

# Analysis of the Economic Impact of Education and Return on Investment

DEMONSTRATING THE VALUE OF  
CANADA'S COLLEGES AND INSTITUTES

October 2016

## EXECUTIVE SUMMARY

# Introduction

Canada's colleges and institutes create value in many ways, improving the lives and employability of students while benefitting Canada as an economy and a nation. This study investigates the economic impacts the colleges and institutes create in the national economy and the benefits they generate in return for the investments made by their key stakeholder groups—students, society, and taxpayers.

Together, Canada's colleges and institutes play a key role in helping students increase their employability and achieve their individual potential. They provide accessible, affordable, and relevant education to many, including students for whom four-year universities were not a viable option, while providing a quality choice in their own right. They attract thousands of international students to Canada annually while facilitating studies abroad for many Canadian students, creating an exchange of experience and expertise that benefits students, colleges, and Canada as a whole by bringing a wider range of knowledge into the national conversation. Their numerous partnerships with Canadian businesses help advance the national economy by creating insight and innovation in a broad spectrum of economic sectors, from forestry and agriculture to communications technology and food science.

The contribution of Canada's colleges and institutes is not limited to these highly visible but hard-to-quantify effects. Their presence has definable economic benefits for students and for Canada as a whole. The colleges and institutes supply businesses with skilled workers. Society as a whole in Canada benefits from an expanded economy and improved quality of life. The benefits created by Canada's colleges and institutes extend as far as the provincial and federal government, in the form of increased tax revenues and public sector savings.

The following two analyses are presented:

- **Economic impact analysis** measuring the income created by colleges and institutes and their students in Canada.
- **Investment analysis** weighing the benefits to students, society, and taxpayers in return for the costs of supporting colleges and institutes.

The results of the study reflect the FY 2014-15 analysis year. Data and assumptions are based on academic and financial reports from colleges and institutes, industry and employment data from Statistics Canada, outputs of Emsi's Canadian regional input-output model, and a variety of studies and surveys relating education to social behaviour. The study applies a conservative methodology and follows standard practice using only the most recognized indicators of economic impact and investment effectiveness. For a full description of the data and approach, please contact Colleges and Institutes Canada.

## STUDY HIGHLIGHTS

### Economic impact analysis

- Former domestic and international students of Canada's colleges and institutes who were active in the national workforce in FY 2014-15 generated **\$189.5 billion** in added income through their higher earnings and increased productivity of their employers.
- Canada received approximately **\$1.6 billion** in added income in FY 2014-15 due to the spending of international students.
- Altogether, Canada's colleges and institutes and their students added **\$191.2 billion** in income to the Canadian economy.

### Investment analysis

- For every \$1 students invest in Canada's colleges and institutes, they receive a cumulative **\$3.80** in higher future earnings over the course of their working careers.
- Canadian society as a whole receives **\$122.5 billion** in higher earnings and **\$2.4 billion** in social savings related to reduced crime, lower unemployment, and improved health across the country.
- Taxpayers receive an internal rate of return of **10.5%** on their investment in Canada's colleges and institutes.

# Economic impact analysis

Economic impact analysis measures the net added income created by Canada's colleges and institutes in the national economy through the enhanced productivity of the workforce and the spending of their international students. All of Canada serves as the backdrop for the analysis.

Canada's colleges and institutes promote economic growth in Canada in a variety of ways. Canada's colleges and institutes are a primary source of education to residents and a supplier of trained workers to national industries. In addition, the living expenses of international students attracted to colleges and institutes benefit local businesses.

Results of the economic impact analysis are organized according to the following two impacts:

1. Impact of the increased productivity of former domestic and international students employed in the national workforce during the analysis year.
2. Impact of the spending of international students.

## IMPACT OF STUDENT PRODUCTIVITY

The greatest impact of Canada's colleges and institutes results from the education and training they provide for residents. Since colleges and institutes were established, both domestic and international students have studied at them and entered the Canadian workforce with newly acquired skills. Today hundreds of thousands of former students are employed in Canada.

