



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

THE ECONOMIC VALUE OF THE YOUNGSTOWN STATE UNIVERSITY

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## EXECUTIVE SUMMARY



 Emsi

# Executive summary

Youngstown State University (YSU) creates value in a variety of ways. The university improves higher education delivery throughout the region and helps students increase their employability and potential. The university facilitates new research and company developments, and also draws visitors to the region, generating new dollars and opportunities for the YSU Service Region.

The value of YSU influences both the lives of students and the regional economy. The university serves a range of industries in the YSU Service Region, supports regional businesses, and benefits society as a whole in Ohio from an expanded economy and improved quality of life. The benefits created by YSU even extend to the state and local government through increased tax revenues and public sector savings as a result of students decreased demand in government services. For a list of study references, please contact the university for a copy of the main report.

This study investigates the economic impacts created by YSU on the business community and the benefits that the university generates in return for the investments made by its key stakeholder groups—students, taxpayers, and society. The region the university serves is defined as the

YSU Service Region and consists of Columbiana, Mahoning, and Trumbull Counties in Ohio as well as Mercer and Lawrence Counties in Pennsylvania. 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 regional 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

YSU promotes economic growth in the YSU Service Region through its direct expenditures and resulting expenditures of students, visitors, and regional businesses. The university serves as an employer and buyer of goods and services for its general, research, and construction activities. Numerous start-up companies have formed through discovery and innovation at YSU. The university's reputation and activities attract students and visitors from outside the YSU Service Region, whose expenditures benefit regional vendors. In addition, YSU is a primary source of education to YSU Service Region residents and a supplier of trained workers to the regional industries, increasing overall productivity in the regional workforce.

## OPERATIONS SPENDING IMPACT

YSU is an important employer in the YSU Service Region. In FY 2016-17, the university employed 2,058 full-time and part-time faculty and staff for its day-to-day operations. Of these, 89% lived in the YSU Service Region. Total payroll at YSU for those employees was \$123.1 million, much of which was spent in the region for groceries, rent/mortgages, dining out, clothing, and other household expenses.

YSU is itself a large-scale buyer of goods and services. In FY 2016-17, the university spent \$77.1 million to cover its day-to-day expenses for facilities, professional services, and supplies.

YSU added \$161.3 million in income to the region during the analysis year as a result of its day-to-day operations. This figure represents the university's payroll, the multiplier effects as more spending is generated down the supply chain from the initial expenditures of the university and its employees. The figure is also adjusted downward to account for funding that the university received from state and local sources that would have created an impact even without YSU. The \$161.3 million in added income is an impact equivalent to supporting 2,736 jobs.

## RESEARCH SPENDING IMPACT

Research activities impact the economy by employing people and requiring the purchase of equipment and other supplies and services. In FY 2016-17, YSU spent \$915 thousand on payroll to support research activities from both funded research and institutional sources. This along with its other research expenditures created a net total of \$3.1 million in added income for the regional economy. This added income is equivalent to supporting 49 jobs.

## CONSTRUCTION SPENDING IMPACT

YSU commissioned contractors to build or renovate a number of facilities during the analysis year. The quick infusion of earnings and jobs that occurred in the regional 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 regional economy in FY 2016-17, equal to \$5 million in added income for the YSU Service Region and is an impact equivalent to supporting 76 jobs.

## START-UP COMPANY IMPACT

YSU creates an exceptional environment that fosters innovation and entrepreneurship, evidenced by the number of YSU start-up companies created in the region. Start-up companies, created specifically to license and commercialize YSU technology or knowledge, have a strong and clearly defined link to YSU. In FY 2016-17, the start-up companies associated with YSU employed 313 people in the YSU Service Region. In FY 2016-17, these employees, along with the spending of the start-up companies added \$29.6 million in income to the YSU Service Region economy, which is an impact equivalent to supporting 467 jobs.

## STUDENT SPENDING IMPACT

Around 20% of students attending YSU originated from outside the region in FY 2016-17, and some of these students relocated to the YSU Service Region to attend YSU. These students would not have come to the region if the university did not exist. In addition, a number of in-region students would have left the region for other educational opportunities if not for the existence of YSU. While attending the university, these relocated and retained students spent \$35.2 million for everyday goods such as groceries, rent accommodation, and transportation. A significant portion of these expenditures occurred in the region, generating \$18.5 million in added income in the regional economy during the analysis year, which is an impact equivalent to supporting 408 jobs.

## VISITOR SPENDING IMPACT

Thousands of visitors from outside the region were attracted to YSU during the analysis year to attend commencement, sports events, and other activities sponsored by the university. While in the region, visitors spent money for lodging, food, transportation, and other personal expenses. The off-campus expenditures of the university's out-of-region visitors generated a net impact of \$1.3 million in added income for the regional economy in FY 2016-17. This \$1.3 million in added income is an impact equivalent to supporting 53 jobs.

