

# Leveraging the Labor Force for Economic Growth

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Assessing the Nashville Economic Market Area's  
Readiness for Work after the Recession

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**Contents**

Executive Summary..... i  
    Workforce Supply ..... i  
    Workforce Demand..... iv  
    Targeted Industry Clusters..... v  
Introduction ..... 1  
About the Data..... 2  
Workforce Supply ..... 4  
    The Region’s People..... 4  
        Population ..... 4  
        Migration Patterns ..... 6  
        Age Structure ..... 8  
        Diversity/Ethnicity..... 9  
    The Region’s Workforce..... 10  
        Labor Force ..... 10  
        Labor Force Participation..... 11  
        Employment and Unemployment..... 11  
        Commuting..... 13  
Workforce Quality..... 14  
    Income ..... 14  
    Entrepreneurship ..... 15  
    Educational Attainment ..... 16  
Workforce Demand..... 18  
    Economic Structure..... 19  
    Detailed Industry Employment Trends and Projections ..... 21  
    Occupation Employment Trends and Projections ..... 23  
    Educational Requirements and Occupational Demand ..... 27  
    Synopsis of Occupational Trends by Employment Band..... 30  
    Evaluating Supply and Demand ..... 33  
Key Industry Clusters ..... 34  
    Health Care Services and Administration ..... 35

Information Technology and Management .....	39
Headquarters Operations .....	42
Finance and Shared Services .....	45
Creative Industries .....	49
Advanced Manufacturing.....	53
Distribution and Logistics.....	57
Hospitality .....	61
Construction.....	65
Industry Cluster Workforce Gap Analysis .....	69
Conclusions .....	70
Appendices.....	74

## Executive Summary

This report provides a follow-up to a 2008 study of the supply and demand for workers in the 10-county Nashville Economic Market Area. This 1.74 million-person region is Tennessee's primary economic engine. It has not, however, been immune from the effects of the worst recession since the Great Depression. The region's unemployment rate has more than doubled since 2004, leaving the region with approximately 80,000 unemployed residents. Finding work—for the currently unemployed and people just entering the workforce—will be a challenge as many of the region's traditional sources of employment, such as the manufacturing sector, no longer produce significant numbers of net new jobs. Securing employment in this challenging economic environment is difficult for everyone, but particularly so for those workers that lack any significant education, training or skills. Given this changing reality, workers must better prepare themselves for the jobs of tomorrow, employers must learn how to do more with less, and education and training providers must learn how to make their offerings more relevant. In order to successfully make these adjustments, employers, workers, educators and policymakers must have solid information on which to base their decisions. This report is intended to provide just this kind of information.

This study explores many of the same questions covered in the 2008 report, but given the current economic environment, these questions merit reconsideration. This analysis examines the region's current workforce, and identifies some potential areas where future worker demand is likely to emerge. It also considers the capacity of regional educational institutions to help meet the region's future demand for skilled and educated workers. Particular attention is given to several of the region's key industry clusters, which offer strong potential for creating workforce opportunities. The report draws upon not only a great number of secondary data sources, but it also reflects the results of analyzing qualitative data gathered from more than 250 companies participating in a survey and focus-group interviews. As a result, this research not only identifies the key trends facing the region's workforce, but also offers insights about the factors driving these changes and how they are expected to influence the region's workforce.

## Workforce Supply

Determining the supply of workers requires examining the region's people, the labor force, and the labor force's relative quality. The region's population provides the pool of workers, and factors such as the number of children, students, retirees or discouraged workers influence the extent to which people participate in the labor force. While many of the factors listed above indicate how many workers are available, few indicators measure their general quality and capacity. This report draws upon three main indicators—average earnings, self-employment and educational attainment.

### *The Region's People*

The region has added about 150,000 people since 2004. This represents an annual growth rate of 2.4 percent—a rate that exceeds both the state and nation's growth rate. During this period, all of the 10 counties in the region experienced an annual growth rate that was faster than the national rate of 0.9 percent. Davidson County accounts for 36.5 percent of the region's total population and remains the

central hub of the region, but its overall share continues to decline as growth in the surrounding counties, especially Williamson and Rutherford, exceeded Davidson's growth.

Migration is a critical workforce issue for most metropolitan areas striving to meet workforce demand. Data from the U.S. Internal Revenue Service reveal that, as in previous years, the Nashville region remains a net gainer of in-migrants. Between 2007 and 2008, the region gained a net 12,505 migrants from 6,723 new households. Davidson, Rutherford, Montgomery and Williamson counties were the most popular destinations for in-migrants. Davidson attracted 34,099 people, compared to 17,716 in Rutherford County, 16,044 in Montgomery County, and 13,248 in Williamson County. Nevertheless, Davidson County was a net loser of in-migrants, as many Davidson residents tended to move to neighboring suburban counties. A slight majority of the movers to the Nashville area came from out of state—58,000, compared to 55,000 who moved from within the state. Some of the leading origins from which new arrivals came to Nashville were the Atlanta, Knoxville, Los Angeles and Detroit metro areas.

The age of the region's population will also affect its future workforce potential. If more people of working age are leaving the workforce than entering, then the region will become more reliant on migration to close this gap. At present, 63 percent of the Nashville area's current population is of working age (20-64), and this figure is projected to decline to 59 percent by 2019 due to the anticipated retirement of the Baby Boomers. Moreover, the percentage of people aged 65 and older is projected to increase from 10 percent to 13 percent during the same time.

The region's ethnic composition is slightly more diverse than in the state as a whole. The region's white and African-American populations are growing, but not as quickly as its Hispanic and Asian populations. From 2004-2009, the Hispanic population grew 8.5 percent annually. This annual rate was somewhat faster than the state rate (8 percent annually), and much faster than the national rate (3.3 percent).

### *The Region's Workforce*

The size of the region's labor force provides an indication of economic strength. In 2009, the Nashville area's labor force was 860,639. This represents an annual increase of 1.6 percent since 2004. This annual growth rate was double the growth rate for the state of Tennessee during the same period (0.8 percent annually) and nearly double the U.S. rate over the same period (0.9 percent annually). Not surprisingly, Davidson County had the region's largest labor force, at 320,647, in 2009. Rutherford and Williamson counties have the Nashville area's fastest-growing labor forces. Davidson, Williamson and Rutherford counties comprise the area's largest employment centers, with a combined 73.7 percent of total employment in 2009. Almost 39 percent of the net new employment growth between 2004 and 2009 occurred in Williamson County. It should also be noted that the region has a relatively strong labor force participation rate of 68.3 percent. This is a slight decline from previous years, and this may be due to the aging population and a growing number of discouraged workers who have given up looking for work. This decline, however, may be offset by many workers staying in the labor force longer than expected due to the diminished size of their retirement accounts after substantial stock market price declines during the recent recession.

The recession has also reduced the number of employment opportunities available. The diminished number of employment opportunities is made plainly evident by the region's unemployment rate, which more than doubled from 4.5 percent in 2004 to 9.3 percent in 2009. This increased the number of unemployed workers from 35,783 in 2004 to 80,231 in 2009, for an additional 44,358 unemployed persons. The regional unemployment rate was on par with the U.S. rate in 2009, though still below the Tennessee rate. The rates were highest in Maury County (13.8 percent), Dickson (11 percent) and Robertson (10.3 percent) counties. Because of this job shortage, workers appear to be willing to travel farther to find work than in previous years. The region's commuting patterns show that there is more intra-county commuting than in years past, particularly between Nashville's suburban counties.

### *Workforce Quality*

Average income provides a rough measure for the value businesses place on workers, as it assumes that businesses will pay higher wages for relatively higher-skilled workers. According to the U.S. Bureau of Economic Analysis, average wage and salary income in the Nashville area was \$43,258 in 2008, higher than the state average but lower than the U.S. average. That said, growth in the region's average earnings continued to lag the nation between 1998 and 2008. The Nashville average wage was 95 percent of the U.S. average in 1998 and 2008. Davidson and Williamson counties were exceptions, but when adjusted for inflation, Maury County actually saw its average income decline between 1998 and 2008.

Self-employment is another particularly important aspect of the region's workforce. The region has 234,000 non-farm sole proprietors, representing a sizable proportion of the region's total job count. In fact, the proportion of the workforce that is self-employed has increased from 18.3 percent in 1998 to 22.7 percent in 2008. The proportion is now only slightly lower than the state's, but higher than the nation's. The largest numbers of sole proprietors are located in Davidson County, while Cheatham and Dickson counties have the largest proportion of all jobs held by sole proprietors. Most promising for the region, though, is that average proprietor incomes in the region are much higher and are growing much faster than either in the state or in the nation. This indicates that many of these proprietorships provide more than just supplementary income. As a result, these proprietors contribute significantly to the region's entrepreneurial strength, and many may become the region's expanding new companies.

Educational attainment is another commonly used measure of worker quality and can affect the region's capacity to take on more value-added activities. The Nashville area has a generally more educated population (age 25+) relative to the U.S. and Tennessee. Nearly 28 percent of adults have at least a bachelor's degree or higher, compared to 26.7 percent in the U.S. and 21.6 percent in Tennessee. Within the Nashville area, educational attainment varies widely, from a high of 48.1 percent of adults with a four-year degree in Williamson County to a low of 12.5 percent in Dickson County. The region also has relatively fewer adults with just a high school diploma or less than either the state or the nation. Educational attainment is an important consideration because it provides a clear indication of one's earning potential. Within the Nashville region, a person with a four-year degree will make, on average, almost \$1 million more than someone who has not completed high school over a 40-year career. High school graduates earn about \$320,000 more than drop-outs over that same time period, while university

degree holders earn \$660,000 more than those working in occupations that typically require only a high school diploma.

## Workforce Demand

In spite of the current recession, many businesses throughout the Nashville region have continued to hire workers. An employer workforce survey administered by the Nashville Area Chamber of Commerce early in 2010 found that 85 percent of businesses surveyed hired at least some workers in 2009; 28 percent hired more than 25 workers last year. Additionally, 57 percent of respondents had a current opening that they were looking to fill, with 23 percent having more than five openings to fill. As the region's economy recovers, more jobs will become available, which presumably will include more lasting and high-skilled jobs. However, understanding the kinds of jobs that will be created requires analyzing not only the region's economic structure, but also how the regional economy has changed and will likely change in the future.

At the broadest level, the largest workforce segments in the Nashville area are in trade, transportation and utilities and professional and business services. The employment projections show that services, in particular, will be important to the region's future employment growth. Service sectors such as professional and business services, education and health services and financial activities will be among the region's fastest-growing sectors between 2009 and 2019. The analysis of more detailed industries reflects many of these broad trends. Growth is projected in health-care-related industries such as specialty hospitals and doctor's offices, and business and financial services such as accounting and bookkeeping, management of companies and enterprises, management consulting services, and computer systems design and related services. Several of these latter industries are directly involved in the region's thriving health care administration activities. Industries projected to decline are most greatly affected by long-term systemic changes. For example, several manufacturing industries are projected to continue losing net employment, as are other declining and restructuring industries such as newspaper publishers, wired telecommunications carriers, and some agricultural activities. These employment declines typically result from increased productivity and occupational obsolescence due to the deployment of automation and technology or from outsourcing of key elements of the production process resulting from increased globalization.

Many of these industry trends are reflected in occupational trends and projections. Industries related to office administration, business, finance, and health care are expected to offer the most future employment opportunities. As a result, more people will be required to fill jobs in occupations such as registered and licensed practical nurses, managers and management analysts, accountants, and office supervisors. However, it is also important to note that jobs that pay above-average wages often require workers who have obtained postsecondary education or participated in longer-term job-related training as well as gained meaningful experience in a specialized career.

