AN ECONOMIC REPORT TO THE GOVERNOR OF THE STATE OF TENNESSEE

THE STATE’S ECONOMIC OUTLOOK
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An Economic Report to the Governor of the State of Tennessee

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PREFACE

This 2015 volume of An Economic Report to the Governor of the State of Tennessee is the thirty-ninth in a series of annual reports compiled in response to requests by state government officials for assistance in achieving greater interdepartmental consistency in planning and budgeting efforts sensitive to the overall economic environment. Both short-term, or business cycle-sensitive forecasts, and longer-term, or trend forecasts, are provided in this report.

The quarterly state forecast through the first quarter of 2017 and annual forecast through 2024 represent the collective judgment of the staff of the University of Tennessee’s Center for Business and Economic Research in conjunction with the Quarterly and Annual Tennessee Econometric Models. The national forecasts were prepared by IHS Global Insight, Inc. Tennessee forecasts, current as of January 2015, are based on an array of assumptions, particularly at the national level, which are described in Chapter One. Chapter Two details evaluations for major sectors of the Tennessee economy, with an agriculture section provided by the University of Tennessee Agricultural Policy Analysis Center. Chapter Three discusses Tennessee’s role in the international economy and presents the long-run outlook and forecast for the state. Chapter Four presents Tennessee’s labor market before and after the Great Recession.

The primary purpose of this annual volume—published, distributed, and financed through the Tennessee Department of Finance and Administration, Tennessee Department of Economic and Community Development, the Tennessee Department of Revenue, the Tennessee Department of Labor and Workforce Development, and the Appalachian Regional Commission—is to provide wide public dissemination of the most-current possible economic analysis to planners and decision-makers in the public and private sectors.

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CHAPTER 3: THE TENNESSEE ECONOMY: LONG-TERM OUTLOOK

In this chapter—

3.1. Introduction
3.2. Job Growth
3.3. Unemployment and Population
3.4. Income, Earnings, and Output
3.5. Workforce Quality – Education and Health Status

3.1. Introduction

Previous chapters have focused on the short-term outlook for the national and state economies. The short-term outlook presented in Chapters 1 and 2 of this report is based on a cyclical forecast which focuses on the economic performance during the ups and downs of a business cycle, including recessions and expansions. This chapter provides a longer-term view of economic growth. The long-term outlook presented below is based on a trend forecast, which emphasizes the influence of major trends such as population and labor force growth. The forecast pays particular attention to Tennessee’s growth from 2004 to the present, as well as the state’s outlook extending out to 2024. Recessions are not built into the long-term outlook as they are inherently unpredictable. However, it is certainly possible that a recession will occur at some point during the long-term outlook horizon.

Between 2004 and 2014, inflation adjusted personal income in Tennessee grew at a 1.9 percent compound annual growth rate (CAGR), keeping pace with national income growth. Looking forward, personal income in Tennessee is expected to grow by 2.6 percent between 2014 and 2024, while U.S. personal income will increase by a faster rate of 3.0 percent. As a result, Tennessee’s per capita nominal personal income of $40,396 in 2014 will fall from 87.6 percent of the national average in 2014 to only 82.7 percent of the national average by 2024. Between 2004 and 2014, national employment growth outpaced job growth in Tennessee. A similar pattern is expected over the course of the next ten years. Despite positive gains in total nonfarm employment, both Tennessee and the U.S. faced job losses in the manufacturing sector between 2004 and 2014. These losses were much more severe in Tennessee where manufacturing employment fell by 2.4 percent (CAGR) versus a 1.6 percent (CAGR) contraction for the nation. The long-term forecast calls for another drop in manufacturing employment for Tennessee between 2014 and 2024, though this drop will be far less pronounced at -0.3 percent (CAGR). In the near-term, manufacturing employment will see a slight uptick as the economy continues its rebound from the recession. However, these gains will be very minor compared to the job losses felt during the Great Recession. Manufacturing employment will return to trend contraction in 2018.
3.2. Job Growth

Between 2004 and 2014, the state economy experienced nonfarm employment growth of 3.6 percent. This translates into a compound annual growth rate below 0.4 percent. By comparison, the U.S. saw nonfarm job growth of 5.4 percent and a compound annual growth rate of 0.5 percent. Job growth during this particular time period was greatly influenced by the Great Recession, which began in the fourth quarter of 2007 and continued up until the second quarter of 2009. During this historical retrospective nonfarm employment peaked in 2007 before experiencing job losses in 2008, 2009, and 2010. Following these years of employment contraction, the state economy has seen slow but steady gains in employment.

