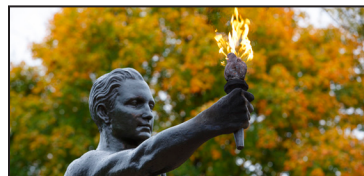


Prepared by

William F. Fox
Director, Boyd CBER

Lawrence Kessler,
Research Assistant Professor, Boyd CBER

August 2018



BOYD CENTER FOR BUSINESS &
ECONOMIC RESEARCH

ECONOMIC IMPACT OF THE UNIVERSITY OF TENNESSEE, KNOXVILLE ON THE STATE OF TENNESSEE

I. Introduction

Founded in 1794, The University of Tennessee, Knoxville (UT Knoxville) has been the flagship institution of the statewide land-grant University of Tennessee System since 1869. The university offers more than 900 degree programs (undergraduate and graduate-levels) and awards more than \$47 million in institutional scholarships each year. In 2017, UT Knoxville awarded a total of 6,944 degrees and had a six-year graduation rate of 70.2 percent.

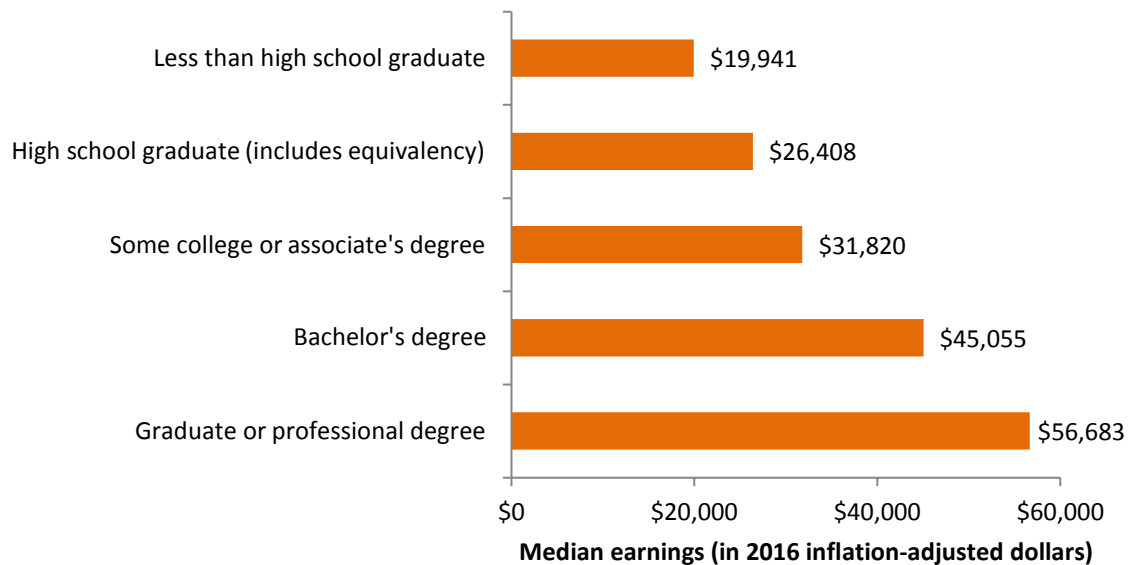
As of Fall 2017, there were 28,321 students enrolled at UT Knoxville. This included a historic new class of more than 4,800 students who made UT Knoxville their college home in the fall of 2017. More than 22,000 of these students are undergraduates and over 6,000 are graduate students. The student body of UT Knoxville represents more than half of the total enrollment at the UT System. Of the 9,744 employees who work for UT Knoxville, more than 1,500 are full-time instructional faculty members, of which 84 percent hold a doctorate degree in their respective discipline.

Using detailed revenue and expenditure data, this study examines the economic impact on the state of Tennessee of the education, research and athletics that were produced by UT Knoxville in Fiscal Year 2017 (from July 1, 2016 to June 30, 2017), which includes the Fall 2016 and Spring 2017 academic year. The university's sizeable economic impact is generated through spending made by the university, its students, and campus visitors.