While these occupations are growing, many occupations—often associated with declining industries—are declining. For instance, as in many places, the region's manufacturing sector has experienced significant losses, and 11 of the 20 occupations projected to lose the most employment over the next 10

years are production-related jobs. This is mostly the outcome of either global firms outsourcing lower value-added jobs or technology making the production process less labor-intensive.

One of the common themes emerging from the data presented above is that workers in jobs requiring relatively lower levels of education and training, particularly those in declining industries, are at the greatest risk of being dislocated. Conversely, those occupations that pay the best wages are those that require some kind of postsecondary degree or long-term on-the-job training (OJT). Roughly half of all jobs in the Nashville region and the U.S. require only short- or moderate-term OJT. At the other end of the education spectrum, more than 20 percent of current jobs require a four-year degree or a graduate degree as a minimum educational requirement. Occupational projections show that an increasing share of work will require postsecondary education as new jobs demand greater skills.

### **Targeted Industry Clusters**

This report identifies several industry clusters that are likely to serve as the basis for future regional growth and workforce opportunities. Those clusters include health care services and administration, information technology and management, headquarters operations, finance and shared services, advanced manufacturing, distribution and logistics, hospitality, and construction. These clusters present a variety of workforce challenges. For instance, the competitiveness of Nashville-area headquarters operations, IT and financial services companies will depend on their ability to find and develop a continuous stream of highly educated workers. Other clusters, such as hospitality, rely more heavily on relatively lower-skilled workers. Those companies must find workers with a strong set of basic work and life skills who can help deliver high-quality services while minimizing worker turnover. The health-care cluster faces issues in recruiting and retaining highly skilled and lower-skilled talent, as this sector needs workers from every part of the skill continuum.

Data on green jobs are not yet available; however, it is clear from focus groups in this study that many of the jobs that will dominate this emerging economic activity are already in the labor market, but those jobs are likely to change – sometimes dramatically. For instance, area contractors seeking to compete for new opportunities will increasingly need to adapt to install solar energy systems in addition to traditional heating and cooling systems. Other area contractors competing for retrofitting and new construction projects will need to be up-to-date in their knowledge and skills related to purchasing and installing energy-efficient building products. Team assemblers in many more advanced manufacturing facilities will need to understand basic electronics to produce batteries or photovoltaic cells. Many more equipment sales professionals will need to learn more about energy usage and storage concepts as they develop technical knowledge about some of their green products. Architects and engineers seeking to compete will need to understand and be capable of implementing key energy-efficiency and conservation principles. Many workers engaged in these related occupations will need to adjust or upgrade their skills in response to key opportunities – and science, technology, engineering and math skills will be critical foundations.

Another theme emerging from the analysis of the targeted industry clusters is that many jobs are quickly changing. For example, even though the manufacturing sector is declining overall, there are still many workers engaged in occupations that offer relatively strong wages. These jobs, however, are not the

traditional manufacturing jobs of yesterday, which frequently required only limited education and simple OJT. Given greater use of technology and automation, many production-related jobs now require higher levels of technical skill and computer literacy. Within the health-care cluster, several employers indicated that since many nurses are now being asked to work more independently, they need additional skills related to management, problem-solving and IT competency. Within the construction industry, several of the employers that were interviewed noted that the industry could be in the early stages of a transformation. The implementation of lean construction techniques – including the introduction of tools like Building Information Modeling – could greatly reduce waiting time and increase efficiency in an industry that still constructs buildings in the same way it has for decades. As these industries transform, the workers will see their jobs change dramatically.

These examples all speak to the constantly changing nature of work, and it will be important for the education and training system to keep pace. There is a continuous need for people with technical certificates and two- and four-year degrees across industries. Almost all workers must engage in some form of lifelong learning in order to continuously renew and refresh their skills. This will not only come through on-the-job experiences and degree programs, but also through shorter, more targeted, and customized education and training programs. Increasingly, the quality of these educational experiences and the skills available are documented in the form of industry-recognized national certifications that are more closely aligned with formal education and training programs.

Ensuring that the region has a constantly evolving and deepening pool of talent requires input and effort from a wide variety of stakeholders. In order to successfully adapt, employers, workers, educators and policymakers must collaborate to build consensus on the resources required to ensure that this talent is readily available for all employers.

## Introduction

At the start of a new decade, the Nashville Economic Market Area<sup>1</sup> faces many new challenges in light of the worst recession since the Great Depression. As a result, the region must adjust to an environment in which many people are searching for jobs that currently may be difficult to find. Given this changing reality, workers must prepare themselves for the jobs that will likely become available as the economy recovers. Often, these jobs will not be the same as those that existed before the recession. Instead, employers are maximizing the productivity of their existing workforce and relying on fewer but more highly skilled employees. Likewise, the region's education and training providers must learn to adapt by ensuring that their offerings are more directly relevant to employers seeking adaptable, flexible workers. This report is intended to provide the information that can serve as the foundation for just this collaboration.

This report provides a follow-up to a 2008 study (*Labor Market Opportunities in the Nashville Economic Market Area*). The earlier report provided a detailed assessment of the region's current workforce and where future worker demand was likely to emerge. It also considered the capacity of regional educational institutions to help meet the region's future demand for skilled and educated workers. The report found that, overall, the Nashville Economic Market Area had a relatively strong and diverse economy. The region also possessed several unique strengths in areas such as music and entertainment, auto manufacturing, health-care administration, distribution and postsecondary education. While the region possessed the institutional infrastructure to meet the needs of these industries, its leaders also needed to ensure that the education and training programs offered closely aligned with industry needs. In addition, the 2008 report concluded that regional leaders must also help students and jobseekers become more aware of available opportunities in these industries.

Since 2007, the dramatically changed economic environment and local conditions merit revisiting those findings. This report explores many similar questions in light of significant economic shifts. It draws upon not only a large number of secondary data sources, but it also reflects the results of analyzing qualitative data gathered from more than 250 companies participating in a survey and focus-group interviews. As a result, this research not only identifies the key trends facing the region's workforce, but also offers insights about the factors driving these changes and how they are expected to influence the region's workforce.

The report begins by examining the region's population and its available workforce. It also characterizes the quality of the region's workforce in terms of its productivity, entrepreneurial capacity and educational attainment. It next seeks to identify the sources of current and future worker demand. In order to do this, the report considers the region's broad economic structure and identifies specific industries and occupations that have and are projected to either significantly grow or decline.

While these sections provide insight into many of the broad trends affecting the region, the subsequent section delves more deeply into the supply and demand for workers in several of targeted industry

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<sup>1</sup> The region is comprised of the 10 counties that comprise the Nashville Area Chamber of Commerce economic development service area. These counties include Cheatham, Davidson, Dickson, Maury, Montgomery, Robertson, Rutherford, Sumner, Williamson and Wilson.

clusters that provide significant workforce opportunities. These targeted clusters include: health care services and administration, information technology and management, headquarters operations, financial and shared services, creative industries, advanced manufacturing, distribution and logistics, hospitality, and construction. For each cluster, the report describes trends and projections within the key industries and occupations. Results from a survey and focus-group interviews inform these findings, adding important context. Moreover, for each target cluster, the report examines which postsecondary institutions are graduating students from relevant degree and certificate programs. Policy leaders can use this data to gauge the region's ability to produce an adequate supply of workers to meet industry demand. In some cases, it is clear that area institutions are not producing a sufficient number of new degree or certificate holders to meet local demand. Furthermore, this information will help regional leaders better understand Nashville's future workforce, the demand for workers, and the gaps and opportunities that require a policy response.

## About the Data

Before beginning the analysis, the data that inform this report merit some explanation. The report uses a wide variety of data sources to assess the region's supply and demand for workers. It should be noted that no one data source, nor one type of data, can tell the whole story of the region's labor market. Fortunately, multiple data sources are available to help paint a complete picture of the complex workforce issues facing the Nashville region. Analyzing the region's labor market supply involved pulling data that address the region's economic and demographic characteristics. In order to do this, this report uses data drawn from public data sources such as the U.S. Census Bureau, U.S. Internal Revenue Service, U.S. Bureau of Economic Analysis, the Tennessee Department of Labor and Workforce Development, and U.S. Bureau of Labor Statistics (BLS). Within this section, population forecasts and some demographics data were drawn from proprietary data estimates, including those generated by Economic Modeling Specialists, Inc. (EMSI), an Idaho-based firm that taps Census and BLS data to produce national population and employment estimates and projections.

The labor demand analysis includes a quantitative assessment of recent employment growth or decline as well as projections of future demand. These data are primarily drawn from EMSI, which provides past industry and occupational employment. It should be noted that the employment data provided here represent "complete" employment. Consequently, it includes not only workers covered by the unemployment insurance program (or "covered" employment, as reported by the Tennessee Department of Labor and Workforce Development and the BLS), but it also includes sole proprietorships<sup>2</sup>, farmers and government workers. These groups of workers are not always included in the state's unemployment insurance program.<sup>3</sup>

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<sup>2</sup> Most proprietors have no employees, but they are not precluded from having employees. However, by remaining a proprietor and not incorporating, the individual who owns the company is personally liable for all debts, may pay higher income taxes, and cannot currently deduct either health or life insurance from their personal income taxes.

<sup>3</sup> Unless otherwise described, employment estimates and projections were developed using an econometric model developed by EMSI. The model was developed to address the needs of community colleges, workforce development boards and economic development groups, using local economic data as a basis for more regionalized economic input-output analysis. The EMSI model has the flexibility to produce estimates and projections based on "covered employment and wages" (the BLS Quarterly Census of Employment & Wages definition for employment that relies on workers covered under the state unemployment insurance program) as well as "complete employment" (the BEA definition).

EMSI also provides projected employment trends. These projections of future employment are “best-guess” estimates based on both national and regional trends. Consequently, they present a likely scenario of what will happen if no major event significantly alters the region’s future. One of the ways to evaluate the region’s capacity to meet future needs is to examine the output of the region’s postsecondary educational institutions. These data are developed from the National Center for Employment Statistics’ Integrated Postsecondary Educational Data System, as aggregated by EMSI.

The secondary data that inform the analysis of the targeted workforce clusters are supplemented by two other important sources of information—an employer workforce survey and a series of focus-group interviews completed in spring 2010. The Nashville Area Chamber of Commerce, along with the region’s three Workforce Investment Boards, conducted the employer workforce survey as a way to solicit more input about the region’s workforce needs and opportunities. Businesses throughout the 10-county region were surveyed. The survey addressed topics such as hiring trends, pending retirements, difficult-to-fill positions, reasons for difficulty hiring and retaining workers, and training needs of businesses. Overall, 233 businesses responded to the survey. These businesses ranged from those employing under 10 workers to those employing more than 1,000 workers. Business across many industries were surveyed, including finance and shared services firms (44 respondents), manufacturing companies, (39 respondents), and health-care businesses (28 respondents). The survey insights were important complements to the trends shown in the industry cluster data.

The project team also conducted a series of focus-group interviews with representatives from the targeted workforce clusters. In total, more than 30 company representatives were interviewed. Combined, the interview and survey data serve two very important purposes for this project. First, they help to validate the quantitative research findings. Second, they offer important context in analyzing the quantitative analysis. As a result, these qualitative data elements allow the project team to better understand the priorities and challenges facing employers in each of the targeted clusters.

