



DEMONSTRATING THE COLLECTIVE ECONOMIC VALUE  
OF NORTH CAROLINA COMMUNITY COLLEGES

# EXECUTIVE SUMMARY

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North Carolina Community Colleges include 58 colleges. This study analyzes the collective economic value these colleges create for North Carolina.

Our analysis shows that in FY 2012-13, the \$2.2 billion in payroll and operations spending of North Carolina Community Colleges, together with their construction spending and the spending of their students and alumni, created **\$21.5 billion** in added state income. This is equal to approximately **4.9%** of the total Gross State Product of North Carolina and is equivalent to creating **375,254** new jobs.

The colleges improve higher education delivery throughout the state and help students increase their employability and potential. By drawing students to North Carolina, the colleges also generate new dollars and opportunities for the state. However, the contributions of North Carolina Community Colleges consist of more than just influencing the lives of students. The colleges serve a range of industries in North Carolina and support state businesses. Communities throughout North Carolina benefit from an expanded economy and improved quality of life. The benefits created by North Carolina Community Colleges extend as far as the state and local government, in the form of increased tax revenues and public sector savings.

The purpose of this study is to investigate

the statewide economic impacts created by North Carolina Community Colleges on the state business community and the benefits that the colleges generate in return for the investments made by their key stakeholder groups—students, society, and taxpayers. We present two types of analyses in turn below: a statewide economic impact analysis and an investment analysis.

All results reflect student and financial data for Fiscal Year (FY) 2012-13. Impacts on the state business community are reported under the statewide 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.

# STATEWIDE ECONOMIC IMPACT ANALYSIS

*Economic growth is promoted in North Carolina by North Carolina Community Colleges through the direct expenditures of the colleges and their students. There are additional expenditures from state businesses whose economic activity increases as a result of the direct expenditures of the colleges and their students. North Carolina Community Colleges serve as employers and buyers of goods and services for their general and construction operations. Their reputation and activities attract students from outside North Carolina, whose expenditures benefit state vendors. In addition, North Carolina Community Colleges are a primary source of education to state residents and suppliers of trained workers to the state industry, increasing overall productivity in the North Carolina workforce.*

The statewide economic impact analysis examines the impact of North Carolina Community Colleges on the state business community through increased consumer spending and enhanced business productivity. Results are measured in terms of added state income, which in this context is equivalent to the commonly referred to measure of Gross State Product. Also reported are the corresponding number of created jobs.

The economic impacts are organized as follows: (1) impact of the increased productivity of alumni employed in the state workforce; (2) impact of the colleges' day-to-day operations; (3) impact of construction expenditures, and; (4) impact of the spending of out-of-state students.

These impacts represent new economic activity

created in the state economy solely attributable to the operations of North Carolina Community Colleges.

## ALUMNI IMPACT

The education and training provided by North Carolina Community Colleges result in the greatest impact. Since they were established, students have studied at the colleges and entered the workforce with new skills. Today, hundreds of thousands of former students who attended North Carolina Community Colleges are employed in North Carolina.

During the analysis year, past and present

students of North Carolina Community Colleges generated \$19.6 billion in added income in the state, which is equivalent to creating 322,005 new jobs. This figure represents the higher wages that alumni earned during the year as a result of attending North Carolina Community Colleges, the increased output of the businesses that employed the alumni, and the multiplier effects that occurred as alumni and their employers who spent money at other businesses.

## OPERATIONS SPENDING IMPACT

All North Carolina Community Colleges are important employers in North Carolina. The colleges employed 45,688 full-time and part-time faculty and staff in FY 2012-13. Of these, 98% lived in North Carolina. Total payroll at the colleges was \$1.3 billion, much of which was spent in the state for groceries, eating out, clothing, and other household expenses. In addition, North Carolina Community Colleges are large-scale buyers of goods and services. In FY 2012-13 the colleges spent \$860.9 million to cover their general expenses for facilities, professional services, and supplies.

This initial round of spending creates more spending across other businesses throughout the state economy, resulting in the commonly referred to multiplier effects. We also apply a downward adjustment to account for funding that the colleges received from state and local sources that could have been spent elsewhere in the state and created impacts even if not directed towards North Carolina Community Colleges. We term this an alternative use of funds and account for it by estimating the impacts that would have been created from the alternative spending and subtracting the alternative impacts from the spending impact of North Carolina Community Colleges.

The net added state income that North Carolina Community Colleges created during the analysis year as a result of their day-to-day operations was approximately \$1.7 billion in added state income, equivalent to creating 49,366 jobs.

