Arizona Community Colleges (ACC) create value in many ways. The colleges play a key role in helping students increase their employability and achieve their individual potential. The colleges provide students both with the skills they need to have a fulfilling and prosperous career and an opportunity to become a part of an educated citizenry. With this higher education, students add value to their region and promote the well-being of Arizona.

The contribution of the colleges influence both the lives of students and also the state’s economy. The colleges serve a range of industries in Arizona and support state businesses, and society as a whole in Arizona benefits from an expanded economy and improved quality of life. The benefits created by ACC even extend to the state and local government through increased tax revenues and public sector savings.

The purpose of this study is to investigate the economic impacts created by the colleges on the business community and the benefits that the colleges generate in return for the investments made by their key stakeholder groups—students, society, and taxpayers. The following two analyses are presented:

- **STATEWIDE ECONOMIC IMPACT ANALYSIS**
- **INVESTMENT ANALYSIS**

All results reflect student and financial data for Fiscal Year (FY) 2013-14. Impacts on the business community are reported under the economic impact analysis, and the return on investment to students, society, and taxpayers are reported under the investment analysis. Both analyses are described more fully in the following sections.
The statewide economic impact analysis examines the impact of the colleges on the state business community through increased consumer spending and enhanced business productivity. Results are measured in terms of added income and are organized according to the following three impacts:

1. Impact of operations spending;
2. Impact of the spending of students who relocated to the state, and;
3. Impact of the increased productivity of alumni that were employed in the state’s workforce during the analysis year.

**OPERATIONS SPENDING IMPACT**

The colleges are important employers in Arizona. In FY 2013-14, the colleges employed 17,623 full-time and part-time faculty and staff. Of these, 98% lived in Arizona. Total payroll at the colleges was $863.7 million, much of which was spent in the state for groceries, rent, eating out, clothing, and other household expenses.

The colleges are large-scale buyers of goods and services. In FY 2013-14 the colleges spent $586.8 million to cover their expenses for facilities, professional services, and supplies.

The total income that the colleges created during the analysis year as a result of their day-to-day operations was $1.2 billion. This figure represents the colleges’ payroll, the multiplier effects generated by the spending of the colleges and their employees, and a downward adjustment to account for funding that the colleges received from local sources.
### Impact of Student Spending

Around 9% of students attending the colleges originated from outside Arizona in FY 2013-14. Some of these students relocated to Arizona. These students likely would not have come to the state if the colleges did not exist. While attending, out-of-state students spent $352.2 million to purchase groceries, rent accommodation, pay for transportation, and so on. A significant portion of these expenditures occurred in Arizona, generating $300 million in new income in the economy during the analysis year.

### Alumni Impact

The colleges’ biggest impact results from the education and training they provide for state residents. Since the colleges were established, students have studied at them and entered the workforce with new skills. Today, thousands of former students are employed in Arizona.

During the analysis year, former students of the colleges generated $13 billion in added income in the state. 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.

### Total Impact

The overall impact of ACC on the state business community during the analysis year amounted to $14.5 billion, equal to the sum of the operations spending impact, the student spending impact, and the alumni impact. This added income was equal to approximately 5.6% of Arizona’s Gross State Product.
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 the colleges as investments from the perspectives of students, society, and taxpayers. The backdrop for the analysis is the entire Arizona economy.

**STUDENT PERSPECTIVE**

In 2013-14, the colleges served 334,056 credit students and 51,060 non-credit students. In order to attend college, 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 college. The total investment made by the colleges’ students in FY 2013-14 amounted to $2.3 billion, equal to $358.7 million in out-of-pocket expenses plus $1.9 billion in forgone time and money.

In return for their investment, the colleges’ students will receive a stream of higher future wages that will continue to grow through 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 associate’s degree completer from the colleges will see an increase in earnings of $9,800 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 $391,572 in higher income.

**FIGURE 1. ANNUAL INCOME BY EDUCATION LEVEL AT CAREER MIDPOINT IN ARIZONA**

Source: EMSI complete employment data.
The present value of the higher future wages that the colleges’
students will receive over their working careers is $11 billion.
Dividing this value by the $2.3 billion in student costs yields a
benefit-cost ratio of 4.9. In other words, for every $1 students
invest in the colleges in the form of out-of-pocket expenses and
forgone time and money, they receive a cumulative of $4.90
in higher future wages. The average annual rate of return for
students is 19.2%. This is an impressive 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

Society as a whole within Arizona benefits from the presence of
ACC in two major ways. The first and largest benefit that society
receives is the added income created in the state. As discussed
in the previous section, students earn more because of the
skills they acquire while attending the colleges. 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 state,
thereby raising prosperity in Arizona 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) unemployment. Health savings include avoided medical
costs associated with smoking, alcoholism, obesity, drug abuse,
and mental disorders. Crime savings include reduced security
expenditure and insurance administration, lower victim costs,
and reduced criminal justice system expenditures. Unemployment
savings include the reduced demand for income assistance and
welfare benefits. For a list of study references to these statistical
benefits, please contact the Arizona Community Colleges for a
copy of the main report.

