Canada’s Post-Secondary Education Performance.
An International Comparison
Canada’s Post-Secondary Education Performance: An International Comparison
Melissa Lalonde and Matthew McKean

Preface
Canadians with post-secondary education (PSE) credentials, as a group, are better off financially than those who lack credentials. The gains cross a variety of socio-economic indicators. This is not surprising, given that Canada’s provincial/territorial post-secondary systems select students based largely on their prior academic accomplishments, which are co-related to intellectual ability, health, drive, and determination.

Canadians support post-secondary education through billions of dollars of public expenditure and spend billions more in tuition and fees. Do these investments in education beyond secondary school produce good socio-economic returns? One way to understand the returns is to compare Canada’s PSE performance with that of other countries. International comparisons highlight how countries generate returns based on different levels of investment. This report compares PSE systems in developed countries that are members of the Organisation for Economic Co-operation and Development.


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Acknowledgments

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About the Centre for Skills and Post-Secondary Education (SPSE)

The Conference Board of Canada's Centre for Skills and Post-Secondary Education (SPSE) is a multi-year initiative that examines the advanced skills and education challenges facing Canada today. While education is a provincial/territorial government responsibility, improving Canada’s skills and post-secondary education performance is a national priority. The Centre examines important themes and issues in post-secondary education from a pan-Canadian perspective. The Centre involves a broad collaboration of public and private sector stakeholders. Together, we aim to address the future of work and the drivers of change in the educational landscape. For more information about the Centre for Skills and Post-Secondary Education, visit www.conferenceboard.ca/spse.
EXECUTIVE SUMMARY

Canada’s Post-Secondary Education Performance: An International Comparison

At a Glance

● This report follows up on The Conference Board of Canada’s November 2014 report Skills—Where Are We Today? The State of Skills and PSE in Canada by assessing Canada’s post-secondary education performance against 15 leading Organisation for Economic Co-operation and Development countries.

● The report compares performance metrics in three categories: inputs, outputs, and outcomes.

● Recommendations focus on improving student retention and the number of advanced-research degree holders; improving literacy, numeracy, and language skills training for college students and newcomers; increasing communication between PSE and industry; and improving labour market information for students.
This report assesses Canada’s post-secondary education (PSE) performance against 15 leading Organisation for Economic Co-operation and Development (OECD) countries. As the basis for comparison, it measures education performance metrics across three categories: inputs, outputs, and outcomes. Input indicators speak to resourcing and participation in PSE systems. These are akin to the national level of PSE effort. Outputs are education-specific metrics that are directly ascribed to PSE systems (e.g., educational attainment). Outcomes are broader socio-economic indicators (e.g., employment). Outcomes can be partly attributed to PSE performance and partly to other socio-economic factors. They are usually the main consideration of governments and individuals that fund PSE systems.

Education in Canada is primarily a provincial/territorial responsibility. Aggregating the data for a national average, to compare Canada to countries with federal PSE systems, is at best an approximation for the sake of comparison. Our How Canada Performs: Education and Skills report card benchmarks the provinces and territories against international peer countries, as does Statistics Canada’s annual Education Indicators in Canada: An International Perspective. Comparing different education systems at aggregate national levels across inputs, outputs, and outcomes nonetheless places Canada’s strengths and weaknesses in a wider global context.

Inputs

Input metrics highlight PSE resourcing and participation. Comparisons and ratings show that Canadian students tend to favour college and bachelor’s degree programs and are less likely than their international
peers to enroll in master’s and doctoral programs. Across the OECD, enrolment rates for universities increased by over 20 per cent from 1995 to 2012. The majority of students (77 per cent) enrolled in full-time study. Parental educational attainment is less of a factor in Canada than in most of its OECD peers: here, Canada ranks 4th out of 13 countries reporting data.

Furthermore, education in Canada costs significantly more than in the average OECD country, and Canada allocates among the lowest percentages of public funding to scholarships. Canada spends significantly more on higher education than most of its OECD peers, placing second only to the United States in PSE expenditure as a share of GDP. Part of the reason for this is that Canadian PSE institutions draw on both public and private sources of funding, much as they do in the United States. There is some concern, however, that PSE systems are increasingly focusing resources on research activities, possibly at the expense of their teaching mandates.

Canadian PSE institutions charge significantly more for tuition than do most OECD comparator countries. Many of the Nordic countries provide free tuition to their PSE students. In contrast, the United States and the United Kingdom charge students approximately double for their post-secondary education in comparison with Canada.

### Outputs

Canada has a higher percentage of its population with tertiary education than the OECD average. This is due to a combination of high enrolments and graduations from college- and bachelor’s-level programs and Canada’s immigration policy, which selects immigrants partly based on applicants’ educational attainment. Canadian immigrants—particularly 24–35-year-old immigrants—are more likely to be tertiary educated than their Canadian-born peers. In 2014, 40 per cent of landed immigrants were university educated, compared with 24 per cent of non-immigrants.

However, a heavy reliance on immigration and a college-orientated tertiary system and lower-than-average skills among university graduates result in a weak relationship between educational attainment and literacy.
Women benefit substantially from obtaining a PSE credential in Canada.

and numeracy skills. Canada also has relatively high rates of under- and overemployment. Better labour market data and significantly more investment in initial language training in English or French for immigrants, including PSE international credential holders, are required to enable these well-educated people to make their full economic contribution to Canada’s workplaces.

Outcomes

Outcomes metrics highlight the experience of individuals and society as a result of post-secondary education. Canada trails its peers in terms of outcomes, particularly concerning the difference in earnings between college and high school graduates and the average unemployment rate for college graduates.

In Canada’s case, it is fair to say that the economy tends to underperform that of the United States, but there are fewer disparities in health and social outcomes in Canada. So the U.S. PSE system produces incrementally higher economic and social returns partly because PSE skills are used more effectively in work and partly because of the greater disparity in health and social outcomes south of the border based on income and education.

Where Canada shines is in its private return on investment (ROI) on educational attainment for post-secondary-educated women versus their high school-graduate counterparts. Women benefit substantially from obtaining a PSE credential in Canada—more so than their male counterparts.

However, the unemployment rate for recent PSE graduates in Canada remains higher than the rate for the general population. This may be due to skills gaps or challenges associated with career transitions, as graduates who do find jobs are not necessarily using their skills at work, particularly compared with their international peers. Canadians with post-secondary education do earn approximately 30 per cent more than their high school-educated peers. Moreover, those with degrees or diplomas in science, technology, engineering, and mathematics
(STEM) fields earn an average of 35 per cent more than their peers with humanities degrees.

**Recommendations**

After analyzing and comparing each of the 42 metrics, we decided on six recommendations for Canada's PSE systems that, if taken into consideration, would help make the systems more competitive, efficient, and effective.

1. **Improve Student Retention**
   
   Canada has a high first-time PSE dropout rate: 14 per cent of first-year PSE students drop out. To increase student retention, PSE institutions must focus on elevating academic and non-academic factors that contribute to students dropping out. Through early intervention, they can work to improve student retention. This assistance can also focus on re-engaging or re-enrolling dropouts who are facing significant issues.

2. **Increase the Number of Advanced-Research Degree Holders**
   
   Canada receives top marks, surpassing all its peer countries, in all areas except master's and doctoral degree attainment. Only 9 per cent of Canadians have completed a master's or doctoral degree, compared with the OECD average of 12 per cent. One potential reason Canadians do not choose to obtain graduate degrees is the limited labour market gains from such diplomas. Strategies to improve employment for PhD graduates include conducting additional research on PhD career pathways, developing PhD alumni networks, promoting the value of PhDs to employers, and facilitating the sharing of professional development resources and best practices across PSE institutions.

3. **Focus on Skills, Not Just Credentials**
   
   Although Canadians are well credentialed, Canada is a bottom-quartile performer in the level of literacy and numeracy skills among adults who have obtained college- and university-level credentials.
The level of performance also suggests that some people are being admitted to college and university without mastering fundamental essential skills by the secondary level of education. Colleges and universities often have to offer remedial education to bring these students up to a functioning level. Primary and secondary schools need to do a better job of fostering these essential skills prior to students attending post-secondary education.

4. Improve Official Language Training for Immigrants
Canadian immigrants are more likely to be highly educated than their Canadian-born peers, but a large percentage of immigrants to Canada come from non-English- or non-French-speaking countries. Immigrants who have achieved intermediate-level English or French can learn more advanced language skills to help them obtain the level they need to excel in their careers.

5. Increase Communication Between Industry and PSE Institutions
Industry has a role to play in supporting the PSE sector—both before and after graduation. Employers that participate in internship, co-operative education, or work-integrated learning programs offer students the opportunity to obtain work experience prior to graduation. Employers can communicate the skills graduates need, and PSE institutions can be responsive to the future needs of employers and students seeking PSE credentials.

6. Improve Labour Market Information
Better, more readily available labour market information, including salary data, skills requirements, and labour market growth areas, will enable students to select diploma and degree programs that will position them for career success. Improved labour market information could improve everything from PSE recruitment and retention to career transition and ROI for graduates, labour market performance, and economic outcomes.
CHAPTER 1

Introduction and Methodology

Chapter Summary

• This report evaluates Canada’s post-secondary education performance against 15 Organisation for Economic Co-operation and Development (OECD) comparator countries.

• Comparator countries have a similar economic and social status, a population greater than 1 million, and a land mass over 10,000 square kilometres; and they have had a per capita GDP above the OECD average for the past five years.

• The report evaluates programs from the college level up to the university doctoral level using the program descriptions provided in UNESCO’s International Standard Classification of Education.
This updated look at the state of skills and post-secondary education (PSE) compares Canada’s performance with 15 member countries of the Organisation for Economic Co-operation and Development (OECD), including five members of the G7.

Indicators are analyzed for Canada and the following 15 comparator countries, for a total sample of 16 countries:

• Australia
• Austria
• Belgium
• Denmark
• Finland
• France
• Germany
• Ireland
• Japan
• Netherlands
• Norway
• Sweden
• Switzerland
• United Kingdom
• United States

Comparator countries are evaluated across a number of indicators. Input indicators speak to the resourcing and participation in the PSE systems. Outputs are education-specific metrics that are directly ascribed to the PSE systems (e.g., educational attainment). Outcomes are broader socio-economic indicators (e.g., employment). Outcomes can be partly attributed to the PSE systems and partly to other socio-economic factors. They are usually the main consideration of governments and individuals that fund the PSE systems.

Although the OECD has 35 member countries, we selected a subgroup of members that are comparable to Canada in economic and social status. Comparator countries were selected by applying the same criteria used in The Conference Board of Canada’s How Canada Performs. OECD member countries were chosen because they have well-developed economies similar to Canada. Moreover, the OECD generates a significant amount of comparative data. In addition, we focused on countries that the World Bank classifies as “high income.” We also applied filters for population size (greater than 1 million); land mass (over 10,000 square kilometres); and GDP per capita (above the OECD average for five years).¹ Selection criteria were designed

¹ The Conference Board of Canada, How Canada Performs: Methodology.
Countries have different approaches to education and the role that PSE institutions play.

to ensure a fair comparison between countries with similar socio-economic characteristics.

PSE comparative analysis often focuses on within-country performance, such as socio-economic outcomes by level of education. PSE generally performs well in these comparisons, partly because of its unique developmental contribution but also because PSE institutions select students based on demonstrated talent and drive. Employers typically build their recruitment systems off PSE credentials, so those with PSE credentials are selected for the best jobs and ongoing employer training. One way to understand average outcomes of educational attainment is to compare different PSE systems.

Countries have different approaches to education and the role that PSE institutions play. Different levels of government fund PSE institutions in different ways: in Canada, it is primarily a provincial/territorial responsibility and so aggregating the data for a national average, to compare Canada to countries with federal PSE systems, is at best an approximation for the sake of comparison. Comparing different education systems at aggregate national levels across inputs, outputs, and outcomes nonetheless places Canada's strengths and weaknesses in a wider global context. It also allows us to distinguish between the PSE contribution to performance versus other factors, as well as look at performance across a wide range of socio-economic metrics.