## Workforce Supply

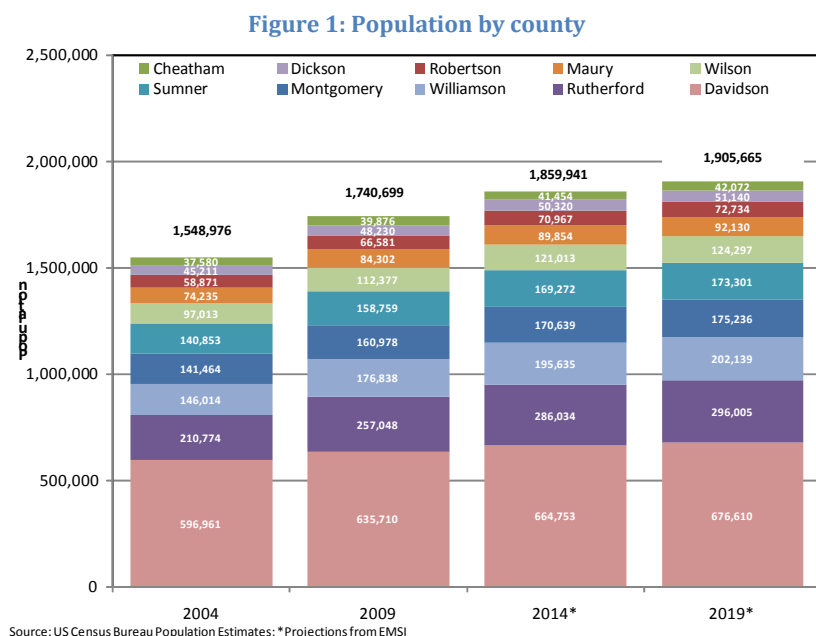
This section examines the region’s people, the labor force, and the labor force’s relative quality. The region’s population provides an available pool of workers, and the changing demographics of this pool over time can affect the quantity and quality of workers available to area companies. Certainly, a larger population alone can increase local consumer demand and more employment opportunities in some sectors. While population size influences the size of the labor force, it is not the only determining factor. Many other factors—such as the number of children, students, retirees or discouraged workers—can also influence labor force participation rates. The volume of unemployed workers itself remains very important as a core measure of the total number of persons available to work.

While many of the factors listed above indicate how many workers are available, few indicators measure their general quality and capacity. As a result, finding appropriate measures can prove challenging. For this analysis, we have selected three main indicators—average earnings, self-employment, and educational attainment. The selection of average earnings is based on the assumption that businesses will pay higher wages for relatively higher-skilled workers. Given the relatively high levels of entrepreneurship in the Nashville area and the emerging skills that are valuable in the workplace, we have also included the proportion of the population that is self-employed. Educational attainment is another commonly used measure of worker quality and can affect the region’s capacity to take on more value-added activities.

## The Region’s People

### Population

The Nashville Economic Market Area’s estimated 2009 population was 1.74 million, as shown in Figure 1. Davidson County accounts for the majority of the 10-county region’s population, with approximately 636,000 people. However, Davidson County’s relative share of the region’s population has diminished over time as several surrounding counties— notably Rutherford and Williamson counties—have emerged as significant drivers of regional growth. By way of illustration, Davidson County represented almost half of the region’s population in 1990, but by 2004, the county represented only 39 percent of the region’s total. Today, the county is now 37 percent of the region’s total population. By contrast,

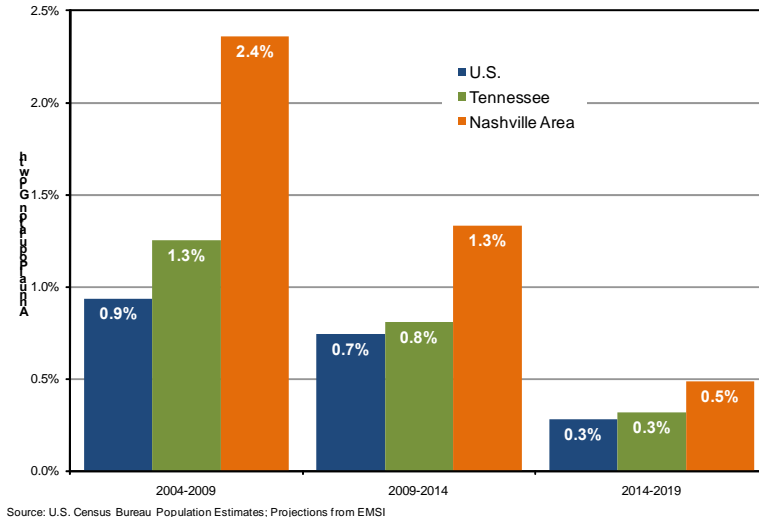


Rutherford and Williamson counties grew from 23 percent of the region’s population in 2004 to 25 percent in 2009.

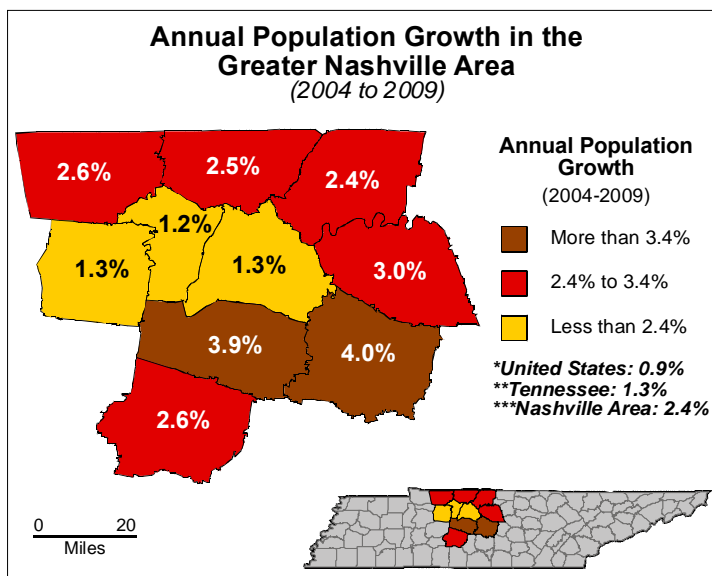
Looking forward, the Nashville Economic Market Area is projected to add approximately 165,000 new people between 2009 and 2019. This represents an annual growth rate of 0.9 percent. This growth would bring the 10-county region’s population to approximately 1.91 million people within the next decade. Growth is projected to occur throughout the region and between 2009 and 2014, every county is not only projected to grow, but they are

also expected to equal or exceed the projected Tennessee annual growth rate of 0.8 percent. Between 2009 and 2019, Rutherford and Williamson counties are projected to grow the fastest at 1.4 percent and 1.3 percent annually, followed by Montgomery County at 0.9 percent annual growth. Although Davidson County is projected to add the most net new people (40,900) between 2009 and 2019, relative to most other counties in the region it will grow at a slower rate of 0.6 percent annually – a rate that is still greater than the statewide average.

**Figure 2: Population growth**



**Figure 3: Annual population growth by county**



Since 2004, the Nashville area has added more than 191,000 people for an increase of 12 percent or an annual 2.4 percent growth rate, as Figure 2 shows. Again, the area’s population growth rates exceeded those for both the U.S. and Tennessee over this period.

As noted above, Rutherford and Williamson counties are among the region’s fastest-growing counties. Figure 3 shows that between 2004 and 2009 they had the region’s fastest annual growth rates, at approximately

four percent. Combined, Rutherford, Davidson and Williamson counties added over 115,000 people between 2004 and 2009, and this represents 61 percent of the region’s net new population.

It should also be noted that all 10 counties in the region grew faster than the national growth rate between 2004 and 2009. During the same period, every county, with the exception of Cheatham, also grew faster than the state. In contrast to findings in the 2008 report, the population growth rates in most of the western counties in the region no longer lag that of other suburban counties.

### Migration Patterns

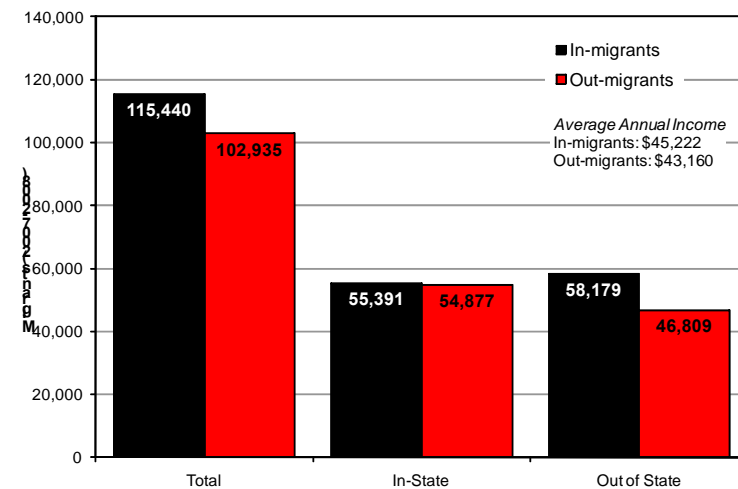
Migration is a critical workforce issue for most metropolitan areas striving to meet workforce demand. Data from the U.S. Internal Revenue Service reveal that, as in previous years, the Nashville region remains a net gainer of in-migrants. Between 2007 and 2008, the region gained a net 12,505 migrants from 6,723 new households, including 115,440 in-migrants and 102,935 out-migrants. In-migrants to the Nashville region tended to earn more (average annual income of \$45,222) than those leaving the region (average annual income of \$43,160). New residents in Williamson County had the highest income per filer at \$83,000 while the lowest average income was in Montgomery County at \$34,000. As the region’s largest county, it is not surprising that Davidson County had the largest volume of movement, accounting for approximately

one-third of total moves to and from the area, followed by Rutherford and Montgomery counties. Davidson, Rutherford, Montgomery, and Williamson counties were the most popular destinations. Davidson attracted 34,099 people, compared to 17,716 in Rutherford County, 16,044 in Montgomery County, and 13,248 in Williamson County.

However, Davidson (-2,452) and Montgomery (-1,652) counties

actually lost more people than they attracted due to migration between 2007 and 2008. In many cases, residents in Davidson tended to move to neighboring suburban counties. For instance, twice as many people moved from Davidson County to Rutherford County as did the reverse, and a net 1,330 Davidson residents moved to Rutherford County from 2007 to 2008. Other surrounding counties that benefited from a significant number of Davidson County out-migrants include Williamson (968 net), Wilson (867 net) and Sumner (574 net) counties. It is worth pointing out that Davidson County had a net gain in total filers (1,071) but a net loss in total exemptions (dependents) (-2,452), which suggests that families were leaving Davidson County, but the county was gaining single adults. Given that professionals—and especially young professionals—are often more mobile than other kinds of workers, it can be inferred

Figure 4: Migrants to and from the Nashville area



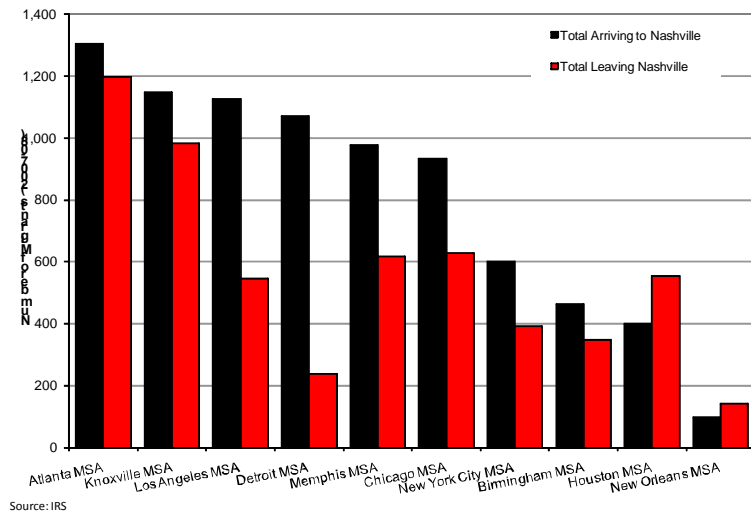
Source: US Internal Revenue Service

that Davidson County represents a significant magnet for attracting young professionals to the Nashville region. Nashville’s ability to attract these workers, therefore, represents an important regional strength.

