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An Economic Report to the Governor of the State of Tennessee

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Preface

This 2008 volume of An Economic Report to the Governor of the State of Tennessee is the thirty-second 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 2010 and annual forecast through 2017 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 Global Insight, Inc. Tennessee forecasts, current as of January 2008, 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 presents the long-run outlook and forecast for the state. Chapter Four discusses welfare policy changes and the extent to which graduates from Tennessee’s institutions of higher education contribute to the state’s economy.

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.
# Contents

Chapter 1: The U.S. Economy ............................................................... 1
  1.1. Introduction ............................................................................. 1
  1.2. The U.S. Economy: Year in Review ....................................... 3
      Components of GDP ............................................................... 3
      Inflation and Prices ............................................................... 7
      The Labor Market .................................................................. 7
  1.3. The U.S. Forecast ................................................................. 12
      Investment and Interest Rates ............................................. 12
      Consumption and the Labor Market .................................... 13
      Government Spending ........................................................ 13
      Net Exports ...................................................................... 14
      Prices and Inflation ............................................................. 14
  1.4. Alternative Scenarios .......................................................... 15
  1.5. Forecast Summary and Conclusions ................................... 16

Chapter 2: The Tennessee Economy: Short-Term Outlook ......... 17
  2.1. Introduction ......................................................................... 17
  2.2. The Current Economic Environment .................................... 18
      State Labor Markets ............................................................. 18
      Personal Income, Wages and Taxable Sales ..................... 20
      Tennessee’s Housing Market ............................................. 21
  2.3. Short-Term Outlook ............................................................ 26
      State Labor Markets ............................................................. 26
      Personal Income, Wages and Taxable Sales ..................... 28
  2.4. Situation and Outlook for Tennessee Agriculture ............... 29
      Overview of Agriculture in Tennessee .................................. 29
      Year in Review ................................................................... 29
      Tennessee Agriculture ........................................................ 29
      Agricultural Products in Tennessee ................................... 30
      Tennessee Agricultural Sector Outlook ............................ 31
      Farm Income .................................................................. 31
      Crops Outlook ................................................................ 31
      Livestock Outlook ............................................................. 32
      Ag Sector Issues and Opportunities .................................. 33
      Biofuels ......................................................................... 33
      Tennessee Agricultural Enhancement Initiative ............... 33
      Future Farm Policy .............................................................. 34

Chapter 3: The Tennessee Economy: Long-Term Outlook .......... 37
  3.1. Introduction ......................................................................... 37
  3.2. Long-Term Historical Trends ............................................. 38
      Employment Trends ............................................................ 38
      State Gross Domestic Product and Per Capita Personal Income ... 40
      Population and Labor Force ............................................. 42
      Business Leaders’ Attitudes Toward Education in Tennessee ... 49
3.3 Long-Term Economic Outlook ..................................................... 49
   Labor Market Outlook ............................................................... 55
   Income and Output ................................................................. 55
3.4 Tennessee’s Economic Outlook .................................................. 55

Chapter 4: Policy Watch ........................................................... 57
   Overview ........................................................................................ 57
   4a.1. Introduction ........................................................................... 58
   4a.2. A Brief History of Welfare Programs in the U.S. and Tennessee ................................................................................. 59
       The AFDC Era: 1935–1996 ......................................................... 59
       The 1996 Welfare Reforms ...................................................... 59
       The Welfare Reform Reauthorization of 2005 ......................... 60
       What Activities Count as Work? .............................................. 61
   4a.3. The New Families First ........................................................... 64
       Education as a Work Activity .................................................... 64
       Time Limit Policies ................................................................. 64
       Tennessee’s New Diversion Program ...................................... 64
       Performance-Based Contracting .............................................. 64
   4a.4. Future Welfare Policy Challenges in Tennessee ................. 66
       Education .................................................................................. 66
       Work Activity Participation Rate Requirements .................... 66
       Time Limits ............................................................................... 66
       Diversion Assistance ............................................................... 66
       References ................................................................................ 67
   4b. School-to-Work: Do Tennessee’s Higher Education Graduates Work in Tennessee ..................................................... 68
   4b.1. Introduction ........................................................................... 68
   4b.2. State-Level Labor Market and Earnings Trends ................. 69
       Participation by Degree Type .................................................... 70
       Average Wages of Tennessee Graduates in the Tennessee Labor Market .......................................................... 71
   4b.3. Employment and Earnings Trends by Institution .......... 76
       The Basic Question Revisited: Working or Not ................. 77
       Full-Time Wages of Tennessee Higher Education Graduates in the Tennessee Labor Market: Comparing Institutions ...... 78
   4b.4. Employment and Earnings Trends by Field of Study .......... 82
       Workforce Participation Trends among Graduates: Comparing Fields of Study .................................................. 82
       Wage Trends among Graduates: Comparing Fields of Study .... 85
   4b.5. Conclusions ........................................................................... 88
Contents

Contents, Figures and Tables

Chapter 1: The U.S. Economy .............................................................. 1
  Figure 1.1. Inflation-Adjusted GDP Growth............................................. 3
  Figure 1.2. Mortgage Rates and New Home Sales ................................. 4
  Figure 1.3. Home Prices and Housing Starts ........................................ 5
  Figure 1.4. Inflation-Adjusted Exports and Imports .............................. 6
  Figure 1.5. Inflation.............................................................................. 7
  Figure 1.6. Average Gasoline and Oil Prices ........................................ 8
  Figure 1.7. Unemployment Rate.............................................................. 8
  Figure 1.8. Employment Growth .......................................................... 9
  Figure 1.9. Disposable Personal Income................................................ 9
  Figure 1.10. Worker Productivity .......................................................... 9
  Figure 1.11. Foreign Exchange Rate..................................................... 10
  Figure 1.12. Expected Annual Percentage of Growth in the Primary Components of GDP .......................................................... 12

Chapter 2: The Tennessee Economy: Short-Term Outlook .. 17
  Figure 2.1. Private Employment Growth: June 2006 to June 2007 ............. 18
  Figure 2.2. Monthly Unemployment Rate (seasonally adjusted), January 2006 to December 2007 .................................................. 20
  Figure 2.3. Monthly Unemployment Insurance Claims, January 2006 to December 2007 ............................................................ 21
  Table 2.1: Per Capita Personal Income, 2005 (current dollars) .................. 22
  Figure 2.4. Tennessee Sales Tax Collections: Building Materials and Home Furnishings, January 2006 to October 2007 .......................... 23
  Figure 2.5. Tennessee Realty Transfer and Mortgage Tax Collections .......... 24
  Figure 2.6. Single-Family Building Permits, Tennessee Metropolitan Statistical Areas: March 2001 to November 2007 ................................... 25
  Figure 2.7. Tennessee Job Growth by Sector, 2008 and 2009 ..................... 26
  Table 2.2: Selected U.S. and Tennessee Economic Indicators, Seasonally Adjusted ................................................................. 27
  Figure 2.8. Leading Tennessee Commodities for Cash Receipts, 2006 ........... 30