During the analysis year, former domestic and international students of Canada's colleges and institutes generated \$189.5 billion in added income in the country. This figure represents the higher wages that students earned during the year, the increased output of the businesses that employed the students, and the multiplier effects that occurred as students and their employers spent money at other businesses.

## IMPACT OF INTERNATIONAL STUDENT SPENDING

Canada's colleges and institutes served approximately 56,572 international students in Canada in FY 2014-15. While attending, these international students spent \$1.9 billion in tuition and fees, as well as to purchase groceries, rent accommodation, pay for transportation, buy books and supplies, and so on. These expenditures generated \$1.6 billion in new income in the national economy during the analysis year.

## TOTAL IMPACT

The overall impact of Canada's colleges and institutes on the national economy during the analysis year amounted to \$191.2 billion, equal to the sum of the student productivity impact and the international student spending impact. This added income was equal to approximately 12.7% of Canada's Gross Domestic Product.

### ADDED INCOME CREATED BY CANADA'S COLLEGES AND INSTITUTES IN FY 2014-15

Impact of student productivity
<b>\$189.5 billion</b>
Impact of international student spending
<b>\$1.6 billion</b>
Total impact
<b>\$191.2 billion</b>

### JOB EQUIVALENTS BASED ON INCOME

Job equivalents are a measure of the average-wage jobs that a given amount of income can potentially support. They are calculated by dividing income by the average annual wages per worker in the nation. Based on the added income created by Canada's colleges and institutes, the job equivalents are as follows:

Impact of student productivity = <b>4,193,810</b> job equivalents
Impact of international student spending = <b>36,408</b> job equivalents

Overall, the added income created by Canada's colleges and institutes and their students supported **4.2 million** average-wage job equivalents.

# Investment analysis

Investment analysis is the process of evaluating total costs and measuring these against total benefits to determine whether or not a proposed venture will be profitable. If benefits outweigh costs, then the investment is worthwhile. If costs outweigh benefits, then the investment will lose money and is considered unprofitable. This study considers Canada's colleges and institutes as an investment from the perspectives of students, society, and taxpayers. The analysis is performed in context of the entire Canadian economy.

## STUDENT PERSPECTIVE

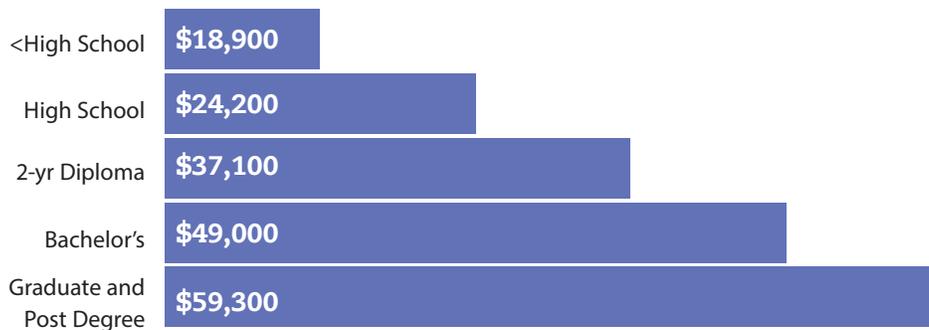
In FY 2014-15, Canada's colleges and institutes served 1.2 million total students in FY 2014-15, including funded, international, and other unfunded students. In order to attend colleges and institutes, students paid for tuition, fees, books, and supplies. They also gave up money that they would have otherwise earned had they been working instead of learning. The total investment made by students at Canada's colleges and institutes in FY 2014-15 amounted to \$15.1 billion, equal to \$3.6 billion in out-of-pocket expenses plus \$11.6 billion in forgone time and money.

