



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

THE ECONOMIC VALUE OF  
BOW VALLEY COLLEGE

March 2017

# EXECUTIVE SUMMARY

# Study Highlights

## ECONOMIC IMPACT ANALYSIS

- Altogether, Bow Valley College and its students and visitors added **\$579.1 million** to the Calgary Census Metropolitan Area economy.
- The Calgary Census Metropolitan Area received approximately **\$97.5 million** in added income in Fiscal Year (FY) 2014-15 due to the spending toward Bow Valley College's day-to-day operations, the spending of out-of-region students, and the spending of visitors to the region.
- Research spending by Bow Valley College contributed another **\$1.1 million** in added income to the Calgary Census Metropolitan Area in FY 2014-15.
- Former students of Bow Valley College who were active in the regional workforce in FY 2014-15 generated another **\$480.4 million** in added income through their higher earnings and increased productivity of their employers.

## INVESTMENT ANALYSIS

- For every \$1 students invest in Bow Valley College, they receive a cumulative **\$4.20** in higher future earnings over the course of their working careers.
- Society as a whole in Alberta receives **\$1.6 billion** in added income and **\$12.8 million** in social savings related to reduced crime, lower unemployment, and improved health across the province in FY 2014-15.
- Provincial taxpayers receive a rate of return of **35.0%** on their investment in Bow Valley College.

# Introduction

Bow Valley College creates value in many ways. This study investigates the economic impacts created by Bow Valley College on the regional economy and the benefits that the college generates in return for the investments made by its key stakeholder groups—students, society, and taxpayers.

Bow Valley College plays a key role in helping students increase their employability and achieve their individual potential. However, the contribution of Bow Valley College consists of more than just influencing the lives of students. The college serves a range of industries in the Calgary Census Metropolitan Area and supplies local businesses with skilled workers. Society as a whole in Alberta benefits from an expanded economy and improved quality of life. The benefits created by Bow Valley College extend as far as the provincial government, in the form of increased tax revenues and public sector savings.

The following two analyses are presented:

- **Regional economic impact analysis** measuring the income created by the college and its students and visitors in the Calgary Census Metropolitan Area.
- **Investment analysis** weighing the benefits to students, society, and taxpayers in return for the costs of supporting the college.

The results of the study reflect the Fiscal Year (FY) 2014-15. Data and assumptions are based on academic and financial reports from the college, 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 Bow Valley College for a copy of the technical report.

# Regional economic impact analysis

Economic impact analysis measures the net added income created by Bow Valley College in the regional economy through its own spending and the spending of its students and visitors, as well as the enhanced productivity of the workforce. The backdrop for the analysis is the Calgary Census Metropolitan Area.

The Calgary Census Metropolitan Area economy is impacted by Bow Valley College in a variety of ways. The college is an employer and a buyer of goods and services. It attract monies that would not have otherwise entered the regional economy through its day-to-day operations, its research activities, and the expenditures of its students and visitors. Further, it provides students with the knowledge, skills, and abilities they need to become productive citizens and contribute to the overall output of the region.

Results of the regional economic impact analysis are broken out according to the following five impacts: 1) impact of college operations, 2) impact of spending on research, 3) impact of student spending, 4) impact of visitor spending, and 5) impact of the skills acquired by former students who are still active in the Calgary Census Metropolitan Area workforce.

## IMPACT OF COLLEGE OPERATIONS

Bow Valley College is an important employer in the Calgary Census Metropolitan Area. In FY 2014-15, the college employed faculty and staff equivalent to 662 full-time employees. Of these, 95% lived in the Calgary Census Metropolitan Area. Total payroll at Bow Valley College was \$60.1 million, much of which was spent in the region for groceries, eating out, clothing, and other household expenses.

Bow Valley College is itself a large-scale buyer of goods and services. In FY 2014-15, the college spent \$27.3 million to cover its expenses for facilities, professional services, and supplies.

The total income that Bow Valley College created during the analysis year as a result of its day-to-day operations (excluding research activities) was \$82.9 million, equivalent to 1,409 job equivalents. This figure represents the college’s payroll for non-research operations, the multiplier effects generated by the spending of the college and its employees, and a downward adjustment to account for funding that the college received from local sources.

### ADDED INCOME CREATED BY BOW VALLEY COLLEGE IN FY 2014-15

ADDED INCOME
<b>\$82.9 million</b>
Impact of college operations
<b>\$1.1 million</b>
Impact of research spending
<b>\$14 million</b>
Impact of student spending
<b>\$607.6 thousand</b>
Impact of visitor spending
<b>\$480.4 million</b>
Alumni impact
<b>\$579.1 million</b>
Total impact



## RESEARCH SPENDING IMPACT

In FY 2014-15, Bow Valley College spent around \$1 million on research and development activities. These efforts attracted new dollars into the region to support a large portion of the research activities, with 58% of funding received from federal sources. The research activities also brought in additional funds from sources within the region, including from foundations and provincial and local governments.