While Montgomery County experienced some intra-regional migration, its overall migration patterns represent a different phenomenon. It is largely influenced by military

service members and their families moving in and out of the region. As a result, its largest source of net inflows are from foreign APO/FPO zip codes (184 net), or places such as Fort Bragg, North Carolina (110 net), and Fort Leavenworth, Kansas (100 net). Meanwhile, it lost net migrants to places such as Fort Lewis, Washington. In all counties except Davidson and Montgomery, the income of households moving to the area was greater than those leaving the area. Those two counties lost \$79 million in earnings from net migration (a net loss in income of \$34 million for Davidson County and \$45 million for Montgomery County).

Figure 5: Migrants to and from the Nashville area by select MSA



A slight majority of the movers to the Nashville area came from out of state—58,000 compared to 55,000 who moved from within the state. However, more movers from Nashville moved within Tennessee than moved to other states (Figure 4). Some of the leading locations from which new arrivals came to Nashville were Atlanta, Knoxville, Los Angeles and Detroit. Nashville gained more than 1,000 new people from each of these locations. The connection to these cities makes sense, given the nature of the major economic drivers in the Nashville region. For instance, Los Angeles is not only the former North American corporate home of Nissan, but Nashville and Los Angeles are also linked by the music and entertainment industry. One might also surmise that the automotive industry partially explains the connection between Nashville and Detroit, but the relative lack of employment opportunities in Detroit compared to Nashville is another factor. The connection to Knoxville is most likely influenced by University of Tennessee graduates seeking work in Middle Tennessee. Memphis is also an important source of households moving to the Nashville area.

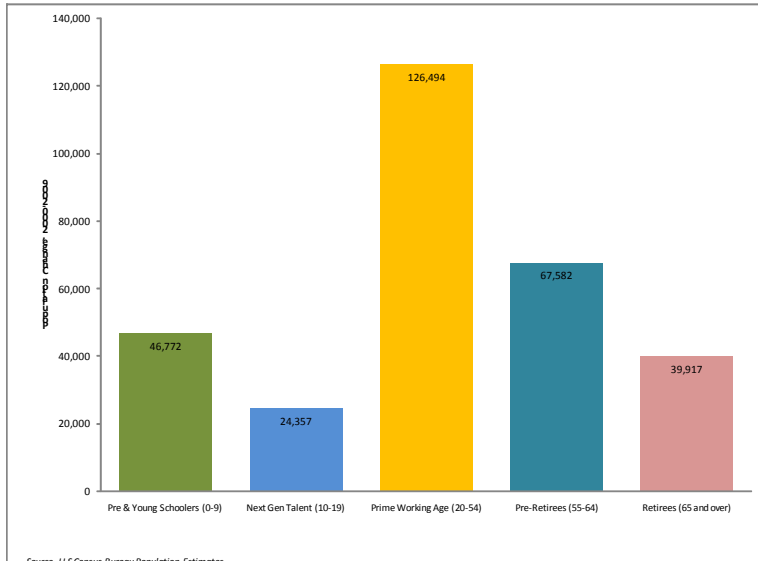
Some of the leading destinations for people leaving Nashville were Atlanta, Knoxville, Chicago and Memphis. In 2007-2008, Nashville had a net loss of migrants to Houston and New Orleans. The migration flows to and from New Orleans are greatly diminished over previous years, as many people who arrived in Middle Tennessee in the immediate aftermath of Hurricane Katrina have subsequently returned. In most cases, movers to Nashville brought more income than people moving from the area

for this set of cities. For example, people moving from Los Angeles, Detroit and Chicago brought more income than the people moving to those cities from Nashville took away.

### Age Structure

The age of the region’s population affects the size and structure of its current and future workforce. The most critical challenge facing the region is that impending retirements among workers in the Baby Boom generation are expected to represent a very large number of workers in the coming decade, as

**Figure 6: Change in Population by Age Cohort, 2000-2009**

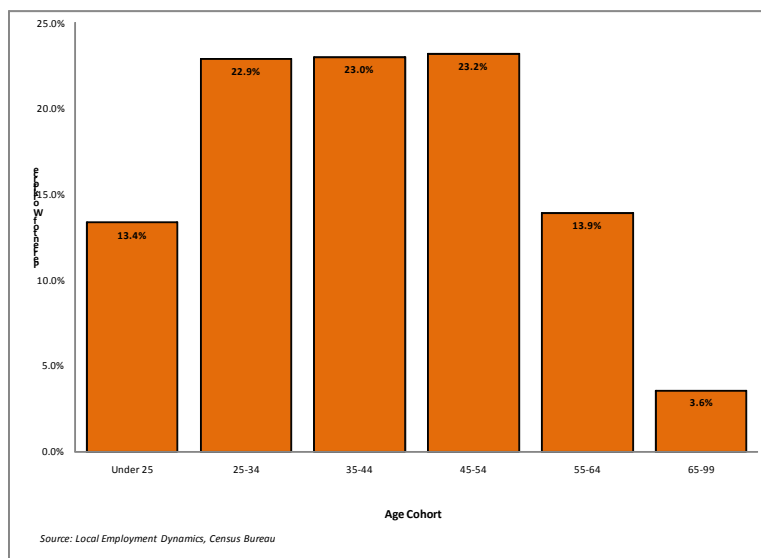


illustrated in Figure 6. During the past decade, nearly 40,000 workers moved into retirement age, and more than 67,500 will reach retirement age in the next decade. Only about 24,400 new workers will move into their early working years to replace the retiring population. That leaves a decline in the working-age population of more than 43,000 by 2019.

About 13.4 percent of the current workforce is under age 25 ( Figure 7). That represents a substantial drop since 2006,

when the share was nearly 16 percent. At the same time, the proportion of the workforce aged 55 and higher rose from 15 percent in 2006 to 17.5 percent in 2009, a substantial increase in pre-retirees as a proportion of the workforce. A recent analysis completed by the BLS suggests that labor force participation among young adults has declined from more than half of those individuals in the labor force in 1998 to just 40 percent by 2008.<sup>4</sup>

**Figure 7: Age Structure of the Existing Nashville Economic Market Area Workforce, 2009**



<sup>4</sup> U.S. Bureau of Labor Statistics, "Labor Force Projections to 2018," Table 3.3 Civilian labor force participation rates by age, sex, race, and ethnicity, 1988, 1998, 2008, and projected 2018, Monthly Labor Review, November 2009.

That trend is expected to continue declining as young adults stay in school longer; increasingly, workers will join the workforce at a later age. Part of the reason for the growth in the labor force among older workers is that participation rates have been climbing among that group. For instance, labor force participation rates for adults aged 60 to 64 are expected to climb from about 54 percent in 2008 to 60 percent by 2018, while rates among workers aged 64 to 69 are expected to rise from 31 percent in 2008 to 37 percent by 2018.

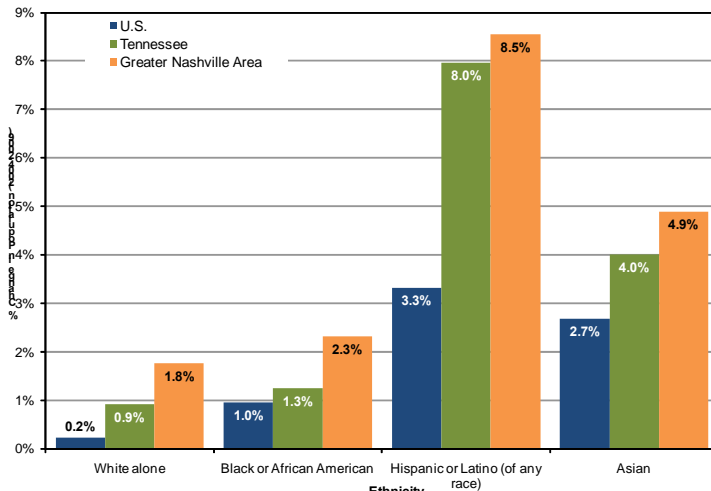
### Diversity/Ethnicity

As the region’s ethnic composition changes, so too will the region’s workforce. About 74 percent of the region’s population was white in 2009, a somewhat lower percentage than in Tennessee (76.7 percent). This figure was nevertheless high relative to the U.S. as a whole (65.1 percent). Nashville also has a higher percentage of blacks/African Americans than the U.S. (16 percent versus 12.2 percent), but a slightly lower rate than in the state. Additionally, the Nashville region (5.9 percent) and Tennessee (3.9 percent) have low percentages of Hispanic population compared to the U.S. (15.6 percent). The region’s Asian population accounts for 2.1 percent of the total.

The Hispanic and Asian populations have shown the fastest growth over the past five years. From 2004 to 2009, the Hispanic population grew 8.5 percent annually. This rate was somewhat faster than the state rate (8 percent annually), and much faster than the national rate (3.3 percent). The Asian population also experienced rapid growth and grew 4.9 percent annually between 2004 and 2009, but this growth occurred among a relatively smaller population. In that five-year period, the region’s Asian population grew by roughly 7,600. By comparison, the white and black/African American populations

expanded more slowly, at annual rates of 1.8 percent and 2.3 percent respectively (Figure 8).

**Figure 8: Population growth by ethnicity: 2004-2009**



These growth rates are projected to slow during 2009-2019, but the Hispanic and Asian populations are expected to continue growing faster than the white and black/African American populations. The Hispanic population is forecasted to grow 2 percent annually between 2009 and 2019. As a consequence, the region would have about 23,000 more Hispanics to add to its current base.

The Asian population is forecasted to grow 1.6 percent annually, while the white population is expected to grow 0.6 percent annually and the black/African American population will expand 0.9 percent during the same period.

It is important to note that these growth rates mask the impact of the changes on the total population. For instance, while the Hispanic population grew rapidly from 2004 to 2009, it did so from a small base. For instance, the growth in the region’s Hispanic population led to 34,620 more Hispanics in 2009 than in 2004. As a result, the Hispanic population accounted for 18 percent of the region’s total population growth – very similar to the African American proportion of 16 percent. Meanwhile, the white population still accounted for 58 percent of the region’s total population growth. The forecast for 2009-2014 is similar. These figures are very different from the U.S., where the Hispanic population accounted for 51 percent of total population growth from 2004-2009.

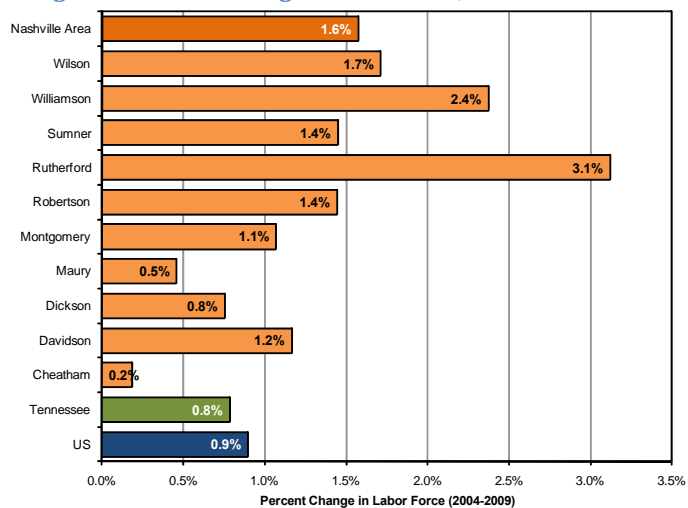
## The Region’s Workforce

### Labor Force

The size of the region’s labor force provides an indication of economic strength. A growing labor force shows that there is a deepening pool of workers available to meet industry demand. In 2009, the Nashville area’s labor force was 860,639, and this represents an annual increase of 1.6 percent since 2004. These recent trends show that the region’s annual growth rate was double the growth rate for the state of Tennessee during the same period (0.8 percent annually) and nearly double the U.S. rate over the same period (0.9 percent annually, Figure 9).