## CONSTRUCTION SPENDING IMPACT

North Carolina Community Colleges built or renovated a number of their facilities during

### NOTE

Our estimated economic impacts are conservative in that we directly take into account the fact that state and local dollars spent on the colleges could have been spent elsewhere in North Carolina if not directed toward the North Carolina Community Colleges, and thus would have created some economic impacts regardless. We account for these alternative uses of funds directly in our analysis by (i) assuming that if funds were not directed to the colleges, they would have been returned to the taxpayer and generate economic impacts through household spending on goods and services, and (ii) subtracting the estimated economic impacts generated by this alternative use of funds from the estimated economic impacts of the colleges. Thus, we report a net impact of North Carolina Community Colleges that is above and beyond what would have occurred had the funds been returned to the taxpayer.

the analysis year. The quick infusion of income and jobs that occurred in the state economy as a result of this construction spending is only considered short-term due to the one-time nature of construction projects. Nonetheless, the construction spending had a substantial impact on the state economy in FY 2012-13, equal to \$37 million in added state income and the creation of 1,354 new jobs.

## STUDENT SPENDING IMPACT

Around 3% of students at North Carolina Community Colleges originated from outside the state in FY 2012-13. Some of these students would not have come to the state if the colleges did not exist. While attending, these students spent \$161.9 million to purchase groceries, rent accommodation, pay for transportation, and so on. A significant portion of these expenditures occurred in the state, generating \$138.7 million in new income in the state economy during the analysis year, which is equivalent to creating 2,529 new jobs.

## TOTAL IMPACT

The overall impact of North Carolina Community Colleges on the state business community during the analysis year amounted to \$21.5 billion in added state income, equal to the sum of the operations spending impact, the construction spending impact, the student spending impact, and the alumni impact. This added income was equal to approximately 4.9% of the Gross State Product and equivalent to creating 375,254 new jobs.

## IMPACTS CREATED BY NORTH CAROLINA COMMUNITY COLLEGES IN FY 2012-13

INCOME	JOB\$
<b>\$19.6 billion</b>	<b>322,005</b>
Alumni impact	
<b>\$1.7 billion</b>	<b>49,366</b>
Operations spending impact	
<b>\$37.0 million</b>	<b>1,354</b>
Construction spending impact	
<b>\$138.7 million</b>	<b>2,529</b>
Student spending impact	
<b>\$21.5 billion</b>	<b>375,254</b>
Total impact	



# 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 and considered profitable.**

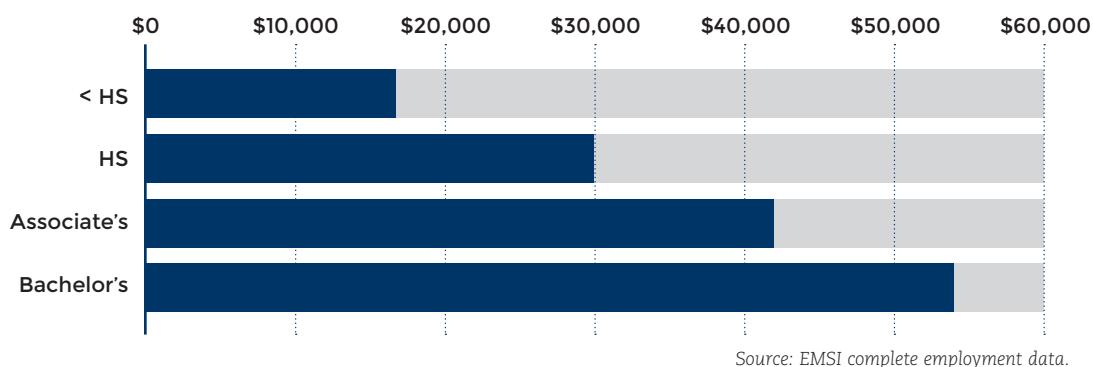
The 58 North Carolina Community Colleges received a total of **\$2.3 billion** in FY 2012-13. Tuition and fees comprised **9%** of total revenue, state and federal government sources comprised another **84%**, and all other revenue comprised the remaining **6%**. This study considers North Carolina Community Colleges as an investment from the perspectives of those who provided these revenues – students, society, and taxpayers. The backdrop for the analysis is the entire North Carolina economy.

## STUDENT PERSPECTIVE

In 2012-13, North Carolina Community Colleges served 326,172 for-credit students and 498,900 students taking courses not for credit towards a degree. 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 North Carolina Community Colleges students in FY 2012-13 amounted to \$4.9 billion, equal to \$502.4 million in out-of-pocket expenses plus \$4.4 billion in forgone time and money.

In return for their investment, students will receive a stream of higher future wages that will continue to grow through their working lives. As shown in Figure 1 on the next page, 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 one of the North Carolina Community Colleges will see an increase in earnings of \$10,800 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 \$350,951 in higher income.

