classified as below Level 1. Despite these changes in sampling procedure between the 1996 and 1999 assessments, sound statistical comparisons can be made between these two assessments.

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School Leavers Survey

Centre for Education Statistics, Statistics Canada

Survey objectives: The primary objectives of this survey are to establish rates of leaving school before high school graduation in Canada and the provinces, to investigate factors associated with school leaving, and to compare the labour force and quality of life experiences between those who left high school before graduation (leavers), those who successfully graduated from high school (completers), and those who are still in the high school system (continuers).

Target population: Individuals in the 18- to 20 year-old age range as of April 1, 1991, residing in one of the ten provinces of Canada.

Sample size: The survey was administered to 18,000 individuals, selected from the family allowance file.

Data collection: Data collection for this survey was conducted with the selected individual by telephone.

Frequency of survey: One-time survey conducted in 1991.

Reference period: 1991.

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Science, Innovation and Electronic Information Division (SIEID), Science and Innovation Surveys Section

Statistics Canada

With support from government and industry partners, SIEID focuses on the development of statistical measures and indicators that facilitate the analysis of the economic and social impacts of the following activities:

- Science and Technology Activities
- Industrial Research and Development
- Human Resources and Intellectual Property
- Advanced Technologies
- Innovation
- Biotechnology
- E-Commerce
- Telecommunications
- Broadcasting
- Information Society, Research and Analysis

Secondary School Graduates Survey

Centre for Education Statistics, Statistics Canada

Survey objectives: This survey collects data on secondary school graduates by age and gender for youths in regular high school programs.

Target population: This survey collects data on all graduates of regular high school programs. For the purposes of this survey, graduates from upgrading programs for out-of-school adults, sometimes leading to "equivalency" certification but in other cases leading to regular high school graduation certification, are not included. Youths are defined as "regular high school" students if they are less than age 20.

Sample size Census.

Data collection method: Data are from administrative files and are provided annually to Statistics Canada by all provinces and territories.

Survey frequency: Annual.

Reference period: 1994-1995 and 1999-2000.

Historical continuity: The survey started in the early 1960s and has been modified periodically since then.

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Centre for Education Statistics,
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Email: educationstats@statcan.ca

Survey of Labour and Income Dynamics (SLID)

Income Statistics Division, Statistics Canada

Survey objectives: SLID is a longitudinal survey that follows the same individuals and households for six years, tracking their educational and labour market experiences, and changes in income and family dynamics. As changes in labour and income situations can be closely related to family and personal characteristics, SLID is designed to collect extensive information on areas such as socio-demographic background, education, family composition, activity limitation, and geographic mobility, and changes in these factors. Although SLID is first and foremost a longitudinal survey, it also generates cross-sectional data, including estimates of the number of people with a job or experiencing a period of unemployment at some time during the year, and annual wage distributions.

Target population: Individuals in the ten provinces, excluding residents of institutions and persons living on Indian reserves. The labour and income questions are intended for people 16 to 69 years old, however basic demographic information is also longitudinally collected on persons 15 years of age and under, and those 69 and older from other household members.

Sample size: Approximately 30,000 households are selected to be surveyed throughout all ten provinces. The SLID sample is composed of two groups, each of which consists of two LFS subsamples (technically referred to as rotation groups) and includes roughly 15,000 households. A group is surveyed for a period of six consecutive years, with a new group being introduced every three years.

Data collection method: SLID interviews are conducted over the telephone. For each sampled household in SLID, up to 12 interviews are conducted over a six-year period. Every year, in January, interviewers collect information regarding respondents' labour market experiences during the previous calendar year and the socio-demographic characteristics as of the end of the previous calendar year. Every May, information on income from the previous calendar year is collected from the same sampled households. The income interview is deferred until May to take advantage of income tax time when respondents are more familiar with their income situation. To reduce response burden, respondents can give Statistics Canada permission to use their

T1 tax information for the purposes of SLID. Those who do so are only contacted for the labour interviews. Proxy response is accepted in SLID.

Survey frequency: Annual, since 1993.

Reference period: 1996, 2000.

Historical continuity: Starting with the 1998 reference year, SLID took over from the Survey of Consumer Finances in producing the annual, or cross-sectional, income statistics, in addition to continuing the production of longitudinal data, which began with the first SLID survey in 1993.