The university provides many benefits that are not quantified in this report, but are major contributors to Tennessee's economy and quality of life. Indeed, educating the population and helping to prepare the Tennessee labor force are the most important functions of UT Knoxville. More broadly, UT Knoxville educates its students and generates knowledge, which it shares with the world through its research and graduates. With regards to the labor force, Figure 1 shows that median wages increase with educational attainment. While Figure 2 depicts a similar positive relationship between the labor force participation rate and educational attainment.¹ These charts suggest that college graduates, such as those from UT Knoxville, are more likely to be working and earning a higher wage than those without a college degree.

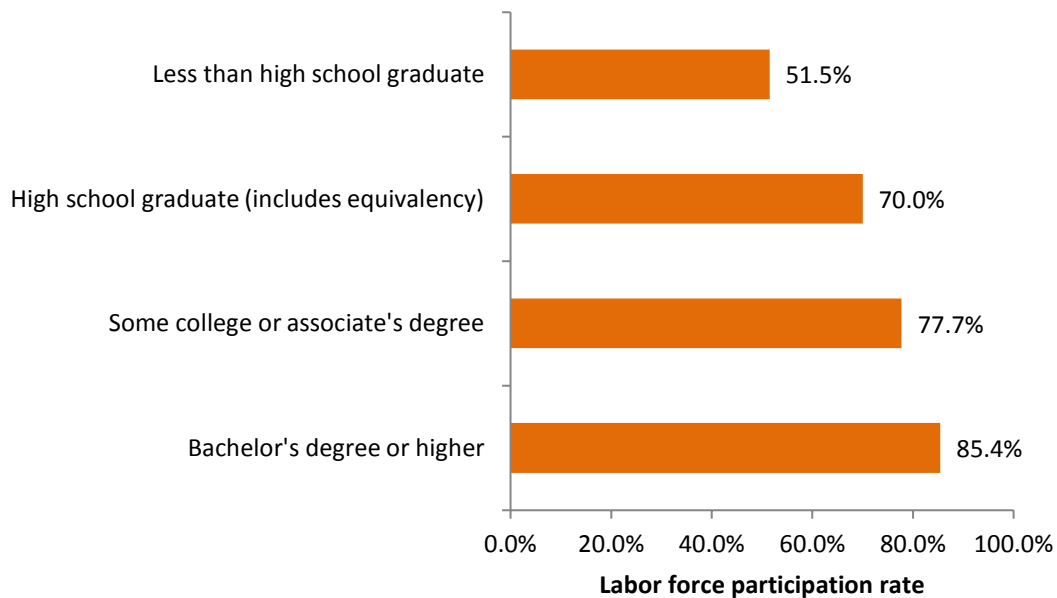
¹ The labor force participation rate is measured as the percentage of the working-age population, aged 25 to 64 years, who are either working or actively seeking employment.

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



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

Figure 2: Labor Force Participation Rate in Tennessee, by educational attainment level. Population 25 to 64 years.



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

UT Knoxville’s faculty, staff, and students also work on a variety of prominent research projects that improve the wellbeing of the state (as well as the nation and the world). These projects are financed by federal and state governments, corporations, individuals, and alumni. These large projects create income and jobs for the state, enhance the state’s reputation, and improve quality of life. The university also contributes to the cultural, social, and entertainment lives of Tennesseans.

Despite these many benefits provided by UT Knoxville, this study focuses only on the economic benefits that result from the **production** of education and the many other activities in Tennessee as the university delivers these many services. The remainder of the report is organized as follows: the next section is a brief overview of the benefits estimated in this report. Section 3 details the university’s various types of spending in 2017, including its students and campus visitors. In the last two sections, we estimate the economic impacts associated with UT Knoxville. Section 4 highlights the amount of income generated for Tennesseans and the number of jobs created as a result of university-related spending; while Section 5 discusses the tax revenue effects of university-related spending.

II. Summary of Results

This study specifically examines how much income, how many jobs, and the amount of state and local tax revenue that are generated as a result of university-related spending in Tennessee. Table 1 presents a summary of the economic benefits generated by the university. We conservatively estimate that in 2017, UT Knoxville was responsible for \$1.698 billion in income and 35,232 jobs in Tennessee, as well as \$166.4 million in tax revenue for Tennessee state and local governments.