The expenditures on research activities by Bow Valley College stimulated other economic activity in the region that resulted in an additional \$1.1 million in regional income for businesses and households. This is equivalent to adding 19 jobs. As with the college operations spending impact, this impact is beyond the opportunity cost to the regional economy of carrying out research at Bow Valley College.

## IMPACT OF STUDENT SPENDING

A total of 3,916 students at Bow Valley College originated from outside the Calgary Census Metropolitan Area in FY 2014-15, including 1,165 international students. Of those out-of-region students, approximately 1,412 students relocated to the Calgary Census Metropolitan Area to attend school at Bow Valley College in FY 2014-15. In addition, a number of in-region students would have left the area for other education opportunities if not for the existence of Bow Valley College. While attending, these out-of-region and retained students spent \$35.1 million to purchase groceries, rent accommodation, pay for transportation, and so on. A significant portion of these expenditures occurred in the region, generating \$14 million in new income in the economy during the analysis year, equivalent to 237 new jobs.

## VISITOR SPENDING IMPACT

Thousands of visitors from outside the region were attracted to Bow Valley College during the analysis year to attend commencements, sports events, and other activities sponsored by the college. Many of these visitors are tied to the college's international students, whose families and friends come to the Calgary Census Metropolitan Area for events such as commencement. While in the region, visitors spent money for lodging, food, transportation, and other personal expenses. The off-campus expenditures of these out-of-region visitors generated a net impact of \$607.6 thousand in new income for the regional economy in FY 2014-15, equivalent to creating 10 new jobs.

## ALUMNI IMPACT

Bow Valley College's greatest impact results from the education and training it provides for local residents. Since the college was established, students have studied at Bow Valley College and entered the workforce with newly acquired

### 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 the added income specific to each type of impact by the average annual wages per worker in the region. Based on the added income created by Bow Valley College, the job equivalents are as follows:

Impact of college operations =  
**1,409** job equivalents

Impact of research spending =  
**19** job equivalents

Impact of student spending =  
**237** job equivalents

Impact of visitor spending =  
**10** job equivalents

Alumni impact =  
**8,161** job equivalents

Overall, the added income created by Bow Valley College and its students supported **9,836** average-wage jobs.

skills. Today, thousands of former students are employed in the Calgary Census Metropolitan Area.

During the analysis year, former students of Bow Valley College generated \$480.4 million in added income in the region, equivalent to 8,161 new jobs. This figure represents the higher wages that former students earned during the year, the increased output of the businesses that employed the former students, and the multiplier effects that occurred as former students and their employers spent money at other businesses.

## TOTAL IMPACT

The overall impact of Bow Valley College on the regional economy during the analysis year amounted to **\$579.1 million**, equal to the sum of the college operations spending impact, the research spending impact, the student spending impact, the visitor spending impact, and the alumni impact. Bow Valley College added **9,836** new jobs to the Calgary Census Metropolitan Area economy. This added income was equal to approximately **0.5%** of the region's Gross Regional Product.

# Investment analysis

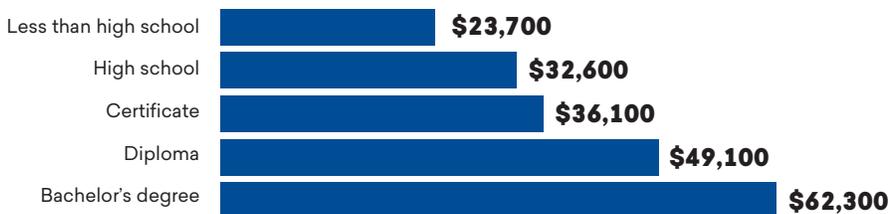
Investment analysis is the process of evaluating total costs and measuring these against total benefits to determine whether or not a proposed venture will be profitable. If benefits outweigh costs, then the investment is worthwhile. If costs outweigh benefits, then the investment will lose money and is considered unprofitable. This study considers Bow Valley College as an investment from the perspectives of students, society, and taxpayers. The backdrop for the analysis is the entire Alberta economy.

## STUDENT PERSPECTIVE

In FY 2014-15, Bow Valley College served 11,776 credit students and 3,017 non-credit students. Of these students, 1,165 students were international students. In order to attend school, 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 attending school. The total investment made by Bow Valley College's students in FY 2014-15 amounted to \$104.5 million, equal to \$27.8 million in out-of-pocket expenses plus \$76.8 million in forgone time and money.

In return for their investment, Bow Valley College's students 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 income levels at the midpoint of the average-aged worker's career increase as people achieve higher levels of education. For example, the average diploma graduate from Bow Valley College will see increased earnings of \$16,500 per year at their career midpoint 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 \$577,500 in higher income.

**FIGURE 1:** Annual income by education level at career midpoint in the Calgary Census Metropolitan Area



## STUDENT PERSPECTIVE

ADDED INCOME
<b>\$439,311</b>
Benefits (thousands)
<b>\$104,545</b>
Costs (thousands)
<b>\$334,766</b>
Net present value (thousands)
<b>4.2</b>
Benefit-cost ratio
<b>21.4%</b>
Rate of return

The present value of the higher future wages that Bow Valley College's students will receive over their working careers is \$439.3 million. Dividing this value by the \$104.5 million in student costs yields a benefit-cost ratio of 4.2. In other words, for every \$1 students invest in Bow Valley College in the form of out-of-pocket expenses and forgone time and money, they receive a cumulative of \$4.20 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 \$3.20 in benefits returned over and above every \$1 in costs.

