

A photograph of three young men in a workshop setting, focused on a complex robotic assembly. They are wearing safety glasses and casual clothing. The assembly consists of a metal frame with various sensors, cables, and mechanical components. The background is a blurred industrial or workshop environment.

ECONOMIC BENEFITS OF POSTSECONDARY CREDENTIALS

Incremental Earnings and Revenues Upon Drive to 55 Achievement

Authored by¹



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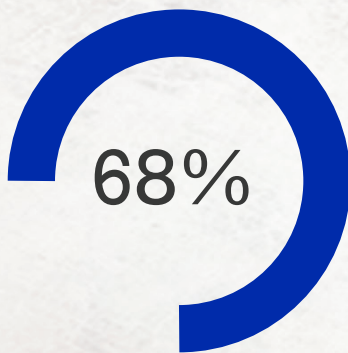
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INTRODUCTION

Governor Bill Haslam initiated the Drive to 55 program with a mission of having 55 percent of Tennessee's working age adult population equipped with a college degree or certificate by the year 2025. Drive to 55 was created because Governor Haslam understood that a better educated, highly skilled workforce is the basis for high-quality jobs, growth in personal income and improvements in the quality of life for Tennesseans. Drive to 55 successes are already evident. For example, Tennessee has become the leading state in the nation for high school seniors completing the Free Application for Federal Student Aid (FAFSA), with 68 percent of the 2015 class submitting the form.² Additionally, first-time freshman enrollment at public institutions in Tennessee increased by 10.1 percent between Fall 2014 and Fall 2015.³



OF THE 2015 CLASS
COMPLETED THE FAFSA

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INSTITUTIONS BY 10.1
PERCENT BETWEEN FALL 2014
AND FALL 2015³



²Tennessee Higher Education Commission (THEC)

³Ibid

This report follows a similar methodology to a recent Brookings Institution article,⁴ which measures the economic benefits of higher education to communities across the nation. On average, individuals with every type of postsecondary credential earn more than individuals with a high school degree.⁵ The higher income potential of Tennessee's workforce will in turn propel higher levels of spending and savings; increased consumption of goods and services will generate new tax revenues for state and local governments.



This report projects the number of additional degrees that Tennessee's population needs to earn to reach the Drive to 55 goal by 2025. Assuming the attainment goal is met, the analysis then projects increases in earnings and consumption of new certificate and degree holders in Tennessee's workforce in 2025, above levels that would have been reached without a postsecondary education. The economic value of postsecondary education within the state of Tennessee is seen in both higher earning potential for individuals and higher tax revenues for state and local governments.

This report does not address other economic benefits resulting from greater postsecondary attainment. These benefits⁶ include an increase in economic activity that occurs when the workforce needs of Tennessee's industries are aligned with the available workforce,⁷ increased innovation and enhanced quality of life for Tennesseans. A highly skilled labor force will also attract more competitive businesses to Tennessee, which can further expand the economy.

⁴Rothwell, Jonathan. "What Colleges Do for Local Economies: A Direct Measure Based on Consumption." Brookings Institution, 17 Nov. 2015.

⁵A significant body of work about the wage premium associated with earning a degree is available—a few sources are Brookings Institution, the Federal Reserve Bank of New York, Georgetown Center on Education and the Workforce, Pew Research Center, State Higher Education Executive Officers, the Lumina Foundation and the New York Times.

⁶See *Education Crossroads*, Center for Business and Economic Research, the University of Tennessee Knoxville, 2008 for a comprehensive discussion of benefits for Tennessee from greater educational attainment.

⁷According to the McKinsey Center for Government, 39% of employers say a skills shortage is a leading reason for entry-level vacancies.

ADDITIONAL CERTIFICATE OR DEGREE HOLDERS

As of 2015, an estimated 1,337,581 Tennesseans age 25 to 64 have a postsecondary certificate or associate's, bachelor's, graduate or professional degree.⁸ This represents 38.7 percent of the working-age population (see Table 1). An estimated 1,984,268 Tennesseans will need a postsecondary credential in 2025 for the state to reach 55 percent postsecondary attainment. Tennessee needs to earn 646,687 net additional certificate or degree holders in the next 10 years to achieve the 55 percent goal. The additional number of degree holders is net of deaths, in- and out-migration,⁹ and the replacement of current degree holders age 55 and above who will age out of the bracket by students under age 25 that will age into the bracket. Figure 1 provides a forecasted distribution of certificates and degrees by type.