Since international systems vary, we need a common nomenclature to describe and compare systems. This report uses UNESCO's International Standard Classification of Education (ISCED) definition of post-secondary education levels 5 to 8. 2 ISCED levels 5 to 8 are typically described as “tertiary education.” According to the OECD, tertiary education builds upon secondary education and is complex

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2 OECD, Education at a Glance 2015, 23.
and specialized education in professional, vocational, and/or academic programs. ISCED levels 5 to 8 include:

- **ISCED 5 (short-cycle tertiary education)**—shorter, practical programs that prepare graduates for the workforce, including higher technical education, community college, technician or advanced/higher vocational training, and associate degrees;
- **ISCED 6 (bachelor's or equivalent level)**—longer (typically three to four years), more theoretical programs that are designed to provide graduates with professional skills and competencies;
- **ISCED 7 (master's or equivalent level)**—more specialized and complex programs than bachelor's degrees, designed to provide advanced academic knowledge, usually including a specialized research component;
- **ISCED 8 (doctoral or equivalent level)**—lengthy (minimum three years) programs designed to offer advanced research qualifications, with a focus on original research often presented through a dissertation for publication. Programs are offered at research-oriented academic institutions.

In the case of Canada, ISCED 5 is typically offered by colleges and polytechnics. Most ISCED 6 programs are based at universities (although some colleges and polytechnics award bachelor's degrees). ISCED 7 and 8 are offered exclusively at the university level, with large research-oriented universities accounting for most ISCED 8 graduates.

This report is based primarily on international data analysis. Most of the data come from the OECD, although in some instances other data sources are used.

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3 According to the OECD, “Vocational education prepares participants for direct entry, without further training, into specific occupations. Successful completion of such programmes leads to a labour-market relevant vocational qualification. Some indicators divide vocational programmes into school-based programmes and combined school and work-based programmes on the basis of the amount of training that is provided in school as opposed to training in the workplace.” OECD, *Vocational Programmes*.

CHAPTER 2

Inputs

Chapter Summary

- Canada performs significantly above the OECD average for college diploma and bachelor’s degree program enrolment.

- Canadian students’ access to education is not determined by their parents’ educational attainment.

- Canada ranks 14th out of 16 OECD comparator countries in providing scholarships to PSE students—significantly lower than the OECD average.
Input indicators highlight PSE system resourcing and participation and, therefore, may be considered equivalent to the national level of PSE effort. Inputs can be viewed in several ways. There is participation, such as enrolments. A funding lens looks at the financial contributions of students, governments, and others. There is also internal resourcing (e.g., administrators, faculty, libraries), which reflects policy and PSE administrator allocation decisions.

These inputs are important to keep in mind for later comparisons of outputs and outcomes. Simply put, PSE systems differ in the amount of inputs they take to produce outputs and outcomes. For this reason, some systems may be more efficient and effective than others. Outcomes depend on a variety of non-PSE factors that may either complement the efforts of PSE institutions or work against them.

**Participation in Education**

Skills-based technical change has driven higher levels of PSE participation. In advanced economies, technology is often used to do tasks that were previously done by people. Technology is also paired with workers to heighten labour productivity. This means that people increasingly need advanced thinking skills to take on higher-order roles in the economy. This economic reality has driven higher returns to advanced education and, consequently, higher levels of participation. Over 58 per cent of today’s young adults in the OECD will enroll in some form of PSE.¹

This report begins with an analysis of enrolment, or entry rates. High enrolment rates are thought to reflect positively on the level of PSE accessibility a country offers. According to the OECD, if a country has high entry and enrolment rates in PSE programs, they are developing

and maintaining a highly educated labour force.\textsuperscript{2} This is not always the case, however. Generally speaking, enrolment rates should be compared to graduation rates to reveal how many students are successfully completing the PSE programs they begin.

Overall, Canada does well in terms of the number of students enrolled in PSE. (See Table 1.)

### Table 1

| Total Enrolment in Public and Private Tertiary Education Institutions, 2013 |
|---------------------------------|---------------------------------|
| (number of persons)             | (number of persons)             |
| All public and private institutions | All public and private institutions |
| Australia                       | 1,390,478                       |
| Austria                         | 422,778                         |
| Belgium                         | 488,488                         |
| Canada                          | 1,505,424                       |
| Denmark                         | 291,147                         |
| Finland                         | 309,009                         |
| France                          | 2,338,135                       |
| Germany                         | 2,780,013                       |
| Ireland                         | 199,428                         |
| Japan                           | 3,862,749                       |
| Netherlands                     | 688,383                         |
| Norway                          | 255,416                         |
| Sweden                          | 436,603                         |
| Switzerland                     | 279,832                         |
| United Kingdom                  | 2,386,199                       |
| United States                   | 19,972,623                      |

Note: Only public institution data were provided for Canada.
Source: OECD.Stat, Enrolment by Type of Institution.

Enrolment rates for students entering university in OECD countries increased by over 20 per cent from 1995 to 2012. But, from 2010 to 2012 enrolment rates decreased by 4 per cent.\textsuperscript{3} This decline is evident in some leading countries, such as Australia, where the national attrition rate\textsuperscript{4} reached an eight-year high in 2013 at 14.84 per cent.\textsuperscript{5} Furthermore, Australia has experienced a 26 per cent drop in PSE enrolment.\textsuperscript{6} One potential reason for the heightened dropout rate is that the Australian education system changed in 2012 to a more demand-driven system, which allowed universities to enroll any students they regarded as

\textsuperscript{4} Attrition rate refers to the number of students who leave a program of study before it has finished.
\textsuperscript{5} Hare, \textit{Access Broadens, Dropouts Soar}.
qualified, many of whom turned out to be unqualified.\(^7\) Another possible explanation for decreasing enrolment rates is the shrinking population of 18–24-year-olds, which is currently an issue in Canada.

Many countries consider vocational schools as short-cycle tertiary, while countries such as the United States include junior college associate degrees in their numbers, which some countries would classify as incomplete post-secondary non-tertiary programs.\(^8\) Canada’s short-cycle tertiary system includes community colleges, polytechnics, and collèges d’enseignement général et professionnel (CEGEPs). Canada also includes CEGEP graduates who did not continue on to other PSE programs, private career college graduates, and trades or apprenticeship graduates. In many other countries, these programs are considered less than short-cycle tertiary.\(^9\)

The United States has a large applied college sector, which largely explains its strong total enrolment performance. The Canadian system is non-compulsory and focused on college and bachelor’s levels of education, typically requiring between two and four years of post-secondary study. Canada’s performance as measured by population participation rates deteriorates considerably at more advanced master’s and PhD levels of education.

Critics point out that the high percentage of master’s degrees in some European countries may be an outcome of the Bologna Process, which improved degree recognition and facilitated mobility for students, faculty, and staff across member countries in Europe beginning in 1999. Prior to the Bologna process, many continental European countries had terminal degrees of four or five years’ duration. Bologna changed this to three years as the standard length for a bachelor’s degree. However, students and employers have only partially bought into these changes and many continue to behave as they did under the earlier regime, which typically saw them go to post-secondary school for four or five years (thus, to the graduate level).

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7 Hare, Access Broadens, Dropouts Soar.
8 Usher, Those OECD Attainment Numbers.
9 Ibid.
Funding models play a factor in the incentive to continue with education. Some countries offer “free” (to the student, at any rate) post-secondary education, while others employ various forms of cost-sharing between students and governments.

**Percentage Enrolment in Science, Mathematics, and Computer Programs**

Some systems encourage wide access across all fields of study. Yet governments are now increasingly interested in encouraging certain fields, specifically science, technology, engineering, and mathematics (STEM) enrolments, which are thought to drive technological innovation. (See Chart 1.)

### Chart 1

**Enrolment in Science, Mathematics, and Computing Programs as a Share of Total Enrolments in Tertiary Education, 2013**

(per cent)

<table>
<thead>
<tr>
<th>Country</th>
<th>Enrolment Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
<td>18.2</td>
</tr>
<tr>
<td>Ireland</td>
<td>17.5</td>
</tr>
<tr>
<td>Germany</td>
<td>16.9</td>
</tr>
<tr>
<td>France</td>
<td>12.8</td>
</tr>
<tr>
<td>Canada</td>
<td>12.6</td>
</tr>
<tr>
<td>Austria</td>
<td>12.1</td>
</tr>
<tr>
<td>Switzerland</td>
<td>11.8</td>
</tr>
<tr>
<td>United States</td>
<td>10.9</td>
</tr>
<tr>
<td>Finland</td>
<td>10.8</td>
</tr>
<tr>
<td>Sweden</td>
<td>10.4</td>
</tr>
<tr>
<td>Australia</td>
<td>10.3</td>
</tr>
<tr>
<td>Denmark</td>
<td>10.0</td>
</tr>
<tr>
<td>Norway</td>
<td>9.7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>8.1</td>
</tr>
<tr>
<td>Belgium</td>
<td>7.5</td>
</tr>
<tr>
<td>Japan</td>
<td>4.6</td>
</tr>
</tbody>
</table>

Source: OECD.Stat, *Enrolment by Field*.

In 2013, the United Kingdom accepted the highest number of students ever recorded in STEM disciplines (98,000 students). The acceptance
rate was 18 per cent higher than the previous decade’s. The U.K. government partnered with businesses to encourage students to register in STEM programs, through an initiative called Project ENTHUSE. This program provides student bursaries and teacher funding.

Parental Background and PSE Participation

Participation in Education Based on Parental Educational Attainment

Educational attainment has typically increased across all OECD comparator countries over time. Yet family background is a more important factor driving participation in some countries than others. Ideally, PSE participation should be determined more by ability than parental background, although it should be acknowledged that ability and drive are often shaped by family background. Children with one parent with PSE credentials are twice as likely to choose to enroll in PSE as well. If both parents have PSE credentials, children are 4.5 times more likely to attend PSE than those with non-tertiary-educated parents.

Canada scores well on this metric (see Chart 2) with low correlation, while the United States has a high correlation between the educational achievement of parents and their children. Only 30 per cent of adults in the United States have attained a higher level of education than their parents. Non-student adults in the United States whose parents have a high school education or less are 7 per cent less likely than the OECD average to attain PSE.

According to the OECD’s report Education at a Glance 2014: Highlights, an average of only 16 per cent of students do not achieve the level of education that their parents achieved. Across OECD countries, it is more common for people to move upwards from an educational achievement perspective rather than downward. The greatest amount of growth

10 Thomas, Number of Students Studying Stem Courses in UK at Record High.
11 STEM Learning, Project ENTHUSE.
14 Ibid., 3.
in educational mobility for those in the 25–34-year-old age range is experienced in France and Ireland, where the difference between upward and downward educational mobility is 30 per cent—meaning it is much more likely for people there to move upward from the social position they are born into.\(^\text{15}\)

**Post-Secondary Education Expenditure**

Charts 3 to 5 consider PSE resourcing. Post-secondary education institutions in all comparator countries tend to be heavily funded by government. On average, OECD countries spend about one-quarter of their education budget on post-secondary education.\(^\text{16}\) However, many PSE institutions also receive significant private funding.\(^\text{17}\)

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\(^{17}\) “Private spending includes all direct expenditure on educational institutions, whether partially covered by public subsidies or not. Expenditure by private companies on the work-based element of school- and work-based training of apprentices and students is also taken into account.” OECD, *Education at a Glance 2015*, 246.
Public and Private Expenditure on PSE Institutions

The United States and Canada spend more on higher education institutions as a share of GDP than do comparator countries. (See Chart 3) Furthermore, Canada and the United States receive the highest percentage of private funding of all OECD countries. PSE institutions in the United States see roughly equal amounts of funding coming from private and public spending. Similarly, Canadian PSE institutions receive 1.5 per cent of GDP in public funding and 1 per cent in private funding.\(^{18}\) However, in Canada, the amount of private funding differs significantly between the provinces. In 2011, universities in Ontario received about 46 per cent of their operating revenue in the form of tuition, while those in Quebec received just over 24 per cent that way.\(^{19}\)

Leveraging both private

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\(^{19}\) Grant, *The Economic Impact of Post-Secondary Education in Canada*, 10.
and public sources helps explain why total funding as a share of GDP is relatively high in these countries. In the United States, the defence program (e.g., Defense Advanced Research Projects Agency) also contributes substantial research funding to the post-secondary system.