Table 1: Summary of Economic Benefits of UT Knoxville, 2017	
Category	Amount
Income Generated	\$1,697.9
Employment Generated	35,232
Tax Revenue Generated	\$166.4

Dollar values in millions

III. Total Economic Impact on Tennessee from UT Knoxville²

Table 2 presents UT Knoxville’s expenditures for 2017 including payroll spending, employee fringe benefits, non-payroll spending in-state, in-state student spending, and campus visitor spending. Altogether, in 2017, the university was responsible for \$1.5 billion in 2017 spending.

²The economic impact is estimated based on expenditures by UT Knoxville, students off campus, and visitors to the campus as opposed to the revenues received by UT Knoxville, such as tuition and fees, room and board, gifts, and so forth. These are generally opposite sides of a coin, since all expenditures must be financed in some fashion.

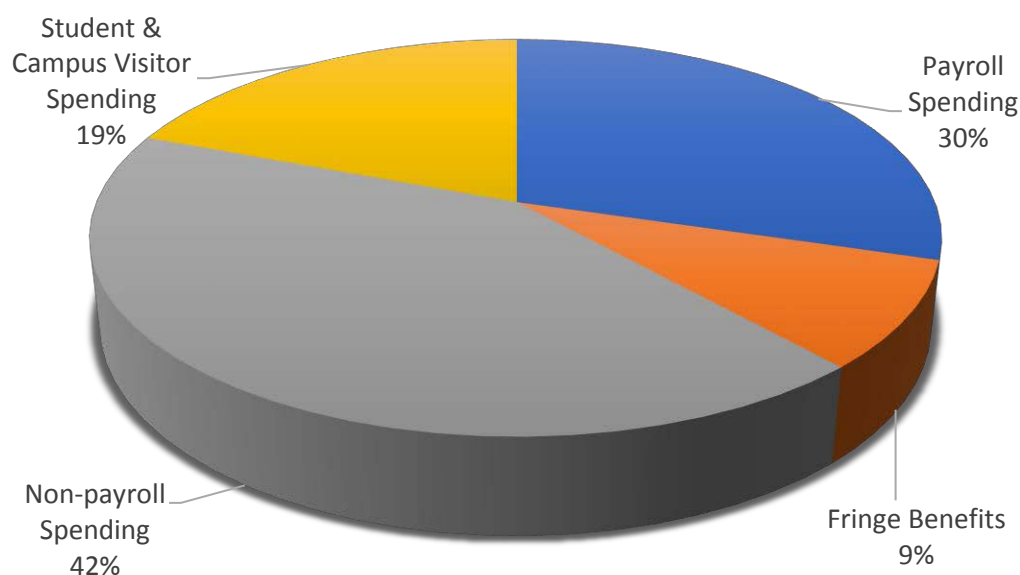
Table 2: UT Knoxville Related In-State Expenditures, 2017

Category	Amount
Payroll Spending	\$444.3
Fringe Benefits	\$130.9
Non-payroll Spending	\$636.3
Student & Campus Visitor Spending	\$288.1
Total	\$1,499.6

Dollar values in millions

UT Knoxville creates income directly through the payment of salaries to its 10,088 employees in Fall 2016, including faculty, staff, and students, totaling \$444.3 million.³ Employee fringe benefits including health and dental insurance and retirement benefits cost the university an additional \$130.9 million. Figure 3 shows that combined payroll spending and fringe benefits accounted for 39 percent of all UT Knoxville related spending in the state in 2017.

Figure 3: UT Knoxville Related In-State Spending, 2017



Non-payroll spending such as (but not limited to) construction, utilities, equipment, supplies, and maintenance repairs totaled \$636.3 million in 2017 and accounted for 42 percent of in-state university spending.

