



# ECONOMIC IMPACT OF THE UNIVERSITY OF TENNESSEE SYSTEM ON THE STATE OF TENNESSEE



Prepared by

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## I. Introduction

The University of Tennessee System was formed in 1968 and includes campuses in Knoxville, Chattanooga, and Martin, as well as the Health Science Center in Memphis, the Space Institute in Tullahoma, and the statewide Institute of Agriculture and Institute for Public Service. Currently, system-wide enrollment is nearly 50,000 students, including both the graduate and undergraduate students, and the system employs roughly 25,000 faculty, staff, and student workers.

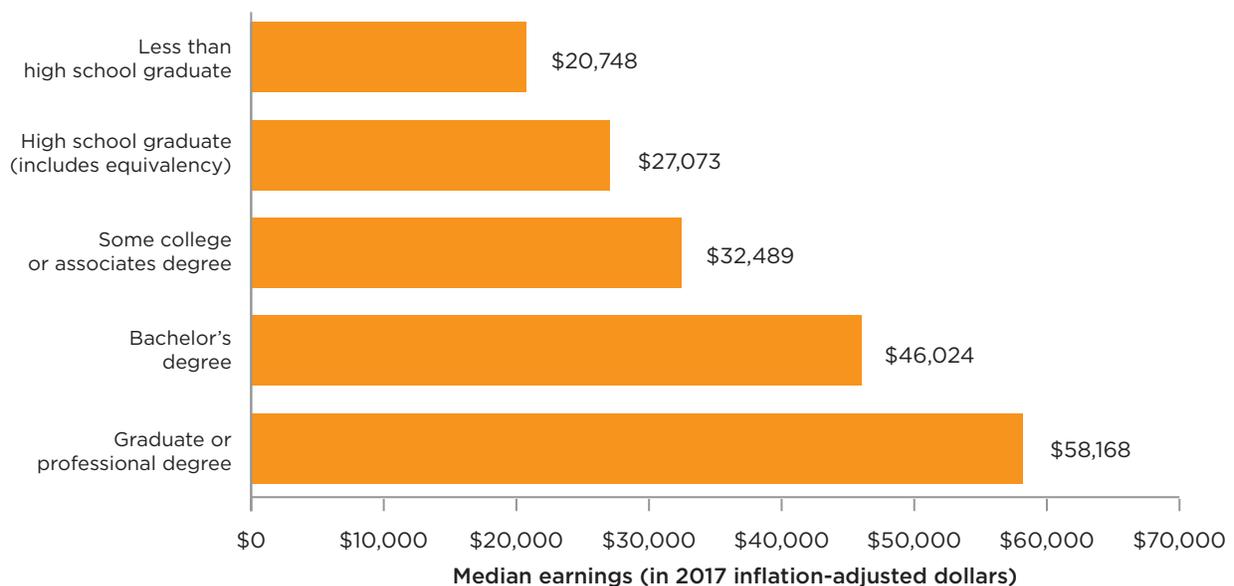
The system's mission is to "serve[s] the people of Tennessee and beyond through the discovery, communication and application of knowledge," and UT benefits the state's economy and improves people's quality of life in many ways. Educating the population, helping to prepare the Tennessee labor force, and improving the health and well-being of the people are indeed the most important functions of UT. More broadly, UT educates its students and generates knowledge, which it shares with the world through its research and graduates,

as well as promotes health and well-being through its clinical care and public service. The Institute of Agriculture and Institute of Public Service provide targeted services that help businesses and agriculture be more productive and help governments operate more efficiently. Entertainment and culture are other benefits as sports teams from Chattanooga, Knoxville and Martin delight fans across the state and alumni across the country; theater, music performances, conferences, and presentations educate and entertain people often, regardless of whether they are otherwise connected to the University. In addition, the Health Science Center in Memphis provides medical services to the population.<sup>1</sup>

Faculty, staff, and students from the various UT campuses and institutes also work on a variety of prominent research projects that enhance the state (as well as the nation and the world). These projects are financed by federal and state governments, corporations, individuals, and alumni and create income and jobs in the state, enhance the state's reputation, and improve quality of life.