The average annual rate of return for students is 21.4%. 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.

## SOCIAL PERSPECTIVE

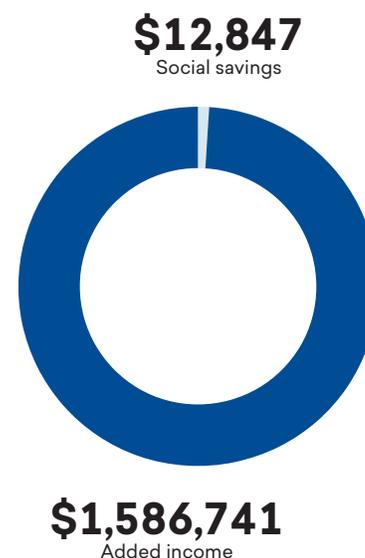
Bow Valley College aims to improve the socioeconomic well-being of the local and provincial community by increasing students' earning potential and by positively influencing the health and lifestyle habits of students. As a result, society as a whole in Alberta benefits from the presence of Bow Valley College in two major ways. The first and largest benefit to society is the added income created in the province. As discussed in the previous section, students earn more because of the skills they acquire while attending Bow Valley College. 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 income across the province, thereby raising prosperity in Alberta and expanding the economic base for society as a whole.

Benefits to society also consist of the savings generated by the improved lifestyles of former 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 added income and social savings that will occur in Alberta over the working lifetimes of Bow Valley College's FY 2014-15 students. Added income amounts to a present value of \$1.6 billion due to the increased lifetime incomes of students and associated increases in business output. Social savings amount to \$12.8 million, the sum of health, crime, and income assistance savings in Alberta. Altogether, total benefits to society equal \$1.6 billion (in present value terms).

Society invested \$170.3 million in educations from Bow Valley College during the analysis year. This includes all expenditures by Bow Valley College, all student

**FIGURE 2:** Present value of added income and social savings in Alberta (thousands)



### SOCIAL PERSPECTIVE\*

ADDED INCOME
<b>\$1,599,589</b>
Benefits (thousands)
<b>\$170,256</b>
Costs (thousands)
<b>\$1,429,332</b>
Net present value (thousands)
<b>9.4</b>
Benefit-cost ratio

\* The 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.

expenditures, and all student opportunity costs. For every \$1 of this investment, society as a whole in Alberta will receive a cumulative value of \$9.40 in benefits, equal to the \$1.6 billion in benefits divided by the \$170.3 million in costs. These benefits will occur for as long as Bow Valley College’s FY 2014-15 students remain employed in the provincial workforce.

### TAXPAYER PERSPECTIVE

From the taxpayer perspective, benefits consist primarily of the taxes that provincial government will collect from the added income created in the province. Note that these are a subset of the added income benefits created in the social perspective. As Bow Valley College’s FY 2014-15 students 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 government will have collected a present value of \$272.5 million in added taxes.

A portion of the savings enjoyed by society also accrues to provincial taxpayers. Former students are more employable, so the demand for income assistance reduces. Improved health habits lower the former students’ demand for provincial health care services. Former 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 \$5.1 million in savings to provincial taxpayers.

Total benefits to taxpayers are \$277.6 million, equal to the sum of the added taxes and public sector savings. Comparing this to the taxpayer costs of \$50.6 million—equal to the funding that Bow Valley College received from provincial government during the analysis year—yields a benefit-cost ratio of 5.5. This means that for every \$1 of public money invested in Bow Valley College, taxpayers receive a cumulative value of \$5.50 over the course of the former students’ working lives. In other words, taxpayers fully recover the cost of the original investment and also receive a return of \$4.50 in addition to every \$1 they paid. The rate of return is 35.0%, a solid investment that compares favourably with other long-term investments in both the private and public sectors.

### TAXPAYER PERSPECTIVE

<b>ADDED INCOME</b>
<b>\$277,555</b>
<b>Benefits (thousands)</b>
<b>\$50,589</b>
<b>Costs (thousands)</b>
<b>\$226,966</b>
<b>Net present value (thousands)</b>
<b>5.5</b>
<b>Benefit-cost ratio</b>
<b>35.0%</b>
<b>Rate of return</b>

## Conclusion

The results of this study demonstrate that Bow Valley College creates value from multiple perspectives. The college benefits local businesses by increasing consumer spending in the region and supplying a steady flow of qualified, trained workers into the workforce. It enriches the lives of students by raising their lifetime incomes and helping them achieve their individual potential. It benefits society as a whole in Alberta by creating a more prosperous economy and generating a variety of savings through the improved lifestyles of students. Finally, it benefits provincial taxpayers through increased tax receipts across the province and a reduced demand for government-supported social services.



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