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

ADDED INCOME	J OBS
<b>\$161.3 million</b>	<b>2,736</b>
<b>Operations spending impact</b>	
<b>\$3.1 million</b>	<b>49</b>
<b>Research spending impact</b>	
<b>\$4.8 million</b>	<b>76</b>
<b>Construction spending impact</b>	
<b>\$29.6 million</b>	<b>467</b>
<b>Start-up company impact</b>	
<b>\$18.5 million</b>	<b>408</b>
<b>Student spending impact</b>	
<b>\$1.3 million</b>	<b>53</b>
<b>Visitor spending impact</b>	
<b>\$705.1 million</b>	<b>11,900</b>
<b>Alumni impact</b>	
<b>\$923.9 million</b>	<b>15,688</b>
<b>Total impact</b>	

## ALUMNI IMPACT

The education and training YSU provides for regional residents results in the greatest impact. As shown in Figure 1, since the university was established, students have studied at YSU and entered the regional workforce with new skills. Today, thousands of former students are employed in the YSU Service Region.

During the analysis year, past and present students of YSU generated \$705.1 million in added income for the region. This figure represents the higher wages that students earned during the analysis year, the increased productivity of the businesses that employed these students, and the multiplier effects that occurred as students and their employers spent money at other businesses. This \$705.1 million in added income is an impact equivalent to supporting 11,900 jobs.

## TOTAL IMPACT

The overall impact of YSU on the regional business community during the analysis year amounted to \$923.9 million in added income, equal to the sum of the operations spending, research spending, construction spending, start-up companies, student spending, visitor spending, and the alumni impact. The \$923.9 million in added income was equal to approximately 3.5% of the GRP of the YSU Service Region. By comparison, this contribution that the university provides on its own is nearly as large as the entire Transportation & Warehousing industry in the region (3.6% of \$26.4 billion in total GRP).

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 \$923.9 million impact supports 15,688 jobs. For perspective, this means that one out of every 23 jobs in the YSU Service Region is supported by the activities of YSU and its students.

The total impact of \$923.9 million is broken out into an industry-by-industry impact. Table 2 outlines the top industries impacted by YSU. Because industries have different average wages and each of YSU's impacts affects industries differently, the associated jobs supported by YSU differ by impact. Nonetheless, these are impacts that would not have been generated without the university's presence.

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

TOTAL INCOME (MILLIONS)	JOBS
<b>\$178.3</b>	<b>3,710</b>
Health Care & Social Assistance	
<b>\$105.9</b>	<b>1,472</b>
Government, Non-Education	
<b>\$101.0</b>	<b>900</b>
Manufacturing	
<b>\$56.8</b>	<b>780</b>
Retail Trade	
<b>\$45.7</b>	<b>856</b>
Professional & Technical Services	
<b>\$436.2</b>	<b>7,970</b>
All other industries	
<b>\$923.9</b>	<b>15,688</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.

YSU had a total revenue of \$203.5 million in FY 2016-17. Tuition and fees comprised 40% of total revenue, student aid from government sources comprised another 39%, and all other revenue comprised the remaining 21%. This study considers YSU as an investment from the perspectives of those whom provided these revenues – students, taxpayers, and society. The backdrop for the analysis is the entire Ohio economy.

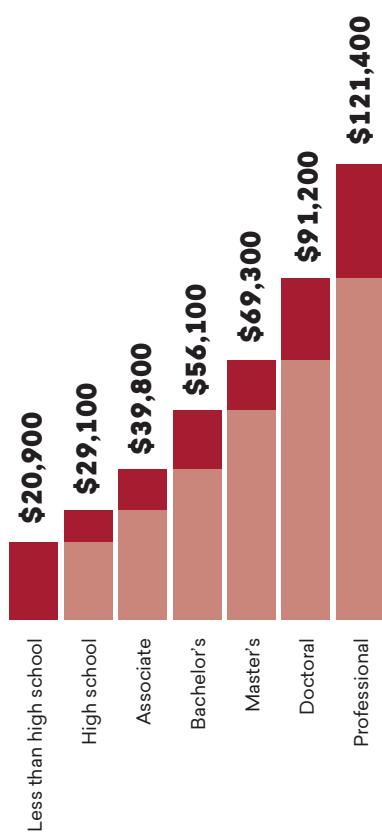
## STUDENT PERSPECTIVE

In FY 2016-17, YSU served 14,946 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 YSU's students for FY 2016-17 amounted to a present value of \$177.6 million, equal to \$90.1 million in out-of-pocket expenses (including future principal and interest paid on student loans) plus \$87.5 million in forgone time and money.

In return for their investment, YSU's students will receive a stream of higher future earnings that will continue to grow through 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. For example, at career midpoint, the average bachelor's degree completer from YSU will see an increase in earnings of \$27,000 each year compared to someone with a high school diploma or equivalent working in Ohio. Over a working lifetime, this increase in earnings amounts to an undiscounted value of approximately \$1,161,000 in higher earnings.