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Third International Mathematics and Science Study (TIMSS)

International Association for the Evaluation of Educational Achievement

Survey objectives: The goal of TIMSS is to measure student achievement in school subjects, with a view to learning more about the factors directly relating to student learning that are amenable to policy, for example, curricular emphasis, allocation of resources, or instructional practices.

The first round of data collection for TIMSS occurred in 1995 in Grades 3, 4, 7, 8, and 12. In 1999, a partial replication of the 1995 study was conducted at the Grade 8 level so that comparisons could be made between the performance of students in 1995 and the performance of students in 1999 (in terms of both the performance of Grade 8 students in 1995 and 1999, and, since Grade 4 students in 1995 were in Grade 8 in 1999, the eighth-grade performance of this cohort of students with their performance at the fourth grade).

Target population: For TIMSS 1999, the target population was students enrolled in the upper of two adjacent grades that contained the largest proportion of 13-year-olds at the time of testing; this was the eighth grade in most countries including Canada. The mean age of participants in Canada was 14.0. Internationally, 38 countries participated in TIMSS 1999, with 26 of these also having participated in TIMSS 1995.

Sample size: Internationally, approximately 200,000 students from 6,000 schools participated in TIMSS 1999. In each country, nationally representative samples of approximately 3,500 eighth-grade students (aged 13 and 14) were assessed in about 150 schools. In Canada, approximately 8,800 students from 385 schools participated. The sample included French and English, public, private and separate schools. Newfoundland and Labrador,

Quebec, Ontario, Alberta, and British Columbia elected to over-sample so that comparisons could be made at the provincial level.

Data collection method:

Students wrote a 90-minute test in mathematics and science. They also completed a questionnaire about their opinions, attitudes, and interests. The teachers and principals of the sampled students completed questionnaires: the teacher questionnaire focused on teaching emphasis of the topics under study, instructional practices, professional training and education, and their views on mathematics and science; whereas principals responded to questions about school staffing and resources, mathematics and science course offerings and teacher support.

The survey was administered from February to May 1999 in Canada and the other Northern Hemisphere countries, and from September to November 1998 in the Southern Hemisphere countries. Each participating country was responsible for carrying out all aspects of the data collection using standardized procedures developed for the study.

The TIMSS 1999 test booklets consisted of a number of items from the 1995 study that had been used but not released, supplemented by new items developed and field tested to parallel those that had been released. The mathematics test covered five content areas—fractions and number sense, measurement, data representation, analysis and probability, geometry, and algebra—and tested five performance categories—knowing, using routine procedures, using complex procedures, investigating and solving problems, and communicating and reasoning. The science component is also designed along two categories. The content category consists of: earth science, life science, physics, chemistry, environmental and resource issues and scientific enquiry, and the nature of science. The performance category consists of: understanding simple information, understanding complex information, theorizing, analyzing and solving problems, using tools, routine procedures and science processes, and investigating the natural world. The test items included multiple-choice items as well as items to which students had to construct responses.

Survey frequency:

- 1995 (Grades 3, 4, 7, 8, and 12);
- 1999 (partial replication of TIMSS 1995 at the Grade 8 level only);
- 2003 (Grades 4 and 8).

Reference period:

Data presented in this report are from TIMSS 1999 (Grade 8: 13- and 14-year-olds).

Historical continuity:

The 1999 test design paralleled the 1995 design. The same sampling procedures were used for the 1995 eighth-grade assessment.

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Further details on the target population, sampling and assessment design are available through the TIMSS 1999 Technical Report available on the Web at http://timss.bc.edu/timss1999i/tech_report.html. More information on the performance of students in Canada can be obtained at http://www.curricstudies.educ.ubc.ca/wprojects/TIMSS/.

Trade-vocational Enrolment Survey (TVOC)

Centre for Education Statistics, Statistics Canada

Survey objectives: This survey provides data on enrolment and graduates in trade-vocational and preparatory training programs offered by community colleges and public trade-vocational schools. Information on the socio-demographic characteristics of students and graduates is also collected.