Figure 2 shows the present value of the added income and social
savings that will occur in Arizona over the working lifetime of
the 2013-14 student population at the colleges. Added income
amounts to a present value of $38.7 billion due to the increased
lifetime incomes of students and associated increases in business
output. Social savings amount to $591.2 million, the sum of
health, crime, and unemployment savings in Arizona. Altogether, total benefits to society equal $39.2 billion (in present value terms).

Society invested $3.4 billion in the colleges during the analysis year. This includes all expenditures by the colleges, all student expenditures, and all student opportunity costs. For every dollar of this investment, society as a whole in Arizona will receive a cumulative value of $11.20 in benefits, equal to the $39.2 billion in benefits divided by the $3490.2 million in costs. These benefits will occur for as long as the colleges’ 2013-14 students remain employed in the state workforce.

**TAXPAYER PERSPECTIVE**

From the taxpayer perspective, benefits consist primarily of the taxes that state and local government will collect from the added income created in the state. As the colleges’ 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, state and local government will have collected a present value of $2.8 billion in added taxes.

A portion of the savings enjoyed by society also accrues to state and local taxpayers. Students are more employable, so the demand for welfare and unemployment benefits reduces. Improved health habits lower the students’ demand for national health care services. Students are also less likely to commit crimes, so the demand for law enforcement services reduces (study references are available in the main report). All of these benefits will generate a present value of $207.1 million in savings to state and local taxpayers.

Total benefits to taxpayers equal $3.1 billion, equal to the sum of the added taxes and public sector savings. Comparing this to the taxpayer costs of $843.1 million—equal to the funding that the colleges received from state and local government during the analysis year—yields a benefit-cost ratio of 3.6. This means that for every $1 of public money invested in the colleges, taxpayers receive a cumulative value of $3.60 over the course of the students’ working lives. The average annual rate of return is 9.7%, a solid investment that compares favorably with other long-term investments in both the private and public sectors.
Table 2 presents the results of the investment analysis for all three of the colleges’ major stakeholder groups—students, society, and taxpayers. As shown, students receive great value for their educational investment. At the same time, the investment made by state and local taxpayers in the colleges creates a wide range of benefits to society and returns more to government budgets than it costs.

**TABLE 2. SUMMARY OF INVESTMENT ANALYSIS RESULTS**

<table>
<thead>
<tr>
<th>STUDENT PERSPECTIVE</th>
<th>Benefits (thousands)</th>
<th>Costs (thousands)</th>
<th>Net present value (thousands)</th>
<th>Benefit-cost ratio</th>
<th>Rate of return</th>
</tr>
</thead>
<tbody>
<tr>
<td>$11,049,413</td>
<td></td>
<td>$2,257,923</td>
<td>$8,791,490</td>
<td>4.9</td>
<td>19.2%</td>
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<table>
<thead>
<tr>
<th>SOCIAL PERSPECTIVE</th>
<th>Benefits (thousands)</th>
<th>Costs (thousands)</th>
<th>Net present value (thousands)</th>
<th>Benefit-cost ratio</th>
<th>Rate of return*</th>
</tr>
</thead>
<tbody>
<tr>
<td>$39,248,400</td>
<td></td>
<td>$3,490,152</td>
<td>$35,758,248</td>
<td>11.2</td>
<td>NA</td>
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</table>

<table>
<thead>
<tr>
<th>TAXPAYER PERSPECTIVE</th>
<th>Benefits (thousands)</th>
<th>Costs (thousands)</th>
<th>Net present value (thousands)</th>
<th>Benefit-cost ratio</th>
<th>Rate of return</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3,055,542</td>
<td></td>
<td>$843,067</td>
<td>$2,212,475</td>
<td>3.6</td>
<td>9.7%</td>
</tr>
</tbody>
</table>

* 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.
CONCLUSION

The results of this study demonstrate that the colleges create value from multiple perspectives. The colleges benefit state businesses by increasing consumer spending in the state and supplying a steady flow of qualified, trained workers into the workforce. Each college enriches the lives of students by raising their lifetime incomes and helping them achieve their individual potential. Together, the colleges benefit society as a whole in Arizona by creating a more prosperous economy and generating a variety of savings through the improved lifestyles of students. Finally, the colleges benefit state and local taxpayers through increased tax receipts across the state and a reduced demand for government-supported social services.

ABOUT THE STUDY

Data and assumptions used in the study are based on several sources, including the 2013-14 academic and financial reports from the colleges, industry and employment data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau, outputs of EMSI’s Social Accounting Matrix (SAM) model, and a variety of studies and surveys relating education to social behavior. The study applies a conservative methodology and follows standard practice using only the most recognized indicators of investment effectiveness and economic impact. For a full description of the data and approach used in the study, please contact ACC for a copy of the technical report.

ABOUT EMSI

Economic Modeling Specialists International, a CareerBuilder company, is a leading provider of economic impact studies and labor market data to educational institutions, workforce planners, and regional developers in the U.S. and internationally. Since 2000, EMSI has completed over 1,200 economic impact studies for educational institutions in four countries. Visit www.economicmodeling.com for more information about EMSI’s products and services.