



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

THE ECONOMIC VALUE OF THE  
NORTH ORANGE COUNTY COMMUNITY COLLEGE DISTRICT

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## EXECUTIVE SUMMARY



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# Executive summary

The North Orange County Community College District (NOCCCD) creates value in many ways. The colleges play a key role in helping students increase their employability and achieve their individual potential. They provide students with the skills they need to have fulfilling and prosperous careers. Further, they supply an environment for students to meet new people, increase their self-confidence, and promote their overall health and well-being.

The value of NOCCCD influences both the lives of students and the county economy. The colleges serve a range of industries in Orange County, support local businesses, and benefit society as a whole in California from an expanded economy and improved quality of life. The benefits created by NOCCCD even extend to the state and local government through increased tax revenues and public sector savings.

This study investigates the economic impacts created by NOCCCD on the business community and the benefits that the colleges generate in return for the investments made by its key stakeholder groups—students, taxpayers, and society. The county the colleges serve and the backdrop for the economic impact analysis is Orange County in California. The following two analyses are presented:

- **Economic impact analysis**
- **Investment analysis**

All results reflect student and financial data for fiscal year (FY) 2016-17. Impacts on the county business community are reported under the economic impact analysis. Results are measured in terms of added income. The returns on investment to students, taxpayers, and society are reported under the investment analysis. Both analyses are described more fully in the following sections.



# Economic impact analysis

NOCCCD promotes economic growth in Orange County in a variety of ways. The colleges are employers and buyers of goods and services, and the living expenses of students benefit local businesses. In addition, the colleges are primary sources of education to Orange County residents and suppliers of trained workers to county industries.

## OPERATIONS SPENDING IMPACT

NOCCCD is an important employer in Orange County. In FY 2016-17, the colleges employed 2,702 full-time and part-time faculty and staff, including district staff. Of these, 63% lived in Orange County. Total payroll at NOCCCD was \$194.4 million, much of which was spent in the county for groceries, rent, dining out, clothing, and other household expenses.

The colleges are themselves large-scale buyers of goods and services. In FY 2016-17, the colleges spent \$129 million to cover their expenses for facilities, professional services, and supplies.

NOCCCD added \$282.1 million in income to the county during the analysis year as a result of the colleges' day-to-day operations. 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 state and local sources. The \$282.1 million in added income is equivalent to supporting 3,713 jobs.

## CONSTRUCTION SPENDING IMPACT

NOCCCD commissioned contractors to build or renovate a number of facilities during the analysis year. The quick infusion of income and jobs that occurred in the county 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 county economy in FY 2016-17, equal to \$8.3 million in added income for Orange County, which is equivalent to supporting 75 jobs.

## STUDENT SPENDING IMPACT

Around 24% of students attending NOCCCD originated from outside the county in FY 2016-17, and some of these students relocated to Orange County to attend the colleges. These students would not have come to the county if the colleges

**TABLE 1:** Impacts created by NOCCCD in FY 2016-17

ADDED INCOME	JOB\$
<b>\$282.1 million</b>	<b>3,713</b>
Operations spending impact	
<b>\$8.3 million</b>	<b>75</b>
Construction spending impact	
<b>\$103 million</b>	<b>1,730</b>
Student spending impact	
<b>\$1.2 billion</b>	<b>14,558</b>
Alumni impact	
<b>\$1.6 billion</b>	<b>20,076</b>
Total impact	

did not exist. In addition, a number of in-county students would have left the area for other educational opportunities if not for the existence of NOCCCD. While attending the colleges, these relocated and retained students spent \$86.9 million to purchase groceries, rent accommodation, pay for transportation, and so on. A significant portion of these expenditures occurred in the county, generating \$103 million in added income in the county economy during the analysis year, which is equivalent to supporting 1,730 jobs.

## ALUMNI IMPACT

The education and training NOCCCD provides for county residents results in the greatest impact. Since the colleges were established, students have studied at NOCCCD and entered the county workforce with new skills. Today, hundreds of thousands of former students are employed in Orange County.

During the analysis year, past and present students of NOCCCD generated \$1.2 billion in added income for the county. This figure represents the higher earnings 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. This \$1.2 billion in added income is equivalent to supporting 14,558 jobs.

## TOTAL IMPACT

The overall impact of NOCCCD on the local business community during the analysis year amounted to \$1.6 billion in added income, equal to the sum of the operations spending impact, the construction spending impact, the student spending impact, and the alumni impact. The \$1.6 billion in added income was equal to approximately 0.6% of the GRP of Orange County.

The total impact is also expressed in terms of the jobs supported by the added income; they are calculated by jobs-to-sales ratios specific to each industry. Overall, the \$1.6 billion impact supports 20,076 jobs. For perspective, this means that one out of every 113 jobs in Orange County is supported by the activities of NOCCCD and its students.

A portion of the total \$1.6 billion is broken out into an industry-by-industry impact ordered by added income. Table 2 outlines the top industries impacted by NOCCCD. Because industries have different jobs-to-sales ratios, the associated jobs supported by NOCCCD differ by impact. Nonetheless, these are impacts that would not have been generated without the colleges' presence.