<sup>1</sup> A study that examines the impact of these medical services can be found at <http://www.uthsc.edu/economic-impact/index.php>.

**Figure 1: Annual median earnings in Tennessee, by educational attainment level. Population 25 years and over.**



Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

Students are the largest single group of beneficiaries from UT’s activities. Figure 1 shows that median wages increase with educational attainment in Tennessee. For example, the median worker with a Bachelor’s degree earns about \$19,000 more each year than one with a high school diploma, a dramatic differential across the course of a person’s work life. Additionally, Figures 2 and 3 demonstrate that individuals with higher educational attainment levels are more attached to the labor force, as measured by higher labor force participation rates and lower unemployment rates.<sup>2</sup> A person with a Bachelor’s degree is about 16 percent more likely to be working and has an unemployment rate that is more than 4 percentage points lower than an average high school graduate. We estimate that students receive an 8.4 percent real rate (adjusted for inflation) of return on attendance at UT based on their lifetime earnings potential and assuming that some students will never graduate and some will choose not to work throughout their life. Those students who receive a degree will reap a more than 9 percent real rate of return.

This study focuses on one aspect of the gains from UT, the economic benefits that result from the production of education and the many other activities in Tennessee as the UT system delivers its many services. Using detailed revenue and expenditure data from each campus and institute, this study examines the economic impact that arises in the state of Tennessee from the education, research, and athletics that were produced by the UT System in Fiscal Year 2017 (from July 1, 2016

to June 30, 2017), which includes the Fall 2016 to Spring 2017 academic year and portions of two summer terms. The economic impact is generated through spending made by the system, its students, and campus visitors.

## II. Summary of Results

This study examines how much income, how many jobs, and the amount of state and local tax revenues that are generated as a result of UT System-related spending in Tennessee. Table 1 presents a summary of the results. In 2017, the UT System generated nearly \$3.5 billion in income, created 71,086 jobs in Tennessee, and was responsible for \$325.2 million in tax revenue for the state and local government.

### Total In-State Expenditures for the UT System

Table 2 presents UT System expenditures for 2017, including payroll spending, employee fringe benefits, non-payroll spending in-state, off-campus student spending, and campus and off-campus visitor spending. Altogether, the UT System was responsible for nearly \$2.9 billion in 2017 spending.

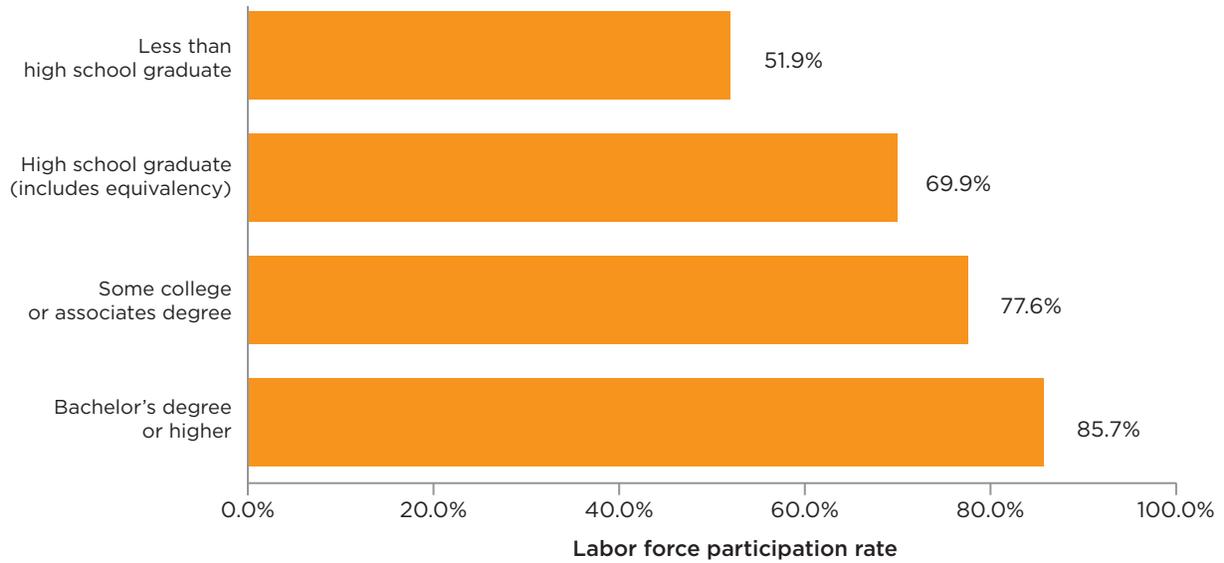
The UT System creates income directly through its employment and payment of salaries totaling \$1.0 billion to its 24,679 workers in 2017. In addition, employee fringe benefits including health and dental insurance and retirement benefits cost the system \$311.3 million. Non-payroll spending such as (but not limited to) construction, utilities,