**Expenditure on Higher Education Research**

A contentious issue is the extent to which PSE funding resources support the education of students. An average PSE class size tends to be a barometer for education quality. Owing to policy and institutional decisions, class sizes in Canada have increased in recent years. Part of the reason is that Canada’s institutions are increasingly focused on their research mandates at the expense of their teaching mandates. In fact, Canada is a strong performer in the share of GDP allocated to research performed at higher education institutions. As we discuss elsewhere, this funding is based largely on the idea that university research will drive innovation and productivity performance. (See Chart 4.)

**Chart 4**

**Spending on Research Based in Higher-Education Institutions as a Share of GDP Spent on Research, 2010–11**

(per cent)

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Netherlands</td>
<td>40.1%</td>
</tr>
<tr>
<td>Canada</td>
<td>38.3%</td>
</tr>
<tr>
<td>Norway</td>
<td>37.8%</td>
</tr>
<tr>
<td>Denmark</td>
<td>33.5%</td>
</tr>
<tr>
<td>Australia</td>
<td>31.7%</td>
</tr>
<tr>
<td>Finland</td>
<td>31.1%</td>
</tr>
<tr>
<td>Finland</td>
<td>31.1%</td>
</tr>
<tr>
<td>Ireland</td>
<td>30.6%</td>
</tr>
<tr>
<td>Sweden</td>
<td>29.4%</td>
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<td>Austria</td>
<td>28.1%</td>
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<td>Belgium</td>
<td>27.6%</td>
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<tr>
<td>France</td>
<td>24.7%</td>
</tr>
<tr>
<td>Finland</td>
<td>23.6%</td>
</tr>
<tr>
<td>OECD average</td>
<td>22.8%</td>
</tr>
<tr>
<td>Germany</td>
<td>21.4%</td>
</tr>
<tr>
<td>United States</td>
<td>19.8%</td>
</tr>
<tr>
<td>Japan</td>
<td>19.2%</td>
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</tbody>
</table>

Note: The calculation was made by taking the percentage of GDP spent on higher education research and dividing it by the total percentage of GDP spent on all research sectors, multiplied by 100 to produce a percentage.

Sources: OECD.Stat; The Conference Board of Canada.
Post-secondary education institutions use public and private funding to finance a variety of initiatives, including teaching staff and academic research. Evidence suggests that it is beneficial to fund enough teaching staff to ensure smaller class sizes. A study in *The Economic Journal* shows that small classes (33 students or less) were more engaging and found to promote better learning. Student outcomes were no better or worse if classes were between 33 and 104 students, though large classes were shown to negatively impact learning. Student-to-teacher ratios across the OECD tend to be lower in college programs than in university programs.

The Times Higher Education found that of the 800 universities they rank, the average student-to-teacher ratio is 16.5 students per staff member. On average, PSE classes in Belgium and the United Kingdom tend to have 20 or more students for one teacher, while in Norway the average is under 10 students per teacher. Canada ranks below the OECD average on its student-staff ratio. (See Chart 5.)

**Chart 5**

**Ratio of University Students to Teaching Staff in Educational Institutions, 2012**

<table>
<thead>
<tr>
<th>Country</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td></td>
</tr>
<tr>
<td>France</td>
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<tr>
<td>Netherlands</td>
<td></td>
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<tr>
<td>OECD average</td>
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<tr>
<td>Australia</td>
<td></td>
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<tr>
<td>Canada</td>
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</tr>
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</tr>
<tr>
<td>Germany</td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
</tr>
</tbody>
</table>

Note: The ratio of students to teaching staff is obtained by dividing the number of full-time equivalent students at a given level of education by the number of full-time equivalent teachers at that level and in similar types of institutions.

Source: OECD, *Education at a Glance: OECD Indicators*, Table D2.2.

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20 Woolley, “University Class Sizes.”


22 Times Higher Education, *Top 100 Universities With the Best Student-to-Staff Ratio.*
Percentage of Public Expenditure Allocated to Scholarships

Scholarships play an important role in encouraging top-performing students to continue on to higher education, and they improve accessibility for low-income students. Although the United States’ PSE systems is characterized by high tuition fees, accessibility is improved somewhat through generous scholarship funding. Chart 6 reflects the percentage of total public expenditure on education that goes toward scholarships and grants for students.

Chart 6
Share of Public Expenditure on Education Allocated to Scholarships to Students, 2011
(per cent)

Source: OECD, Education at a Glance 2014: OECD Indicators, Table B5.4.

Denmark does not charge Danish students, Swiss students, or students from the European Union or European Economic Area for PSE and provides scholarships to students from other countries. The Danish Innovation Scholarship provided $3.4 million euros in scholarships in the
The affordability of higher education is a significant factor for students in deciding whether to continue their education.

2015–16 academic year to top-tier students. Denmark also provides scholarships and grants to students to cover living costs above and beyond subsidized tuition through the Danish State Educational Support. Over 300,000 Danes benefit from these two types of educational supports every year. This amounts to about 11 billion Danish kroner (C$2.16 billion), or 0.8 per cent of GDP. Students receive approximately 60 per cent of the wage of a typical industrial worker.

Canada ranks below all but two of its OECD peers in terms of public expenditure on scholarships and instead relies on government loan programs, which are forgiving. According to the OECD, Canadian students benefit from high remission rates, meaning that a large proportion of the average student’s loans are forgiven if the student completes his or her studies.

Cost of Post-Secondary Education

The affordability of higher education is a significant factor for students in deciding whether to continue their education. The Nordic countries, as well as France, Belgium, Austria, and Switzerland, are considered highly affordable, while the United States and the United Kingdom are not. (See Chart 7.) Canada’s education costs are above average in comparison with its peer countries. It is important to note than in many countries the cost of education differs between programs and education levels.

Conclusions

Across the OECD, enrolment rates for universities increased by over 20 per cent from 1995 to 2012. The majority of students enrolled in full-time study (77 per cent). Parental educational attainment is less of a factor in Canada than for most of its OECD peers.

Canada spends significantly more on higher education than its OECD peers, and places second only to the United States on PSE expenditure

23 Study in Denmark, Tuition Fees & Scholarships.  
24 Uddannelses-og Forskningsministeriet, State Educational Grant and Loan Scheme (SU).  
as a share of GDP. Part of the reason is that Canadian PSE institutions draw on both public and private sources of funding, much as they do in the United States. There is some concern, however, that the PSE systems are increasingly focusing resources on research activities, possibly at the expense of teaching mandates.

Canadian PSE institutions charge significantly more for tuition than most of their OECD comparator counterparts. Many of the Nordic countries provide free tuition to their PSE students. In contrast, the United States and the United Kingdom charge students approximately double for their post-secondary education in comparison with Canada.
CHAPTER 3

Outputs

Chapter Summary

- Canada has the most educated labour force in the world, ranking 1st for having the highest percentage of labour-participating adults with a PSE credential.

- But Canada could still improve its first-time graduation rates from master’s degree and PhD programs.

- Canada is well ahead of 15 comparator countries for college diploma attainment in the 25–64-year-old population.

- Literacy and numeracy proficiency scores for college- and university-educated adults in Canada are low.
Outputs are PSE-specific performance metrics that relate to education and research activities. They include graduation rates, credentials, and education-derived skills such as literacy and numeracy. Outputs can also include job qualifications and skills acquired through education and work-integrated learning.

When considered in relationship to inputs, outputs provide an idea of the efficiency and effectiveness of PSE systems in generating education-specific performance. It is the application of the education outputs to the broader society and economy that shapes outcomes. If outputs are not well aligned with socio-economic needs, a country may perform well on outputs but not on outcomes.

**PSE Credentials**

PSE students in OECD countries are more likely to graduate from bachelor’s degree programs than any other level of PSE. The numbers vary considerably by country, but in 2013, 69 per cent of OECD graduates received a bachelor’s degree, as opposed to 18 per cent attaining college diplomas and 14 per cent earning master’s degrees.¹ Graduates in science and engineering combined represent less than a quarter of total tertiary graduates, but they represent 44 per cent of graduates at the PhD level.²

However, higher levels of enrolment are not always matched by attainment. In Canada, approximately 14 per cent of first-year PSE students drop out and 16 per cent of PSE students are expected to drop out overall.³ Students are most likely to drop out in the first year. Dropout rates fall with education level, suggesting that once well established in the post-secondary system, students are being properly prepared and selected for more advanced levels of study within the

---

² Ibid., 60.
³ Finnie, Childs, and Qiu, *The Patterns of Persistence in Post-Secondary Education Among College Students in Ontario*, 13.
system. Canada is an average performer on first-time graduation rates from bachelor’s programs, principally due to high losses in the first year.

Dropouts are concerning because partial education toward a credential is not typically recognized by employers or educational institutions. This means students with partial credentials do not have the same job and continuing education opportunities. This is a concern to both the student and the society that supports them through PSE subsidies. Moreover, once students drop out, they tend to face significant challenges in regaining admittance to PSE. Also, financial supports that may have been available based on high-level scholastic performance are often lost, which can create additional financial strain and prevent students from re-entering PSE.

**First-Time Graduation Rates From Bachelor’s Programs**

According to the OECD, graduation rates are described as “the total number of graduates (the graduates themselves may be of any age) at the specified level of education divided by the population at the typical graduation age from the specified level.” Moreover, graduates can be either first-time graduates or repeat graduates. The OECD defines a first-time graduate as “a student who has graduated for the first time at a given level of education in the reference period. Thus, if a student has graduated multiple times over the years, he or she is counted as a graduate each year, but as a first-time graduate only once.”

There is a sizable difference in first-time bachelor’s degree graduation rates across OECD peer countries. (See Chart 8.) Canada performs slightly above the OECD average, which suggests that Canadian students may not be fully prepared for university.

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Bachelor’s Degree Attainment

Graduation rates impact educational attainment levels over time, and the rise or fall of these two metrics is directly correlated. There is a stark difference in terms of the percentage of the population in Canada aged 25 to 64 with bachelor’s degrees in comparison with the current first-time graduation rate. In 2015, 20 per cent of Canadians held bachelor’s degrees. (See Chart 9.) This is a significant number, however, and Canada places 10th of 16 comparator countries. To maintain the current level of degree holders, Canadian institutions need to ensure their graduation rates remain competitive.

Some OECD countries have been actively working to increase their degree completion rates. Norway reformed its education system by shortening degree programs and increasing financial support for students, only to find its completion rate dropped by 6 per cent between 2005 and 2011. The United Kingdom, which ranked in the
top half of OECD countries for bachelor’s completion rates, had decidedly more success by capping tuition fees in 2012.

**Chart 9**

**Bachelor’s Degree Attainment, Population Aged 25–64, 2015**

(per cent)

Note: Percentage of adults with a given level of education as the highest level attained.

**College Diploma Attainment**

Canada is one of only three countries where a higher percentage of citizens hold college (short-cycle tertiary) diplomas rather than bachelor’s degrees as their highest level of education (see Table 2 and Chart 10), which suggests a somewhat more vocationally orientated PSE system. As Table 2 shows, there is a 5.5 percentage point difference between the number of 25–64-year-old Canadians whose highest level of education obtained is a college diploma versus a bachelor’s degree. There are several potential reasons for this.
Table 2
Difference Between Percentage of Adults With Bachelor’s Degrees and Percentage With College Diplomas, 25–64-Year-Olds, 2015
(percentage point)

<table>
<thead>
<tr>
<th></th>
<th>Percentage point difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>20.4</td>
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<tr>
<td>Netherlands</td>
<td>18.2</td>
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<tr>
<td>Denmark</td>
<td>15.8</td>
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<tr>
<td>Germany</td>
<td>14.0</td>
</tr>
<tr>
<td>Australia</td>
<td>13.2</td>
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<tr>
<td>United States</td>
<td>11.4</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>11.4</td>
</tr>
<tr>
<td>Japan</td>
<td>8.3</td>
</tr>
<tr>
<td>Ireland</td>
<td>8.2</td>
</tr>
<tr>
<td>OECD average</td>
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</tr>
<tr>
<td>Norway</td>
<td>6.9</td>
</tr>
<tr>
<td>Sweden</td>
<td>6.1</td>
</tr>
<tr>
<td>Finland</td>
<td>3.3</td>
</tr>
<tr>
<td>France</td>
<td>−5.3</td>
</tr>
<tr>
<td>Canada</td>
<td>−5.5</td>
</tr>
<tr>
<td>Austria</td>
<td>−12.3</td>
</tr>
</tbody>
</table>


Chart 10
College Diploma Attainment, Population Aged 25–64, 2015
(per cent)

Note: Percentage of adults with a given level of education as the highest level attained.
First, a recent trend is for Canadians to attend college after completing a bachelor’s degree. According to Colleges Ontario, 12 per cent of students enrolling in college in 2012–13 had already obtained a university degree.6 Second, Quebec’s unique CEGEP program contributes to the large percentage of college-level graduates. Finally, the education system in Canada may be mirroring the structure of the economy. The commodity and construction sectors are a larger part of the Canadian economy than they are in many other OECD countries. The skills needs from these sectors can increase demand for trade-related education, which is offered through the college system.