In addition, impacts result from off-campus spending by students and campus visitors as they rent apartments, shop in local stores, stay in hotels and eat in restaurants. When examining student spending we only include dollars spent off-campus by full-time students. On-campus

³The number of employees on Page 1 is reported from Fall 2017.

spending is already accounted for through UT Knoxville's revenue and expenditure data, and part-time students are excluded on the presumption that they would have engaged in economic activity in Tennessee regardless of whether they were enrolled at UT Knoxville. As a result, we include the spending of 24,535 students (in Fall 2016), and estimate total spending of \$178.2 million on books, transportation, and other personal expenditures.⁴ Finally, campus visitors include those attending sporting events at Neyland Stadium or Thompson Boling Arena, special events at the latter, and conference attendees visiting the UT Conference Center. Off-campus visitor spending is estimated at \$109.9 million in 2017.

IV. Economic Impact in Tennessee

Creation of Income

The university increases economic activity in several ways. As noted above, UT Knoxville creates direct benefits through its payroll spending, which, by definition, is income. In addition, the university creates incomes indirectly 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 also generated through the multiplier effect, where dollars are spent and re-spent elsewhere in Tennessee such that each dollar can cause more than one dollar of economic activity. For example, the multiplier effect occurs when UT Knoxville 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 income effects from UT Knoxville's three main sources of spending -- payroll spending, non-payroll spending, and student and campus visitor spending. In 2017, payroll spending generated \$1.001 billion in income for Tennesseans, non-payroll spending created \$473.5 million, and student and campus visitor spending generated \$223.7 million. In total, UT Knoxville related expenditures created \$1.698 billion in income for the state of Tennessee in 2017.

Table 3: Summary of Income Effects by Source, 2017

Category	Amount
Payroll Spending	\$1,000.7
Non-payroll Spending	\$473.5
Student & Campus Visitor Spending	\$223.7
Total	\$1,697.9

Dollar values in millions

Employment Effects

The university creates employment through the same avenues as it does income. We estimate that a total of 35,232 jobs are in Tennessee because of university-related spending. Table 4

⁴ Based on data from "estimated undergraduate budget" at <https://onestop.utk.edu/cost-of-attending-ut/undergrad/>.

presents the employment effects, by source. Payroll spending accounts for 15,851 of these jobs, 10,088 of which were direct employees of the university in the fall of 2016, and 5,763 from the multiplier effect. Non-payroll spending creates an additional 12,813 jobs in the state, and student and visitor spending generates 6,568 new jobs.

Table 4: Summary of Employment Effects by Source, 2017

Category	Number of Jobs
Payroll Spending	15,851
Direct Employees	10,088
Payroll Multiplier Effect	5,763
Non-Payroll Spending Impact	12,813
Student & Campus Visitor Spending Impact	6,568
Total Number of Jobs	35,232

V. Tax Effects

State and local tax revenues result from the spending and incomes associated with the university's presence and operations. Table 5 provides a breakdown of the tax revenue effects. Sales taxes arise through several avenues.

First, UT Knoxville employees spend a portion of their incomes on sales taxable goods in Tennessee, which generated an estimated \$21.7 million in sales tax revenue. In addition, a portion of the indirect income arising from the university's non-payroll spending and through the multiplier effect is also spent on sales-taxable goods, creating an additional \$54.7 million in sales tax revenue. Finally, student and campus visitors' purchases of sales taxable goods and services are responsible for \$18.7 million in sales taxes.

In total, UT Knoxville generated an estimated \$166.4 million in tax revenues for the state in 2017. Of this, \$95.1 million came in the form of sales tax revenue and \$71.3 million was from other tax revenue sources such as the gasoline tax and property taxes.

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

Category	Amount
Sales Tax Revenue	\$95.1
<i>Payroll Spending</i>	\$21.7
<i>Economic Impact Spending</i>	\$54.7
<i>Student & Campus Visitor Spending</i>	\$18.7
Other Tax Revenue	\$71.3
Total	\$166.4

Dollar values in millions

VI. Conclusion

Spending by UT Knoxville generates a significant economic impact for the state of Tennessee. We conservatively estimate that in 2017, UT Knoxville was responsible for \$1.698 billion in income, 35,232 jobs and \$166.4 million in tax revenue for Tennessee and local governments. However, its main mission is to educate students, help create a productive labor force for the future and to facilitate key research. The impact of such is not quantified in this report, but Tennessee's future is heavily dependent on the nearly 7,000 annual graduates and many other outputs of UT Knoxville.