<sup>2</sup> The labor force participation rate is measured as the percentage of the working-age population, aged 25 to 64 years, who are either working or actively seeking employment. The unemployment rate measures the percentage of the working-age population who are unemployed but actively seeking employment.

Income Generated	\$3,472,065,376
Employment Generated	71,086
Tax Revenue Generated	\$325,229,479

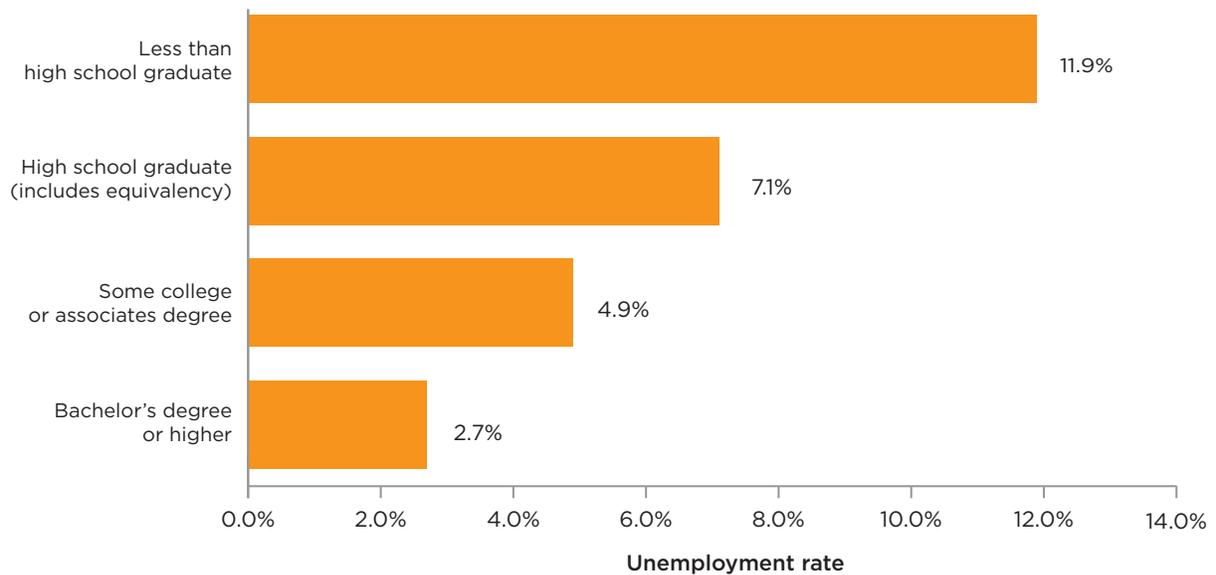
Payroll Spending	\$1,018,477,437
Fringe Benefits	\$311,326,923
Non-payroll Spending	\$1,117,218,661
Student & Campus Visitor Spending	\$413,970,692
<b>Total</b>	<b>\$2,860,993,713</b>