Target population: All full- and part-time students of trade-vocational and vocational preparatory programs offered by community colleges and public trade-vocational schools in the provinces and territories. The types of programs covered by this survey are pre-employment or pre-apprenticeship programs, registered apprenticeship programs, pre-vocational academic upgrading or basic training for skill development programs, pre-employment language training programs (English/French as a second language courses), basic job readiness training programs, orientation programs and special training programs.

Sample size: Census.

Data collection method: Data are drawn from the administrative records of community colleges and public trade-vocational schools. Institutions submit individual student record data to Statistics Canada.

Survey frequency: Annual.

Reference period: Enrolment: 1988-1989 to 1998-1999.
Completions: 1991-1992 and 1998-1999.

Historical continuity: The Trade-vocational Enrolment Survey prior to 1992-1993 provided a Canada-wide data base on full-time enrolments and completions in trade-vocational programs offered by community colleges, public vocational schools and other similar institutions. The survey obtained aggregate counts of full-time students by program rather than student records. Beginning in 1992-1993, the requested method of reporting the data changed from aggregate to individual student records for both full- and part-time enrolment.

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Tuition and living accommodation costs for full-time students at Canadian degree-granting institutions

Centre for Education Statistics, Statistics Canada

Survey objectives: The survey data are used by federal and provincial governments, university and student associations, students and researchers. The information is used to analyze and assess the cost students can incur while attending a Canadian university on a full-time basis, for future planning and setting of new rates, as well as assessing the effects of an increase in rates.

Target population: All degree-granting postsecondary institutions, i.e. universities and university-colleges.

Sample size: Census.

Data collection method: Data are extracted from administrative files.

Survey frequency: Annual.

Reference period: 1997-1998 to 1999-2000.

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Uniform Financial System–School Boards, Survey of

Centre for Education Statistics, Statistics Canada

Survey objectives: This survey looks at the revenues and expenditures of school boards, aggregated at the jurisdictional level. Board revenues can be examined by sources of funds (e.g., local taxation),

whereas expenditures can be examined by function (e.g., administration, instruction), and detailed classification (e.g., salaries and compensations, supplies and services).

Target population: All school boards in the provinces and territories.

Sample size: Census.

Data collection method: Provincial- and territorial-level data on school board revenue and expenses is collected by Statistics Canada from the ministry/department of education of each province and territory. The Centre breaks down expenditure items in cases where the provincial/territorial classification is not detailed enough.

Survey frequency: Annually.

Reference date: 1997-1998 to 1999-2000.

Historical continuity: Survey revisions took place in 1982 and comparisons across years before 1982 should be conducted with caution.

Contact: Client Services
Centre for Education Statistics,
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University and College Academic Staff System

Centre for Education Statistics, Statistics Canada

Survey objectives: This database provides information on the number and characteristics of full-time teachers in degree-granting institutions.

Target population: Full-time teachers in degree-granting institutions.

Sample size: Census.

Data collection method: Data are extracted from the administrative files of Canada's universities and degree-granting institutions, usually in individual record format.

Survey frequency: Annual.

Reference period: 1989-1990 and 1999-2000.

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University Student Information System (USIS)– Enrolment and Graduations

Centre for Education Statistics, Statistics Canada

Survey objectives: The USIS database provides Canada-wide enrolment and graduate statistics from degree-granting universities and colleges. Data collected enables a general profile of students and the programs they take including gender, age, citizenship, geographic source of student, level of education, field of study, type of attendance (full-time, part-time), and year of graduation.

Target population: The target population for the enrolment statistics is all students enrolled in degree-granting institutions in Canada in programs leading toward a degree, diploma or certificate. This includes students enrolled in courses as well as students who have completed their course requirements and who are engaged in thesis writing or research. Those students who are taking courses eligible for credit but who are not seeking a degree, diploma or certificate (e.g., auditors) are also included. The target population for the graduate statistics is all students who have received a degree, diploma, or certificate during the calendar year ending in December.

Sample size: Census.

Data collection method: All student data is extracted from the administrative files of Canada's degree-granting institutions, generally in an individual record format.

Survey frequency: Annual. Enrolment data are available from the 1972-1973 academic year to the present. Graduate data are from 1970 to the present.