TABLE 1: PROGRESS TOWARD DRIVE TO 55 GOAL

Number of Tennesseans (Age 25-64) by Highest Level of Education Attainment	2012	2013	2014	2015
Certificate ¹⁰	136,630	136,794	137,530	138,304
Associate's degree	250,219	257,289	256,817	260,210
Bachelor's degree	583,335	582,617	605,594	616,128
Graduate or professional degree	300,693	317,495	315,247	322,939
Total	1,272,877	1,294,249	1,315,188	1,377,581
Percentage of working-age population with a postsecondary credential	37.3%	37.8%	38.3%	38.7%

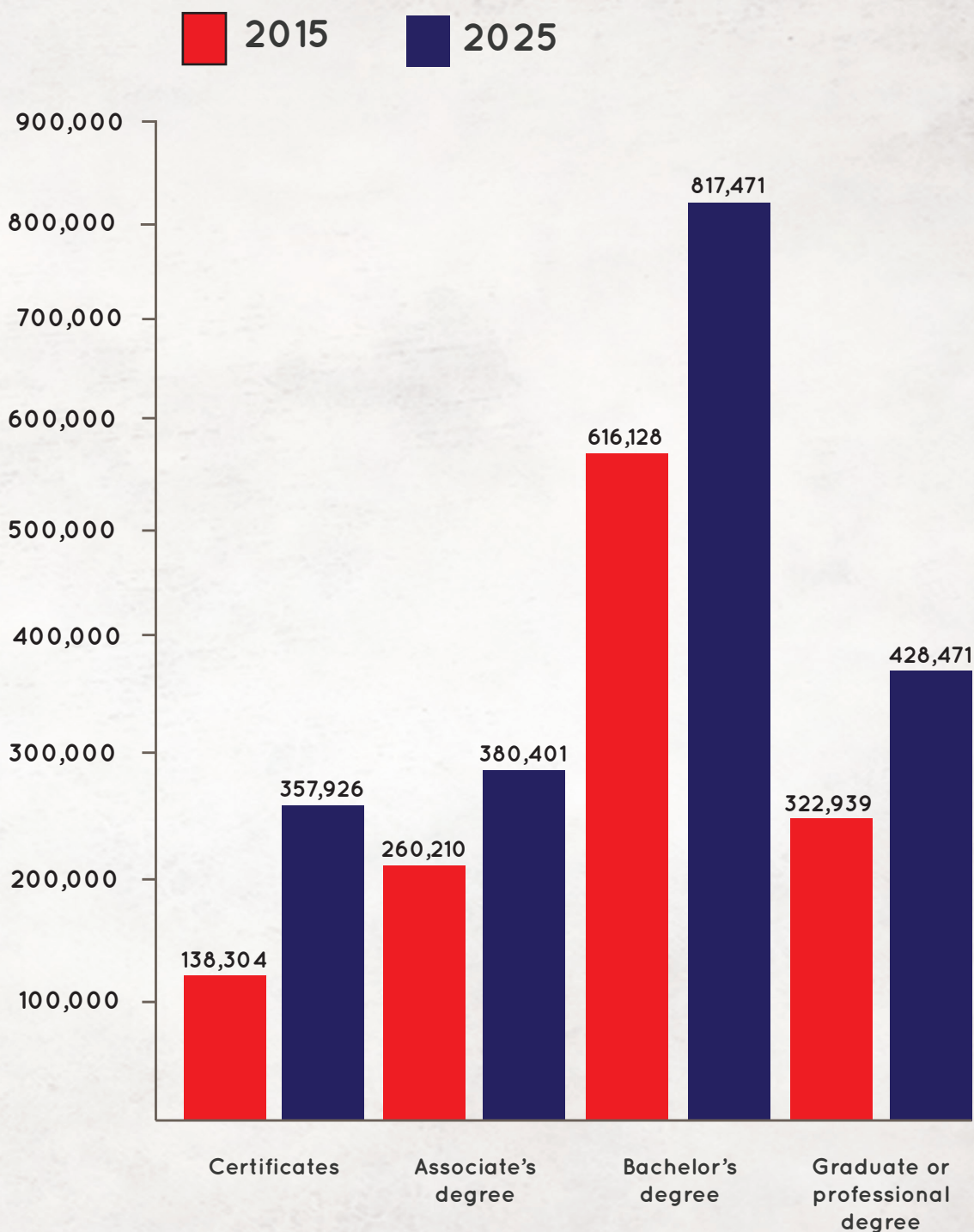
Upon achievement of 55 percent postsecondary attainment, we estimate that an additional 219,622 Tennesseans will hold a certificate as compared to 2015, 120,191 additional Tennesseans will hold an associate's degree, 201,343 additional Tennesseans will have a bachelor's degree and 105,532 more Tennesseans will hold graduate or professional degrees. See Figure 1.

⁸Estimates are based on U.S. Census Bureau population and educational attainment levels of the population age 25 to 64. CBER's estimation of postsecondary certificates and CBER's 2015 population forecasts for age 25 to 64. Focusing on the highest level of educational attainment avoids double-counting individuals who have received more than one credential.