**Figure 2: Labor Force Participation Rate in Tennessee, by Educational Attainment Level. Population 25 to 64 Years.**



Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

**Figure 3: Unemployment Rate in Tennessee, by Educational Attainment Level. Population 25 to 64 Years.**



Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

equipment, supplies, and maintenance repairs totaled \$1.1 billion. In addition, spending by students and campus visitors generates significant economic activity in the state. We conservatively estimate that student and visitor expenditures totaled \$414.0 million in 2017.<sup>3</sup>

## Economic Impact in Tennessee

### *Creation of Income*

The UT System stimulates economic activity in a number of ways. The system creates direct benefits through its payroll spending and fringe benefits, which, by definition, are income. In addition, the system indirectly generates income through non-payroll spending, as university-related purchases of goods and services from Tennessee vendors create jobs and income for the vendor owners and employees. Additional jobs and income are created through the multiplier effect, whereby money is spent and re-spent elsewhere in Tennessee such that each dollar spent by the UT System can generate more than one dollar of economic activity. For example, the multiplier effect occurs when system employees spend their incomes buying homes, going out to dinner, or attending events in Tennessee, which allow the owners and workers of these businesses to also earn income. The owners and workers in turn go out

and spend in the state, and the process continues.

Table 3 presents the total income gains from the UT System, broken down by campus and other system-related entities. In total, the UT System generated \$3.5 billion in income for Tennesseans in 2017. Nearly \$2.0 billion of the income was caused by UT Knoxville,<sup>4</sup> the Health Science Center in Memphis created \$824.5 million, UT Chattanooga created \$353.1 million, UT Martin added \$198.2 million, and other system related entities were responsible for \$104.7 million in income for Tennesseans.<sup>5</sup>

Tennessee state government appropriated \$546.2 million to the UT system in fiscal 2017 and the state reaped nearly \$3.5 billion in economic activity, meaning the state receives an outstanding return for its investment. In addition, the state and its citizens receive the full range of services discussed above.

### *Employment Effects*

The UT System creates employment through the same channels as it does income. We estimate that a total of 71,086 jobs are created in Tennessee due to system-related spending.<sup>6</sup> Table 4 reports the employment effects by campus and for other system-related entities. UT Knoxville accounts for 42,973 of these jobs, the Health Science Center creates 13,188 jobs, UT Chattanooga and UT

<sup>3</sup> UT Knoxville calculations incorporate spending made by the university, its students and campus visitors (i.e. fans at sporting events as well as visitors to the UT Conference Center.) For other campuses (Martin, Chattanooga, and the Health Services Center), the economic impacts only include university spending and student spending. Off-campus visitor spending data were not available.

<sup>4</sup> In this report, UT Knoxville also includes the Space Institute and the Institute of Agriculture, which were not included in our June 2018 report on the economic impact of UTK, thereby making the economic impacts associated with UTK larger than those provided in the previous UTK economic impact study.

<sup>5</sup> Other entities include the Institute for Public Service (IPS) and University Wide Administration (UWA).

<sup>6</sup> Employment effects are calculated based on both full-time and part-time workers.

**Table 3: Summary of Total Income Effects by Source, 2017**

UT Knoxville	\$1,991,504,279
UT Martin	\$198,216,625
UT Chattanooga	\$353,059,596
Health Science Center	\$824,546,069
Other	\$104,738,807
<b>Total</b>	<b>\$3,472,065,376</b>

**Table 4: Summary of Total Employment Effects by Source, 2017**

UT Knoxville	42,973
UT Martin	5,186
UT Chattanooga	8,388
Health Science Center	13,188
Other	1,352
<b>Total</b>	<b>71,086</b>

Martin create 8,388 and 5,186 jobs respectively, and other UT entities account for 1,352 jobs in the state.