Chapter 3: The Tennessee Economy: Long-Term Outlook .. 37
  Figure 3.1: Total Nonfarm Employment Growth, U.S. and Southeastern States: 1997 to 2007 ................................................................. 38
  Figure 3.2. Annual Private Employment Growth: 2000 to 2006 .................. 39
  Figure 3.3. Population Growth: 2000 to 2006 ........................................ 39
  Figure 3.4. Percentage Change in Manufacturing Employment: 1997 to 2006 .......................... 40
  Figure 3.5. Percentage Change in Number of Manufacturing Establishments: 1998 to 2005 ............................................................. 40
  Figure 3.6: Per Capita Personal Income, U.S. and Southeastern States: 1990, 2000, and 2006 ................................................................. 40
  Figure 3.7: Labor Force Participation Rate, U.S. and Tennessee: 1990 to 2017 .... 44
  Figure 3.8: U.S. Labor Force Growth by Gender ...................................... 45
  Figure 3.9: U.S. Labor Force Growth by Race and Ethnicity .................... 46
Figure 3.10: Educational Attainment of the U.S. Hispanic Population Aged 18 Years and Older: 2007 ................................................................. 46
Figure 3.11: Educational Attainment of Tennessee’s Immigrant Population by Place of Nativity: 2000 ................................................................. 48
Figure 3.12: Perceived Changes in the Quality of the Tennessee Workforce over the Last 10 Years ............................................................. 51
Figure 3.13: Perceived Changes in the Quality of the Tennessee Workforce over the Last 10 Years by Firm Location ........................................ 51
Figure 3.14: Expectations of the Future Tennessee Workforce ............................................................. 52
Figure 3.15: Preparedness of the Tennessee Workforce ............................................................................ 52
Table 3.3: Workforce Qualities Valued by Tennessee Businesses for Future Success ............................................................................ 53
Figure 3.16: Budget Reallocation Preferences ............................................................................... 54
Table 3.4: Grades Given to Tennessee Public K-12 Schools by Category ........................................ 54
Table 3.5: Projected Growth in Tennessee Occupations: 2004 to 2014 .................................................. 56

Chapter 4: Policy Watch .................................................................................................................. 57
Figure 4a.1: Welfare Programs History ...................................................................................... 59
Figure 4a.2: Tennessee Welfare Timeline ..................................................................................... 60
Table 4a.1: How Certain Educational Activities Count in the New Work Activities Definitions ...................................................................................... 61
Table 4a.2a: “Core” Activities .................................................................................................... 62
Table 4a.2b: “Non-Core” Activities ............................................................................................. 63
Figure 4a.3: Families First Contractor Zones ................................................................................ 65
Figure 4b.1: Percentage of Higher Education Graduates Working in Tennessee ......................... 71
Figure 4b.2: In-State and Out-of-State Student Participation in the Tennessee Labor Market ...................................................................................... 72
Figure 4b.3: Distribution of Degrees Awarded ............................................................................. 73
Table 4b.1: Average Annual Wages by Select Degrees .................................................................... 73
Figure 4b.4: Workforce Participation by Degree Type ..................................................................... 74
Figure 4b.5: Average Annual Wages for All Full-time Workers ..................................................... 74
Figure 4b.6: Average Annual Wages by Select Degrees .................................................................... 75
Figure 4b.7: Trend in Graduates Working in Tennessee ................................................................. 76
Figure 4b.8: Trend in Graduates Working in Tennessee: Associate’s Degrees ................................. 77
Figure 4b.9: Trend in Graduates Working in Tennessee: Bachelor’s Degrees ................................. 78
Table 4b.2: Wage CAGRs for Graduates of Tennessee Public Institutions ........................................ 79
Figure 4b.10: Trend in Wages for Graduates Working in Tennessee ................................................ 80
Figure 4b.11: Trend in Wages for Graduates Working in Tennessee: Associate’s Degrees .............. 80
Figure 4b.12: Trend in Wages for Graduates Working in Tennessee: Bachelor’s Degrees .............. 81
Figure 4b.13: Trend in Wages for Graduates Working in Tennessee: Professional Degrees ............... 81
Table 4b.3: Trend in Graduates Working in Tennessee: Bachelor’s Degrees .................................... 83
Table 4b.4: Trend in Graduates’ Wages: Bachelor’s Degrees ......................................................... 85
3.1. Introduction

Previous chapters have considered the short-term outlook for the national and state economies. This chapter takes a longer-term perspective by considering historical trends dating back to the 1990s and presenting projections of the economic outlook through 2017. Highlighted in the discussion that follows are labor force trends and an assessment of public education and workforce quality by Tennessee business leaders. Labor force trends receive focused attention since they have an important bearing on economy-wide growth. Labor force growth in Tennessee is expected to slow after 2010 as a result of lower fertility rates and the retirement of the Baby Boom population. This will slow overall rates of economic growth for the state and the nation. Education is highlighted because of its importance to the path of economic development and its impact on quality of life.
3.2 Long-Term Historical Trends

Employment Trends

Job growth in Tennessee between 1997 and 2007 lagged both the national and southeastern state averages as shown in Figure 3.1. The state saw jobs grow 8.6 percent over this period of time compared to 12.4 percent growth for the national economy. Florida’s job growth has been rather spectacular, coming in at nearly 27 percent, more than twice the pace of job growth for the nation. Louisiana is at the bottom with 3.6 percent growth, a legacy of Hurricane Katrina. The pattern across states is similar for the more recent 2000-2007 time window, with Tennessee trailing the nation and placing seventh among the southeastern states.

Figure 3.2 shows county-level job growth across Tennessee for 2000 to 2006. Forty-nine counties experienced job losses over this period of time. Bledsoe, Giles, Lauderdale, Lawrence, Marshall, Morgan and Pickett counties all endured jobs losses in excess of 20 percent, led by a 45.1 percent setback in Bledsoe County. On the other hand, 20 counties enjoyed job gains greater than 10 percent between 2000 and 2006. Cheatham, De Kalb and Williamson counties had the strongest rates of job growth, in each case in excess of 30 percent. De Kalb County led the state with 39.1 percent job growth.