Not surprisingly, Davidson County had the region’s largest labor force, at 320,647 in 2009. This was more than double the county with the next largest labor force—Rutherford County—which had a labor force of 132,910 workers. Rutherford and Williamson counties were the Nashville area’s fastest-growing labor forces. Rutherford County’s labor force grew by 3.1 percent and Williamson County’s grew 2.4 percent annually between 2004 and 2009. By contrast, three counties—Maury, Dickson and Cheatham counties—experienced labor force growth rates over this period that were below the U.S., state, and regional averages. The recent recession has somewhat blunted the relatively strong growth that occurred in the region during the previous half-decade. Given the more limited number of employment opportunities, many discouraged workers have quit looking for work and have left the labor force altogether. This can be quantified by comparing current labor force participation rates to other benchmarks such as the region’s historic average or current state or national averages.

Figure 9: Percent change in labor force, 2004-2009

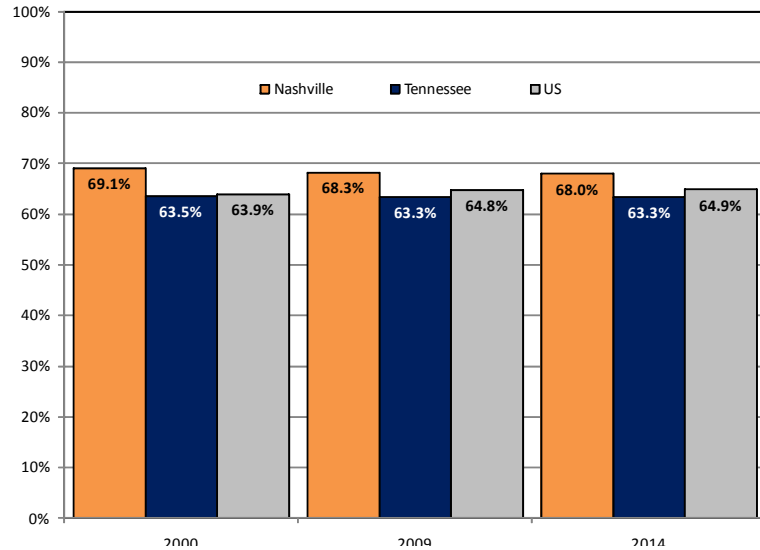


Source: Bureau of Labor Statistics

## Labor Force Participation

Labor force participation is the proportion of people age 16 and older who are either working or seeking work. Students, homemakers, retired individuals and others not looking for work do not count as participating in the labor force. Many factors affect the labor force participation rate. Labor force participation tends to be lower in weaker economies because some jobseekers give up looking for work.

Figure 10: Labor force participation rates



Rates also vary by age. Given that many teenagers either do not work or are too young to work, their participation rate frequently is less than 50 percent. By contrast, more than 80 percent of adults between the ages of 25 and 54 are in the labor force. Labor force participation begins to decline at age 55 as workers begin to retire. The Nashville area's labor force participation rate was 68.3 percent in 2009, a drop from 69.1 percent in 2000 (Figure 10). The decline may be a result of the current state of the economy, but the forecasted rate for 2014 is 68 percent, which reflects the changing age structure of the workforce, especially the early effects of the retiring baby-boom generation.<sup>5</sup> The region's labor force participation nevertheless remains higher than the nation and the state, as the national labor force participation was approximately 65 percent while the state labor force participation rate was 63.3 percent.

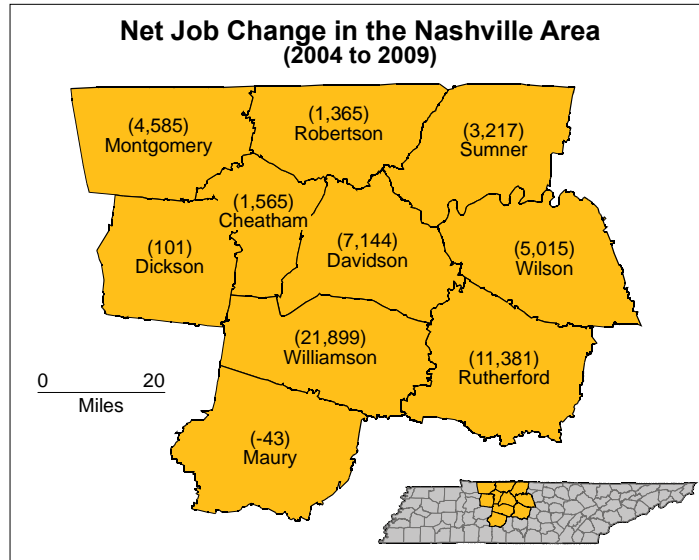
## Employment and Unemployment

The Nashville area's job total was 1,064,321 in 2009, including both wage and salary workers as well as proprietors and non-payroll workers. Davidson, Williamson and Rutherford counties are the area's employment centers, with a combined 73.7 percent of total jobs in 2009. Figure 11 illustrates that these three counties also contributed 71.9 percent of the region's net new jobs between 2004 and 2009. Over the past half decade, Williamson and Rutherford counties have become significant destinations for workers. By way of illustration, Williamson County comprises 11 percent of total jobs, but between 2004 and 2009, accounted for 38.9 percent of the region's net new job growth. Similarly, Rutherford County, which has 12.2 percent of the region's jobs, generated 20.2 percent of net new employment. Davidson County grew from 530,372 jobs in 2004 to 537,716 jobs in 2009. Davidson County, therefore, remains the region's employment center of the region, with 50.5 percent of total jobs, but only accounted for 12.7 percent of the region's net new jobs between 2004 and 2009.

<sup>5</sup> These data were provided by Demographics Now, which is a proprietary data vendor. Through Demographics Now, these data are only available for the years presented in Figure 10.

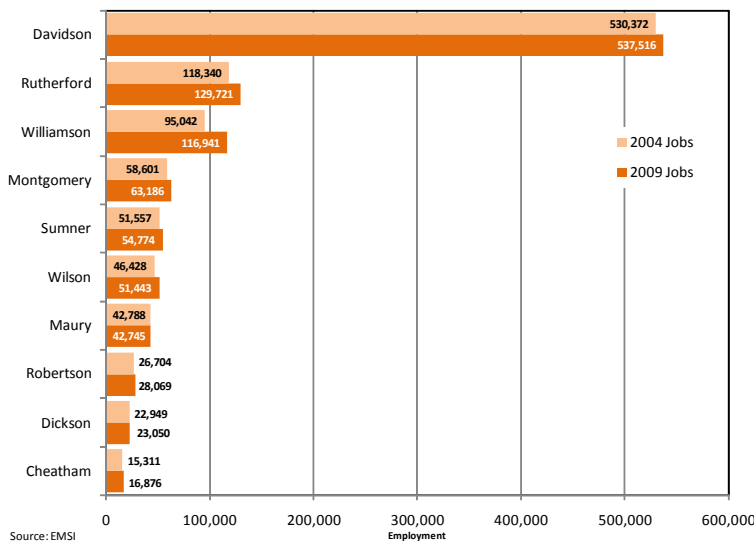
Looking at the details, job totals increased an average of 1.1 percent per year in the Nashville area between 2004 and 2009, above the state (0.5 percent) and U.S. (0.9 percent) growth rates. Figure 12 shows that by adding 21,899 jobs between 2004 and 2009, job totals changed the most in Williamson County, increasing an average of 4.2 percent per year. The next highest growth rates were found in Wilson (2.1 percent) and Cheatham (2.0 percent) counties. Given its small relative size, the additional 1,565 jobs created in Cheatham County contributed significantly to its relatively rapid growth. Rutherford County grew at an average annual rate of 1.9 percent and added 11,381 more jobs.

Figure 11: Net job change in the Nashville area



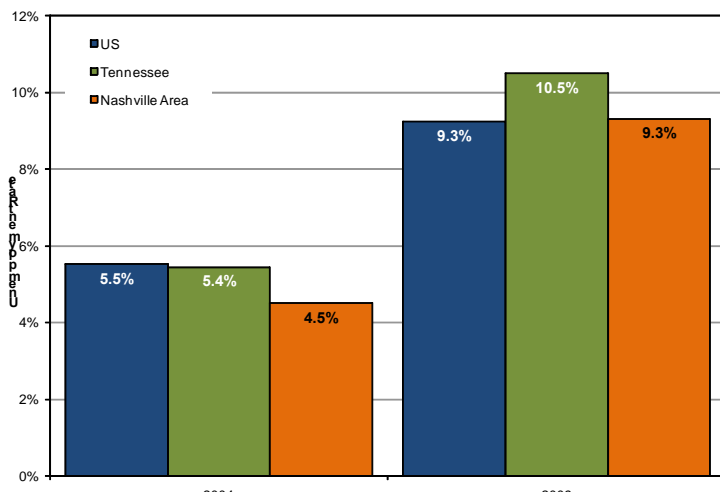
The labor pool not only consists of people who are currently working, but also those who are looking for work. Given the current recession, it is not surprising that the region's unemployment rate has risen dramatically since 2007. Shown in Figure 13, unemployment in the Nashville area increased from 4.5 percent in 2004 to 9.3 percent in 2009. This increase more than doubled the number of unemployed workers, from 35,783 in 2004 to 80,231 in 2009, for an increase of 44,358 more people currently seeking work than in 2004. The regional unemployment rate was below both the U.S. and Tennessee rates in 2004, but was on par with the U.S. rate in 2009, though still below the Tennessee rate. In 2009, Maury

Figure 12: Employment by county



County had the region's highest unemployment rate at 13.8 percent, up from 5.5 percent in 2004. This is due in no small part to the recent closure of the former GM Spring Hill plant. Dickson and Robertson counties' 2009 unemployment rates were also above 10 percent, at 11.0 percent and 10.3 percent, respectively. Williamson County had the region's lowest unemployment rate in 2009 at 7.6 percent, which is up from only 3.7 percent in 2004.

**Figure 13: Unemployment rate**



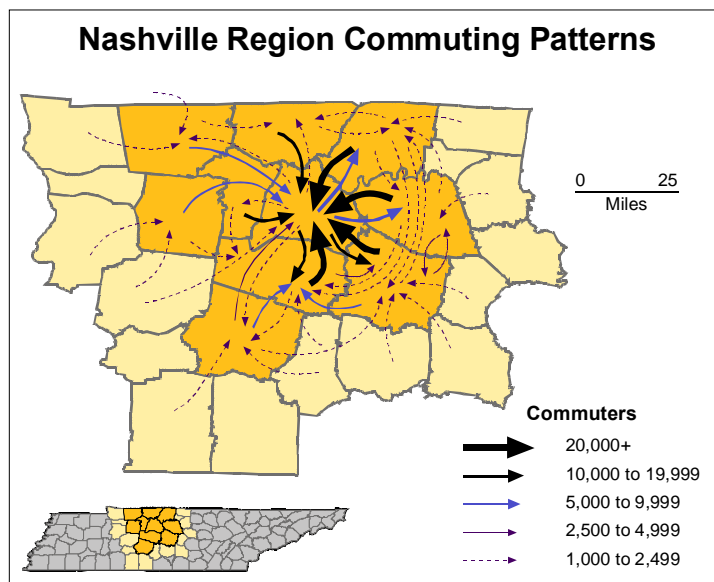
**Commuting**

The distance that people are willing to travel in order to find work also influences the pool of available workers. Data compiled by the U.S. Census Bureau<sup>6</sup> show that in 2008, 47 percent of workers in the Nashville area work in the counties where they live. Montgomery County has the highest percentage of workers who live and work in the same county, at 66.8 percent. This is most likely due to the presence

of Fort Campbell, and its relative distance from Davidson County, which is the region’s main job center. Williamson County has the lowest percentage of workers who live and work in the same county, as only 29.8 percent of its workers live in the county. In Davidson County, 45.8 percent of workers work and live in the county. The remaining 53 percent commute to other counties from locations within and outside the region.