In return for their investment, students of Canada's colleges and institutes develop the skills required for an increasingly globalized workplace and receive a stream of higher future wages that will continue to grow throughout their working lives. As shown in Figure 1, mean earnings levels at the midpoint of the average-aged worker's career increase as people achieve higher levels of education. For example, the average two-year diploma completer from Canada's colleges and institutes will see an increase in earnings of \$11,900 each year compared to someone with a high school diploma or equivalent. Over a working lifetime, this increase in earnings amounts to an undiscounted value of approximately \$482,506 in higher earnings.

The present value of the higher future wages that students at Canada's colleges and institutes will receive over their working careers is \$57.9 billion. Dividing this value by the \$15.1 billion in student costs yields a benefit-cost ratio of 3.8. In other words, for every \$1 students invest in Canada's colleges and institutes in the form of out-of-pocket expenses and forgone time and money, they receive a cumulative of \$3.80 in higher future wages. The return on investment to students (i.e., the benefit-cost ratio less the cost of the original investment) thus comes to \$2.80 in benefits returned over and above every \$1 in costs.

The average annual internal rate of return for students is 16.1%. This is a favourable return compared, for example, to the less than 1% return per annum that is generally expected from saving money in today's standard bank savings accounts.

**FIGURE 1:** Annual earnings by education level at career midpoint in Canada



## STUDENT PERSPECTIVE

Benefits (thousands)	<b>\$57,888,778</b>
Costs (thousands)	<b>\$15,117,177</b>
Net present value (thousands)	<b>\$42,771,602</b>
Benefit-cost ratio	<b>3.8</b>
Rate of return	<b>16.1%</b>

## SOCIAL PERSPECTIVE

Canada's colleges and institutes aim to improve the socioeconomic well-being of the local and national community by increasing students' earning potential and by positively influencing the health and lifestyle habits of their students. As a result, society as a whole in Canada benefits from the presence of Canada's colleges and institutes in two major ways. The first and largest benefit to society is the higher earnings created in the country. As discussed in the previous section, students earn more because of the skills they acquire while attending Canada's colleges and institutes. Businesses also earn more because the enhanced skills of students make them more productive. Together, higher student wages and increased business output stimulate increases in earnings across the country, thereby raising prosperity in Canada and expanding the economic base for society as a whole.

Benefits to society also consist of the savings generated by the improved lifestyles of students. Education is statistically correlated with a variety of lifestyle changes that generate social savings across three main categories: 1) health, 2) crime, and 3) income assistance. Health savings include avoided medical costs associated with smoking, alcoholism, obesity, and mental illness. Crime savings include reduced Criminal Justice System expenditures, lower victim costs, and increased productivity of individuals who are working rather than spending time in custody. Income assistance savings include the reduced demand for employment insurance benefits and employment-related social assistance.

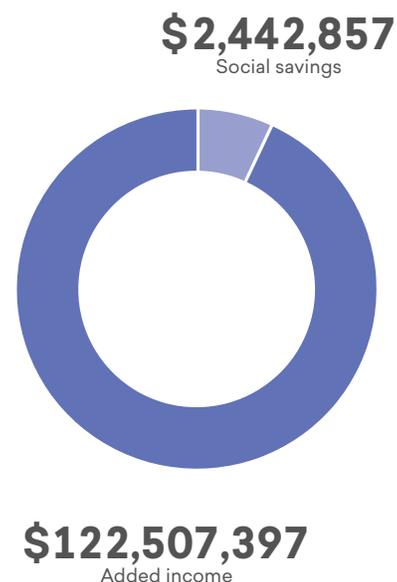
Figure 2 shows the present value of the higher earnings and social savings that will occur in Canada over the working lifetimes of the FY 2014-15 student population at Canada's colleges and institutes. Higher earnings amount to a present value of \$122.5 billion due to the increased lifetime earnings of students and associated increases in business output. Social savings amount to \$2.4 billion, the sum of health, crime, and income assistance savings in Canada. Altogether, total benefits to society equal \$125 billion (in present value terms).