**First Time Graduation Rates for Graduate Degree Holders**

Comparisons and ratings show that Canadian students are less likely than their international peers to enrol in master’s or doctoral programs. While Canada performs well on both college and bachelor’s degree enrollment, it underperforms for enrollment in master’s and PhD programs. (See charts 11 and 12.)

The OECD estimates that only 2 per cent of people under the age of 30 in its member countries will graduate from a PhD program in their lifetimes.7 Despite the low number of graduates from PhD programs, the OECD notes that the number of PhD graduates increased between 2005 and 2013 in most member countries. Austria and Finland are exceptions to this, as their graduation rates for PhDs dropped. (See Chart 12.)

The Conference Board’s *How Canada Performs* publication gives every Canadian province a “D” or “D-” in terms of the number of PhD graduates, except for Quebec, which receives a “C” grade.8 All provinces produced fewer PhD graduates than Canada’s 15 OECD comparator countries.

Many students go abroad to pursue studies at the graduate level and OECD data suggest a correlation between stronger first-time PhD

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6 Algonquin College, *College After University*.

Find Conference Board research at www.e-library.ca. 24
Chart 11
First-Time Master's Degree Graduation Rate, 2015
(sum of age-specific graduation rates, per cent)

Source: OECD, Education at a Glance 2016, Table A3.1.

Chart 12
First-Time PhD Graduation Rate, 2014
(sum of age-specific graduation rates; per cent)

Source: OECD, Education at a Glance 2016, Table A3.1.
graduation rates in countries with high international student enrolment. Meanwhile, a 2011 Statistics Canada and Human Resources and Skills Development Canada (HRSDC) study shows that more than 20 per cent of PhD graduates left Canada upon graduation.

**Percentage of STEM Program Graduates**

As discussed earlier, Canada performs relatively well in terms of STEM enrolments. (See Chart 13.) But STEM programs see fewer students graduate than disciplines such as the arts and social sciences. The importance of STEM rises with the level of education. The OECD reports that, on average, their member countries see less than 25 per cent of PSE graduates completing STEM programs. However, at the PhD level, 44 per cent of degrees are granted in the STEM fields. Canada is one of the countries that experiences a high number of PhD graduates in the STEM fields. Like France, Canada sees over 55 per cent of PhD students graduating from science or engineering programs.

**Share of Population With PSE Credentials**

**Percentage of Labour Force With PSE Credentials**

A significantly higher share of the Canadian adult population than the OECD average holds tertiary certifications. (See Chart 14.) Canada’s educational attainment is partly due to its relatively large college sector (inflated by Quebec’s publicly funded pre-university college system, CEGEP) as well as high attainment in bachelor’s degree programs.

Immigration adds significantly to attainment levels. Canada has a high rate of immigration and uses educational attainment as an immigration selection criterion. This has the effect of increasing adult educational attainment well beyond what might be expected based on tertiary education completion rates out of Canadian institutions.

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10. Desjardins and King, *Expectations and Labour Market Outcomes of Doctoral Graduates From Canadian Universities*. HRSDC is now called Employment and Social Development Canada (ESDC).
12. Ibid., 65.
Chart 13
Share of Graduates in Science, Mathematics, Computing, Engineering, Manufacturing, and Construction, College to PhD Levels Inclusive, 2014
(per cent)

Note: The percentage is calculated by combining the share of graduates in the "Science, Mathematics, Computing" category with the share of graduates in the "Engineering, Manufacturing, Construction" category. All data are from 2014, with the exception of Belgium and Canada (2013).
Sources: OECD.Stat, Distribution of Graduates and Entrants by Field: Share of Graduates by Field; The Conference Board of Canada.

Chart 14
Labor Force With Tertiary Education, 2014
(per cent)

Source: World Bank, Education Statistics—All Indicators.
immigrants—especially 24–35-year-old immigrants—are more likely to be educated than their Canadian-born peers.

In 2014, 40 per cent of Canada’s landed immigrants were university educated, compared with 24 per cent of non-immigrants. For those in the 25–34-year-old age group, 45 per cent of landed immigrants held university degrees, versus 29 per cent of non-immigrants. Moreover, about half of the 24–35-year-old university-degree-holding labour force entrants were immigrants. Immigration plays a powerful role in Canada’s strong performance in terms of the share of its labour force holding PSE credentials.

Application of Skills in Work

Canada’s high level of PSE attainment does not translate well into numeracy and literacy skills. These skills are assessed through a standardized test conducted by the OECD under its Programme for the International Assessment of Adult Competencies (PIAAC). Canada receives a “D” in both numeracy and literacy proficiency skills of PSE graduates, based on the 2013 PIAAC test.

Part of the reason is that Canada produces a relatively high number of college graduates who tend to score lower (see Chart 15) on these tests than university graduates. (College graduates achieve 7 per cent lower literacy proficiency scores on average.) But university graduates do not perform as well as might be expected. Less than one-third of university graduates operate at level 4 or 5 in literacy. (See Table 3 for literacy and numeracy level descriptions.) Over 30 per cent of these graduates scored at Level 3 or below in numeracy, while 6 per cent of Canadian university graduates received a Level 1 or below on the PIAAC test in 2013. Canada’s literacy proficiency scores have not improved over the last decade. Level 3 competency in literacy and numeracy is often treated as the desired level for success in a knowledge-based economy. Furthermore, Level 3 is the level that correlates with enhanced labour market outcomes in advanced economies.

14 Parkin, A Fresh Look at Educational Attainment.
One potential reason for Canada’s poor PIAAC scores is Canada’s practice of sourcing educated immigrants from countries where neither English nor French are the mother tongue. Although Canada selects immigrants in part based on educational attainment, their educational attainment may not reflect their literacy skills in English or French. Hence, Canada’s educational attainment increases through immigration but not necessarily its literacy and numeracy skills.

In other words, the relationship between PSE and literacy/numeracy rates is complex. Linguistic and educational backgrounds, as well as issues related to employment tenure and type, can have an impact on literacy and numeracy skills over time.

Source: OECD, OECD Skills Outlook 2013: First Results From the Survey of Adult Skills, Table A5.5a (L).
## Table 3

### Literacy and Numeracy Level Descriptions

<table>
<thead>
<tr>
<th>Level</th>
<th>Points</th>
<th>Literacy</th>
<th>Numeracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below Level 1</td>
<td>Below 176 points</td>
<td>• Read brief texts on familiar topics&lt;br&gt;• Locate a single piece of specific information&lt;br&gt;• Little or no competing information in text&lt;br&gt;• Only basic vocabulary knowledge required&lt;br&gt;• Not required to understand structure of sentences/paragraphs or make use of other text features</td>
<td>• Carry out simple processes such as counting, sorting, performing basic arithmetic operations with whole numbers or money&lt;br&gt;• Recognize common spatial representations</td>
</tr>
<tr>
<td>Level 1</td>
<td>176 to less than 226 points</td>
<td>• Read relatively short digital or print texts&lt;br&gt;• Locate single piece of information that is identical to or synonymous with information given in the question or directive&lt;br&gt;• Knowledge and skill in recognizing basic vocabulary, determining the meaning of sentences, and reading paragraphs of text</td>
<td>• Carry out basic mathematical processes in common, concrete contexts where the mathematical content is explicit&lt;br&gt;• Perform one-step or simple processes involving counting, sorting, performing basic arithmetic operations&lt;br&gt;• Identify elements of simple or common graphical or spatial representations</td>
</tr>
<tr>
<td>Level 2</td>
<td>226 to less than 276 points</td>
<td>• Make matches between the text, either digital or printed, and information.&lt;br&gt;• May require paraphrasing or low-level inferences</td>
<td>• Apply two or more steps or processes involving calculation with whole numbers and common decimals, per cents and fractions&lt;br&gt;• Perform simple measurement and spatial representation&lt;br&gt;• Estimate&lt;br&gt;• Interpret relatively simple data and statistics in texts, tables and graphs</td>
</tr>
<tr>
<td>Level 3</td>
<td>276 to less than 326 points</td>
<td>• Texts are often dense or lengthy&lt;br&gt;• Often requires understanding text and rhetorical structures and navigating complex digital texts</td>
<td>• Apply number sense and spatial sense&lt;br&gt;• Recognize and work with mathematical relationships, patterns, and proportions expressed in verbal or numerical form&lt;br&gt;• Interpret data and statistics in texts, tables, and graphs</td>
</tr>
<tr>
<td>Level 4</td>
<td>326 to less than 376 points</td>
<td>• Perform multiple-step operations to integrate, interpret, or synthesize information from complex or lengthy texts&lt;br&gt;• Identify and understand one or more specific, non-central idea(s) in the text in order to interpret or evaluate subtle evidence claim or persuasive discourse relationships</td>
<td>• Perform analysis and more complex reasoning about quantities and data; statistics and chance; spatial relationships; and change, proportions, and formulas&lt;br&gt;• Understand arguments or communicate well-reasoned explanations for answers or choices</td>
</tr>
<tr>
<td>Level 5</td>
<td>Equal to or higher than 376 points</td>
<td>• Search for and integrate information across multiple, dense texts&lt;br&gt;• Construct syntheses of similar and contrasting ideas or points of view&lt;br&gt;• Evaluate evidence-based arguments&lt;br&gt;• Be aware of subtle, rhetorical cues and make high-level inferences or use specialized background knowledge.</td>
<td>• Integrate multiple types of mathematical information where considerable translation or interpretation is required&lt;br&gt;• Draw inferences&lt;br&gt;• Develop or work with mathematical arguments or models&lt;br&gt;• Critically reflect on solutions or choices</td>
</tr>
</tbody>
</table>

Source: OECD, *Key Facts About the Survey of Adult Skills (PIAAC)*, 3.

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### Literacy Proficiency Skills of University Graduates

Canadian university graduates achieve an average of 7.1 per cent higher literacy proficiency scores than college graduates—one of the largest differences of any OECD country. (See Chart 16 and Table 4.) Despite this, both college and university graduates achieve substantially lower literacy proficiency scores than their international peers.¹⁵

¹⁵ Literacy and numeracy scores achieved are a group average; individuals can score higher or lower than the group average.
Table 4

Difference Between Literacy Proficiency Scores of College and University Graduates, 2013

(percentage)  

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
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<td>Finland</td>
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<td>Canada</td>
<td>7.1</td>
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<tr>
<td>Ireland</td>
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<tr>
<td>Germany</td>
<td>6.7</td>
</tr>
<tr>
<td>Australia</td>
<td>6.6</td>
</tr>
<tr>
<td>England/N. Ireland (U.K.)</td>
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</tr>
<tr>
<td>Belgium</td>
<td>5.9</td>
</tr>
<tr>
<td>Netherlands</td>
<td>5.6</td>
</tr>
<tr>
<td>OECD average</td>
<td>5.3</td>
</tr>
<tr>
<td>Sweden</td>
<td>5.1</td>
</tr>
<tr>
<td>Norway</td>
<td>5.0</td>
</tr>
<tr>
<td>Japan</td>
<td>4.7</td>
</tr>
<tr>
<td>Denmark</td>
<td>4.0</td>
</tr>
<tr>
<td>France</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Source: OECD, *OECD Skills Outlook 2013: First Results From the Survey of Adult Skills*, Table A5.5a (L).
The difference between the literacy proficiency scores achieved by Canadian college versus university graduates may be attributed to a student’s choice in educational level, rather than the education they receive in PSE. Students scoring within a level 4 or 5 were approximately 10 times more likely to attend PSE than students who scored in the Level 2 or lower ranges. Students scoring in the Level 3 range were half as likely to attend PSE as their level 4 or 5 peers. Furthermore, the higher that students scored on the literacy tests, the higher the chance they attended university over college. In a 2011 study, it was determined that students scoring Level 5 were most likely to attend university, and students scoring Level 2 were most likely to attend PSE at institutions other than universities. Few students who scored at Level 5 chose to attend non-university PSE (9 per cent).