For the rest of the region, Davidson County remains, by far, the major employment hub for Nashville area commuters, with over 236,000 workers (56 percent of all commuters) traveling to the county for work. Williamson County is a distant second by this measure, with 57,000 people (14 percent of all commuters) traveling there for work. Commuters from outside the 10-county region account for a relatively fast-growing 22 percent share of workers in the Nashville area. Figure 14

**Figure 14: Commuting patterns, 2008**



Source: U.S. Census Bureau, Local Employment Dynamics (2008)

<sup>6</sup> Commuting pattern data come from the U.S. Census Bureau’s Local Employment Dynamics. These data are compiled from unemployment insurance records that are submitted by private businesses. It is important to note that these data do not yet include the self-employed or government employees. This may not fully account for many government workers known to commute to Davidson County (e.g., state employees) or Montgomery County (e.g., military and federal civilian employees). These commuting data are generated from a different, more current source than the 2007 Nashville Labor Market Report, which used the 2000 Census.

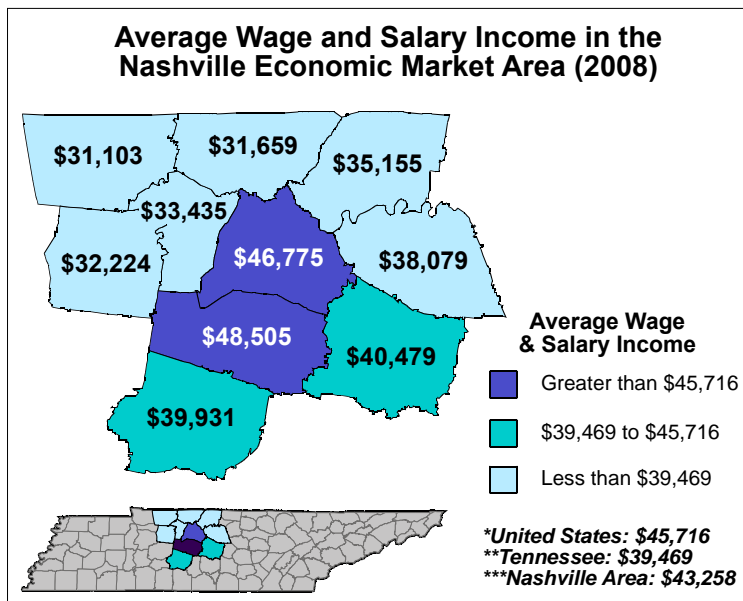
illustrates the flow of workers within and into the Nashville area. While Davidson County is obviously the region’s employment center, the employment growth occurring in Rutherford and Williamson counties has helped those jurisdictions stand out as suburban employment centers. A growing number of workers commute from Davidson to these counties, as do workers from other counties in the region. Relative to data provided in the 2000 Census, Sumner and Wilson counties also appear to be emerging job centers. Commuting patterns have become more complex over the last decade. Specifically, the pattern of inter-suburban commuting appears to have increased from 2000, with the role of the southern and southeastern counties expanding the most. This is again not totally surprising, given that most of the region’s net new employment growth has occurred in those counties.

## Workforce Quality

### Income

Average wage and salary income in the 10-county Nashville Area was \$43,258 in 2008, higher than the state average but lower than the U.S. average.<sup>7</sup> Nashville remains above the state average, extending its advantage slightly between 1998 and 2008. The Nashville average wage was 95 percent of the U.S. average in both 1998 and 2008. Put another way, when adjusted for inflation, the average wage and salary income in the Nashville region only grew 0.9 percent annually between 1998 and 2008, but the state average grew 0.7 percent, and the U.S. average grew 1 percent annually during the same period.

Figure 15: Average Wage & Salary Income



Source: US Bureau of Economic Analysis

That said, there are obviously differences within the region (Figure 15). For instance, Davidson and Williamson counties had 2008 average wage and salary incomes of \$46,775 and \$48,505 respectively, placing them above the area, state and U.S. averages. Davidson and Williamson counties were the only locations where the annual growth in average earnings exceeded both the state and the nation. Rutherford and Maury counties’ average wage and salary incomes were above

the state average (but not the national average). Average wage and salary incomes in the remaining

<sup>7</sup> The data used in this section and the subsequent section on entrepreneurship are derived from the U.S. BEA. The most recent year for these data is 2008. They are also important inputs to the model used by EMSI that produced much of the data used throughout the report.

counties ranged from \$31,103 in Montgomery County to \$38,079 in Wilson County, putting them all below the area, state and U.S. averages. When adjusted for inflation, Maury County saw its average wage and salary income actually decline at a rate of 0.8 percent annually between 1998 and 2008.

### Entrepreneurship

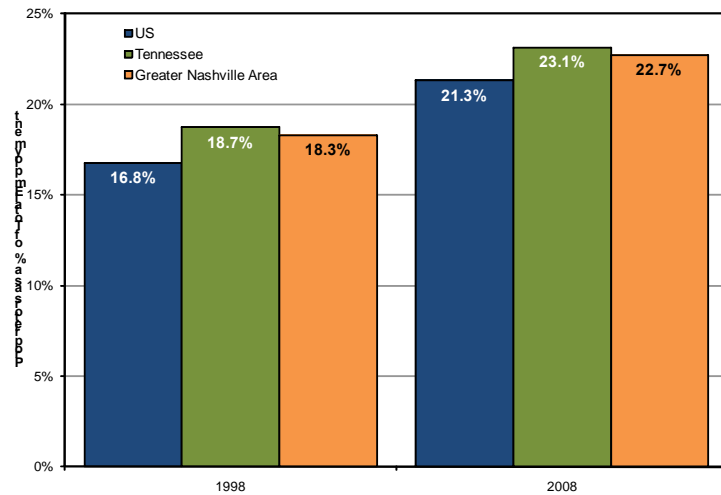
Self-employment provides many people with opportunities to earn a living or supplement their current wages. Self-employment can include a variety of activities, ranging from consultants and real estate agents to farmers and musicians.

These sole proprietors comprise a significant portion of the workforce in addition to wage and salary workers. More than 234,000 additional jobs in the region are attributable to non-wage and salary employment. Proprietors accounted for 22.7 percent of total employment in Nashville in 2008, up from 18.3 percent in 1998 (Figure 16).

Nashville has a higher level of proprietor employment than the U.S., but a slightly lower rate than the state. Similar to the average

income, there are significant variations throughout the region. For instance, most sole proprietors are located in Davidson County (114,460), but Davidson County proprietors represented one of the smallest proportions of workforce (20.4 percent). Smaller and less populous counties in the western section of the Nashville region also have sizable components of worker totals engaged in self-employment. With a mixture of smaller communities, considerable in-commuting to larger employment centers, and some remaining rural characteristics, it is not unexpected that those areas, too, would have elevated shares of proprietors in their economy. So, it is not surprising that almost half (47.6 percent) of Cheatham County’s employment is composed of non-wage and salary workers. The second greatest proportion was in Dickson County, where approximately one-third (36.5 percent) of all workers were sole proprietors.

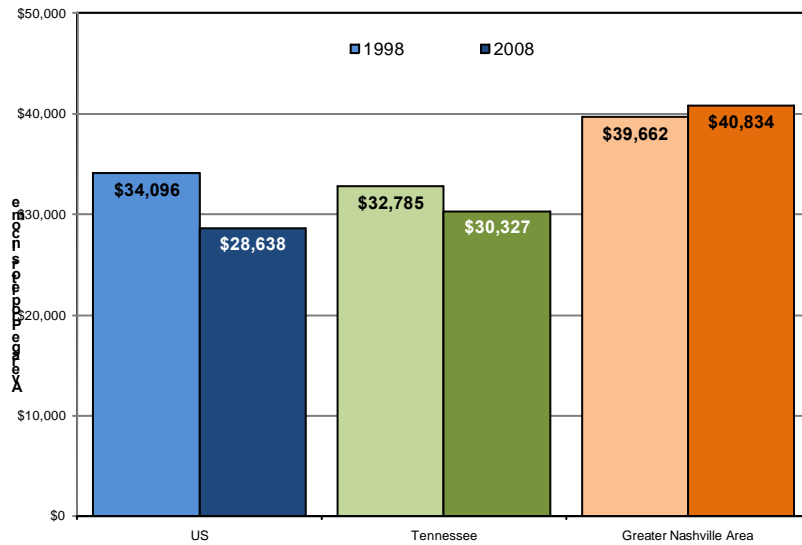
Figure 16: Proprietors as a percentage of total employment



Source: US BEA

Looking at the region overall, the Nashville Economic Market Area's proprietors generated a significant amount of wealth. Average earnings from proprietary employment were \$40,834 in 2008, far higher than the state and national averages (Figure 17). In some instances, the average income of sole proprietors was significantly different from wage and salary

Figure 17: Average proprietor's income

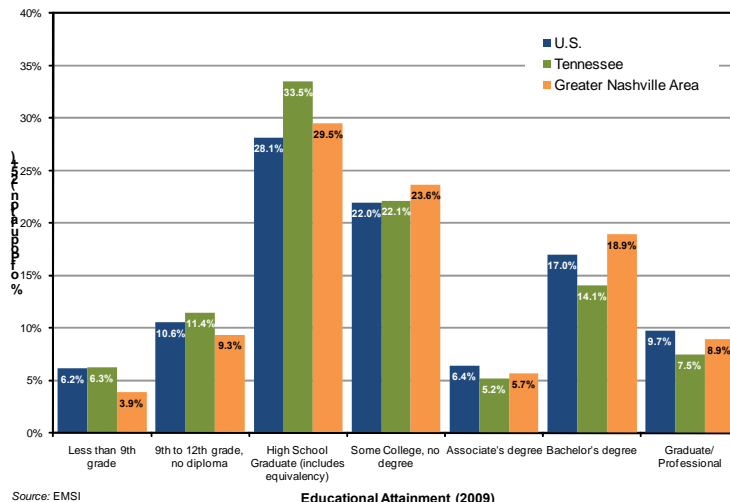


income. In Davidson County, for instance, the average sole proprietor earned \$57,964 per year. This figure is about \$11,000 more than the average wage and salary income in Davidson County. In Sumner County, wage and salary income was only slightly higher than the average sole proprietors' income. In these instances, one can infer that many of these jobs do not represent a source of supplementary income, but rather, a sizable portion represents a primary income source. It should also be highlighted that the income generated by sole proprietors in the region grew in the region between 1998 and 2008, while it declined nationally and statewide. During this period, proprietors' income in the Nashville region grew 0.3 percent annually. By comparison, Tennessee declined 0.8 percent annually, while the U.S. dropped by 1.7 percent annually. The fastest annual growth in proprietors' income occurred in Sumner (2.6 percent), Williamson (1.9 percent) and Robertson (1.1 percent) counties. Declines occurred in a mix of counties by type and size that included Dickson, Maury, Rutherford, Wilson and Montgomery counties.