Job growth and population growth tend to go hand in hand. Between 2000 and 2006, the state’s population grew more slowly than the nation (see below), but ahead of the overall pace of job growth in the state. Figure 3.3 illustrates the pattern of population growth across Tennessee counties between 2000 and 2006. It is striking that 17 counties experienced a net outflow of people during this period of time. While there are exceptions, many of the counties that lost population between 2000 and 2006 also lost jobs. In many instances the population losses are quite modest, as with Obion, Polk, Giles, Jackson, Houston and Wayne counties where the population losses were less than 1 percent. The population drain was most significant in Lake and Weakley counties where the losses totaled 6.9 percent and 4.4 percent.

Figure 3.1: Total Nonfarm Employment Growth, U.S. and Southeastern States: 1997 to 2007

3.2 Long-Term Historical Trends, continued

Manufacturing has been a primary source of job losses across the state and the nation, with 1998 being the last year either economy added a net new job in the industrial sector. Figure 3.4 puts the situation in perspective for Tennessee counties using data drawn from the U.S. Census Bureau’s County Business Patterns series. In some instances the manufacturing sector job losses are staggering, as with Polk, Bledsoe, Roane and Morgan counties where the setbacks have exceeded 70 percent. It is equally striking that 21 counties were able to engineer job gains and fight the overall pattern of job decay.

While employment in manufacturing is contracting, so too is the number of manufacturing plants as illustrated in Figure 3.5. Almost all sectors of manufacturing have seen plant contraction, with the largest losses in apparel and textile mills. Lake County, which had a small number of industrial facilities, saw all of these leave the county between 1998 and 2005. Many other counties shed a significant number of establishments over the same window of time. But like
3.2 Long-Term Historical Trends, continued

the employment situation discussed immediately above, a good number of counties—24 in total—were able to support net gains in the number of manufacturing facilities. A comparison between Figures 3.4 and 3.5 shows that there is not always a direct correspondence between changes in the number of plants and changes in employment.

**State Gross Domestic Product and Per Capita Personal Income**

The most recent data on inflation-adjusted state gross domestic product (SGDP) are for 2005 when growth tallied 2.8 percent. Manufacturing jobs fell 0.7 percent in 2005 implying decent gains in average worker productivity. Projections for 2006 and 2007 indicate SGDP growth of 3.7 percent and 3.3 percent.

Personal income consists of income from all sources, including wages and salaries, proprietors’ income, rents, interest, dividends and transfer payments (including social security and welfare payments). Per capita income is a good proxy measure of quality of life since it captures the average ability to purchase goods and services from the market. Tennessee and most other states within the southeast have long lagged

*continued on page 42*
3.2 Long-Term Historical Trends, continued

Volatility

The national economy is flirting with a recession and the Federal Reserve has moved its policy focus away from containing inflation to ensuring stronger economic growth via reductions in the Federal Funds rate. While economic growth is slowing, some may be surprised to know that the boom and bust pattern of the business cycle has become much less pronounced in the last 20 years. This is true of the U.S. as well as the broader global economy.

The recession of the early 1980s was the most serious economic contraction dating back to the Great Depression. The more muted swings in the economy since that time can be attributed to a variety of factors, including more careful government interference in the economy by both fiscal and monetary authorities. This new period has been referred to as the Great Moderation.

The following two figures illustrate the nature of this moderation of market activity. The first shows the dampened volatility of market output; i.e., GDP, in the aftermath of the recovery from the recession of the early 1980s. While swings in GDP have continued, the swings are much more modest than in the pre-1980s period. The second figure shows more dramatic stabilization of inflation for the national economy after 1980. Like GDP, there continues to be up and down movement across time, but inflation has shown a significant degree of stabilization.

What is the source of reduced macroeconomic volatility? There are a number of explanations. First are improvements in the structure and timing of monetary and fiscal policies, including an increased focus of monetary policy on combating inflation. Second is the liberation of markets generally, but in particular financial markets. Improvements in technology also deserve credit, as businesses—especially those in manufacturing—can now better manage their inventories and avoid undo increases that might otherwise lead to layoffs. Finally, there has been a run of good luck as the economy has been able to avoid significant adverse shocks like the oil crisis of the late 1970s. But it is not yet time to write an obituary for the business cycle.

the nation in per capita personal income. A primary explanation is relatively lower levels of educational attainment among the states within the region.

Per capita personal income figures are illustrated in Figure 3.6 for the southeastern states and the U.S. as a whole for 1990, 2000 and 2006. Tennessee is now placed 4\textsuperscript{th} among the states shown, moving up one notch from 2000 by overtaking neighboring Georgia. Per capita income in Tennessee was 88.4 percent of the national average in 2006, compared to 87.8 percent in 2000 and 85.7 percent in 1990. Mississippi continues to trail all southeastern states with 2006 per capita income of $26,908, while Virginia continues to hold the top spot with income averaging $39,564.

### Population and Labor Force

Population growth rates reflect the complex dynamics of human biology and behavior, and market forces. Fertility and death rates are important to population changes, but these rates tend to be quite stable over relatively short periods of time. Interstate migration can have a significant bearing on net changes in a state’s population, both in the short run and the long run. (A good example is the outflow of population from Louisiana in response to the devastation caused by Hurricane Katrina.) Migration patterns are heavily influenced by the relative attractiveness of a place to live and work. Overall population growth rates in turn have an important bearing on economic growth since the size of the population affects the size of the labor force that businesses can draw upon for support. Population growth rates for the state and the nation are expected to slow over time due to lower fertility rates.

Slower population growth coupled with the retirement of the Baby Boom generation will translate into slower rates of growth in the labor force and thus lower rates of economy-wide growth by the end of the long-term forecast period (2017).

Slower aggregate economic growth is not a problem in and of itself. For example, per capita income can still grow at rates that support improvements in the quality

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**Figure 3.6: Per Capita Personal Income, U.S. and Southeastern States: 1990, 2000, and 2006**

<table>
<thead>
<tr>
<th>State</th>
<th>1990</th>
<th>2000</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA</td>
<td>$39,564</td>
<td>$36,665</td>
<td>$36,665</td>
</tr>
<tr>
<td>FL</td>
<td>$32,338</td>
<td>$32,305</td>
<td>$32,025</td>
</tr>
<tr>
<td>U.S.</td>
<td>$31,369</td>
<td>$30,841</td>
<td>$29,719</td>
</tr>
<tr>
<td>NC</td>
<td>$29,444</td>
<td>$28,688</td>
<td>$28,067</td>
</tr>
<tr>
<td>TN</td>
<td>$29,444</td>
<td>$28,688</td>
<td>$28,067</td>
</tr>
<tr>
<td>GA</td>
<td>$28,444</td>
<td>$28,067</td>
<td>$26,908</td>
</tr>
</tbody>
</table>

Source: Bureau of Economic Analysis.