Of the Canadian students who wrote the Programme for International Student Assessment (PISA—a survey of youth literacy) test in 2000 and scored a level 4 or 5, 63 per cent enrolled in university, and 26 per cent enrolled in college. As the literacy proficiency levels fall, more students select college over university. For those students who achieved a Level 3, 33 per cent enrolled in university, versus the 40 per cent that enrolled in college. Students scoring below Level 3 were less likely to attend PSE. For those who did, 13 per cent enrolled in university and 38 per cent selected college. Students who attended college typically had lower literacy proficiency scores, providing an explanation for the difference between the scores received by college and university graduates.

**Numeracy Skills of PSE Credential Holders**

Canada receives similarly low numeracy proficiency scores for PSE graduates. In fact, Canadians scored approximately 10 per cent lower than the highest-scoring countries, Belgium and Austria. Furthermore, Canada scored lower than the OECD average, meaning that its scores are lower than a significant proportion of all OECD countries, including comparator countries. (See Chart 17.)

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16 Dion and Maldonado, *Making the Grade?* 14.
17 Ibid., 15.
18 Ibid., 16.
19 Ibid., 16.
Canada’s low literacy and numeracy proficiency scores do not correlate with typical results for a country with a large number of educated people in the population. In fact, the adult/graduate skills indicators paint an unfair picture of Canada’s PSE performance because we have such a high proportion of immigrants from non-English/-French speaking countries in the data—adults/graduates, in other words, who were not educated in one of Canada’s PSE systems.

The data tell a different story when literacy test scores are divided between immigrant and non-immigrant credential holders. For the Canadian context, it is possible to disaggregate by immigrant status and place of education as we did in our foundational *State of Skills* report three years ago, which examined literacy and numeracy scores provincially and territorially along with the impact of immigration.\(^{20}\)

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\(^{20}\) Munro, MacLaine, and Stuckey, *Skills—Where Are We Today?* 69–74.
Canadian-born university graduates in Canada who are native speakers score an average of 313 in literacy, while foreign-born, foreign-language university graduates in Canada score an average of 275. If Canada was judged solely on Canadian-born literacy, the country would rank higher on the y axis on the basis of the total population.  

**Qualification for Jobs**

Issues related to over- and under-qualification for jobs result from skills mismatches. On this metric, Canada underperforms compared with other OECD countries, especially Northern European countries and the United States. (See charts 18 and 19.)

**Chart 18**  
**Incidence of Over-Qualification: Highest Qualification Is Higher Than the Qualification Workers Deem Necessary to Get Their Job Today, 2013**  
(percentage of workers)

Source: OECD, *OECD Skills Outlook 2013: First Results From the Survey of Adult Skills*, Table A4.2.

With 58.5 per cent of Canadian workers self-reporting that they are qualified for their jobs—6.8 per cent below the OECD average—it is clear that skills mismatches exist in the Canadian workforce. (See Table 5.) As well, a 2012 report by the Certified General Accountants of Canada suggested that 24.6 per cent of all university-educated full-time employees were employed in occupations that required less than a university degree.  

A 2012–13 study of over 25,000 Ontario university graduates from the class of 2010 reported that in the six months following graduation, 23.4 per cent of respondents were working full time in fields unrelated to their discipline.  Two years after graduation, 17.5 per cent were still working in unrelated fields. This most likely reflects the fact that some fields of study are essentially non-vocational. For instance, many liberal arts graduates may not be working in their “field” but have nonetheless developed skills that are applicable to other fields.

22 Grant, Aligning Skills Development With Labour Market Need, 48.

23 Ibid., 49.
Table 5  
Qualified Workers, 2013  
(per cent)

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of qualified workers</th>
</tr>
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<tbody>
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<td>Denmark</td>
<td>71.6</td>
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<tr>
<td>Flanders (Belgium)</td>
<td>70.7</td>
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<tr>
<td>Finland</td>
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</tr>
<tr>
<td>United States</td>
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<tr>
<td>Netherlands</td>
<td>67.5</td>
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<tr>
<td>Germany</td>
<td>65.8</td>
</tr>
<tr>
<td>OECD average</td>
<td>65.3</td>
</tr>
<tr>
<td>Norway</td>
<td>65.0</td>
</tr>
<tr>
<td>Austria</td>
<td>64.9</td>
</tr>
<tr>
<td>Japan</td>
<td>61.0</td>
</tr>
<tr>
<td>Sweden</td>
<td>60.1</td>
</tr>
<tr>
<td>Canada</td>
<td>58.5</td>
</tr>
<tr>
<td>Australia</td>
<td>58.4</td>
</tr>
<tr>
<td>England/N. Ireland (U.K.)</td>
<td>57.6</td>
</tr>
<tr>
<td>Ireland</td>
<td>57.1</td>
</tr>
</tbody>
</table>

Source: OECD, *OECD Skills Outlook 2013: First Results From the Survey of Adult Skills*, tables A4.2 and A4.25.

Conclusions

Canada has a higher percentage of its population with tertiary education than the OECD average. This is due to a combination of high enrolments and graduations from college- and bachelor’s-level programs and Canada’s immigration policy, which selects immigrants based partly on applicants’ educational attainment. Canadian immigrants—and particularly 24–35-year-old immigrants—are more likely to be tertiary educated than their Canadian-born peers. In 2014, 40 per cent of landed immigrants were university educated, compared with 24 per cent of non-immigrants.

However, a heavy reliance on immigration and a college-orientated tertiary system and lower-than-average skills among university graduates results in a weak relationship between PSE attainment and literacy and numeracy skills. Canada’s PSE systems need to do more to increase literacy, numeracy, and language proficiency, especially for immigrants, and decrease the rates of under- and overemployment.
Canada needs to address skills mismatches for all workers and initial language training in English or French for immigrants, including PSE international credential holders, to ensure that these well-educated people are able to make their full economic contribution to Canada’s workplaces.
Outcomes

Chapter Summary

- Employment rates for Canadian college and university graduates are lower than the OECD average. However, adults who have a PSE credential are more likely to be employed than those who do not. Moreover, they have better labour market opportunities and a stronger chance of earning higher wages.

- Canadian women see the highest average return on education in the world compared with their high school-educated peers—2.5 percentage points higher than men experience over their high school-educated peers. Conversely, in the United Kingdom men see a significantly higher return on education—7 percentage points more than women, in comparison to their high school-educated peers.

- PSE contributes only modestly to incremental health outcomes in Canada when compared with other OECD countries.
Outcomes differ from outputs in that they gauge the application of PSE-created knowledge and skills in the economy and society. Outcomes include economic metrics, such as employment and income, as well as social metrics, such as social engagement and health. PSE outputs are only partly responsible for these outcomes, which also depend on a range of other economic and societal factors.

Society makes significant investments in PSE through government funding, based largely on the rationale of capturing socio-economic returns beyond what might be expected through pure market forces. These additional investments need to be evaluated in relation to the socio-economic contributions of PSE beyond secondary school.

PSE institutions claim numerous social and economic benefits to justify these investments, from enhanced professional and interpersonal skills, to improved financial and employment opportunities, to greater life satisfaction. University of Guelph Provost and Vice-President, Academic, Maureen Mancuso suggests that “some graduates do poorly, others well. But the average graduate is more employable than non-graduates, with a higher salary, better health and, in many aspects, improved quality of life. University graduates vote, volunteer, participate as citizens, and create economic and social value disproportionate to their mere numbers and to the amount society invests in their education.”

Moreover, the research by Ross Finnie at the University of Ottawa’s Education Policy Research Initiative (EPRi) has gone a long way toward busting the well-known barista myth, confirming instead strong labour market outcomes for graduates over time. To recruit new students and garner support from governments, PSE institutions must promote the success of their graduates, both financially and socially.

---

1 Mancuso, Your Degree Is Not a Waste of Time.
This chapter analyzes PSE outcomes in terms of employment, the use of skills in work, wages and returns, and societal factors.

**Employment**

Most students attend PSE to improve their employment prospects.³ Across the OECD, higher education is associated with improved employment. In charts 20 and 21, Switzerland’s employment rate is generally high, regardless of education level. For instance, 69 per cent of adults with less than upper secondary education are employed—a rate that is 13 per cent higher than the OECD average.⁴ Employment rates jump to 83 per cent for adults with a vocational upper secondary or post-secondary non-tertiary qualification.⁵

Of course, there are two lenses through which to view employment outcomes: through the employment rate, which is the percentage of a chosen demographic that is employed, or through the unemployment rate, which focuses on those who are available and looking for work but unable to find it. Given fluctuations in the labour market, we average employment and unemployment rates over the 2005–15 period to provide a better representation of labour market performance for PSE graduates.

**Average Employment Rates for University Graduates**

Canada underperforms in terms of employment rates for graduates at both the college and university levels. Canada sees a very minor (1 per cent) difference in average employment rates between college and university graduates. Both Canada and Australia show a very small difference (under 3 per cent) in employment rates among adults with upper secondary education and tertiary education.⁶ (See charts 20 and 21.)

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⁴ According to the OECD, upper secondary “(ISCED 3) corresponds to the final stage of secondary education in most OECD countries. Instruction is often more organised along subject-matter lines than at ISCED level 2 and teachers typically need to have a higher level, or more subject-specific, qualifications than at ISCED 2. The entrance age to this level is typically 15 or 16 years.” OECD, *Upper Secondary Education (ISCED 3)*.


Chart 20
Average Employment Rates, College Graduates, 2005–15
(percentage of employed 25–64-year-olds among all 25–64-year-olds)

Note: The average shown is the 10-year average for all countries except Switzerland and Sweden (9 years).

Chart 21
Average Employment Rates, University Graduates, 2005–15
(percentage of employed 25–64-year-olds among all 25–64-year-olds)

Average Unemployment Rates for University Graduates

Similarly, Canada performs relatively poorly in unemployment rates. This weak performance may be due to the significant role of highly educated immigrants in fuelling labour force growth in Canada. (See charts 22 and 23.)

Chart 22
Average Unemployment Rates for College Graduates, 2005–15
(percentage of unemployed 25–64-year-olds among 25–64-year-olds in the labour force)

Note: The average was taken for 10 years for all countries except Sweden and the Netherlands (9 years); Belgium and Germany (8 years); Austria (7 years); Switzerland (6 years); and Norway (4 years).
Source: OECD, Education at a Glance 2006–2015, Table A5.2.

Canada’s Labour Force Estimates by Educational Attainment

In absolute terms, PSE graduates in Canada are doing exceptionally well. As charts 20 to 23 show, Canada’s performance lags when compared internationally. However, Table 6 paints a different picture. In fact, nearly three-quarters of PSE graduates in Canada are employed.

Table 6 looks at the employment and unemployment data for high school graduates, college graduates, and university graduates. Statistics Canada
describes the unemployment rate as “the number of unemployed persons expressed as a percentage of the labour force.” The employment rate is defined as “the number of persons employed expressed as a percentage of the population 15 years of age and over.” The number of employed or unemployed people is expressed as a percentage of the labour force in three groups based on educational attainment: high school graduates, post-secondary certificate or diploma holders, and university degree holders. Statistics Canada defines post-secondary certificate or diploma holders as those who “completed a certificate (including a trade certificate) or diploma from an educational institution beyond the secondary level. This includes certificates from vocational schools, apprenticeship training, community colleges, CEGEPs, and schools of nursing. Also included are certificates below a bachelor’s degree obtained at a university.” The 2005–15 average provided is to be used as a comparison with the data analyzed in charts 20 to 23, as well as the most recent 2016 data.