### Educational Attainment

The Nashville area has a generally more educated population (age 25+) relative to the U.S. and Tennessee. Nearly 28 percent of adults have at least a bachelor's degree or higher, compared to 26.7 percent in the U.S. and 21.6 percent in Tennessee (Figure 18). Moreover, a relatively low proportion of adults in the Nashville area have a high school diploma or less compared

Figure 18: Educational attainment



Source: EMSI

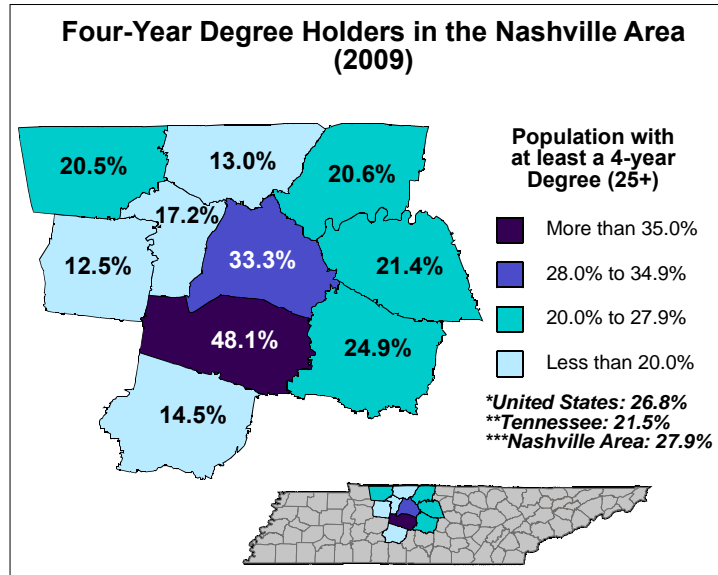
Educational Attainment (2009)

to the U.S. and the state. Nashville also has a slightly higher percentage of adults with some college but no degree and a slightly lower percentage of adults with an associate’s degree than the U.S.

Within the Nashville area, educational attainment varies widely, from a high of 48.1 percent of adults with a four-year degree in Williamson County to a low of 12.5 percent in Dickson County. At more than 48 percent, the proportion of people with at least a four-year degree in Williamson County was more than 20 percent greater than the national percent of 26.8 percent, and more than twice the Tennessee proportion of 21.5 percent. This, however, masks some of the

region’s challenges because, with the exception of Davidson and Williamson counties, the remaining counties have lower rates of adults with college degrees than the U.S. as a whole. Similarly, there are important differences within the region by population without a high school diploma. The western counties, with the exception of Montgomery County, have a relatively large proportion of people without a high school education. Williamson County has the lowest percentage of population on this measure by a significant margin (Figure 19).

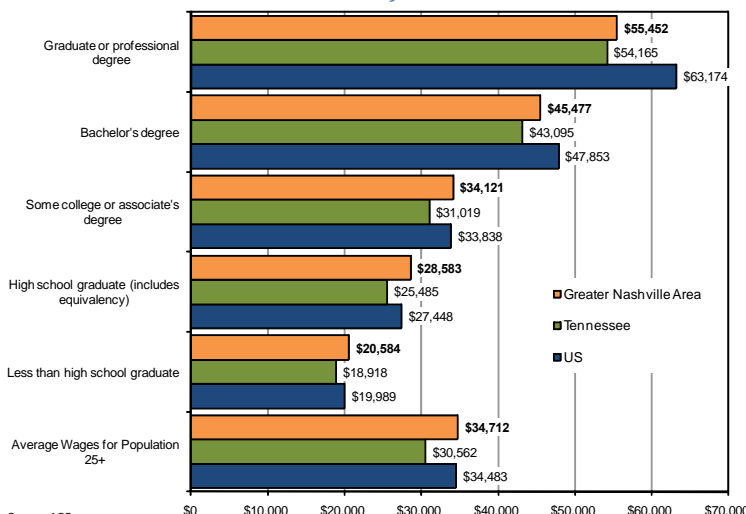
Figure 19: Four-year degree holders



Source: Economic Modeling Specialists, Inc.

These data are important because they provide a clear indication of someone’s earning potential. On average, people with higher levels of education earn more than those with less. The data in

Figure 20: Earnings by educational attainment (2006-08)



average, people with higher levels of education earn more than those with less. The data in Figure 20, which are based on a three-year rolling average, show that in the Nashville region, earnings increase with education. The average earnings for individuals with at least a four-year degree are greater than the average for the region, and the same is true at the national level. Individuals with less education tend to earn less than the average. Average wages for

people with less than a four-year degree are about the same as the U.S. level, but are notably lower for those with a college degree or greater (Figure 18). These findings are significant, as over a 40-year career, high school graduates earn about \$320,000 more than those who does not complete, at minimum, a GED. Workers who continued their education beyond high school are even better off. For instance, university degree holders, on average, typically earn \$660,000 more than people who work in typical occupations requiring, at minimum, a high school diploma, and \$980,000 more than job holders in occupations requiring no high school diploma at all.

## Workforce Demand

In spite of the current recession, many businesses throughout the Nashville region have continued to hire workers. The employer workforce survey administered by the Nashville Area Chamber of Commerce and others found that, in 2009, 85 percent of businesses surveyed hired workers, and 28 percent hired more than 25 workers. Additionally, 57 percent of respondents had a current opening that they were looking to fill, with 23 percent having more than five openings to fill. The quality of these jobs often depended on the amount of education and training required. The employer workforce survey showed that 53 percent of the job openings required at least a high school diploma or equivalent, 49 percent required work experience in a related firm, and 27 percent required a bachelor's degree<sup>8</sup>. As the region's economy recovers, more —and presumably higher-paying — jobs will become available. This section identifies potential future worker demand.

Worker demand is largely based on the structure of the region's economy, and the kinds of jobs associated with growing and declining industries.<sup>9</sup> As a result, understanding workforce demand requires analysis not only of the region's current economic structure, but also of how the economy has changed and how it is likely to change in the future. This section first examines industry growth and employment at both the broad and detailed levels. It identifies industries that are both growing and declining within the region. It then considers occupational employment trends in terms of growth and decline, but it also gives particular attention to the demand for jobs that require different levels of skill and education. Throughout, the data provided are based on past trends and future projections that consider both existing national and regional trends. Consequently, they present a most likely scenario of what will happen if no major event significantly alters the region's future.

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<sup>8</sup> Percentages do not sum to 100 because respondents could mark more than one response due to minimum qualifications that vary between different occupations.

<sup>9</sup> The industries presented in this section are based on the North American Industry Classification System (NAICS). NAICS provides a way to classify business establishments for the purpose of data collection and analysis. It should also be noted that the NAICS codes presented in this report are based on the 2007 definitions. The earlier 2008 report used the 2002 definitions. As a result, most of the industry definitions are the same or similar, while some are not. For more information on NAICS and the differences between the 2002 and 2007 definitions, see <http://www.census.gov/eos/www/naics>.

## Economic Structure

Within the region, the largest segment of employment is found in the trade, transportation and utilities supersector. Figure 21 shows that in 2009, this supersector employed 199,316 workers, or 18.7 percent of the region’s total employment.

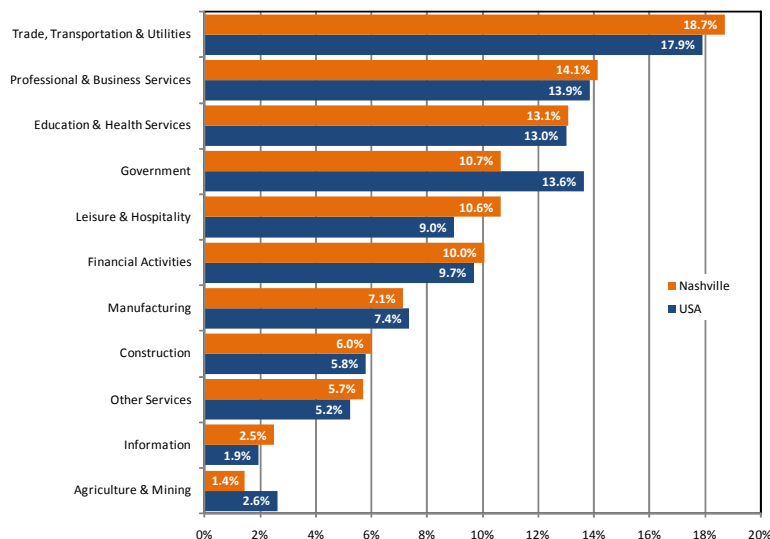
Figure 21: Employment of industrial supersectors in the Nashville Economic Market Area

Supersector	2004		2009		2014		2019	
	Number	% of Total	Number	% of Total	Number	% of Total	Number	% of Total
Agriculture & Mining	16,794	1.7%	15,275	1.4%	12,267	1.1%	10,949	0.9%
Construction	60,639	6.0%	63,670	6.0%	68,974	6.0%	75,900	6.2%
Manufacturing	96,979	9.6%	75,814	7.1%	65,975	5.8%	64,009	5.3%
Trade, Transportation & Utilities	190,917	18.9%	199,316	18.7%	210,157	18.3%	218,604	18.0%
Information	24,491	2.4%	26,480	2.5%	25,547	2.2%	26,157	2.2%
Financial Activities	87,074	8.6%	106,953	10.0%	121,253	10.6%	130,720	10.8%
Professional & Business Services	142,204	14.1%	150,418	14.1%	174,514	15.2%	193,351	15.9%
Education & Health Services	125,841	12.5%	139,121	13.1%	162,010	14.1%	178,163	14.7%
Leisure & Hospitality	104,289	10.3%	113,268	10.6%	119,133	10.4%	121,684	10.0%
Other Services	54,594	5.4%	60,621	5.7%	65,764	5.7%	69,543	5.7%
Government	104,273	10.3%	113,385	10.7%	121,200	10.6%	126,878	10.4%
<b>Total Employment</b>	<b>1,008,095</b>	<b>100%</b>	<b>1,064,321</b>	<b>100%</b>	<b>1,146,794</b>	<b>100%</b>	<b>1,215,958</b>	<b>100%</b>

Source: EMSI

Professional and business services were the second largest supersector, employing 150,418 workers and 14.1 percent of total employment. Both of these supersectors grew in an absolute sense between 2004 and 2009, but trade, transportation and utilities experienced a slight decline in its share of total employment. By contrast, financial activities and education and health services both grew faster, adding roughly 20,000 and 13,000 jobs respectively. As a result, they also became a greater share of the region’s total employment. In fact, financial, education and health services accounted for approximately 60 percent of net new job growth between 2004 and 2009. Financial activities employed 106,953 workers, or 10 percent of total employment in 2009, up from 8.6 percent in 2004. Education and health services also rose, growing from 12.5 percent of total regional employment in 2004 to 13.1 percent in 2009. Conversely, the manufacturing sector continued to shrink as a percentage of total employment. Between 2004 and 2009, manufacturing shrunk from 9.6 percent of the region’s total employment to just 7.1 percent in 2009, reflecting a loss of more than 20,000 manufacturing jobs during that five-year

Figure 22: Employment of supersectors, Nashville and U.S.



period. While the manufacturing sector’s continued decline conforms to broader national trends, it is nevertheless significant for the region, as manufacturing often provides good-quality jobs for workers who may not have extensive amounts of postsecondary education.