<table>
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<td></td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
</tr>
<tr>
<td></td>
<td>Percentage</td>
<td>Percentage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>267,783,607</td>
<td>301,621,157</td>
<td>335,804,546</td>
<td>33,837,550 (12.6%)</td>
<td>34,183,389 (11.3%)</td>
</tr>
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<td>Alabama</td>
<td>4,320,281</td>
<td>4,627,851</td>
<td>4,728,915</td>
<td>307,570 (7.1%)</td>
<td>101,064 (2.2%)</td>
</tr>
<tr>
<td>Arkansas</td>
<td>2,524,007</td>
<td>2,834,797</td>
<td>3,060,219</td>
<td>310,790 (12.3%)</td>
<td>225,422 (8.0%)</td>
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<tr>
<td>Florida</td>
<td>14,683,350</td>
<td>18,251,243</td>
<td>23,406,525</td>
<td>3,567,893 (24.3%)</td>
<td>5,155,282 (28.2%)</td>
</tr>
<tr>
<td>Georgia</td>
<td>7,486,094</td>
<td>9,544,750</td>
<td>10,843,753</td>
<td>2,058,666 (27.5%)</td>
<td>1,299,003 (13.6%)</td>
</tr>
<tr>
<td>Kentucky</td>
<td>3,907,816</td>
<td>4,241,474</td>
<td>4,424,431</td>
<td>333,658 (8.5%)</td>
<td>182,957 (4.3%)</td>
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<tr>
<td>Louisiana</td>
<td>4,351,390</td>
<td>4,793,204</td>
<td>4,719,160</td>
<td>-74,044 (-1.6%)</td>
<td>425,956 (9.2%)</td>
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<td>Mississippi</td>
<td>2,731,826</td>
<td>2,918,785</td>
<td>3,044,812</td>
<td>166,027 (5.8%)</td>
<td>126,027 (4.3%)</td>
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<td>North Carolina</td>
<td>7,428,672</td>
<td>9,061,032</td>
<td>10,709,289</td>
<td>1,632,360 (22.0%)</td>
<td>1,648,257 (18.2%)</td>
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<tr>
<td>South Carolina</td>
<td>3,790,066</td>
<td>4,407,709</td>
<td>4,822,577</td>
<td>617,868 (16.3%)</td>
<td>414,868 (9.4%)</td>
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<tr>
<td>Tennessee</td>
<td>5,378,433</td>
<td>6,156,719</td>
<td>6,780,670</td>
<td>778,256 (14.5%)</td>
<td>623,951 (10.1%)</td>
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<td>Virginia</td>
<td>6,732,878</td>
<td>7,712,091</td>
<td>8,917,395</td>
<td>979,213 (14.5%)</td>
<td>1,205,304 (15.6%)</td>
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<tr>
<td>West Virginia</td>
<td>1,815,588</td>
<td>1,812,035</td>
<td>1,801,112</td>
<td>-3,553 (-0.2%)</td>
<td>-10,923 (-0.6%)</td>
</tr>
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*Source: U.S. Census Bureau.*


<table>
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<tr>
<th>Age Group</th>
<th>1986-Level</th>
<th>1996-Level</th>
<th>2006-Level</th>
<th>2016-Level</th>
<th>Change</th>
<th>Change-Percentage</th>
<th>Change-Annual growth rate (%)</th>
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<td>16 to 19 yrs</td>
<td>7,926</td>
<td>7,806</td>
<td>7,281</td>
<td>5,896</td>
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<td>-525</td>
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<td>20 to 24 yrs</td>
<td>15,441</td>
<td>13,377</td>
<td>15,113</td>
<td>14,955</td>
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<td>25 to 34 yrs</td>
<td>34,591</td>
<td>32,573</td>
<td>37,289</td>
<td>4,716</td>
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<td>35 to 44 yrs</td>
<td>27,232</td>
<td>35,848</td>
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<td>45 to 54 yrs</td>
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<td>35,146</td>
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<td>8,749</td>
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<td>55 to 64 yrs</td>
<td>11,894</td>
<td>19,884</td>
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<td>65 to 74 yrs</td>
<td>2,594</td>
<td>3,194</td>
<td>4,404</td>
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<td>600</td>
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<td>75 yrs and older</td>
<td>417</td>
<td>634</td>
<td>1,080</td>
<td>1,990</td>
<td>217</td>
<td>446</td>
<td>910</td>
</tr>
</tbody>
</table>

*Source: Bureau of Labor Statistics.*
of life even if overall personal income grows at more modest rates. But some secondary problems are expected to emerge over the course of the next decade as population and labor force growth rates slow. One problem, discussed in various parts of this chapter, is that the retirement of large numbers of individuals from the Baby Boom generation will mean the loss of an enormous pool of skilled labor. (The Baby Boom working population is estimated to be 77 million.) This will occur at the same time that employers increase their demand for better skilled workers to enable them to compete in the global economy. Relatively high dropout rates, low educational attainment rates and rapid growth in a largely unskilled Hispanic population will aggravate the difficulty employers in Tennessee will have in recruiting and retaining skilled workers.

As shown in Table 3.1, the population of the U.S. is projected to increase from 301 million in 2007 to 335 million in 2020, an increase of 11.3 percent. The shorter historical window of 1997–2007 produced a 12.6 percent increase in the nation’s population. Tennessee will record a 10.1 percent change in population between 1997 and 2020, which is noticeably slower than the 14.5 percent change in population between 1997 and 2007. Tennessee places 5th among the southeastern states in terms of anticipated population growth by 2020, trailing Florida, North Carolina, Virginia and Georgia. The only southeastern state expected to lose population is West Virginia.

The labor force participation rate is the share of the adult non-institutional population that is either working, or unemployed and actively seeking employment. The nation’s labor force participation rate is expected to decline to 62.9 percent in 2017 from 64.4 percent in 2007 (see Figure 3.7). The labor force participation rate in Tennessee is expected to follow the national trend, falling from 63.5 percent in 2007 to 63.0 percent in 2017. Slower labor force growth will mean slower job growth for both the state and the nation (see the forecast discussion below). Employers will be forced to incur high costs in recruiting and training younger workers as Baby Boomers retire. Expect employers to create novel incentives to help keep aging workers on the job.