⁹Because of the positive net domestic migration seen in recent years in Tennessee, we conservatively assume that out-migration and in-migration of degree holders are equal. We also assume that in-migrants with each level of education are equally likely to work as those staying in Tennessee with the same education.

¹⁰CBER previously estimated the number of Tennesseans with a postsecondary certificate within a range of four to seven percent of the population age 25 to 64; in this report we conservatively assume 4 percent of the population has a postsecondary certificate. See Celeste K. Caruthers and William Fox, "The 2011 Stock of Postsecondary Certificate Holders in Tennessee," UT Center for Business and Economic Research, February 2013.

FIGURE 1: DEGREES NEEDED TO REACH DRIVE TO 55 GOAL



Not all of the additional certificate and degree holders will enter Tennessee's workforce. Approximately 78.4 percent of certificate and associate's degree holders and approximately 85.4 percent of those with bachelor's or professional degrees in Tennessee can be expected to be in the labor force.¹¹ Therefore, an estimated 528,630 new graduates will be working in Tennessee in 2025.¹²

¹¹ Labor force participation rate by educational attainment for the population 25 to 64 years are from the U.S. Census Bureau, 2014 5-Year American Community Survey.

¹² Jobs requiring the requisite education are assumed to rise with the available skills in the labor force.

ADDITIONAL INCOME

Each level of postsecondary education will boost income for Tennesseans. Table 2 lists current median earnings by educational attainment in Tennessee, and illustrates that higher levels of education are associated with higher median earnings.

TABLE 2: MEDIAN EARNINGS BY LEVEL OF EDUCATION¹³

Level of Educational Attainment	Median Earnings (in 2015 dollars)
Less than high school graduate	\$19,035
High school graduate (includes equivalency)	\$26,365
Some college or associate's degree	\$32,306
Bachelor's degree	\$45,225
Graduate or professional degree	\$57,314

On average, a high school graduate in Tennessee could earn \$5,941 more per year with a certificate or an associate's degree, \$18,860 more per year with a bachelor's degree and \$30,949 more per year with a graduate or professional degree in 2015.¹⁴ We assume that fringe benefits such as health and dental insurance would add another 22.5 percent to these additional earnings.¹⁵

Table 3 shows the 528,630 net new degree holders working in Tennessee in 2025 will earn a total of \$7.62 billion annually in additional earnings and \$1.71 billion in additional fringe benefits for a total of \$9.33 billion in annual additional income, all reported in 2015 dollars.¹⁶



**528,630 NET NEW DEGREE HOLDERS WORKING
IN TENNESSEE IN 2025 FOR A TOTAL OF \$9.33
BILLION IN ADDITIONAL INCOME ANNUALLY**

EAST TENNESSEE STATE UNIVERSITY

¹³ Median earnings are from the U.S. Census Bureau's 2014 5-year American Community Survey and are adjusted to 2015 dollars using the Employment Cost Index.

¹⁴ Ibid.

¹⁵ U.S. Bureau of Economic Analysis data from the second quarter of 2015 suggest that fringe benefits equal 22.5 percent of wage and salary earnings.

¹⁶ Additional income represents income above what would have been made with only a high school degree.

**TABLE 3: ADDITIONAL INCOME TO
TENNESSEE WORKERS**

Type of Postsecondary Attainment	Additional Certificate/ Degree Holders Working in TN in 2025	Additional Earnings per Worker	Total Additional Earnings per Worker	Total Additional Fringe Benefits	Total Additional Income
Associate's/ Certificate	266,446	\$5,941.20	\$1,583,010,247	\$355,814,122	\$1,938,824,369
Bachelor's	172,021	\$18,859.91	\$3,244,292,192	\$729,221,419	\$3,973,513,611
Graduate or Professional	90,163	\$30,948.55	\$2,790,418,880	\$627,204,054	\$3,417,622,934
Total	528,630		\$7,617,721,318	\$1,712,239,595	\$9,329,960,914

Sources: CBER and CERT calculations based on data from the U.S. Bureau of Economic Analysis and the U.S. Census Bureau

ADDITIONAL TAX REVENUE TO TENNESSEE

Tax revenues result as Tennessee's well-educated workforce earns more, spends more and engages in other taxable activities. Data from the U.S. Census Bureau and the U.S. Bureau of Economic Analysis indicate that Tennessee state and local government tax revenue equals 8.0 percent of the state's personal income. State and local tax revenue includes sales, property, corporate franchise and excise taxes and other taxes.

Using this ratio, we project the new degree holders will generate an additional \$746.4 million in state and local tax revenues if Tennessee were to reach 55 percent attainment by 2025. State tax revenue accounts for 58.1 percent of Tennessee's tax collections, and local tax revenue accounts for 41.9 percent of Tennessee's tax collections.¹⁷ Thus, of the \$746.4 million in additional tax revenue per year, \$433.7 million will be state revenues and \$312.7 million will be local.

