



Analysis of the Economic Impact and Return on Investment of Education

THE ECONOMIC VALUE OF
TRUCKEE MEADOWS COMMUNITY COLLEGE

July 2018

A photograph of a male healthcare professional, likely a nurse or technician, wearing teal scrubs and white gloves. He is standing in a clinical setting, possibly a hospital or clinic, and is adjusting a piece of medical equipment on a stand. In the background, there are medical carts and equipment, including an IV drip chamber and a clear plastic bag hanging from a stand. The lighting is bright and clinical.

EXECUTIVE SUMMARY

 Emsi

Executive summary

Truckee Meadows Community College (TMCC) creates value in many ways. The college plays a key role in helping students increase their employability and achieve their individual potential. It provides students with the skills they need to have fulfilling and prosperous careers. Further, it supplies an environment for students to meet new people, increase their self-confidence, and promote their overall health and well-being.

The value of TMCC influences both the lives of students and the county economy. The college serves a range of industries in Washoe County, supports local businesses, and benefits society as a whole in Nevada from an expanded economy and improved quality of life. The benefits created by TMCC even extend to the state government through increased tax revenues and public sector savings.

This study investigates the economic impacts created by TMCC on the business community and the benefits that the college generates in return for the investments made by its key stakeholder groups—students, taxpayers, and society. For the purposes of this study, the region the col-

lege serves is Washoe County. 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

TMCC promotes economic growth in Washoe County in a variety of ways. The college is an employer and buyer of goods and services, and the living expenses of students benefit local businesses. In addition, TMCC is a primary source of education to Washoe County residents and a supplier of trained workers to county industries.

OPERATIONS SPENDING IMPACT

TMCC is an important employer in Washoe County. In FY 2016-17, the college employed 1,585 full-time and part-time faculty and staff. Of these, 90% lived in Washoe County. Total payroll at TMCC was \$45.1 million, much of which was spent in the county for groceries, rent, dining out, clothing, and other household expenses.

TMCC is itself a large-scale buyer of goods and services. In FY 2016-17, the college spent \$23.1 million to cover its expenses for facilities, professional services, and supplies.

TMCC added \$67.5 million in income to the county during the analysis year as a result of its day-to-day operations. This figure represents the college’s payroll, 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 state sources. The \$67.5 million in added income is equivalent to supporting 1,876 jobs.

STUDENT SPENDING IMPACT

Around 21% of credit students attending TMCC originated from outside the county in FY 2016-17, and some of these students relocated to Washoe County to attend TMCC. These students would not have come to the county if the college 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 TMCC. While attending the college, these relocated and retained students spent \$44.6 million to purchase groceries, rent accommodation, pay for transportation, and so on. A significant portion of these expenditures occurred in the county, generating \$24.3 million in added income in the county economy during the analysis year, which is equivalent to supporting 504 jobs.

ALUMNI IMPACT

The education and training TMCC provides for county residents results in the greatest impact. As shown in Figure 1, since the college was established, students

TABLE 1: Impacts created by TMCC in FY 2016-17

ADDED INCOME	JOBS
\$67.5 million	1,876
Operations spending impact	
\$24.3 million	504
Student spending impact	
\$393.1 million	5,152
Alumni impact	
\$484.9 million	7,531
Total impact	

have studied at TMCC and entered the county workforce with new skills. Today, thousands of former students are employed in Washoe County.

During the analysis year, past and present students of TMCC generated \$393.1 million 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 \$393.1 million in added income is equivalent to supporting 5,152 jobs.

TOTAL IMPACT

The overall impact of TMCC on the local business community during the analysis year amounted to \$484.9 million in added income, equal to the sum of the operations spending impact, the student spending impact, and the alumni impact. The \$484.9 million in added income was equal to approximately 2.0% of the GRP of Washoe County. By comparison, this contribution that the college provides on its own is nearly twice large as the entire Utilities industry in the 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 \$484.9 million impact supports 7,531 jobs. For perspective, this means that one out of every 38 jobs in Washoe County is supported by the activities of TMCC and its students.