Reference period: Enrolment data are shown in this publication for the 1988-1989, 1992-1993, and 1998-1999 academic years. Enrolment data are collected as of December 1 of the academic year in all provinces except Ontario, where the reference date is November 1, and is used as a proxy for the total number of students enrolled during a complete academic year. Graduate data are shown for the years 1976 to 1998. The reference period for graduate data is the calendar year ending in December.

Historical continuity: The Enhanced Student Information System (ESIS), initially implemented in 2000, has begun to replace current postsecondary enrolment and graduate surveys, including the University Student Information System, with a single survey. Although institutions in most parts of the country are already reporting under ESIS, initial start-up problems have limited the data available for this publication. While ESIS has been designed to continue the work of the postsecondary enrolment and graduation surveys, it will address their shortcomings and providing additional policy-relevant information.

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Youth in Transition Survey (YITS)

Centre for Education Statistics, Statistics Canada

Survey objectives: YITS is a longitudinal survey designed to provide information on the transitions in the lives of young people as they move from high school to postsecondary education, and from schooling to the labour market and the factors influencing these pathways, particularly family background, secondary school experiences, achievement, aspirations and expectations, and various activities (volunteer work, part-time work, participation in work-experience programs).

Target population: YITS involves the participation of two different age groups: younger teenagers, who began their participation in the survey at 15 years of age, and an older cohort who entered at ages 18 to 20. The target population for the 15-year-old cohort are youth in the ten provinces who were born in 1984 who were attending school in Canada at the time of sample selection. Students of schools located on Indian reserves were excluded, as were students of schools for those with severe learning disabilities, schools for blind and deaf students, and students who were being home-schooled. The target population for the cohort entering YITS at ages 18 to 20 was youth in the ten provinces born between 1979 and 1981. As the sample for the 18- to 20-year-old cohort is derived from households that were in previous Labour Force Survey samples, it excludes individuals living on Indian reserves or Crown lands, in care and treatment facilities and in correctional facilities.

Sample size: For the 15-year-old group, approximately 30,000 students from 1,200 schools participated in the first cycle of YITS. Approximately 23,000 youths aged 18 to 20 also participated. The same youths from both these age groups will continue to be interviewed every two years in order to have data over several years.

Data collection method: The first cycle for the 15-year-old cohort was administered in schools along with the Programme for International Student Assessment (PISA), an international assessment of the skills and knowledge of 15-year-olds, directed by the Organisation for Economic Co-operation and Development involving 32 countries. Data collection took place in April and May 2000.

As part of the data collection, 15-year-olds:

- completed the YITS questionnaire which collected information on the student's school experience, activities, achievements, aspirations and expectations and employment history;
- wrote the PISA skill assessment focusing on reading but also testing in the areas of mathematics and science;
- completed the PISA student questionnaire on factors related to student achievement.

In addition, information on the students' schools was also collected via the PISA school administrator's questionnaire in which school principals provided information about characteristics of schools including questions specific to the measurement of school-work transitions.

Parents of the 15-year-old youths taking part in YITS were interviewed by telephone in June 2000, to collect their views on their child's schooling and to provide family background information.

The integration of YITS and PISA enable the examination of the relationship between tested skills and knowledge and the education and labour market outcomes of youth.

For participants 18 to 20 years of age, the survey was administered by telephone between January and April 2000, when participants were asked about their education and employment activities during the previous year.

Survey frequency: YITS will contact the same youths from the initial 15-year-old and 18- to 20-year-old groups every two years over several years, with the second cycle of data collection taking place in 2002.

Reference period: 1999 (for 18- to 20-year-olds).
2000 (for 15-year-olds).