### *Tax Effects*

In addition to generating income and creating new jobs, UT System-related spending results in additional tax revenues for the state and local government. Tax revenues result through a multitude of channels. First, UT System employees spend a portion of their incomes on sales taxable goods in Tennessee. Second, a portion of the indirect income arising from the system's non-payroll spending and through the multiplier effect is also spent on sales-taxable goods. Student and campus visitors' purchases create additional sales tax revenues. For example, visitors pay sales taxes on game tickets, hotel rooms, and restaurants. In addition, UT system-related spending generates revenues from the entire range of other tax sources, such as the gasoline tax and local property taxes. Our calculations weren't for all of these taxes.

Table 5 reports the tax revenue effects by each UT entity. In total, the UT System creates an additional \$325.2 million in state and local tax revenues each year. From which, UT Knoxville and the Health Science Center are responsible for \$191.6 million and \$71.6 million in additional tax revenues respectively. UT Chattanooga creates \$33.8 million,

UT Martin generates \$19.6 million, and other UT entities create \$8.7 million.

The State of Tennessee expects significant return for its appropriations to UT and much of this return is seen in the value of education to the workers and employers in the state, improved health care, and entertainment for the state's citizens and taxpayers, as was discussed above. In addition, higher wages that accrue for post high school education lead to added tax revenue for the state. For example, using national data on lifetime earnings for people with post high school education, we estimate that the income gains for UT Knoxville's most recent freshman class<sup>7</sup> will result in nearly \$45,900 more in taxes paid across the average student's life (in 2017 dollars). Thus, the current UTK freshman cohort will generate approximately \$295 million in additional taxes.

As an example of the tax benefits to the State of Tennessee from UTK alone, we estimate that UTK was responsible for about \$213 million more in state tax revenues in 2017.<sup>8</sup> Coincidentally, the present value of all tax revenues for Tennessee in 2017 equals the \$213 million in appropriations that UTK received from the State of Tennessee in 2017. So Tennessee received an educated citizenry, a trained labor force, a healthier population, and the entertainment and cultural value of UTK at no net cost to the State of Tennessee.

<sup>7</sup> The 2018-19 UTK freshman cohort includes 6,428 students.

<sup>8</sup> The \$295 million in added tax revenue due to higher wages for UTK graduates is discounted at a 3 percent real rate of return (and real wages are assumed to grow 1 percent annually). The tax revenue is further reduced by 35 percent to account for students moving out of Tennessee after school (this recognizes that UT prepares students to compete around the world) and for people choosing not to participate in the labor force for part of their life. Combined these adjustments result in a present value of \$102 million. Adding to this, UTK-related spending also generates \$191.6 million in state and local tax revenue (as seen in Table 5), 58 percent of which will go to the state government, resulting in \$111.1 million in additional state tax revenue.

**Table 5: State & Local Tax Revenue  
Generated by Source, 2017**

UT Knoxville	\$191,555,009
UT Martin	\$19,591,179
UT Chattanooga	\$33,788,148
Health Science Center	\$71,578,218
Other	\$8,716,925
<b>Total</b>	<b>\$325,229,479</b>

### III. Conclusion

We conservatively estimate that in 2017, the UT System was responsible for \$3.5 billion in income, 71,086 jobs, and \$325.2 million in tax revenue for the state and local government through its activities that produce educational and health services as well as and entertainment. The state government contributed \$546.2 million to help support these operations, meaning an excellent return for the state's taxpayers. However, the largest benefits arise through UT's main

missions of educating students, helping establish a productive labor force for the future, and facilitating key research, which make Tennessee businesses more productive and enhance people's quality of life. This report only estimates the income and jobs created in producing these key benefits of the UT system, and not the actual benefits associated with its main mission. Tennessee's future is heavily dependent on each year's more than 11,000 graduates who earn bachelor's, master's, doctoral, and professional degrees, as well as the many other outputs of the UT System.