Table 3.1 presents the levels and compound annual growth rates for broad sectors of nonfarm employment in Tennessee. Between 2004 and 2014, manufacturing employment suffered the largest losses, contracting by 2.4 percent (CAGR). Both durable and nondurable goods manufacturing performed poorly during this 10-year period, with durable goods employment falling by 2.1 percent and nondurable goods employment shrinking 2.9 percent. Conversely, education and health services, which were largely unharmed by the Great Recession, saw growth of 2.2 percent (CAGR) between 2004 and 2014. Leisure and hospitality services also enjoyed employment gains of 1.7 percent (CAGR).

Overall nonfarm employment in Tennessee is forecasted to grow by 1.2 percent (CAGR) from 2014 to 2024. Sectors which are expected to grow the fastest are professional and business services (3.1 percent, CAGR), natural resources, mining, and construction (2.0 percent, CAGR), and education and health services (1.8 percent, CAGR). Conversely, the manufacturing sector will continue to face employment losses, contracting by 0.3 percent (CAGR) between 2014 and 2024.

Figure 3.1 depicts Tennessee’s trend pattern of employment growth compared to the national

<table>
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<tr>
<th>Table 3.1: Tennessee Nonfarm Employment by Sector</th>
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<tr>
<td><strong>Level</strong></td>
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<tr>
<td>Total Nonfarm</td>
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<td>Natural Resources, Mining &amp; Construction</td>
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<td>Manufacturing</td>
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<td>Durable Goods</td>
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<td>Nondurable Goods</td>
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<td>Trade, Transportation, Utilities</td>
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<td>Other Services</td>
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<td>Government</td>
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<td>Federal, Civilian</td>
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<td>State &amp; Local</td>
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Note: Employment Level Data are in Thousands.
*compound annual growth rate (CAGR).
Source: Bureau of Labor Statistics and UT-CBER.
The Tennessee Economy: Long-Term Outlook

3.2. Job Growth, continued

As is evident in the figure, both total nonfarm employment and manufacturing employment growth are expected to mirror the trends of the national economy. Nonfarm employment growth should remain positive throughout the forecast horizon, but employment gains will not be as prominent in the years to come. This of course assumes that no recessions will transpire over the next ten years, but recessions do occur and are generally unpredictable. Conversely, manufacturing employment, which is expected to see some positive growth in the near-term will revert back to trend contraction in 2018.

The dynamic structure of the state’s employment mix is depicted in Figure 3.2, showing how Tennessee industries have changed from 2004 to 2014, and how they are projected to change by 2024. The education and health services sector has become a bigger part of the Tennessee economy, and will continue to grow into the long-term horizon. Starting at 11.9 percent of nonfarm jobs in 2004, the education and health services sector increased to 14.3 percent in 2014 and is expected to reach 15.2 percent by 2024. Leisure and hospitality services have also seen a small but steady increase in their share of the employment distribution. The most significant trend shown in Figure 3.2 is the shrinking manufacturing sector. In 2004 manufacturing accounted for 15.2 percent of nonfarm jobs, but will fall below 10 percent by 2024. A similar, albeit less severe, downward trend has occurred nationwide, as the U.S. manufacturing sector accounted for 11.7 percent of all nonfarm jobs in 2004 but only 8.7 percent in 2014. In the near-term manufacturing employment will see modest improvements as some firms are moving jobs from abroad and back to the U.S. and Tennessee. However, manufacturing employment will start to contract again starting in 2018. Despite shrinking employment levels and a reduction in the mix of state jobs, manufacturing output is still expected to see healthy growth between 2014 and 2024.
3.2. Job Growth, continued

Figure 3.2: Nonfarm Employment in Tennessee Continues to Evolve

2004

- Government 15.3%
- Nat Resources, Mining & Construction 4.5%
- Education & Health 11.9%
- Leisure & Hospitality 9.4%
- Trade, Transportation, Utilities 21.7%
- Manufacturing 15.2%
- Fin, Info, Bus Srvs 18.2%
- Other Services 3.8%

2014

- Government 14.8%
- Nat Resources, Mining & Construction 4.0%
- Education & Health 11.5%
- Leisure & Hospitality 10.7%
- Trade, Transportation, Utilities 21.2%
- Manufacturing 15.2%
- Fin, Info, Bus Srvs 19.7%
- Other Services 3.5%

2024

- Government 13.9%
- Nat Resources, Mining & Construction 4.4%
- Education & Health 15.2%
- Leisure & Hospitality 11.0%
- Trade, Transportation, Utilities 20.3%
- Manufacturing 9.9%
- Fin, Info, Bus Srvs 21.9%
- Other Services 3.5%

Source: Bureau of Labor Statistics and UT-CBER.