7 Statistics Canada, CANSIM table 282-0004.
8 Ibid.
9 Ibid.
Table 6
Canada’s Employment and Unemployment Rates, By Educational Attainment, 2016
(per cent)

<table>
<thead>
<tr>
<th>Labour force characteristics</th>
<th>Educational attainment</th>
<th>2005–15 average</th>
<th>2016</th>
<th>Percentage change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment rate</td>
<td>High school graduate</td>
<td>7.5</td>
<td>7.9</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>Post-secondary certificate or diploma (college)</td>
<td>5.6</td>
<td>5.9</td>
<td>4.7</td>
</tr>
<tr>
<td></td>
<td>University degree</td>
<td>4.6</td>
<td>4.9</td>
<td>5.7</td>
</tr>
<tr>
<td>Employment rate</td>
<td>High school graduate</td>
<td>62.4</td>
<td>58.1</td>
<td>–6.9</td>
</tr>
<tr>
<td></td>
<td>Post-secondary certificate or diploma (college)</td>
<td>71.3</td>
<td>69.2</td>
<td>–3.0</td>
</tr>
<tr>
<td></td>
<td>University degree</td>
<td>75.4</td>
<td>73.9</td>
<td>–2.0</td>
</tr>
</tbody>
</table>

Source: Statistics Canada, CANSIM table 282-0004.

While the employment rate of the working-age population is at a record high in Canada, it has trended lower since 2005 and through the financial crisis of 2008–09. The unemployment rate has cycled, jumping higher in the 2008–09 recession but declining since then. While these trends are structural and related to an aging population, education levels are part of the story. There is a stark difference between the percentage drop in the employment rates of those with high school and those with PSE. The percentage change for high school graduates is more than double that of college graduates, and more than three times that of university degree holders. The percentage change in the unemployment rate (difference between 2005–15 average and 2016 result) for all levels of education is close, but university graduates were three percentage points less likely to be unemployed than high school graduates, which is substantial. Clearly PSE of all levels provides graduates with a higher chance of employment, and a lower chance of unemployment, than their high school-educated peers in Canada. In fact, the difference between the employment rate for high school graduates and university graduates in 2016 was 15 percentage points.

Skills in Work

Labour market outcomes relate to gaining employment and subsequent experiences in employment. Wages, and by association returns to education investments, are mostly driven by how people apply their skills in work environments, which is an indicator of their productivity in work.
As such, it is important to understand what skills are garnered through education and how these skills generate returns in work.

Credentials serve as a proxy for literacy and numeracy skills. To get a more accurate assessment, the OECD conducts separate standardized tests on adults to independently gauge these skills. The OECD collects a variety of data from these test takers, which allows it to draw relationships between education credentials, skills, and labour market performance. Although learning credentials are important to position workers for jobs, their actual literacy and numeracy skills in work determine whether they keep, and advance, in their jobs.

Across OECD countries, there is a positive correlation between literacy and wages. Those with high literacy skills are 20 per cent more likely to participate in the labour market and 10 per cent more likely to be employed. High literacy skills (level 4 or 5) result in a higher employment rate for four out of five adults; in essence, 80 per cent of those with high literacy skills are employed. Meanwhile, Level 1 literacy is associated with an employment rate of just over 50 per cent.

The OECD found that those with high literacy skills garner an 8 per cent increase in hourly wages. Across the OECD, the median hourly earnings for those with level 4 or 5 literacy are 60 per cent higher than for those with Level 1 literacy.

Effect of Literacy Proficiency on Wages for PSE Graduates

Charts 24 shows the effect of literacy proficiency on wages for PSE graduates. In Canada, a one standard deviation change in literacy proficiency improves gross wages by 14 per cent, which is high by OECD standards. Canada’s performance reflects the fact that our tertiary-educated workers are more likely to use literacy skills in work than non-tertiary-educated workers.

10 OECD, OECD Skills Outlook 2013: First Results From the Survey of Adult Skills, 36–37.
11 Ibid., 224.
Use of Numeracy Skills at Work Based on Educational Attainment

Chart 25 shows that Canada’s tertiary-educated workers are 20 per cent more likely on average to use reading skills at work than their high school graduate counterparts. However, Canadians do not tend to use numeracy skills at work as much as literacy skills, and the difference between the use of numeracy skills at work by tertiary- and non-tertiary-educated employees is low. (See Chart 26.)

Wages and Returns to Education

The OECD reports that adults with tertiary education are significantly (23 percentage points) more likely to be among the top 25 per cent in terms of monthly earnings, compared with their peers who have obtained

Note: The chart shows the percentage change in wages associated with a one standard deviation change in proficiency in literacy, by educational attainment.
Source: OECD, OECD Skills Outlook 2013: First Results From the Survey of Adult Skills, Table A6.8 (L).
Chart 25
Difference Between the Mean Use of Reading Skills at Work by With High School Education vs Tertiary Education, 2013
(per cent)

Note: High school education includes ISCED 3A, 3B, 3C long, and 4. Tertiary education includes ISCED 5A, 5B, and 6.
Source: OECD, OECD Skills Outlook 2013: First Results From the Survey of Adult Skills, Table A4.11a.

Chart 26
Difference Between the Use of Numeracy Skills at Work by With High School Education vs. Tertiary Education, 2013
(per cent)

Note: High school education includes ISCED 3A, 3B, 3C long, and 4. Tertiary education includes ISCED 5A, 5B, and 6.
Source: OECD, OECD Skills Outlook 2013: First Results From the Survey of Adult Skills, Table A4.11a.
Post-secondary education is hugely advantageous for Canadian women. Upper secondary or post-secondary non-tertiary education (essentially high school) is important to employment. Adults who have a PSE credential are more likely to be employed than those who do not. Moreover, they have better labour market opportunities and a stronger chance of earning higher wages.

Post-secondary education provides individuals with a return on investment (ROI), known as a private return. According to the OECD, “the private internal rate of return is equal to the discount rate that equalises the real costs of education during the period of study to the real gains from education thereafter.”

Across the OECD, males holding PSE credentials can expect a private return of over US$229,000 during their lifetime, US$121,900 more than upper secondary school graduates (53 per cent more). Females will see a private return of US$145,200, US$83,200 more than their upper secondary school counterparts (57 per cent more). Thus, on average across OECD countries, men can expect to earn approximately 35 per cent more than women with the same level of tertiary education over their lifetimes. For Canada, males with PSE credentials generate US$114,579 in private returns over secondary school graduates, while women generate US$83,208 more.

Private Internal Rate of Return on Educational Investments for Males and Females

Post-secondary education is hugely advantageous for Canadian women. In fact, Canada is a top performer on the private internal rate of return on educational investments for females (over their high school-educated peers), scoring just below the United States. (See Chart 27.) This is not the case for Canadian men, who receive a smaller ROI for their educational investment. (See Chart 28.)

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12 According to the OECD, “Post-secondary non-tertiary education straddles the boundary between upper secondary and post-secondary education from an international point of view, even though it might clearly be considered upper secondary or post-secondary programs in a national context. Although their content may not be significantly more advanced than upper secondary programmes, they serve to broaden the knowledge of participants who have already gained an upper secondary qualification. The students tend to be older than those enrolled at the upper secondary level.” OECD, Post-Secondary Non-Tertiary Level of Education (ISCED 4).

13 OECD, Education at a Glance 2015, 83.

14 OECD, Private Internal Rate of Return.

15 OECD, Education at a Glance 2015, 133.

16 The Conference Board of Canada, Return on Investment in Tertiary Education.

17 The OECD refers to “internal rate of return” as “the (hypothetical) real interest rate equalizing the costs and the benefits related to the educational investment.” OECD, Education at a Glance 2015, 138.
**Chart 27**

*Private Internal Rate of Return on Education Attainment for PSE vs. Upper Secondary and Non-Tertiary (Female), 2012 (per cent)*

Note: All data are from 2012, with the exception of Canada, Germany, Sweden, and the United Kingdom, which use 2011 data; and Austria, which uses 2010 data.


**Chart 28**

*Private Internal Rate of Return on Education Attainment for PSE vs. Upper Secondary and Non-Tertiary (Male), 2012 (per cent)*

Note: All data are from 2012, with the exception of Canada, Germany, Sweden, and the United Kingdom, which use 2011 data; and Austria, the Netherlands, and Norway, which use 2010 data.

Although post-secondary graduates earn more on average than those without PSE credentials, the question is whether the additional investment in obtaining PSE credentials generates returns commensurate to the cost and effort of obtaining them. Total returns to education factor in the investments that both governments (in subsidies) and people (in forgone earnings and money) spend.

Canadian women see the highest average return on education in the world (over their high school-educated peers, in comparison with the male ROI compared with their high school-educated peers)—2.5 percentage points higher than the next comparator country, Australia. (See Table 7.) Conversely, in the United Kingdom, men see a significantly higher return on education—7 percentage points more than women. It must be noted that to calculate this metric, the OECD calculates the difference between women/men who attained a PSE credential compared with those who have obtained upper secondary or post-secondary non-tertiary education, essentially what Canadians consider to be high school. Thus, PSE is a lucrative endeavor in terms of a personal rate of return for both men and women, but women tend to experience a much higher rate of return in comparison with their peers with a high school education.

Table 7
Difference Between Male and Female Internal Rate of Return on Education Attainment for PSE vs. Upper Secondary and Non-Tertiary, 2010–12
(percentage point)

<table>
<thead>
<tr>
<th>Percentage point difference between male and female rate of return</th>
</tr>
</thead>
<tbody>
<tr>
<td>United Kingdom</td>
</tr>
<tr>
<td>Japan</td>
</tr>
<tr>
<td>Germany</td>
</tr>
<tr>
<td>United States</td>
</tr>
<tr>
<td>Austria</td>
</tr>
<tr>
<td>Finland</td>
</tr>
<tr>
<td>OECD average</td>
</tr>
<tr>
<td>Denmark</td>
</tr>
<tr>
<td>Sweden</td>
</tr>
<tr>
<td>Netherlands</td>
</tr>
<tr>
<td>Norway</td>
</tr>
<tr>
<td>Australia</td>
</tr>
<tr>
<td>Canada</td>
</tr>
</tbody>
</table>

According to the OECD, the net financial return (total benefits minus total cost) for a PSE-educated man in Canada is US$169,400. Conversely, for a Canadian woman, the net financial return is US$181,200—approximately 7 per cent higher than the net financial return experienced by men.\(^\text{18}\) (See Table 8.) Again, Canada is the only one of its peer countries where women receive a higher ROI (in this case, net financial return) than men.