The present value of the higher future earnings that YSU's students will receive over their working careers is \$914.9 million. Dividing this value by the \$177.6 million in present value student costs yields a benefit-cost ratio of 5.2. In other words, for every \$1 students invest in YSU in the form of out-of-pocket expenses and forgone time and money, they receive a cumulative of \$5.20 in higher future earnings. The average annual rate of return for students is 15.0%. 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:** Higher earnings by education level at career midpoint in Ohio



## TAXPAYER PERSPECTIVE

YSU generates more in tax revenue than it receives from state and local sources. 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 YSU 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 \$271 million in added taxes.

Benefits to taxpayers 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. Former 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). Former 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 university for a copy of the main report. All of these benefits will generate a present value of \$24.6 million in savings to state and local taxpayers.

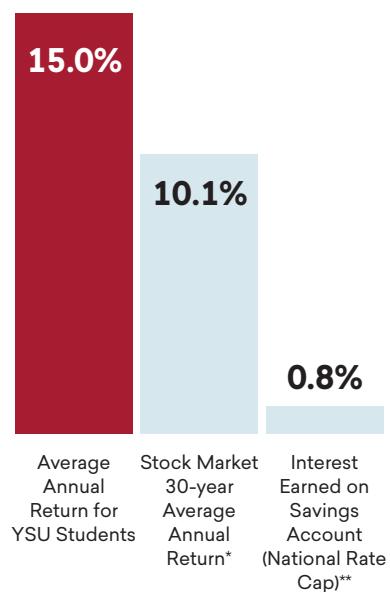
Total benefits to taxpayers equal \$295.6 million, equal to the sum of the added taxes and public sector savings. Comparing this to the taxpayer costs of \$54 million—equal to the funding that YSU received from the state and local government during the analysis year—yields a benefit-cost ratio of 5.5. This means that for every \$1 of public money invested in YSU, taxpayers receive a cumulative value of \$5.50 over the course of the students' working lives. The average annual rate of return is 10.4%, a solid investment that compares favorably with other long-term investments in both the private and public sectors (such as the 30-year annual average stock market return of 10.1%).

## SOCIAL PERSPECTIVE

Society as a whole within Ohio benefits from the presence of YSU 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 Ohio 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

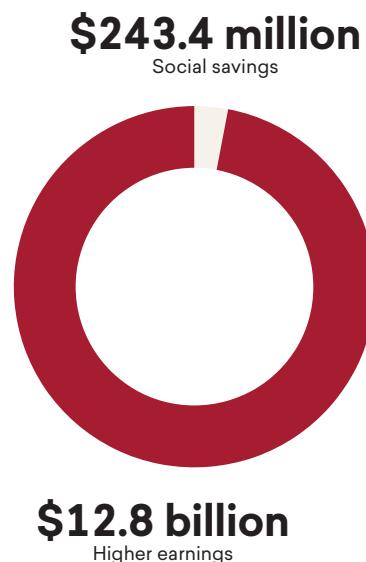
**FIGURE 3:** Student rate of return



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

\*\* FDIC.gov, 7-2017.

**FIGURE 4:** Present value of higher lifetime earnings and social savings in Ohio for FY 2016-17 student cohort



savings 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.

Figure 4 shows the present value of the higher earnings and social savings that will occur in Ohio over the working lifetime of the FY 2016-17 student population at YSU. Higher earnings amount to a present value of \$3.7 billion due to the increased lifetime earnings of students and associated increases in business output. Social savings amount to \$101.3 million, the sum of health, crime, and unemployment savings in Ohio. Altogether, total benefits to society equal \$3.8 billion (in present value terms).

Society invested a present value of \$328.3 million for FY 2016-17 YSU educations. This includes all expenditures by YSU, all student expenditures, and all student opportunity costs. For every \$1 of this investment, society as a whole in Ohio will receive a cumulative value of \$11.70 in benefits, equal to the \$3.8 billion in benefits divided by the \$328.3 million in costs (Table 3). These benefits will occur for as long as YSU'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 YSU'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 university 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>\$914,922</b>	<b>\$295,574</b>	<b>\$3,830,199</b>
Present value costs (thousands)	<b>\$177,607</b>	<b>\$54,016</b>	<b>\$328,252</b>
<b>Net present value (thousands)</b>	<b>\$737,315</b>	<b>\$241,557</b>	<b>\$3,501,946</b>
Benefit-cost ratio	<b>5.2</b>	<b>5.5</b>	<b>11.7</b>
Rate of return	<b>15.0%</b>	<b>10.4%</b>	<b>NA*</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 YSU creates value from multiple perspectives. The university 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 earnings and helping them achieve their individual potential. It benefits state and local 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 Ohio by creating a more prosperous economy and generating a variety of savings through the improved lifestyles of students across their working careers.

## 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 YSU, 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 YSU for a copy of the main report.



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