Society invested \$23.3 billion in educations from Canada's colleges and institutes during the analysis year. This includes all expenditures by Canada's colleges and institutes, all student expenditures, and all student opportunity costs. For every dollar of this investment, society as a whole in Canada will receive a cumulative value of \$5.40 in benefits, equal to the \$125 billion in benefits divided by the \$23.3 billion in costs. These benefits will occur for as long as Canada's colleges and institutes' FY 2014-15 students remain employed in the national workforce.

## TAXPAYER PERSPECTIVE

From the taxpayer perspective, benefits consist primarily of the taxes that provincial and federal governments will collect from the higher earnings created in the country. As students of Canada's colleges and institutes earn more, they will make higher tax payments. Employers will also make higher tax payments as they increase their output and purchase more supplies and services. By the end of the students' working careers, provincial and federal government will have collected a present value of \$19.7 billion in added taxes.

**FIGURE 2:** Present value of higher earnings and social savings in Canada (thousands)



## SOCIAL PERSPECTIVE

Benefits (thousands)	<b>\$124,950,254</b>
Costs (thousands)	<b>\$23,301,700</b>
Net present value (thousands)	<b>\$101,648,554</b>
Benefit-cost ratio	<b>5.4</b>
Rate of return	<b>n/a*</b>

\* The internal rate of return is not reported for the social perspective because the beneficiaries of the investment are not necessarily the same as the original investors.

A portion of the savings enjoyed by society also accrues to taxpayers. Students are more employable, so the demand for income assistance reduces. Improved health habits lower the students' demand for health care services. Students are also less likely to commit crimes, so the demand for law enforcement services reduces. All of these benefits will generate a present value of \$1 billion in savings to taxpayers.

Total benefits to taxpayers are \$20.6 billion, equal to the sum of the added taxes and public sector savings. Comparing this to the taxpayer costs of \$6.8 billion—equal to the funding that Canada's colleges and institutes received from provincial and federal government during the analysis year—yields a benefit-cost ratio of 3.0. This means that for every \$1 of public money invested in Canada's colleges and institutes, taxpayers receive a cumulative value of \$3.00 over the course of the students' working lives. In other words, taxpayers fully recover the cost of the original investment and also receive a return of \$2.00 in addition to every \$1 they paid. The internal rate of return is 10.5%, a solid investment that compares favourably with other long-term investments in both the private and public sectors.

## Conclusion

The results of this study demonstrate that Canada's colleges and institutes create value from multiple perspectives. The colleges and institutes benefit Canadian businesses by supplying a steady flow of qualified, trained workers into the workforce. They enrich the lives of students by raising their lifetime earnings and helping them achieve their individual potential. They benefit society as a whole in Canada by creating a more prosperous economy and generating a variety of savings through the improved lifestyles of students. Finally, they benefit taxpayers through increased tax receipts across the country and a reduced demand for government-supported social services.

### TAXPAYER PERSPECTIVE

Benefits (thousands)
<b>\$20,645,559</b>
Costs (thousands)
<b>\$6,832,102</b>
Net present value (thousands)
<b>\$13,813,457</b>
Benefit-cost ratio
<b>3.0</b>
Rate of return
<b>10.5%</b>



Emsi, a CareerBuilder company, is a leading provider of economic impact studies and labour market data to educational institutions, workforce planners, and regional developers in North America and the UK. Since 2000, Emsi has completed over 1,200 economic impact studies for educational institutions in four countries. For more information about Emsi and its products and services, visit [www.economicmodeling.com](http://www.economicmodeling.com).

#### About Colleges and Institutes Canada

Colleges and Institutes Canada (CICan), which commissioned this study, is the primary national association of non-university educational institutions in Canada, and those institutions' representative to both government and industry. Based in Ottawa, CICan currently counts 127 institutions as members. The membership includes a wide variety of institutions from across Canada. This study, while commissioned by CICan, extends beyond its membership to encompass all of Canada's colleges and institutes.