### Table 8

<table>
<thead>
<tr>
<th></th>
<th>Men</th>
<th>Women</th>
<th>Percentage difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>169,400</td>
<td>181,200</td>
<td>–7</td>
</tr>
<tr>
<td>Estonia</td>
<td>126,900</td>
<td>100,500</td>
<td>21</td>
</tr>
<tr>
<td>Netherlands</td>
<td>234,500</td>
<td>179,300</td>
<td>24</td>
</tr>
<tr>
<td>Norway</td>
<td>181,000</td>
<td>132,800</td>
<td>27</td>
</tr>
<tr>
<td>Australia</td>
<td>209,600</td>
<td>147,100</td>
<td>30</td>
</tr>
<tr>
<td>United States</td>
<td>457,800</td>
<td>297,900</td>
<td>35</td>
</tr>
<tr>
<td>OECD average</td>
<td>258,400</td>
<td>167,600</td>
<td>35</td>
</tr>
<tr>
<td>Austria</td>
<td>266,200</td>
<td>146,500</td>
<td>45</td>
</tr>
<tr>
<td>Finland</td>
<td>188,500</td>
<td>102,700</td>
<td>46</td>
</tr>
<tr>
<td>Denmark</td>
<td>146,100</td>
<td>74,300</td>
<td>49</td>
</tr>
<tr>
<td>Japan</td>
<td>244,000</td>
<td>33,600</td>
<td>86</td>
</tr>
</tbody>
</table>


### Increase in Earnings for College Graduates

Despite the forgone earnings and direct cost of education, those with PSE credentials see an increase in income and a direct return on their PSE investment over time. Those with PSE credentials are about 25 per cent more likely to earn twice the median income across OECD countries, as opposed to those with below-upper secondary education (3 per cent likely to earn twice the median) and are very unlikely to be in the low-earning category.\(^\text{19}\) The OECD uses upper secondary education as a benchmark to gauge the incremental earnings associated with higher levels of educational attainment. It is beyond this level that

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Further education tends to imply a higher earning potential. (See charts 29 and 30.) Across the OECD, people with post-secondary education tend to earn, on average, 65 per cent more than those with only upper secondary education.\(^{20}\)

**Chart 29**

**Difference in Relative Earnings Between Bachelor’s and Below-Upper Secondary Graduates, 2014**

(full-time, full-year workers, 25–64 years old, percentage difference)

<table>
<thead>
<tr>
<th>Country</th>
<th>Relative Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>57.2%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>56.6%</td>
</tr>
<tr>
<td>OECD average</td>
<td>55.1%</td>
</tr>
<tr>
<td>Germany</td>
<td>54.1%</td>
</tr>
<tr>
<td>Ireland</td>
<td>53.7%</td>
</tr>
<tr>
<td>Canada</td>
<td>51.7%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>51.7%</td>
</tr>
<tr>
<td>Australia</td>
<td>51.2%</td>
</tr>
<tr>
<td>Austria</td>
<td>50.9%</td>
</tr>
<tr>
<td>France</td>
<td>49.8%</td>
</tr>
<tr>
<td>Belgium</td>
<td>48.8%</td>
</tr>
<tr>
<td>Norway</td>
<td>47.7%</td>
</tr>
<tr>
<td>Denmark</td>
<td>47.1%</td>
</tr>
<tr>
<td>Finland</td>
<td>47.1%</td>
</tr>
</tbody>
</table>

*Relative Earnings:* percentages of the earnings of adults with levels of education other than upper secondary relative to the earnings of those with upper secondary education. *Below-Upper Secondary Graduates:* adults with income from employment; upper secondary education = 100; earnings above or below are recorded, and the difference is taken between earnings of below-upper secondary and bachelor’s degree graduates.


Canada ranks below the OECD average in terms of the incremental earnings of PSE graduates over upper secondary school graduates. This is largely because college-level graduates do relatively poorly in terms of incremental earnings. (See Chart 30.) The same does not apply to Canada’s bachelor’s graduates, who earn about one-fifth more than college graduates. (See Table 9.)

Table 9
Difference in Earnings Between Bachelor’s and College Graduates, 2014
(per cent)

<table>
<thead>
<tr>
<th>Country</th>
<th>Difference (higher earnings for college)</th>
<th>Difference (higher earnings for bachelor’s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>–</td>
<td>28.7</td>
</tr>
<tr>
<td>Ireland</td>
<td>–</td>
<td>21.2</td>
</tr>
<tr>
<td>Canada</td>
<td>–</td>
<td>20.9</td>
</tr>
<tr>
<td>OECD average</td>
<td>–</td>
<td>19.1</td>
</tr>
<tr>
<td>Germany</td>
<td>–</td>
<td>17.3</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>–</td>
<td>17.2</td>
</tr>
<tr>
<td>Australia</td>
<td>–</td>
<td>14.9</td>
</tr>
<tr>
<td>France</td>
<td>–</td>
<td>5.2</td>
</tr>
<tr>
<td>Denmark</td>
<td>–</td>
<td>4.7</td>
</tr>
<tr>
<td>Finland</td>
<td>–</td>
<td>2.7</td>
</tr>
<tr>
<td>Austria</td>
<td>19.7</td>
<td>–</td>
</tr>
<tr>
<td>Norway</td>
<td>9.3</td>
<td>–</td>
</tr>
</tbody>
</table>

Below-Upper Secondary Graduates: adults with income from employment; upper secondary education = 100; earnings above or below are recorded, and the difference is taken between earnings of below-upper secondary and bachelor’s degree graduates.

Note: Data are from 2014, with the exception of Canada and Finland (2013) and France and Australia (2012). Source: OECD, Education at a Glance 2016, Table A6.1a.
Canadian PSE graduates experience a significantly different rate of return on their education in comparison to Americans for both college and university graduates. American PSE graduates experience one of the highest rates of return of any OECD country, earning approximately 76 per cent more in income from employment, significantly surpassing the OECD average of 60 per cent. The earnings premium is especially high for those with a master’s or doctoral or equivalent degree, who earn 143 per cent more than an individual with upper secondary education—the third-highest among OECD countries.21

These Canada–U.S. differences are unlikely to be due to education-specific factors (in terms of structure, curriculum, and pedagogy) because the systems are roughly similar. Rather, these returns are more likely a reflection of the health of the United States economy and its higher productivity and wages. Essentially, skills are used in work environments that generate higher earnings.

Americans with bachelor’s degrees can expect to earn US$720,000 more over their lifetimes than those with some college, and US$970,000 more than those with only high school education. In the United States, over their lifetime, bachelor’s degree holders earn approximately US$2.27 million, master’s degree holders earn US$2.67 million, doctoral degree holders earn US$3.25 million, and professional degree holders earn US$3.65 million.22

Table 10 considers the mean monthly earnings in U.S. dollars of American PSE graduates with level 4 or 5 literacy scores and shows, as a percentage, how much less workers make in other countries with the same skill level and education. Canadians earn significantly less than their American counterparts (27.1 per cent). Chart 31 shows that Americans with no PSE credentials earn more than PSE graduates in many OECD countries if they score a level 4 or 5 on the literacy test. Canadian PSE graduates earn only 11 per cent more on average per month than American upper secondary or post-secondary non-tertiary graduates. This suggests that it would be highly beneficial for the Canadian economy to ensure that our university and college students

graduate with higher average literacy and numeracy levels than they
do today.

Chart 31
Mean Monthly Earnings of Workers, By Educational Attainment and
PIAAC Literacy Proficiency Level, 2012
(25–64-year-olds with income from employment working full time [i.e., 30 or more hours
per week], in equivalent US$ converted using PPPs for private consumption)

Source: OECD, Education at a Glance 2014, Table A6.6a.
Table 10
Percentage Difference Between Mean Monthly Earnings of Tertiary-Educated Workers, 2012
(25–64-year-olds with income from employment working full time [i.e., 30 or more hours per week], in equivalent US$ converted using PPPs for private consumption)

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage difference in mean monthly earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
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<td>47.21</td>
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<td>France</td>
<td>51.07</td>
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Note: Tertiary-educated earners with Level 4/5 literacy proficiency in the United States have a mean monthly earning potential of $7,366. As the top-earning country, the United States is used as the example and all other OECD peer countries’ earnings are used to provide a percentage difference from the top-earning country. Source: OECD, Education at a Glance 2014, Table A6.6a

Difference in Hourly Earnings Based on Educational Attainment
Concerning the methodology for Chart 32, the OECD estimates the percentage change in hourly earnings compared with someone with below-upper secondary education and a literacy proficiency of Level 1. Thus, this becomes the comparator group, and data are provided in comparison with this group. Chart 32 measures the difference in hourly earnings between PSE and high school graduates who achieved a Level 3 on the PISA literacy test. The difference in earnings was calculated as the percentage point difference between the amount high school graduates earned, relative to the reference category, and the amount PSE graduates earned, relative to the reference category.
Most graduates of PSE programs in all OCED countries receive higher wages than their high school-educated peers. In fact, even in the bottom-scoring country, Japan, PSE graduates earn an average of 17 per cent more than those who graduated from high school. In Canada, PSE graduates who scored a Level 3 on the PISA literacy test can expect to earn an average of nearly 30 per cent more than those with a high school education. Canadian PSE graduates earned approximately 40 per cent more an hour than the comparator group, those who did not graduate from high school and who scored at a Level 1 or below on the PISA test. Overall, this indicator demonstrates that PSE provides graduates with the opportunity to earn a higher income, likely because of the skills they develop, since income tends to rise with literacy scores.
Difference Between Mean Monthly Earnings of Lowest Paying and Highest Paying Field of Education Studied

Certain PSE programs tend to provide graduates with a higher income upon graduation. This is a significant motivating factor for students selecting degree or diploma programs. In Canada, the highest paying degree and diploma programs—engineering, manufacturing, and construction—pay 35 per cent more than the lowest paying programs—humanities, languages, and arts. (See Chart 33.) Pay is not the only indicator of credential value, of course, but it does pay to select a program in STEM in all OECD countries.

Chart 33
Difference Between Mean Monthly Earnings of Lowest Paying and Highest Paying Field of Education Studied, Male and Female PSE Graduates, 2012
(per cent)

Overall, having a degree pays the most in the United States, where the average degree holder can expect to make a mean monthly income of US$6,100, significantly more than in France, where a degree holder
can expect to earn $3,200 per month. (See Table 11.) In terms of mean monthly income for all fields of education (overall average pay for all degree subjects), Canada ranked second, behind the United States. However, American graduates can expect to earn an average of 20 per cent more per month than Canadians.

Table 11
Mean Monthly Earnings of Tertiary-Educated Adults, By Field of Education Studied, Male and Female, 2012
(Survey of Adult Skills, 25–64-year-olds with income from employment working full time [i.e., 30 or more hours per week], in equivalent 2012 US$ converted using PPPs for private consumption)

<table>
<thead>
<tr>
<th>Country</th>
<th>Teacher training and education science</th>
<th>Humanities, languages, and arts</th>
<th>Social sciences, business, and law</th>
<th>Science, mathematics, and computing</th>
<th>Engineering, manufacturing, and construction</th>
<th>Health and welfare</th>
<th>All fields of education</th>
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<td>3,500</td>
<td>3,800</td>
<td>3,200</td>
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</tr>
</tbody>
</table>

Note: Countries are ranked and given overall grades based on their mean monthly earnings in all fields of education.
Source: OECD, Education at a Glance 2016, Table A6.4.

Health and Social Outcomes

PSE institutions collect data on their graduates, their socio-health outcomes, and their impact on the community. The Council of Ontario Universities maintains that “a university degree is an investment that keeps on giving. Whether it be its value in increasing employability and earnings in the job market, improving personal health outcomes, or building social capital in communities, a university degree benefits
its graduates and opens the door to endless opportunities.” Although this is very likely to be the case in within-country comparisons between education levels, as with employment and wages, the question is the incremental contribution of PSE to health and social outcomes and how well the Canadian system performs in comparison with other systems.

PSE leads to higher earnings in most OECD countries, thus allowing those with higher incomes to purchase healthier foods, exercise equipment, or health club memberships; pay for medical care (in some countries, notably the United States, where medical care is costly); and cover the cost of transportation to health care facilities.

Charts 34 to 39 review findings on health and social outcomes, focusing on the incremental outcomes after upper secondary school. Overall, PSE contributes only modestly to these incremental outcomes in Canada when compared with other OECD countries. For example, while Canadians report incremental improvements in self-reported health outcomes, this may mean that Canadians with lower levels of education are healthier on average than their international counterparts or are kept healthy by Canada’s publicly funded health care system.

**People Reporting Good Health Based on Educational Attainment**

As with literacy and employment, most of the incremental gains in health outcomes are realized at the university level, so when these levels are combined into “tertiary” education, Canada’s performance is slightly below average. (See Chart 34.) Consider, for example, statistics on tobacco use. Canadian university graduates are much less likely to be current smokers than those with lower levels of educational achievement. The 2011 Canadian Tobacco Use Monitoring Survey shows that 9.3 per cent of university graduates smoke, versus 19.9 per cent of college graduates, 20.7 per cent of people with some PSE, and 29.6 per cent of high school graduates or less. However, university graduates were more likely to report that they drank alcohol two to three times a week, more than all other groups except technical and trades people.

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23 Council of Ontario Universities, *Value of a University Degree.*

24 Zimmerman, Woolf, and Haley, “Understanding the Relationship Between Education and Health.”
graduates reported drinking one extra day a week as compared to other groups.  