**TABLE 2:** Top industries impacted by NOCCCD

TOTAL INCOME (MILLIONS)	JOBS
<b>\$192.4</b>	<b>2,430</b>
Professional & Technical Services	
<b>\$115.2</b>	<b>1,903</b>
Health Care & Social Assistance	
<b>\$113.1</b>	<b>592</b>
Manufacturing	
<b>\$108.6</b>	<b>2,021</b>
Accommodation & Food Services	
<b>\$77.3</b>	<b>555</b>
Government, Non-Education	
<b>\$948.9</b>	<b>12,574</b>
All other industries	
<b>\$1,555.5</b>	<b>20,076</b>
<b>Total impact</b>	

# 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 NOCCCD as an investment from the perspectives of students, taxpayers, and society. The backdrop for the analysis is the entire California economy.

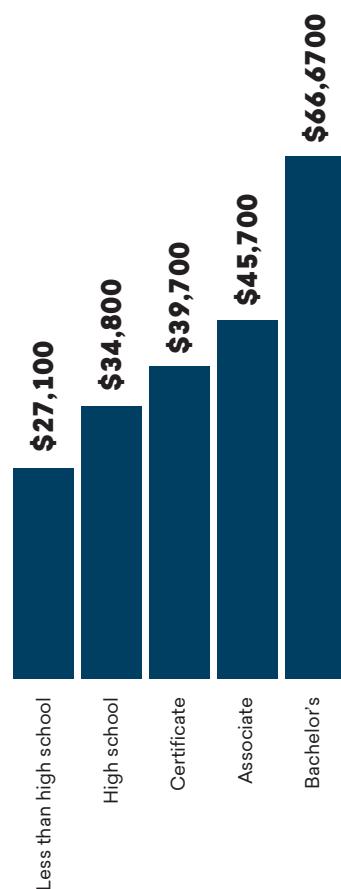
## STUDENT PERSPECTIVE

In FY 2016-17, NOCCCD served 44,297 credit students and 43,807 non-credit students. In order to attend college, students paid for tuition, fees, books, and supplies. They also took out loans and will incur interest on those loans. Additionally, students gave up money that they would have otherwise earned had they been working instead of attending college. The total investment made by NOCCCD's students for FY 2016-17 amounted to a present value of \$252.6 million, equal to \$57.8 million in out-of-pocket expenses (including future principal and interest on student loans) plus \$194.8 million in forgone time and money.

In return for their investment, NOCCCD's students will receive a stream of higher future earnings 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 associate degree completer from NOCCCD will see an increase in earnings of \$10,900 each year compared to someone with a high school diploma or equivalent working in California. Over a working lifetime, this increase in earnings amounts to an undiscounted value of approximately \$370,600 in higher earnings.

The present value of the higher future earnings that NOCCCD's students will receive over their working careers is \$1.4 billion. Dividing this value by the \$252.6 million in present value student costs yields a benefit-cost ratio of 5.7. In other words, for every dollar students invest in NOCCCD in the form of out-of-pocket expenses and forgone time and money, they receive a cumulative of \$5.70 in higher future earnings. The average annual rate of return for students is 17.3%. This is an impressive return, especially when compared to the 30-year average 10.1% return to the U.S. stock market (Figure 2).

**FIGURE 1:** Average earnings by education level at career midpoint in California



Source: Emsi complete employment data.

## TAXPAYER PERSPECTIVE

The colleges generate more in tax revenue than they take. These benefits to taxpayers consist primarily of taxes that the state and local government will collect from the added revenue created in the state. As NOCCCD's 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 FY 2016-17 students' working careers, the state and local government will have collected a present value of \$852 million in added taxes.

Benefits to taxpayers also consist of the savings generated by the improved lifestyles of students and the proportionally reduced government expenditures. Education is statistically correlated with a variety of lifestyle changes that generate taxpayer savings across three main categories: 1) health, 2) crime, and 3) unemployment. 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 and criminal justice services is reduced (study references are available in the main report). Students are also more employable, so the demand for welfare and unemployment benefits, such as earnings assistance and welfare benefits, is reduced. For a list of study references to these statistical benefits, please contact the district for a copy of the main report. All of these benefits associated with increased education will generate a present value of \$67.8 million in savings to state and local taxpayers.

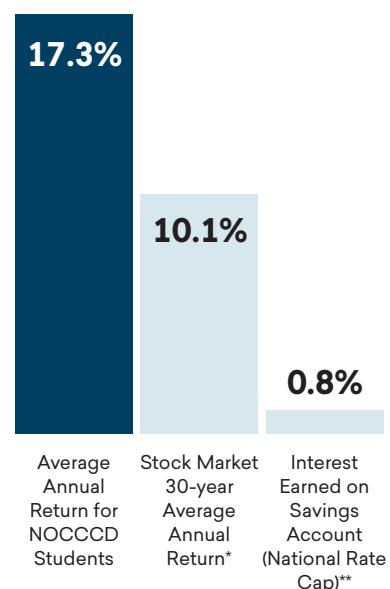
Total benefits to taxpayers equal \$919.8 million, equal to the sum of the added taxes and public sector savings. Comparing this to the taxpayer costs of \$257.8 million—equal to the funding that NOCCCD received from the state and local government during the analysis year—yields a benefit-cost ratio of 3.6. This means that for every dollar of public money invested in NOCCCD, taxpayers receive a cumulative value of \$3.60 over the course of the students' working lives. The average annual rate of return is 8.8%, a solid investment that compares favorably with other long-term investments in both the private and public sectors.