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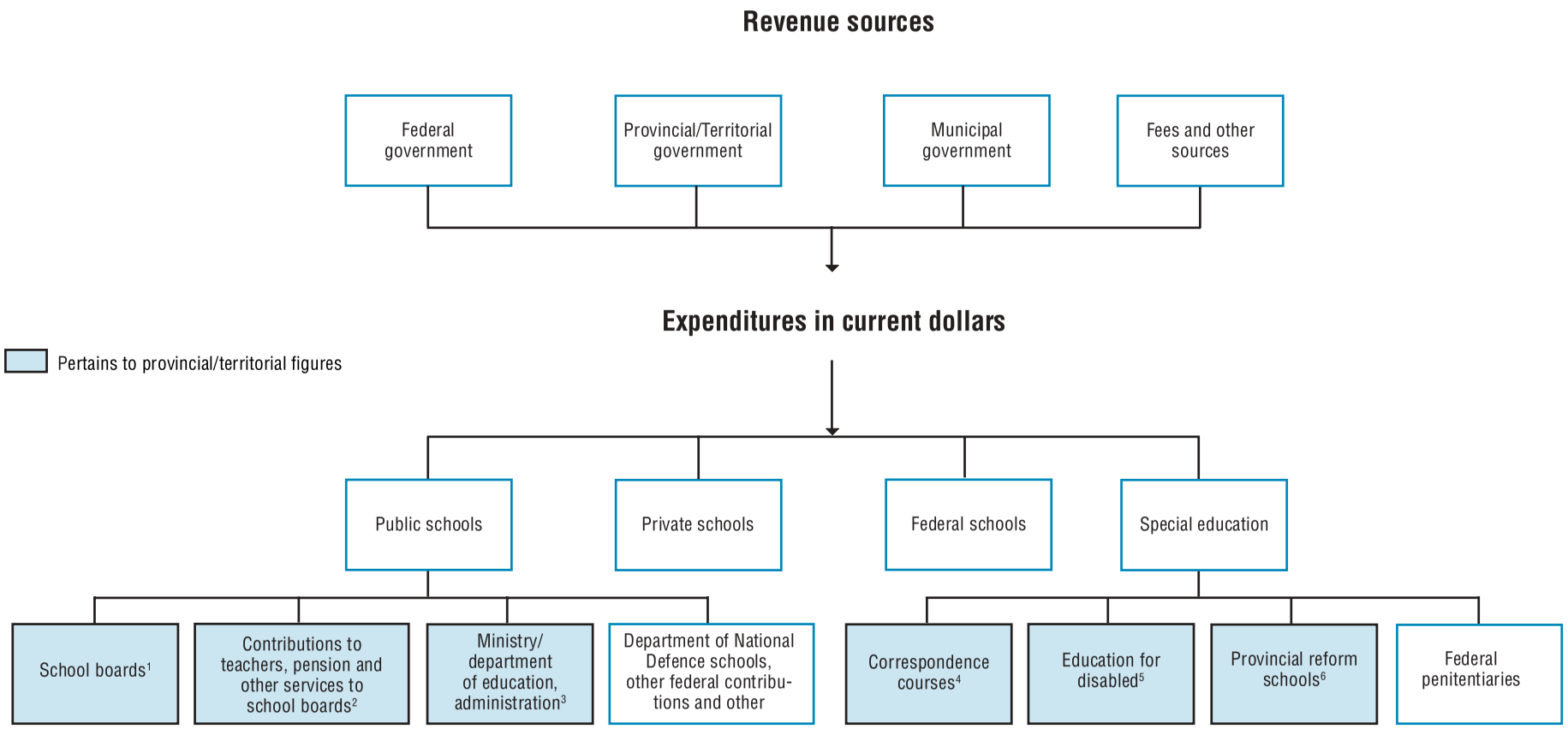
Calculation of revenues and expenditures for each jurisdiction – Elementary and secondary education



1. Ministry/department of education: Adjustments have been made in most provinces/territories to standardize fiscal year ends.
2. Ministry/department of education (public accounts) and/ or "provincial/territorial estimates".
3. Ministry/department of education. Adjustments or estimates are made in some provinces/territories where the elementary/secondary administration amount is not separated out in the public accounts or the provincial/territorial estimates.
4. In some provinces/territories, may include expenditures on correspondence courses incurred by other ministries/departments, not only ministry/ department of education.
5. In some provinces/territories, may include expenditures on correspondence courses incurred by other ministries/departments, not only ministry/ department of education.
6. Information on reform schools is obtained by a survey sent to various ministries/departments of justice, correctional services, penitentiaries or other reform school related administrative bodies.