### Figure 3.7: Labor Force Participation Rate, U.S. and Tennessee: 1990 to 2017

![Labor Force Participation Rate Graph](image-url)

Source: Global Insight, Inc. and CBER-UT.
3.2 Long-Term Historical Trends, continued

Table 3.2 shows detail on how the workforce is expected to evolve by 2016, including some historical figures for perspective. Between 2006 and 2016, the projected number of individuals in the civilian labor force in the 16 to 19, 20 to 24, and 35 to 64 age groups will decline. The highest rate of decline is expected to occur in the 16 to 19 age group, with a drop of 19 percent, or about 2.1 percent on compound annual basis. At the same time, the number of people in the labor force in the 65 and older groups is expected to increase sharply. From 2006 to 2016, the number of people in the labor force in the 65 to 74 age group will increase by 83.4 percent, while the number in the 75 years and older age group is expected to see a 84.3 percent increase.

Women represent less than one-half of the market workforce, but they have had stronger labor force growth rates than their male counterparts as shown in Figure 3.8. This general pattern will not change in the years ahead, though growth rates for both men and women will slow. Women now have higher labor force participation rates than men. The labor force participation rate of men is projected to grow at a compound annual rate of 0.9 percent versus 1.0 percent for women between 2006 and 2016, yielding cumulative growth rates under 10 percent.

The Hispanic population will play a key role in the economy during the next decade. From 2006 to 2016, the Hispanic population group in the U.S. civilian labor force will grow by 29.9 percent. On the other hand, the black population group will increase by 16.2 percent and the white population group will increase by 5.5 percent. (See Figure 3.9.)

With educational attainment levels drifting up and employers demanding more skilled workers, general workforce education levels should rise over the next ten years. Many “green” workers with higher levels of educational attainment will be replacing Baby Boomers who possess significant on-the-job skills. Immigrants are expected to play an important role in replacing

continued on page 48
3.2 Long-Term Historical Trends, continued

Figure 3.9: U.S. Labor Force Growth by Race and Ethnicity

![Bar chart showing labor force growth by race and ethnicity for different time periods.]


Figure 3.10: Educational Attainment of the U.S. Hispanic Population Aged 18 Years & Older: 2007

![Pie chart showing educational attainment levels for the U.S. Hispanic population.]

Source: U.S. Census Bureau.
3.2 Long-Term Historical Trends, continued

Social Security

The social security program is a “pay-as-you-go” retirement system. Workers and their employers contribute taxes that are deposited into a trust fund to support payments to retirees. Workers pay a 6.2 percent tax, along with their employers, yielding a total tax of 12.4 percent on earnings. Income subject to Social Security tax is capped at $94,200. Funding Social Security payments for future retirees has received considerable attention due to a fundamental gap that will emerge between current workers contributing to the program and retirees drawing their annuity payments. In the near term this is not a problem because the Social Security system has developed a large trust fund balance. But these trust fund balances have been invested in government securities, and retiring the securities will require higher taxes, lower benefits or some combination of the two. There is no painless way out of this problem.

Social Security is important to most American households. An estimated 163 million workers, or 96 percent of all workers, are currently covered under Social Security. At the same time, 52 percent of the workforce has no private pension coverage and 31 percent of the workforce has no savings set aside specifically for retirement.

One way of looking at the funding dilemma is to consider the number of workers who are contributing Social Security payments to fund annuity payments for the stock of retirees. In 1955, there were 8.6 workers supporting each retiree, but in 2007 the ratio had slipped to 3.3 workers per beneficiary. Current projections have the ratio of workers to retirees decreasing further until it reaches 2.1 workers per beneficiary in 2032 and 1.8 workers per beneficiary in 2080. Aggravating the woes of Social Security has been the increased life expectancy of the population which extends the period of annuity payouts.


### Number of Workers per Social Security Beneficiary

3.2 Long-Term Historical Trends, continued

upcoming retirees. However the growing number of immigrants will not be enough to replace the retiring Baby Boomers. Moreover, many of these immigrants have relatively low levels of educational attainment.

Nationwide, Hispanics represent the fastest growing population group and nationally represent about 13 percent of the entire U.S. population. The latest U.S. Bureau of the Census figures that show Tennessee’s Hispanic population has increased by 35 percent since 2000 and now accounts for almost 3 percent of the state’s population. Nationally, only 11.1 percent of the Hispanic population group has a bachelor’s degree or higher (see Figure 3.10). To put these figures in perspective, more than half of Asians 25 years and older hold at least a bachelor’s degree (52 percent), compared with 32 percent of non-Hispanic whites, and 19 percent of blacks.

Figure 3.11 sheds light on the educational attainment of the immigrant population in Tennessee based on data for 2000. Native Tennesseans trail other U.S. states, as well as immigrants from the Philippines and India, in both the share of adults with a high school degree and advanced degrees. Native-born Tennesseans lead Chinese immigrants in the state in terms of a high school education, but Chinese immigrants tend to have more advanced degrees. Immigrants from Mexico who live in Tennessee tend to have very low levels of attainment, similar to their counterparts in other states as shown above.

Figure 3.11: Educational Attainment of Tennessee’s Immigrant Population by Place of Nativity: 2000

Native-born Tennesseans: 80.5% High School Education or Higher
8.7% Master’s, Professional, or Doctorate Degree

Source: U.S. Census Bureau, Census 2000.
3.3 Long-Term Economic Outlook

The long-term outlook presented below is a trend forecast of economic conditions that are expected to prevail over the course of the next ten years. As is typical of a trend forecast, there are no business cycles built into the outlook beyond the current slowdown and its anticipated rebound by 2009. Long-term economic performance is affected heavily by growth in the population and labor force, as was discussed above. Since the labor force is expected to grow more slowly, especially in 2012 and beyond, broad measures of economic growth for the state will also slow. Other key factors affecting long-term economic performance include investments in private production capacity including buildings, equipment and computer technology; investments in human capital or education; and investments in public infrastructure like roads and highways.

The discussion of the long-term outlook below is broken up into two broad sections. First is an examination of a survey that was administered to businesses in Tennessee regarding their attitudes toward education. The issue of education is important because of the way education affects worker productivity, worker earnings and overall economic performance. The final major section of the chapter presents the economic forecast through 2017.