A portion of the total \$484.9 million is broken out into an industry-by-industry impact ordered by added income. Table 2 outlines the top industries impacted by TMCC. Because industries have different jobs-to-sales ratios, the associated jobs supported by TMCC differ by impact. Nonetheless, these are impacts that would not have been generated without the college’s presence.



FIGURE 1: TMCC alumni working in-county today

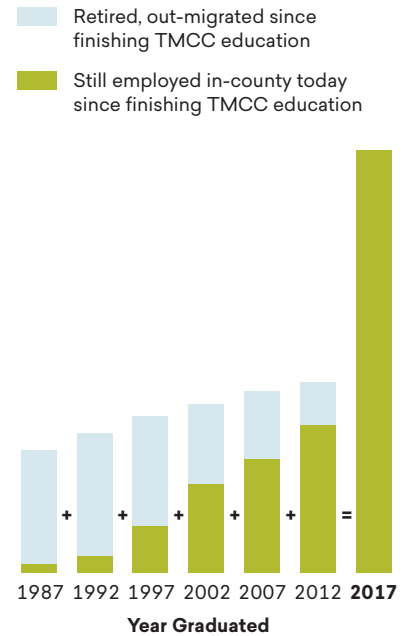


TABLE 2: Top industries impacted by TMCC

TOTAL INCOME (MILLIONS)	JOBS
\$110.7	1,721
Health Care & Social Assistance	
\$50.0	401
Government, Non-Education	
\$33.0	454
Professional & Technical Services	
\$28.8	248
Manufacturing	
\$23.3	518
Accommodation & Food Services	
\$239.2	4,190
All other industries	
\$484.9	7,531
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. If costs outweigh benefits, then the investment will lose money and is considered unprofitable. This study considers TMCC as an investment from the perspectives of students, taxpayers, and society. The backdrop for the analysis is the entire Nevada economy.

STUDENT PERSPECTIVE

In FY 2016-17, TMCC served 16,095 credit students and 14,294 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 TMCC's students for FY 2016-17 amounted to a present value of \$102.7 million, equal to \$24.7 million in out-of-pocket expenses (including future principal and interest on student loans) plus \$77.9 million in forgone time and money.

In return for their investment, TMCC's students will receive a stream of higher future earnings that will continue to grow throughout their working lives. As shown in Figure 2, mean earnings levels at the midpoint of the average-aged worker's career increase as people achieve higher levels of education. Note that these data represent the averages across all occupations and do not show the differences in wage by occupation; for example, skilled trades workers in some occupations often see higher earnings than workers with associate and bachelor's degrees in other fields. On average, an associate degree completer from TMCC will see an increase in earnings of \$8,600 each year compared to someone with a high school diploma or equivalent working in Nevada. Over a working lifetime, this increase in earnings amounts to an undiscounted value of approximately \$352,600 in higher earnings.

The present value of the higher future earnings that TMCC's students will receive over their working careers is \$431.4 million. Dividing this value by the \$102.7 million in present value student costs yields a benefit-cost ratio of 4.2. In other words, for every dollar students invest in TMCC in the form of out-of-pocket expenses and forgone time and money, they receive a cumulative of \$4.20 in higher future earnings. The average annual rate of return for students is 15.6%. This is an impressive return, especially when compared to the 30-year average 10.1% return to the U.S. stock market (Figure 3).

FIGURE 2: Average earnings by education level at career midpoint in Nevada



Source: Emsi complete employment data.



TAXPAYER PERSPECTIVE

TMCC generates more in tax revenue than it takes. These benefits to taxpayers consist primarily of taxes that the state government will collect from the added revenue created in the state. As TMCC 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 government will have collected a present value of \$125.1 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 college for a copy of the main report. All of these benefits associated with increased education will generate a present value of \$16.3 million in savings to state taxpayers.