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



The present value of the higher future wages that students attending North Carolina Community Colleges will receive over their working careers is \$11.5 billion. Dividing this value by the \$4.9 billion in student costs yields a benefit-cost ratio of 2.3. In other words, for every \$1 students invest in one of the North Carolina Community Colleges in the form of out-of-pocket expenses and forgone time and money, they receive a cumulative of \$2.30 in higher future wages. The average annual rate of return for students is 12.0%. 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

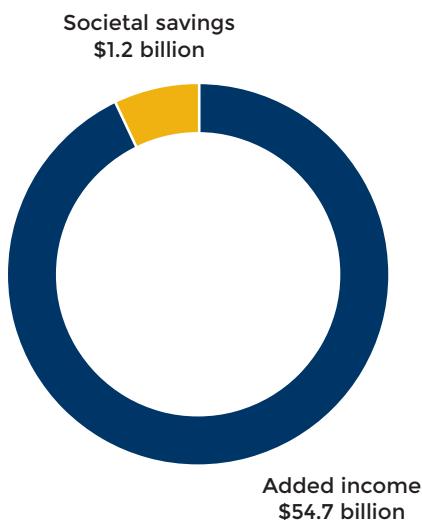
Communities and citizens throughout North Carolina benefit from the presence of North Carolina Community Colleges in two major ways. The first and largest benefit that society receives is the added income created in the state. As discussed in the previous section, students earn more because of the skills they

acquire while attending one of the North Carolina Community 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 North Carolina and expanding the economic base for the citizenry as a whole.

Benefits also include the savings generated by the improved lifestyles of students. Education is statistically correlated with a variety of lifestyle changes that generate societal 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.

Figure 2 on the following page shows the present value of the added income and social savings that will occur in North Carolina over the working lifetimes of North Carolina Com-

**FIGURE 2. PRESENT VALUE OF ADDED INCOME AND SOCIETAL SAVINGS IN NORTH CAROLINA**



munity Colleges' 2012-13 students. Added income amounts to a present value of \$54.7 billion due to the increased lifetime incomes of students and associated increases in business output. Societal savings amount to \$1.2 billion, the sum of health, crime, and unemployment savings in North Carolina. Altogether, total societal benefits to North Carolina equal \$55.9 billion (in present value terms).

Investment in North Carolina Community Colleges during the analysis year totaled \$6.9 billion. This includes all expenditures by the colleges, all student expenditures, and all student opportunity costs. For every dollar of this investment, North Carolina as a whole will receive a cumulative value of \$8.10 in benefits, equal to the \$55.9 billion in benefits divided by the \$6.9 billion in costs. These benefits will occur for as long as North Carolina Community Colleges' 2012-13 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 North Carolina Community Colleges' 2012-13 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 \$5.2 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 public 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 \$376.5 million in savings to state and local taxpayers.

Total benefits to taxpayers equal \$5.6 billion, equal to the sum of the added taxes and public sector savings. Comparing this to the taxpayer costs of \$1.4 billion—equal to the funding that North Carolina Community Colleges received from state and local government during the analysis year—yields a benefit-cost ratio of 4.1. This means that for every \$1 of public money invested in North Carolina Community Colleges, taxpayers receive a cumulative value of \$4.10 over the course of the students' working lives. The average annual rate of return is 14.7%, a solid investment that compares favorably with other long-term investments in both the private and public sectors.

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

<b>STUDENT PERSPECTIVE</b>	
<b>\$11,465,721</b>	Benefits (thousands)
<b>\$6,569,318</b>	Costs (thousands)
<b>\$13,078,705</b>	Net present value (thousands)
<b>2.3</b>	Benefit-cost ratio
<b>12.0%</b>	Rate of return
<b>SOCIETAL PERSPECTIVE</b>	
<b>\$55,854,355</b>	Benefits (thousands)
<b>\$6,854,014</b>	Costs (thousands)
<b>\$49,000,342</b>	Net present value (thousands)
<b>8.1</b>	Benefit-cost ratio
<b>N/A</b>	Rate of return*
<b>TAXPAYER PERSPECTIVE</b>	
<b>\$5,567,128</b>	Benefits (thousands)
<b>\$1,366,305</b>	Costs (thousands)
<b>\$4,200,824</b>	Net present value (thousands)
<b>4.1</b>	Benefit-cost ratio
<b>14.7%</b>	Rate of return

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

## **SUMMARY OF INVESTMENT ANALYSIS RESULTS**

Table 2 presents the results of the investment analysis for all three of North Carolina Community 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 creates a wide range of benefits to North Carolina communities and citizens and returns more to government budgets than it costs.



# CONCLUSION

*The results of this study demonstrate that North Carolina Community 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. They enrich the lives of students by raising their lifetime incomes and helping them achieve their individual potential. They benefit North Carolina as a whole by creating a more prosperous economy and generating a variety of savings through the improved lifestyles of students. Finally, they 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 2012-13 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 visit the North Carolina Community College System website at [www.nccommunitycolleges.edu/emsi-study](http://www.nccommunitycolleges.edu/emsi-study).

## ABOUT EMSI

Economic Modeling Specialists International turns labor market data into useful information that helps organizations understand the connection between economies, people, and work. Since 2000, EMSI has completed numerous economic impact studies for educational institutions across the US, Canada, the UK, and Australia. It also provides industry-leading labor market data via software and reports to higher education professionals, workforce planners, and regional developers in the U.S. and internationally. For more information, visit [www.economicmodeling.com](http://www.economicmodeling.com).