Business Leaders’ Attitudes Toward Education in Tennessee

The long-term outlook for the state and the nation points to much slower growth in the labor force and a potentially serious shortage of skilled workers in the years ahead, as is discussed above. These workforce changes are anticipated because of fundamental demographic shifts including the retirement of large numbers of workers from the Baby Boom generation. Slower growth in the workforce will translate into slower rates of economy-wide growth, while a shortage of skilled workers will mean further outsourcing of jobs, either abroad or to domestic locations where there are greater numbers of skilled workers. Many employers in Tennessee today have difficulty finding and retaining skilled workers. The long-term outlook suggests that this problem will become more acute in the next ten years which could hamper the state’s path of economic development.

In 2007 the Center for Business and Economic Research administered a survey to businesses that have a presence in Tennessee to assess their attitudes toward education and the quality of the workforce. The survey was administered electronically with the assistance of the Tennessee Chamber of Commerce and Industry and yielded 618 completed surveys. The survey provides an invaluable assessment of how Tennessee business leaders feel about the quality of public education, the role education plays in business competitiveness and skill levels of the workforce.

Comparing today’s workforce to the workforce of 1997, 42.4 percent of the businesses said the quality of the workforce had stayed the same, while 30.4 percent said quality had declined and the remaining 27.1 percent believed workforce quality had increased. If one believes that improvements in the workforce are necessary to enable businesses to compete in the modern global market place, these responses are not encouraging. Over 73 percent of businesses surveyed said that a skilled workforce was “important” or “very important” to their competitiveness, while 73.5 percent of the respondents thought investments in education and a skilled workforce were “important” or “very important” to their ability to compete in the global economy of the future.

Regardless of location, more firms said that the quality of the Tennessee workforce had stayed about the same over the last ten years than decreased or increased. However, more businesses located in metropolitan areas believe the quality of the workforce increased (30.8 percent)
than decreased (27.8 percent). Among firms located in the suburbs, 24.1 percent thought the quality of the workforce had increased, but 30.6 percent thought that it had decreased over the last ten years. This result was more pronounced in rural areas where only 19.5 percent of firms believed workforce quality increased and 36.9 percent thought it decreased.

Business leaders were asked to assess the educational attainment level of their current employees. The average business reported that more than one-half of their workers (nearly 57 percent) have only a high school diploma or GED. Over a third (38 percent) said their workers have at least a four-year college degree. As discussed below in the outlook section, the most rapidly growing occupations in Tennessee and in the nation require some form of post-secondary education. The most rapidly declining occupations require only a high school diploma or GED.

Several questions on the survey dealt with what Tennessee business leaders perceive the quality of the future Tennessee workforce to be. Most respondents expressed concerns regarding the preparedness of the state’s future workforce by indicating that it will be difficult to find qualified workers. About two-thirds (66.2 percent) think it will be “much harder” or “harder” to find qualified workers in Tennessee’s workforce over the next decade. Only a scant 9.9 percent of respondents said they expect the challenge of finding qualified Tennessee workers will be “easier” or “much easier.” That leaves 23.9 percent who predict hiring challenges will be “about the same” as they are currently.

Profile of Business Survey Respondents

The survey respondents come from a diverse cross section of Tennessee businesses. Single-location enterprises accounted for 54.2 percent of the business responses, while the remaining 45.8 percent were multiple-location enterprises. Some firms were in their infancy, while at least one had been in operation 200 years. The typical respondent firm averaged about 32 years in operation. The average respondent employed 448 people, while the median firm had only 29 employees, indicating the inclusion of a small number of very large employers in the overall survey.

Only 25.0 percent of respondents were located in a rural area of the state, while the majority of firms were located in a metropolitan area (56.8 percent). The remaining respondents reported their Tennessee location to be suburban (18.2 percent). The location of the headquarters of the firms varied. Over half of the respondent firms (56.7 percent) were headquartered in Tennessee, 41.2 percent had headquarters in another state, and the remaining 2.1 percent were headquartered outside the U.S.

In terms of primary market regions, the respondents were quite diverse. Nearly 36 percent of respondents said that their primary market region was local (Tennessee only), 31.4 percent pursued a regional market, 22.8 percent a national market, and 10.2 percent an international market. The businesses surveyed also represented a relatively diverse group of industries. Nearly a fifth of the businesses (19.5 percent) were in financial activities, 19.7 percent were in manufacturing, and 15.3 percent were in professional and business services. The remaining firms were scattered across an array of industries including trade, transportation, utilities, and education and health.
3.3 Long-Term Economic Outlook, continued

Figure 3.15 illustrates business leaders’ assessment of the preparedness of the workforce by education level. In the eyes of the surveyed businesses, workers with more education are more adequately prepared for entry-level positions while workers with less education are more likely to be poorly prepared for an entry-level job. In particular, the vast majority of companies (about 91.0 percent) indicated that applicants with a bachelor’s degree were more adequately prepared for an entry-level job than individuals with a two-year college degree or a high school diploma. Nearly 60 percent deemed individuals with only a high school diploma or GED to be poorly prepared for an entry-level job.

Among smaller firms (those with 100 employees or less), 75.5 percent of the workforce with two-year vocational
3.3 Long-Term Economic Outlook, continued

or technical training was assessed as adequately prepared. For larger firms (those more than 100 employees), this number was 90.9 percent—significantly higher than the relatively smaller firms. Among small firms, 88.6 percent of the workforce with a four-year college degree was adequately prepared for an entry-level position. Among large firms, 95.7 percent of workers with a four-year degree were viewed as adequately prepared.

Table 3.3 shows the responses from firms when they were asked to identify the most important factors that would support their success in the future. (Note that firms could respond to more than one of the criteria.) About two-thirds of Tennessee business leaders value a high performance workforce as a key component to their future success. About 46 percent of respondents place value

Figure 3.14: Expectations of the Future Tennessee Workforce

![Bar chart showing the level of difficulty anticipated in finding qualified/educated Tennessee workers over the next 10 years.](chart)


Figure 3.15: Preparedness of the Tennessee Workforce

![Bar chart showing the preparedness of the Tennessee workforce.](chart)

in better customer service orientation, and about 29 percent believe new product innovation to be important for future success.

The survey also provides information on the training decisions that businesses make. The average amount spent per employee on training was $4,152 per year. Most respondents said they provide on-the-job training in the form of specialized technical training, supervisory training, and computer literacy training. Slightly over one third (33.7 percent) provide executive training, and 14.6 percent provide basic skills training. Many businesses also provide incentives to employees who acquire additional education. The incentives included tuition/fee reimbursements, salary increases, and paid leave to attend classes. Almost one-half of respondents indicated they had increased employee training in the past three years. This is likely a reflection of increased competitive pressures and the need to support a better-trained workforce.