Appendix 5

Basic reference statistics

Provinces/territories	Consumer Price Index (2001 = 100)					Gross Domestic Product (GDP)[1] (excluding FISIM[2]) (in millions of dollars)		
	1997	1998	1999	2000	2001	1998	1999	2000
CANADA	**92.4**	**93.3**	**94.9**	**97.5**	**100.0**	**901,239**	**960,573**	**1,041,099**
Newfoundland and Labrador	94.5	94.7	96.1	99.0	100.0	11,063	12,176	13,881
Prince Edward Island	92.9	92.5	93.6	97.5	100.0	2,920	3,052	3,279
Nova Scotia	92.7	93.3	94.8	98.2	100.0	20,910	22,521	23,581
New Brunswick	93.2	93.7	95.2	98.3	100.0	17,279	18,372	19,381
Quebec	92.7	94.0	95.4	97.7	100.0	195,010	206,744	220,733
Ontario	91.7	92.5	94.3	97.0	100.0	371,614	398,757	422,409
Manitoba	92.1	93.2	95.0	97.4	100.0	30,446	31,272	33,280
Saskatchewan	91.7	92.9	94.5	97.0	100.0	28,614	29,577	32,969
Alberta	91.2	92.2	94.4	97.8	100.0	105,908	115,351	141,529
British Columbia	95.2	95.5	96.5	98.4	100.0	113,510	118,415	125,281
Yukon	94.0	95.0	95.9	98.0	100.0	1,063	1,090	1,107
Northwest Territories	95.8	95.8	96.7	98.4	100.0	2,619	2,097	2,459
Nunavut	…	…	96.7	98.4	100.0	…	837	891

Provinces/territories	Gross Domestic Product (GDP) (excluding FISIM[2]) adjusted to the fiscal year[3] (in millions of dollars)			Purchasing Power Parity[4] (PPP)			GDP implicit price index[5] (2001=100)		
	1997-1998	1998-1999	1999-2000	1998	1999	2000	1991	1995	2000
CANADA	**878,761**	**916,073**	**986,442**	**1.16**	**1.19**	**1.19**	**86.1**	**91.4**	**99.0**
Newfoundland and Labrador	10,566	11,341	12,602	1.16	1.19	1.19	85.3	89.4	101.4
Prince Edward Island	2,796	2,953	3,109	1.16	1.19	1.19	88.0	89.5	97.5
Nova Scotia	20,221	21,313	22,786	1.16	1.19	1.19	87.6	91.6	98.5
New Brunswick	16,776	17,552	18,624	1.16	1.19	1.19	84.2	91.7	98.5
Quebec	188,981	197,944	210,241	1.16	1.19	1.19	88.5	93.1	98.7
Ontario	358,344	378,400	404,670	1.16	1.19	1.19	90.2	93.9	99.1
Manitoba	29,635	30,653	31,774	1.16	1.19	1.19	86.3	91.7	97.8
Saskatchewan	28,733	28,855	30,425	1.16	1.19	1.19	78.4	89.6	99.9
Alberta	105,875	108,269	121,896	1.16	1.19	1.19	71.4	76.1	97.8
British Columbia	112,812	114,736	120,132	1.16	1.19	1.19	80.9	92.5	98.7
Yukon	1,087	1,070	1,094	1.16	1.19	1.19	…	…	…
Northwest Territories	2,663	2,489	2,188	1.16	1.19	1.19	…	…	…
Nunavut	…	…	851	…	1.19	1.19	…	…	…

1. GDP data used in the calculation of total research and development (R&D) expenditures and university R&D expenditures as a proportion of GDP differ slightly from those presented here. The source of GDP figures used in the R&D section is Statistics Canada's Income and Expenditure Accounts Division (December 2002).
2. Financial intermediation services indirectly measured (FISIM) in the System of National Accounts is measured as the total property income receivable by financial intermediaries minus their total interest payable, excluding the value of any property income receivable from the investment of their own funds, as such income does not arise from financial intermediation.
3. GDP is estimated as $0.75(GDP_{t-1}) + 0.25(GDP_t)$, where *0.75* and *0.25* are the weights for the respective portions of the two reference periods for GDP which fall within the educational financial year.
4. PPP figures were obtained from the OECD publication *Education at a Glance*, 2000, 2001, and 2002.
5. The GDP implicit price index is used to deflate university R&D expenditures and the source of funds of these expenditures for Canada and the provinces. The source of this index is Statistics Canada's CANSIM II Table 384-0036 (1997=100). For the purposes of this report, this index was rebased to 2001=100 by dividing the series for Canada and each province by the 2001 factor.

Appendix 6