3.3. Unemployment and Population

The Great Recession led to deep cuts in employment and, as a result, a strong uptick in the unemployment rate. At its peak, Tennessee’s annual unemployment rate reached 10.5 percent in 2009 and the U.S. annual rate hit 9.6 percent in 2010. Rising unemployment was felt across the state and all Tennessee counties were hit hard during the Great Recession. As the economy continues to pull itself out of the recession unemployment rates are continuing to fall across the state, but Tennessee and the nation are both a long way from pre-recession levels of unemployment. Figure 3.3 shows unemployment rates across Tennessee counties for 2004 and 2013. The year 2004 was chosen as a benchmark because it was three years after the 2001 recession and represents a year of healthy economic performance. In 2004, the unemployment rate in Tennessee was 5.4 percent and 54 counties had an unemployment rate below 5.5 percent (which was the national unemployment rate). Furthermore, in 2004 only two counties had an unemployment rate above 9.0 percent. Conversely, in 2013, roughly four years after the Great Recession, Tennessee’s unemployment rate was still elevated at 8.2 percent, and the national unemployment rate was 7.4 percent. In 2013 there were no Tennessee counties with an unemployment rate below 5.5 percent, and 53 counties reported an unemployment rate in excess of 9 percent. It is important to note that the counties with the lower unemployment rates were all in close proximity to one of Tennessee’s larger metropolitan areas (Nashville, Knoxville, Memphis, and Chattanooga), while the counties with higher unemployment rates were smaller, more rural counties. Observing metropolitan areas performing better than their rural counterparts has been an ongoing pattern in Tennessee, and one that will likely persist. There are many factors explaining this pattern, from the scope of infrastructure to the educational attainment of the population.

The long-term forecast calls for the state unemployment rate to continue its downward trend and reach 5.5 percent by 2020. This can
3.2. Unemployment and Population, continued

be attributed to both increases in the number of employed persons as well as decreases in the number of unemployed persons. However, the unemployment rate will not reach 5.2 percent, which was Tennessee’s pre-recession unemployment rate in 2006, until 2023 (see Figure 3.4). Despite this movement in the unemployment rate, the labor force participation rate, which is already at its lowest in recent years, is expected to continue its downward trend. This will be due, in part, to slower population growth but also because more people will be leaving the labor force entirely (discouraged workers and baby-boomers retiring).

In the short-run, employment and unemployment patterns are driven by fluctuations in business cycles. Over the longer term, population changes will have a more significant effect on the overall level of employment and economic activity. From 2010-2014, Tennessee’s population grew by 4.9 percent, or 1.2 percent on a compound annual basis. By comparison, the U.S. grew at a slower rate of 3.1 percent, equating to a 0.8 percent compound annual growth rate. Between 2014 and 2024, population growth for the state is expected to slow to 1.0 percent (CAGR), but remain constant at 0.8 percent (CAGR) for the nation. As a result, Tennessee’s labor force will continue to grow, but at a slower rate than in previous years.

Figure 3.3: Unemployment Rates in Tennessee Remain Elevated in Certain Areas

3.3. Unemployment and Population, continued

Personal income will continue to improve as the economic recovery persists. Between 2014 and 2024, nominal personal income is expected to grow 4.5 percent (CAGR). This compares favorably to the 3.8 percent growth rate (CAGR) between 2004 and 2014. Income growth for the nation was slightly faster than income growth in Tennessee, a pattern that will repeat itself between 2014 and 2024.

In Tennessee, the strongest component of personal income growth between 2014 and 2024 will be proprietors’ income, with a compound annual growth rate of 5.5 percent. Rent, interest, and dividend income will expand by 4.7 percent (CAGR), and wages and salaries (i.e., total wage and salary income) will see 3.5 percent growth (CAGR).

Per capita income in Tennessee was only 87.6 percent of the national average in 2014. However, between 2004 and 2014 per capita income growth lagged behind national growth. In 2004, the state’s per capita income was 90.8 percent of the national average, but fell to 87.6 in 2014. This gap between per capita income in the U.S. and per capita income in Tennessee is expected to expand further by 2024. Tennessee must see per capita income grow faster than the nation if the state is to close the gap on income disparities.

The average wage in Tennessee will see slightly slower growth over the next ten years (out to 2024) than compared to the previous ten years (since 2004). The inflation-adjusted average wage will only grow by 0.5 percent (CAGR) between 2014 and 2024, versus an expected 0.6 percent (CAGR) growth rate from 2004 to 2014.