Chart 34
Difference Between PSE-Educated and High School-Educated 25–64-Year-Olds Reporting That They Are in Good Health, 2012
(percentage point)

The United States experiences the largest percentage of self-reported health benefits for PSE graduates. Life expectancy for Americans without a high school education is nine years shorter on average than for their more educated peers, which can likely be attributed to their private health care system. The United States experiences the largest percentage of self-reported health benefits for PSE graduates. Life expectancy for Americans without a high school education is nine years shorter on average than for their more educated peers, which can likely be attributed to their private health care system. Those without a high school education are 33 per cent less healthy than peers with PSE, according to self-reports. A 2013 *Population Health* study also found that there was a correlation between educational attainment and diabetes—7 per cent of PSE graduates got diabetes, versus 15 per cent of high school dropouts.


26 Zimmerman, Woolf, and Hailey, “Understanding the Relationship Between Education and Health.”
People Who Volunteer Based on Educational Attainment

How much does PSE education improve social outcomes, such as social engagement levels and social health? These outcomes are difficult to measure. One measure of social engagement is volunteering (see Chart 35) and the impact of education on volunteering appears to be much higher than the impact of education on health.

Chart 35
Difference Between PSE-Educated and High School-Educated 25–64-Year-Olds Reporting That They Volunteer at Least Once a Month, 2012
(percentage point)

Source: OECD, Education at a Glance 2014: OECD Indicators, Table A8.2a.

People Reporting They Trust Others Based on Educational Attainment

Measures of trust are another indicator of social health, and here too post-secondary education makes little impact in Canada. (See Chart 36.)

There are several ways to interpret social impact data. One is that Canada is a healthy society that does not rely on the PSE system to improve outcomes, which are already good. For example, the OECD
Chapter 4 | The Conference Board of Canada

Chart 36
Difference Between PSE-Educated and High School-Educated 25–64-Year-Olds Reporting That They Trust Others, 2012
(percentage point)

Source: OECD, Education at a Glance 2014: OECD Indicators, Table A8.3a.

reports that Canada overall has above-average levels of trust.27 Thus, most Canadians trust others regardless of level of education. In contrast, PSE graduates in Belgium, Germany, and England are over 60 per cent more likely to trust others than those without an education, and those societies rely on education to develop this trust. Another explanation is that Canada’s exceptionally large college system tends to generate substantially lower measured outcomes than is the case for universities, with large gaps in performance between the two levels (also true in health and employment). Finally, Canada relies on immigration for a higher share of its tertiary-educated population and these immigrants may arrive from countries with poorer social outcomes.

People Who Believe They Have a Say in Government Based on Educational Attainment

Theoretically, more educated people tend to have a better understanding of social and political issues and are more likely to feel they can affect government, so on average, they are more likely to be interested in getting involved in politics.²⁸ (See Chart 37.)

Chart 37
Difference Between PSE-Educated and High School-Educated 25–64-Year-Olds Reporting That They Believe They Have a Say in Government, 2012
(percentage point)

Source: OECD, Education at a Glance 2014: OECD Indicators, Table A8.4a.

There is a modest correlation between PSE attainment and political influence. (See Chart 37.) PSE graduates acquire the skills necessary to understand politics and communicate their concerns to politicians. Critical thinking skills make highly educated people more likely to be able to understand abstract concepts involved in politics. There is some evidence that they tend to be more interested in their community

and in researching candidates and the issues in elections. On this metric, post-secondary education appears to have a relatively low (10–21 percentage point difference) impact on outcomes in Canada and other OECD countries.

**Life Satisfaction Today**

Charts 38 and 39 reflect data from the Gallup World Poll, as reported by the OECD. The poll had individuals report their satisfaction with their lives in 2010 and monitored their satisfaction through to 2015. The poll found that individuals with post-secondary education were the most likely to report satisfaction with their lives worldwide. In fact, 92 per cent of post-secondary-educated participants were satisfied with their life in 2015, versus 83 per cent with upper secondary or post-secondary non-tertiary education.

According to the OECD, “Education appears to play some role in improving subjective well-being, but mainly through its impact on other life outcomes. This is because a correlation between subjective well-being and higher educational attainment, which exists across countries, becomes weak if other aspects of well-being, such as income and health status, are controlled for.”

In both metrics, Canadians with PSE reported having more life satisfaction than those with only a high school education. In the first instance, the difference was more significant—7 percentage points higher, versus 2 percentage points higher five years later. Education seems to have the greatest difference on life satisfaction in Japan, where those with PSE are approximately 15 per cent and 10 per cent, respectively, more satisfied than high school graduates.

**Conclusions**

Intra-country comparisons of economic and social outcomes generally favour countries with higher levels of PSE attainment. One reason is that education tends to reinforce economic and social engagement and vice versa; more economically and socially engaged people are attracted

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Chart 38
(percentage point)

Note: Data come from 25–64-year-olds reporting where they stand on the positive side of the Cantril ladder of life satisfaction.
Source: OECD, Education at a Glance 2016, Table A8.3a.

Chart 39
Life Satisfaction in Five Years, Difference Between PSE Graduates and High School Graduates, 25–64 Years Old, 2015
(percentage point)

Note: Data come from 25–64-year-olds reporting where they stand on the positive side of the Cantril ladder of life satisfaction.
Source: OECD, Education at a Glance 2016, Table A8.3a.
to, and capable of, attaining higher levels of education. Another is that PSE graduates are more likely to have good jobs than those who do not graduate from PSE, which results in more employment, higher wages, and stronger returns on education.

International comparisons reveal a somewhat more nuanced picture. Incremental economic and social outcomes beyond upper secondary school vary considerably among comparator countries. Most of the economic gains in Canada are realized at the university level of education, so the combining of college and university into “tertiary” reduces Canada’s performance. A comparison between Canada and the United States, in particular, shows that PSE systems that are structured similarly but with a different mix of degree and non-degree programs and a different mix of jobs in the economy can produce very different economic outcomes.

U.S. PSE systems produce incrementally higher economic and social returns compared to Canada’s PSE systems, partly because PSE skills are used more effectively in work. But while Canada’s economy does not perform at the same level as that of the United States, there are fewer disparities in health and social outcomes. The evidence shows that post-secondary education in Canada has a high rate of return, albeit less than in some other countries. Canadians with a PSE credential out-earn those with a high school diploma alone and are better able to weather fluctuations in the labour market. Where Canada shines is in its private ROI on educational attainment for post-secondary-educated women, versus their high school graduate counterparts. Women in Canada benefit substantially from obtaining a PSE credential in Canada—more so than their male counterparts.

Although skills gaps and challenges associated with PSE-to-career transitions remain, PSE in Canada pays off with higher employment rates and lower unemployment rates.
CHAPTER 5
Recommendations

Chapter Summary

- Canada’s PSE systems could improve student retention and increase the number of advanced-research degree holders. Students require additional support transitioning into and out of PSE programs.

- Canada’s PSE systems could improve by focusing efforts on skills development—both when selecting an incoming class of students by ensuring students are prepared to complete their program of choice and when designing programs to ensure that graduates have strong literacy and numeracy skills upon completion.

- Increased communication between industry and PSE institutions would enable employers to communicate the skills graduates need to have and PSE institutions to respond to the future needs of employers and students seeking to obtain PSE credentials.
Based on this report’s analysis, we offer the following recommendations to Canada’s provincial and territorial skills and education sectors.

Improve Student Retention

Canada has a relatively high first-time PSE dropout rate: 14 per cent of first-year PSE students drop out. Approximately 16 per cent of students drop out of bachelor’s programs. Dropping out costs individuals and the society that supports them. High dropout levels may reflect a variety of personal and institutional factors. Families, institutions, and governments would greatly benefit from reducing the level of dropouts.

For PSE institutions to increase student retention, they must focus on elevating academic and non-academic factors that contribute to students dropping out. Early intervention in K–12 and programs that provide students with additional academic and social support during the transition from secondary school to PSE can improve student retention. Several practices contribute positively to student retention, such as offering academic advising centres, increasing the number of advisors, offering first-year transition programs, providing additional support for first-generation PSE students, having an early warning system, providing students with tutoring centres, and offering financial advisory services. Through early intervention, PSE institutions can work to improve student retention.

Increase the Number of Advanced-Research Degree Holders

Canada has the highest percentage of post-secondary-educated adults of any OECD country (54 per cent). Canadians have diverse PSE options—26 per cent of Canadians graduated from colleges, the highest number in any OECD country. Canada receives top marks, surpassing

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all its peer countries in all areas except master’s and doctoral degree attainment. Only 9 per cent of Canadians have completed a master’s or doctoral degree compared with the OECD average of 12 per cent, well below peer countries like Denmark and the United Kingdom. But, Canadians are more likely to finish college programs, compared with Denmark and the United Kingdom.

Producing and employing more advanced-level graduates should be a focus of Canada’s PSE systems. The Conference Board of Canada’s report Inside and Outside the Academy: Valuing and Preparing PhDs for Careers suggests that PhD graduates would benefit from comprehensive professional development initiatives and experiential learning opportunities. By easing career transitions for PhD graduates, students would gain a deeper understanding of diverse career pathways, both academic and non-academic, that would utilize their knowledge and skills. Both the PhD graduates and employers would benefit from a greater understanding of potential applications of skills developed during PhD studies.² Eight strategies are provided to improve employment for PhD graduates, such as conducting additional research on PhD career pathways, developing PhD alumni networks, promoting the value of PhDs to employers, and facilitating the sharing of professional development resources and best practices across PSE institutions.

Focus on Skills, Not Just Credentials

Although Canadians are well credentialed, Canada is a bottom-quartile performer in the level of literacy and numeracy skills among adults who have obtained college- and university-level credentials. Part of the issue is that Canada relies heavily on immigration to increase the ranks of its post-secondary credentialed adults. These immigrants often struggle with mastery of one of Canada’s two official languages. But the level of performance also suggests that some people are being admitted to college and university without mastering fundamental essential skills by the secondary level of education. Colleges and universities often have to offer remedial education to bring these students up to a functioning level.

² Edge and Munro, Inside and Outside the Academy, 99.
Primary and secondary schools need to do a better job of fostering these essential skills prior to students attending post-secondary education.

**Improve Official Language Training for Immigrants**

Canadian immigrants are more likely to be educated than their Canadian-born peers, but a large percentage of immigrants to Canada come from non-English- or non-French-speaking countries. This is a contributing factor to Canada’s low literacy and numeracy proficiency scores. One potential way to improve this is for PSE institutions to provide English- or French-language training for immigrants.

One exemplary program offered at Niagara College provides newcomers the opportunity to learn career-specific English skills with the goal of enabling immigrants to expedite their entry into the workforce or PSE programs. This program works in tandem with government-sponsored English language programs. In general, immigrants who have achieved intermediate-level English or French can learn more advanced English or French to assist them in obtaining the language skills they need to progress in their careers.

**Increase Communication Between Industry and PSE Institutions**

Industry has a role to play in supporting the PSE sector—both before and after graduation. Employers that participate in internship and co-operative education programs offer students the opportunity to obtain work experience prior to graduation. Moreover, employers must be aware of the specific skill sets students graduate with and work to integrate these into job advertisements and tasks. Once employed, industry must provide opportunities for continual learning, through training, re-training, and upskilling of employees. Increased communication between industry and PSE institutions can lead to a more defined role for industry in the education system.

PSE institutions also need to remain alert to the needs of industry to provide students with the skills they need to succeed. Industry wants
PSE institutions to place more emphasis on work-integrated learning, such as co-operative education, internships, mentoring, and PSE-based consultancy opportunities, thus better preparing students for the workplace. By creating or maintaining communication channels between PSE institutions and employers, a stronger understanding of mutual needs can be achieved. Employers can communicate the skills graduates need, and PSE institutions can be responsive to the future needs of employers and students seeking PSE credentials.

**Improve Labour Market Information**

PSE graduates earn more than non-graduates in all comparator countries, despite forgone earnings and the direct cost of education. On average, people with PSE credentials earn 65 per cent more than their peers who have only upper secondary education. A labour market filled with PSE graduates will naturally be more competitive, but PSE graduates experience far higher rates of return over non-PSE graduates.

Better, more readily available labour market information, including salary data, skills requirements, and labour market growth areas, will enable students to select diploma and degree programs that will position them for career success. Improved labour market information could improve everything from PSE recruitment and retention, to career transition and ROI for graduates, to labour market performance and economic outcomes.

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APPENDIX A

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