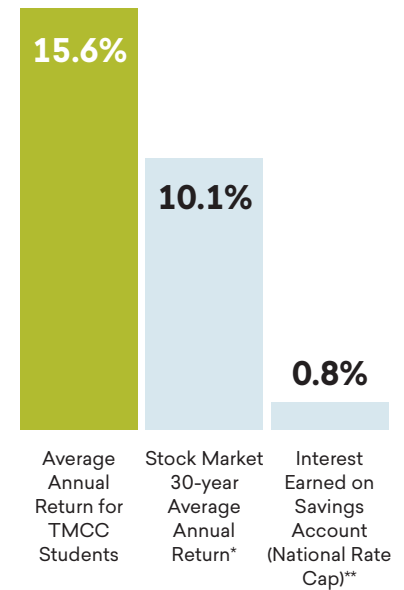
Total benefits to taxpayers equal \$141.5 million, equal to the sum of the added taxes and public sector savings. Comparing this to the taxpayer costs of \$32.4 million—equal to the funding that TMCC received from the state government during the analysis year—yields a benefit-cost ratio of 4.4. This means that for every dollar of public money invested in TMCC, taxpayers receive a cumulative value of \$4.40 over the course of the students' working lives. The average annual rate of return is 14.4%, 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 Nevada benefits from the presence of TMCC 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 Nevada 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 include reduced security expenditures and insurance administration, lower victim

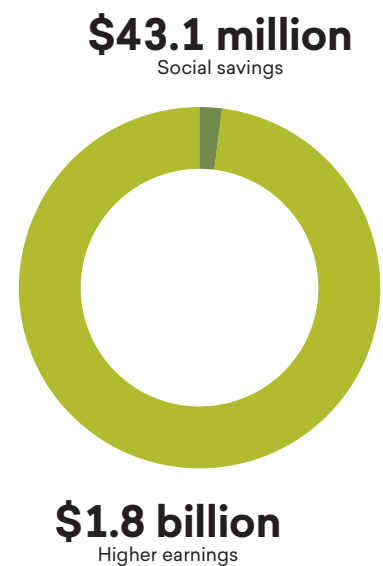
FIGURE 3: Student rate of return



* Forbes' S&P 500, 1987-2016.

** FDIC.gov, 7-2017.

FIGURE 4: Present value of higher earnings and social savings in Nevada



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 college for a copy of the main report.

Figure 4 shows the present value of the higher earnings and social savings that will occur in Nevada over the working lifetime of the FY 2016-17 student population at TMCC. Higher earnings amount to a present value of \$1.8 billion due to the increased lifetime earnings of students and associated increases in business output. Social savings amount to \$43.1 million, the sum of health, crime, and unemployment savings in Nevada. Altogether, total benefits to society equal \$1.9 billion (in present value terms).

Society invested a present value of \$155.2 million for FY 2016-17 TMCC educations. This includes all expenditures by TMCC, all student expenditures, and all student opportunity costs. For every dollar of this investment, society as a whole in Nevada will receive a cumulative value of \$12.20 in benefits, equal to the \$1.9 billion in benefits divided by the \$155.2 million in costs. These benefits will occur for as long as TMCC'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 TMCC'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 taxpayers to the college 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)	\$431,394	\$141,453	\$1,890,278
Costs (thousands)	\$102,667	\$32,369	\$155,189
Net present value (thousands)	\$328,727	\$109,084	\$1,735,089
Benefit-cost ratio	4.2	4.4	12.2
Rate of return	15.6%	14.4%	N/A*

* 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 TMCC creates value from multiple perspectives. The college benefits local businesses by increasing consumer spending in the county and supplying a steady flow of qualified, trained workers into the workforce. It enriches the lives of students by raising their lifetime earnings and helping them achieve their individual potential. It benefits state taxpayers through increased tax receipts across the state and a reduced demand for government-supported social services. Finally, it benefits society as a whole in Nevada 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 TMCC, 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 college for a copy of the main report.



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