3.4. Income, Earnings, and Output

Figure 3.4: Tennessee’s Unemployment Rate is Falling But Will Not Reach Pre-Recession Levels Until 2023

Source: Bureau of Labor Statistics and UT-CBER.
3.4. Income, Earnings, and Output, continued

Between 2004 and 2014, inflation-adjusted state gross domestic product (GDP) only grew by 1.1 percent (CAGR), compared to 1.6 percent for the national economy. Output growth in the state manufacturing sector grew by less than 1 percent (CAGR) over the last ten years, and manufacturing output is still slightly below its pre-recession peaks from 2006. Over the last ten years, Tennessee’s construction sector was hit the hardest, with inflation-adjusted output contracting by 1.8 percent (CAGR). Conversely, natural resources and mining, information, financial activities, professional and business services, and education and health services all enjoyed growth in excess of 2.0 percent (CAGR) since 2004. Looking ahead ten years, inflation-adjusted state GDP growth should keep pace with national growth, as both are projected to expand by 2.6 percent (CAGR) between 2014 and 2024. The state manufacturing sector should see growth of 2.4 percent (CAGR) despite future employment losses. Output in the durable goods sector will advance 2.9 percent (CAGR), and nondurable goods production will increase 1.6 percent (CAGR).

3.5. Workforce Quality – Education and Health Status

Within a region long-term economic growth depends on the ability to produce goods and services and export these outputs to consumers in other markets. Inputs into the production process include the size of the labor force, the quality of the labor force (i.e. education, skill level, and health), private capital investment, and public infrastructure. Economic growth in Tennessee has lagged behind that of the nation on many occasions, suggesting that at least one of the components of growth is below the national average in Tennessee. A chief suspect is workforce quality, as education and health data show that Tennessean’s are well below the national average.

In recent years Tennessee has made important strides to improve its education status. For example, the Drive to 55 initiative aims at increasing the educational attainment level so that 55 percent of the Tennessee population has a college degree or certificate by the year 2025. Moreover, the recently announced Tennessee Promise initiative offers two years of tuition-free community college or technical college to Tennessee high school graduates. A big part of the latter program, which was an expansion of the Knox Achieves and TnAchieves initiatives, is that every participating student receives a mentor to help them through the college admissions process and facilitate post-secondary success. Programs such as these are big steps in the right direction, but they will need to be sustained and supported in the long-term in order to be impactful.

Figure 3.5 presents educational attainment levels for the U.S. and Tennessee from 2006 to 2013. The first panel shows the percentage of the population with at least a high school diploma. Both Tennessee and the nation have shown gains from 2006 to 2013 and the percentage of Tennesseans with a high school degree or higher is starting to catch-up to the national average. The second panel reports the percentage of the population with a bachelor’s degree or greater. Similarly, the U.S. and state both saw improvement from 2006 to 2013. However, Tennessee’s college graduation rate still lags the nation’s and is not catching-up as is the case at the high-school level. Based on high school performance, Tennessee’s status relative to the nation is improving. This may translate into a stronger higher education pipeline in future years. The improvement in high school performance also makes the state more attractive as a place to create jobs. However, in order to attract the more high paying jobs, Tennessee will need to engineer further improvements in college graduation rates and workforce readiness.

Figure 3.6 shows educational attainment levels by Tennessee county for 2013 (the most recent year of data available). With regards to the
3.5. Workforce Quality – Education and Health Status, continued

percentage of adults with a high school degree or higher, only seven counties had an attainment rate higher than the national average of 86.6 percent. Williamson County led this category with a 94.6 percent attainment rate, while Campbell County, at 70.4 percent, was at the bottom. Regarding college graduation rates (Bachelor’s degree or higher), only three Tennessee counties had an attainment rate higher than the national average of 29.6 percent. Again Williamson County led the way with 52.8 percent of their adult population holding a Bachelor’s degree or higher, followed by Davidson County (35.9 percent), and Knox County (34.3 percent). Conversely, 14 Tennessee counties had a college attainment rate below 10 percent. Lake County was at the bottom at 7.0 percent, followed by Morgan County (7.4 percent), and Wayne County (7.9 percent).

Another component of workforce quality is overall health status, as a healthier worker is also a more productive worker. This means that, on average, a healthier worker earns more income and employers of healthy workers enjoy greater levels of workplace productivity. However, Tennesseans tend to have a poorer health status and engage in more unhealthy behaviors than the average American.