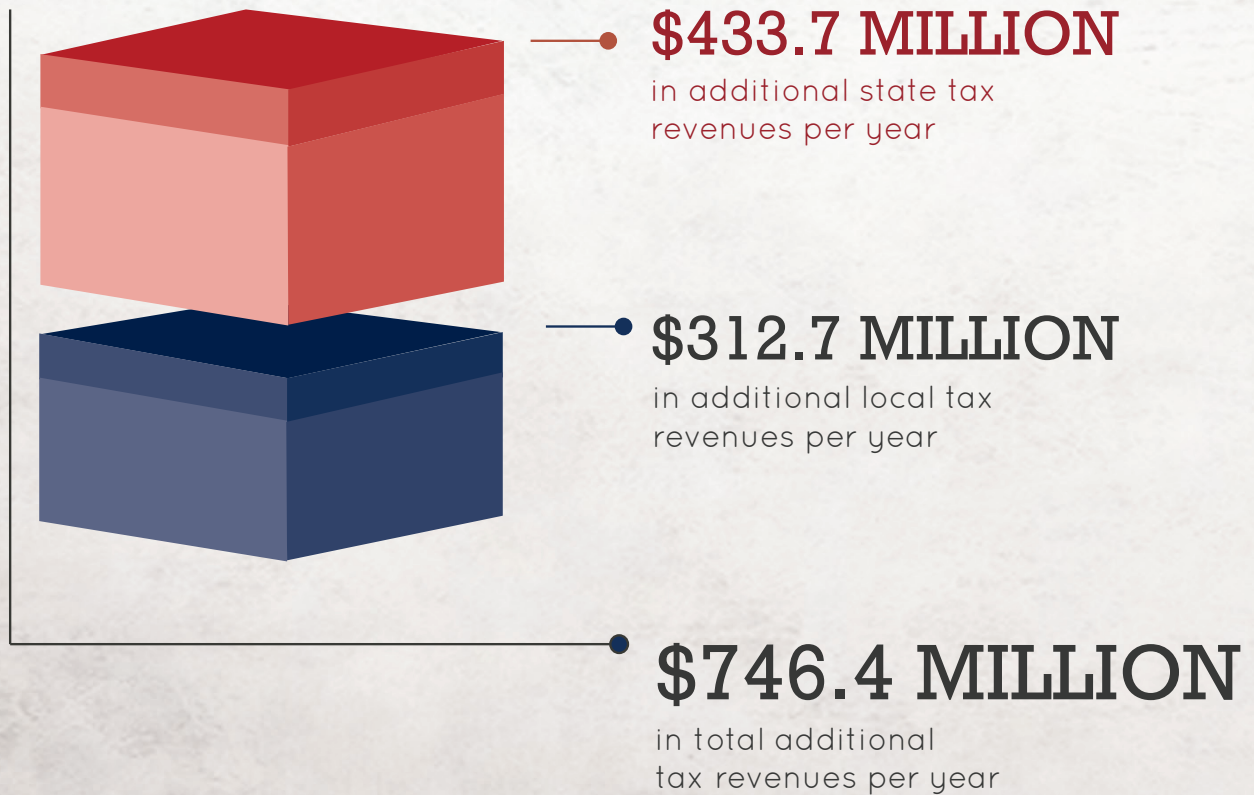
¹⁷U.S. Census Bureau, 2013 Annual Survey of State and Local Government Finances.

TABLE 4: ADDITIONAL TAX REVENUE TO TENNESSEE

The new certificate and degree holders will generate \$746.4 million in additional tax revenues per year above levels that would have been generated with no postsecondary credentials.

Type of Post Secondary Attainment	Total Additional Income	Total Tax Revenue	State Tax Revenue	Local Tax Revenue
Associate's/ Certificate	\$1,938,824,369	\$155,105,950	\$90,116,557	\$64,989,393
Bachelor's	\$3,973,513,611	\$317,881,089	\$184,688,913	\$133,192,176
Graduate or Professional	\$3,417,622,934	\$273,409,835	\$158,851,114	\$114,558,721
Total	\$9,329,960,914	\$746,396,873	\$433,656,583	\$312,740,290

Sources: CBER and CERT calculations based on data from the U.S. Bureau of Economic Analysis and the U.S. Census Bureau



CONCLUSION

An estimated 528,630 additional certificate or degree holders will work in Tennessee upon achievement of 55 percent postsecondary attainment by 2025. The incremental growth in educational attainment will coincide with higher income potential of Tennessee's workforce. These workers are projected to earn \$9.33 billion more in income annually than that which would have been generated without a postsecondary credential. As higher income workers tend to spend more and engage in other taxable activities, the additional degree holders in Tennessee's workforce will generate \$746.4 million in tax revenue for state and local governments, above what would have been collected without postsecondary education.



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