Since the workforce of tomorrow will be a product of today’s schools, business leaders were asked to assess the quality of Tennessee’s public schools. Most (53.6 percent) graded the overall quality of Tennessee’s current k-12 public education system to be average (C). Less than one fifth of respondents graded Tennessee’s public school quality to be above average with an A (0.5 percent) or a B (17.3 percent). Over one quarter assessed the quality of Tennessee’s public school system to be below average with a D (25.2 percent) or an F (3.4 percent). When asked to compare Tennessee to the average state, most business leaders perceive the quality of the state’s public education system to be about the same (43.2 percent) or worse (41.7 percent).

Business leaders were also asked to assess the quality of specific aspects of public school education as summarized in Table 3.4. C grades were most common across the various areas. F grades were frequent in areas where schools may have less direct influence on student outcomes, including discipline/work ethic, initiative, leadership, and life skills. Critical thinking can be influenced by the home and community environment, as well as the classroom. Nearly one in five respondents gave public schools an F grade on this category. The arts and extracurricular activities also received a significant share of Fs, but the same category receives more As than any other surveyed category.

A significant share of respondents (nearly 65 percent) said that if they were able to reallocate the Tennessee State budget they would spend more on k-12 education

### Table 3.3. Workforce Qualities Valued by Tennessee Businesses for Future Success

<table>
<thead>
<tr>
<th>Workforce Quality</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-performance workforce</td>
<td>67.0%</td>
</tr>
<tr>
<td>Increased customer service orientation</td>
<td>46.3%</td>
</tr>
<tr>
<td>New product innovation</td>
<td>29.3%</td>
</tr>
<tr>
<td>Low cost producer status</td>
<td>18.3%</td>
</tr>
<tr>
<td>Sourcing products in global markets</td>
<td>6.0%</td>
</tr>
<tr>
<td>Supply chain integration with supplies</td>
<td>5.0%</td>
</tr>
<tr>
<td>Increasing sales outside the U.S.</td>
<td>4.1%</td>
</tr>
<tr>
<td>None of the above</td>
<td>10.8%</td>
</tr>
</tbody>
</table>

3.3 Long-Term Economic Outlook, continued

(see Figure 3.16). Only about 8 percent of respondents said they would provide tax relief. This suggest that the vast majority of businesses would rather Tennessee spend more on k-12 education than provide tax breaks across the state. While businesses certainly value relatively low taxes, they cannot compete on low taxes alone and must have access to a skilled workforce. Given the responses summarized in Table 3.4, it is highly unlikely that businesses would support spending the next dollar of tax revenue on education the way the last dollar was spent.

Figure 3.16: Budget Reallocation Preferences

Most business leaders would spend more on k-12 education if given the opportunity to reallocate the state budget

Table 3.4. Grades Given to Tennessee Public k-12 Schools by Category

<table>
<thead>
<tr>
<th>Category</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic skills</td>
<td>1.25%</td>
<td>20.00%</td>
<td>52.14%</td>
<td>24.46%</td>
<td>2.14%</td>
</tr>
<tr>
<td>Computer literacy</td>
<td>2.69%</td>
<td>30.52%</td>
<td>45.06%</td>
<td>19.57%</td>
<td>2.15%</td>
</tr>
<tr>
<td>Technical/vocational training</td>
<td>1.70%</td>
<td>25.38%</td>
<td>48.48%</td>
<td>20.64%</td>
<td>3.79%</td>
</tr>
<tr>
<td>College prep</td>
<td>1.99%</td>
<td>23.37%</td>
<td>47.46%</td>
<td>23.37%</td>
<td>3.80%</td>
</tr>
<tr>
<td>Providing highly qualified teachers</td>
<td>2.55%</td>
<td>23.72%</td>
<td>46.90%</td>
<td>20.07%</td>
<td>6.75%</td>
</tr>
<tr>
<td>Arts, extracurricular activities</td>
<td>3.20%</td>
<td>22.60%</td>
<td>36.16%</td>
<td>27.12%</td>
<td>10.92%</td>
</tr>
<tr>
<td>Discipline/work ethic</td>
<td>0.36%</td>
<td>9.66%</td>
<td>32.38%</td>
<td>40.61%</td>
<td>16.99%</td>
</tr>
<tr>
<td>Leadership</td>
<td>0.54%</td>
<td>11.01%</td>
<td>46.87%</td>
<td>32.13%</td>
<td>9.75%</td>
</tr>
<tr>
<td>Initiative</td>
<td>0.36%</td>
<td>9.27%</td>
<td>45.09%</td>
<td>34.55%</td>
<td>10.73%</td>
</tr>
<tr>
<td>Life skills</td>
<td>0.18%</td>
<td>13.18%</td>
<td>40.61%</td>
<td>36.28%</td>
<td>9.75%</td>
</tr>
<tr>
<td>Critical thinking</td>
<td>0.36%</td>
<td>7.93%</td>
<td>34.05%</td>
<td>39.28%</td>
<td>18.38%</td>
</tr>
</tbody>
</table>

3.4 Tennessee’s Economic Outlook

Labor Market Outlook

Nonfarm employment is projected to grow at a 1.1 percent compound annual growth rate (CAGR) between 2007 and 2017. Job growth rates will peak in 2010 and 2011 at 1.4 percent before slowing in the face of slower population and labor force growth. By 2017, nonfarm job growth is projected to slip below 1.0. Natural resources and mining, manufacturing and the federal government sectors will see employment losses by 2017, while all other broad sectors of the economy expand. The largest numerical job gains will be in trade, transportation and utilities (80,700 jobs), followed by education and health services (70,500 jobs) and leisure and hospitality services (53,200 jobs).

The state’s manufacturing sector accounted for 390,200 jobs in 2007, but by 2017 manufacturing employment will slip to 362,500, a loss of 27,700 positions. Employment in durable goods will stay about the same, while employment in nondurable goods will contract. All broad subsectors in nondurable goods manufacturing will suffer setbacks; within durable goods manufacturing, five broad subsectors will expand while five contract. The projected winners include wood products, nonmetallic minerals, fabricated metals, electrical equipment and appliances, and transportation equipment. It should be noted that these projections, while pointing to continued setbacks, are not as bad as the experience of the last ten years. In the short run the falling dollar is expected to help the state and national manufacturing sectors. Over the longer term it is greater investments in new technology and a more skilled workforce that will support a somewhat stronger climate in manufacturing.