According to the 2014 edition of America’s Health Rankings, a yardstick measure of the relative health of each state, Tennessee currently ranks 45th in overall health status. Only Mississippi, Arkansas, Louisiana, Kentucky, and Oklahoma ranked more poorly. These health rankings are based on four subcategories: healthy behaviors, community and environment, health policy, and clinical care. According to the 2014 report, Tennessee ranked poorly in large part because of a high prevalence of obesity, diabetes, physical inactivity, smoking, and a high violent crime rate.

As of 2013, Tennessee had the fifth highest adult smoking rate at 24.3 percent. Conversely, the adult smoking rate was only 19.0 percent for the nation. Figure 3.7 presents the adult smoking rates for the five highest and five lowest states in the country. The highest adult smoking rate can be found in West Virginia, at 27.3 percent, and the worst five smoking rates are all located in the southeast region. The lowest adult smoking rate is enjoyed by Utah, at only 10.3 percent. Figure 3.8 presents trend data on adult smoking rates in Tennessee and in the nation from 2011 to 2013. Since 2011 the national smoking rate has trended downwards, whereas in Tennessee tobacco use has increased.

2The most recent tobacco use data (2011-2013) from the Behavioral Risk Factor Surveillance System (BRFSS) is not directly comparable to BRFSS data from previous years because of changes in weighting and sampling methodology. As a result, we are unable to analyze more long term trends in adult tobacco use.

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Figure 3.5: Educational Attainment in Tennessee Still Lags Behind the Nation

![Educational Attainment in Tennessee Still Lags Behind the Nation](chart.jpg)

Source: U.S. Census Bureau.

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3.5. Workforce Quality – Education and Health Status, continued

Figure 3.6: Educational Attainment Rates are Below the National Average in Most Tennessee Counties. Percentage of the Population Aged 25 Years or Older

High School Graduate or Higher

Bachelor’s Degree or Higher

Tennessee: 85.6%
United States: 86.6%

Less than 75.0%
75.0% to 79.9%
80.0% to 84.9%
85.0% to 86.6%
Greater than 86.6%

Tennessee: 24.8%
United States: 29.6%

Less than 10.0%
10.0% to 14.9%
15.0% to 19.9%
20.0% to 24.9%
25.0% to 29.6%
Greater than 29.6%


Figure 3.7: Tennessee has the Fifth Highest Adult Smoking Rate in the Nation, 2013

Source: Centers for Disease Control and Prevention, Behavior Risk Factor Surveillance System.
Obesity rates, as measured by a body mass index (BMI) above 30.0, are also higher in Tennessee than they are in the nation. In 2013, Tennessee’s obesity rate was 33.7 percent, whereas the U.S. rate was 29.4 percent (see Figure 3.9). Since 2011, state and national obesity rates have both been on an upward trend. However, Tennessee’s rate has risen at a rate that is more than 2.5 times faster than the national average (see Figure 3.10). In 2013 Tennessee had the fourth highest obesity rate in the country, only behind Mississippi (35.1 percent), West Virginia (35.1 percent), and Arkansas (34.6 percent). Kentucky rounded out the worst five with a 33.2 percent rate. By comparison, the lowest obesity rate was in Colorado at 21.3 percent.

Based on tobacco use and obesity rates, the southeast region as a whole does not fare very well. The same five states, all of which are located in the southeastern region, made up the worst five with regards to adult smoking rates and obesity rates (West Virginia, Kentucky, Arkansas, Mississippi, and Tennessee). Thus, patterns of unhealthy behavior appear to not only be a Tennessee problem but rather a problem for the southeast region in general.

In addition to unhealthy behaviors, the data also show that more Tennesseans suffer from serious health issues compared to the average U.S. citizen. Figure 3.11 reports prevalence data for Tennessee and the nation for various health issues. Aside from kidney disease, the prevalence of all serious health conditions is higher in Tennessee than the nation. For example, 6.9 percent of Tennesseans reportedly were told by a doctor that they had suffered a heart attack in the past and 12.2 percent were diagnosed with diabetes. Conversely, in the U.S. only 4.3 percent have ever been told they had a heart attack and 9.7 percent were diagnosed with diabetes.
3.5. Workforce Quality – Education and Health Status, continued

Figure 3.9: Tennessee has the Fourth Highest Obesity Rate in the Nation, 2013

Source: Centers for Disease Control and Prevention, Behavior Risk Factor Surveillance System.

Figure 3.10: Obesity Rates in Tennessee have Increased at a Faster Rate than the National Average

Source: Centers for Disease Control and Prevention, Behavior Risk Factor Surveillance System.
3.5. Workforce Quality – Education and Health Status, continued

Figure 3.11: More Tennesseans Report Serious Health Issues than do their National Counterparts

Source: Centers for Disease Control and Prevention, Behavior Risk Factor Surveillance System.