## SOCIAL PERSPECTIVE

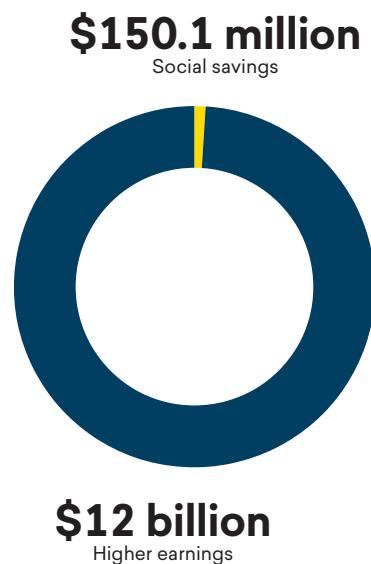
Society as a whole within California benefits from the presence of NOCCCD in two major ways. The first and largest benefit that society receives is an increased state economic base. As discussed in the previous section, the higher student earnings and increased business output occurs across the state. This raises prosperity in California and expands the economic base for society as a whole.

Benefits to society also consist of the savings generated by the improved lifestyles of students. Similar to the taxpayer section above, education is statistically correlated with a variety of lifestyle changes that generate social savings. Note that these costs are avoided by the consumers, and are distinct from the costs avoided by taxpayers outlined above. Health savings include avoided medical costs associated with smoking, alcoholism, obesity, drug abuse, and mental disorders. Crime savings

**FIGURE 2:** Student rate of return



**FIGURE 3:** Present value of higher earnings and social savings in California



include reduced security expenditures and insurance administration, lower victim costs, and reduced criminal justice system expenditures. Unemployment savings include the reduced employer contributions towards unemployment claims. For a list of study references to these statistical benefits, please contact the district for a copy of the main report.

Figure 3 shows the present value of the higher earnings and social savings that will occur in California over the working lifetime of the FY 2016-17 student population at NOCCCD. Higher earnings amount to a present value of \$12 billion due to the increased lifetime earnings of students and associated increases in business output. Social savings amount to \$150.1 million, the sum of health, crime, and unemployment savings in California. Altogether, total benefits to society equal \$12.2 billion (in present value terms).

Society invested a present value of \$567.2 million for FY 2016-17 NOCCCD educations. This includes all expenditures by NOCCCD, all student expenditures, and all student opportunity costs. For every dollar of this investment, society as a whole in California will receive a cumulative value of \$21.50 in benefits, equal to the \$12.2 billion in benefits divided by the \$567.2 million in costs. These benefits will occur for as long as NOCCCD's FY 2016-17 students remain employed in the state workforce.

## **SUMMARY OF INVESTMENT ANALYSIS RESULTS**

Table 3 presents the results of the investment analysis for all three of NOCCCD's major stakeholder groups—students, taxpayers, and society. As shown, students receive great value for their educational investment. At the same time, the investment made by state and local taxpayers to the colleges creates a wide range of benefits to society and returns more to government budgets than it costs.

**TABLE 3:** Summary of investment analysis results

	STUDENT PERSPECTIVE	TAXPAYER PERSPECTIVE	SOCIAL PERSPECTIVE
Present value benefits (thousands)	<b>\$1,430,681</b>	<b>\$919,803</b>	<b>\$12,190,020</b>
Present value costs (thousands)	<b>\$252,643</b>	<b>\$257,829</b>	<b>\$567,208</b>
<b>Net present value (thousands)</b>	<b>\$1,178,038</b>	<b>\$661,974</b>	<b>\$11,622,812</b>
Benefit-cost ratio	<b>5.7</b>	<b>3.6</b>	<b>21.5</b>
Rate of return	<b>17.3%</b>	<b>8.8%</b>	<b>N/A*</b>

\* 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 NOCCCD creates value from multiple perspectives. The colleges benefit local businesses by increasing consumer spending in the county and 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 state and local taxpayers through increased tax receipts across the state and a reduced demand for government-supported social services. Finally, they benefit society as a whole in California by creating a more prosperous economy and generating a variety of savings through the improved lifestyles of students.

## ABOUT THE STUDY

Data and assumptions used in the study are based on several sources, including the FY 2016-17 academic and financial reports from NOCCCD, industry and employment data from the U.S. Bureau of Labor Statistics and U.S. Census Bureau, outputs of Emsi's Multi-Regional Social Accounting Matrix 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 the district for a copy of the main report.



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