Table 3.5 shows projections of rapidly growing and rapidly declining occupations for the state for the 2004–2014 period. There are two striking features of the data. First, the rapidly growing occupations pay about twice the average that is received in the declining occupations. Second, the jobs that are expected to see strong growth by 2014 typically require some form of post-secondary education, while none of the occupations that are expected to decline require any post-secondary education.

Growth in the civilian labor force in 2017 will be about one-half the rate of growth expected in 2010 and 2011. The state unemployment rate is projected to range between 4.9 percent and 5.0 percent after 2009. By 2017, the labor force participation rate will be one-half percentage point below the 63.5 percent rate that prevailed in 2007.

Income and Output

Tennessee nominal personal income should be up 4.8 percent (CAGR) between 2007 and 2017. Growth will slow some following a peak in 2010. Wage and salary income will slow from 2011 forward due to slower statewide job growth. Transfer payments, on the other hand, will grow at stronger rates beginning in 2011 as the pace of retirement picks up and social security payments increase.

Per capita income will not be affected by the slowdown in overall personal income growth since population growth will be slowing as well. Expect Tennessee per capita income to rise by 3.9 percent (CAGR) through 2017, compared to 4.0 percent for the U.S.

Projecting inflation-adjusted state GDP out to 2017 is problematic given that the most recent historical data point is 2005 and there are only 9 years of historical data. With this important caveat in mind, inflation-adjusted state GDP is expected to see peak growth of 3.5 percent in 2010, with growth then slowing to 2.4 percent by 2017.
Table 3.5. Projected Growth in Tennessee Occupations: 2004 to 2014

### Fastest-Projected Gains

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>Percent</td>
<td>Entry-level</td>
<td>Mean (All)</td>
</tr>
<tr>
<td>Network Systems &amp; Data Communications Analysts</td>
<td>2,680</td>
<td>4,410</td>
<td>1,730</td>
<td>64.6%</td>
<td>$16.75 $27.52</td>
</tr>
<tr>
<td>Court Reporters</td>
<td>70</td>
<td>110</td>
<td>40</td>
<td>57.1%</td>
<td>$9.88 $31.61</td>
</tr>
<tr>
<td>Computer Software Engineers, Systems Software</td>
<td>2,740</td>
<td>4,270</td>
<td>1,530</td>
<td>55.8%</td>
<td>$23.10 $32.43</td>
</tr>
<tr>
<td>Database Administrators</td>
<td>1,450</td>
<td>2,180</td>
<td>730</td>
<td>50.3%</td>
<td>$17.08 $28.55</td>
</tr>
<tr>
<td>Computer Software Engineers, Applications</td>
<td>3,090</td>
<td>4,640</td>
<td>1,550</td>
<td>50.2%</td>
<td>$20.53 $32.45</td>
</tr>
<tr>
<td>Conveyor Operators &amp; Tenders</td>
<td>2,570</td>
<td>3,800</td>
<td>1,230</td>
<td>47.9%</td>
<td>***</td>
</tr>
<tr>
<td>Medical Assistants</td>
<td>8,290</td>
<td>12,170</td>
<td>3,880</td>
<td>46.8%</td>
<td>$9.07 $11.38</td>
</tr>
<tr>
<td>Network &amp; Computer Systems Administrators</td>
<td>3,870</td>
<td>5,650</td>
<td>1,780</td>
<td>46.0%</td>
<td>$18.03 $27.62</td>
</tr>
<tr>
<td>Desktop Publishers</td>
<td>800</td>
<td>1,160</td>
<td>360</td>
<td>45.0%</td>
<td>$9.41 $13.78</td>
</tr>
<tr>
<td>Physician Assistants</td>
<td>600</td>
<td>870</td>
<td>270</td>
<td>45.0%</td>
<td>$20.56 $31.58</td>
</tr>
</tbody>
</table>

**Average** $16.05 $26.32

### Fastest-Projected Losses

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>Percent</td>
<td>Entry-level</td>
<td>Mean (All)</td>
</tr>
<tr>
<td>Railroad Brake, Signal, &amp; Switch Operators</td>
<td>590</td>
<td>340</td>
<td>-250</td>
<td>-42.4%</td>
<td>***</td>
</tr>
<tr>
<td>Textile Knitting &amp; Weaving Machine</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Moderate-term on-the-job training</td>
</tr>
<tr>
<td>Setters, Operators, &amp; Tenders</td>
<td>650</td>
<td>380</td>
<td>-270</td>
<td>-41.5%</td>
<td>$7.70 $10.54</td>
</tr>
<tr>
<td>Meter Readers, Utilities</td>
<td>1,480</td>
<td>930</td>
<td>-550</td>
<td>-37.2%</td>
<td>$9.17 $14.29</td>
</tr>
<tr>
<td>Textile Bleaching &amp; Dyeing Machine Operators</td>
<td>270</td>
<td>170</td>
<td>-100</td>
<td>-37.0%</td>
<td>$10.20 $13.33</td>
</tr>
<tr>
<td>Mail Clerks &amp; Mail Machine Operators (excl.</td>
<td>1,790</td>
<td>1,130</td>
<td>-660</td>
<td>-36.9%</td>
<td>$8.51 $11.82</td>
</tr>
<tr>
<td>Credit Authorizers, Checkers, &amp; Clerks</td>
<td>1,080</td>
<td>700</td>
<td>-380</td>
<td>-35.2%</td>
<td>$10.08 $16.31</td>
</tr>
<tr>
<td>File Clerks</td>
<td>3,700</td>
<td>2,430</td>
<td>-1,270</td>
<td>-34.3%</td>
<td>$7.43 $10.44</td>
</tr>
<tr>
<td>Furniture Finishers</td>
<td>810</td>
<td>550</td>
<td>-260</td>
<td>-32.1%</td>
<td>$8.86 $12.08</td>
</tr>
<tr>
<td>Telephone Operators</td>
<td>220</td>
<td>150</td>
<td>-70</td>
<td>-31.8%</td>
<td>***</td>
</tr>
<tr>
<td>Textile Winding, Twisting, &amp; Drawing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Short-term on-the-job training</td>
</tr>
<tr>
<td>Out Machine Setters, Operators, &amp; Tenders</td>
<td>1,890</td>
<td>1,330</td>
<td>-560</td>
<td>-29.6%</td>
<td>$6.60 $12.14</td>
</tr>
</tbody>
</table>

**Average** $8.82 $12.62

Source: Tennessee Department of Labor and Workforce Development.