Figure 22 shows that, compared to U.S. employment, Nashville has a higher proportion of workers employed in trade, transportation and utilities, as it is well-positioned

at the intersection of three major interstates. Similarly, there is a greater proportion of leisure and hospitality employment in the region than in the U.S. This, again, is not surprising, given that Nashville is a major tourist destination.

Despite Nashville's position as a state capital, and the location of Fort Campbell in Montgomery County, the Nashville region has a relatively lower concentration of government workers. This is due in large part to a lower concentration of military in the Nashville region given its size, the consolidated form of city-county government, and a smaller number of municipalities compared to other regions.

Changes to the region's economic structure are projected in the future. The Nashville area is projected to add more than 151,000 new jobs between 2009 and 2019, for a 1.3 percent annual growth rate. This

rate of growth is higher than in both Tennessee and the U.S., which are both projected to grow at an average of 1.1 percent between 2009 and 2019.

**Figure 23: Nashville supersectors as percent of total employment**

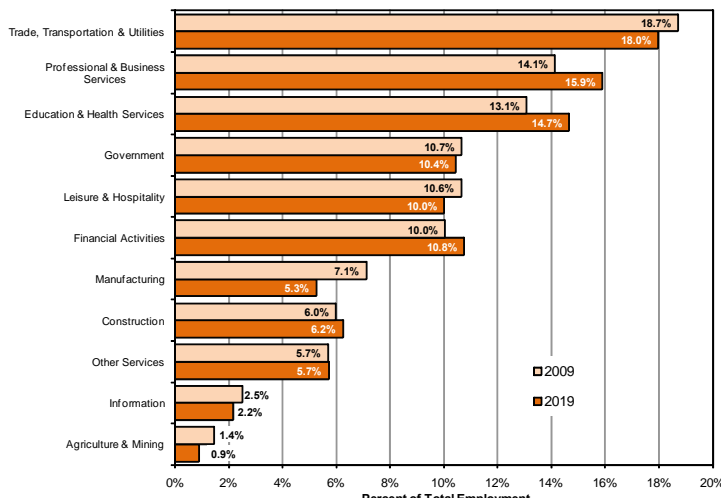


Figure 23 shows which industries are most likely to be affected. Professional and business services, education and health services, financial activities, and construction are expected to rebound from the recession with steady growth, remaining important segments of the regional economy in 2019.

Professional and business services and education and health services are each projected to grow at an average annual rate of 2.5 percent, faster than the Nashville regional rate of 1.3 percent per year, and should account for more than 45 percent of the employment increase in the region between 2009 and 2019. Across the state and the nation, these two supersectors are also projected to account for more than 54 percent of net new employment between 2009 and 2019. The trade, transportation and utilities supersector is still expected to remain the single largest source of jobs, but this sector is nevertheless projected to decline as a relative share of total employment. Manufacturing employment is expected to continue its relative decline and is projected to fall from 7.1 percent of total employment in 2009 to only 5.3 percent by 2019, with a real loss in total jobs.

## Detailed Industry Employment Trends and Projections

While analyzing data at the supersector level provides insights into the region’s economic structure and broad economic trends, more detailed industry analysis can identify specific industries that are growing and declining. Several government- and leisure/hospitality-related industries remain the region’s largest. In 2009, the largest and third-largest industries, respectively, were local and state government. While

Figure 24: Largest industries by employment (5-digit NAICS)

NAICS	Industry	2009	2019	Change 09-19	Annual % Change 09-19
93000	Local government	69,181	76,242	7,061	1.0%
72211	Full-Service Restaurants	35,471	42,000	6,529	1.7%
92000	State government	28,754	32,028	3,274	1.1%
72221	Limited-Service Eating Places	26,843	23,197	-3,646	-1.4%
53121	Offices of Real Estate Agents & Brokers	19,260	27,914	8,654	3.8%
62111	Offices of Physicians	17,736	24,005	6,269	3.1%
62211	General Medical & Surgical Hospitals	17,258	15,694	-1,564	-0.9%
81311	Religious Organizations	16,159	18,599	2,440	1.4%
71151	Independent Artists, Writers, & Performers	15,603	18,034	2,431	1.5%
56132	Temporary Help Services	15,509	17,823	2,314	1.4%
54121	Accounting, Tax Preparation, Bookkeeping, & Payroll Services	14,993	19,868	4,875	2.9%
62231	Specialty (except Psychiatric & Substance Abuse) Hospitals	14,742	24,846	10,104	5.4%
44511	Supermarkets & Other Grocery (except Convenience) Stores	13,169	13,302	133	0.1%
11A00	Crop & animal production	12,982	8,680	-4,302	-3.9%
81411	Private Households	12,804	16,600	3,796	2.6%
72111	Hotels (except Casino Hotels) & Motels	12,560	13,020	460	0.4%
48412	General Freight Trucking, Long-Distance	12,228	12,488	260	0.2%
56172	Janitorial Services	11,400	12,959	1,559	1.3%
55111	Management of Companies & Enterprises	11,286	17,636	6,350	4.6%
61131	Colleges, Universities, & Professional Schools	11,121	9,154	-1,967	-1.9%

Source: EMSI

these industries include many activities related to Nashville as a state capital, as well as county governments, they include people who work for public-school districts as well.

Besides government-related activities, other areas with a number of large industries include leisure/hospitality and health care. Among leisure/hospitality-related industries,

restaurants (both full- and limited-service) are the largest industries. These industries account for roughly 62,000 jobs in the region. Hotels and motels are also significant regional employers. Within health-care-related industries, doctor’s offices and the area’s hospitals are among the region’s largest employers. In the past, manufacturing industries—notably automobile and light truck manufacturing—appeared among the region’s largest, but this is no longer the case. No manufacturing industries are currently among the region’s 20 largest.

In terms of growth prospects, the largest industries forecasted to increase faster than the overall regional average annual growth rate of 1.3 percent are: full-service restaurants (1.7 percent); offices of real estate agents and brokers (3.8 percent); offices of physicians (3.1 percent); religious organizations (1.4 percent); independent artists, writers and performers (1.5 percent); temporary help services (1.4 percent); accounting and bookkeeping services (2.9 percent); specialty hospitals (5.4 percent); and management of companies and enterprises (4.6 percent). In the current economic climate, many real estate firms are shedding jobs due to the bursting of the housing bubble. Yet, the complete data reveal that many more workers are reporting that they work in real estate than ever before, with the growth expected to continue. This statistic, like those of certain other industries, masks an ongoing

restructuring. Companies are relying more on part-time and contract workers that may be temporarily employed in the industry as those workers seek to supplement their income.<sup>10</sup>

**Figure 25: Largest sources of new jobs (2009-2019) (5-digit NAICS)**

NAICS	Industry	2009	2019	Change 09-19	Annual % Change 09-19
62231	Specialty (except Psychiatric & Substance Abuse) Hospitals	14,742	24,846	10,104	5.4%
53121	Offices of Real Estate Agents & Brokers	19,260	27,914	8,654	3.8%
93000	Local government	69,181	76,242	7,061	1.0%
72211	Full-Service Restaurants	35,471	42,000	6,529	1.7%
55111	Management of Companies & Enterprises	11,286	17,636	6,350	4.6%
62111	Offices of Physicians	17,736	24,005	6,269	3.1%
54121	Accounting, Tax Preparation, Bookkeeping, & Payroll Services	14,993	19,868	4,875	2.9%
54161	Management Consulting Services	9,434	13,834	4,400	3.9%
45211	Department Stores	9,727	13,931	4,204	3.7%
81411	Private Households	12,804	16,600	3,796	2.6%
54151	Computer Systems Design & Related Services	8,001	11,744	3,743	3.9%
54111	Offices of Lawyers	6,580	10,301	3,721	4.6%
51821	Data Processing, Hosting, & Related Services	3,983	7,478	3,495	6.5%
23821	Electrical Contractors & Other Wiring Installation Contractors	7,171	10,665	3,494	4.0%
53139	Other Activities Related to Real Estate	8,207	11,689	3,482	3.6%
92000	State government	28,754	32,028	3,274	1.1%
91100	Federal government, civilian, except postal service	9,192	12,366	3,174	3.0%
23822	Plumbing, Heating, & Air-Conditioning Contractors	7,524	10,397	2,873	3.3%
52393	Investment Advice	6,083	8,919	2,836	3.9%
42512	Wholesale Trade Agents & Brokers	7,100	9,932	2,832	3.4%

Source: EMSI

Many of the region’s largest industries will also be sources of net new employment. These industries include specialty hospitals; offices of real estate agents and brokers; local government; full-service restaurants; management of companies and enterprises; offices of physicians; and accounting and bookkeeping services. Combined, these industries are expected to add nearly 50,000 jobs over the next decade (Figure 25). Several professional and business services industries will likely provide a high number of net new jobs between 2009 and 2019: management of companies and enterprises (6,350 new jobs); accounting and bookkeeping services (4,875 new jobs); management consulting services (4,400 new jobs); computer systems design (3,743); and offices of lawyers (3,721).

<sup>10</sup> In 2009, non-payroll workers accounted for almost 90 percent of employment in the industry known as “Offices of Real Estate Agents and Brokers.” Employment covered under unemployment insurance accounted for only 10 percent of the total—or less than 1,900 workers—in 2009. Even with the required licensing and testing to become an agent, many look to real estate as a source for supplemental income (due to the flexible hours), and many people entered the industry during the housing boom. Few non-payroll workers earn enough to live on, as the average annual earnings for this group are slightly more than \$9,000 per year. Furthermore, since these wages are not likely to be primary sources of income, there is also little motivation for people to completely leave the industry, even during periods of limited demand for real estate services. Moreover, the continued growth for workers in this industry may also reflect a continuing transformation of how the industry is structured, with much of the work being undertaken by more part-time or contract workers.

There are also a number of industries that are expected to experience significant declines, including many in which the decline is long-term and structural, rather than short-term and cyclical. For instance, newspaper publishers are projected to lose 1,109 jobs over the next decade. Similarly, agricultural

**Figure 26: Fastest-declining industries (2009-2019) (5-digit NAICS)**

NAICS	Industry	2009	2019	Change 09-19	Annual % Change 09-19
11A00	Crop & animal production	12,982	8,680	-4,302	-3.9%
72221	Limited-Service Eating Places	26,843	23,197	-3,646	-1.4%
611131	Colleges, Universities, & Professional Schools	11,121	9,154	-1,967	-1.9%
32311	Printing	5,492	3,707	-1,785	-3.9%
62211	General Medical & Surgical Hospitals	17,258	15,694	-1,564	-0.9%
56131	Employment Placement Agencies & Executive Search Services	2,842	1,342	-1,500	-7.2%
33341	Ventilation, Heating, Air-Conditioning, & Commercial Refrigeration Equipment Manufacturing	2,202	843	-1,359	-9.2%
51711	Wired Telecommunications Carriers	4,484	3,135	-1,349	-3.5%
51111	Newspaper Publishers	2,117	1,008	-1,109	-7.2%
33637	Motor Vehicle Metal Stamping	1,637	552	-1,085	-10.3%
52411	Direct Life, Health, & Medical Insurance Carriers	2,198	1,288	-910	-5.2%
51212	Motion Picture & Video Distribution	2,386	1,539	-847	-4.3%
44711	Gasoline Stations with Convenience Stores	4,503	3,663	-840	-2.0%
42441	General Line Grocery Merchant Wholesalers	1,935	1,148	-787	-5.1%
44111	New Car Dealers	5,466	4,716	-750	-1.5%
52211	Commercial Banking	7,173	6,501	-672	-1.0%
33451	Navigational, Measuring, Electromedical, & Control Instruments Manufacturing	678	120	-558	-15.9%
42342	Office Equipment Merchant Wholesalers	788	232	-556	-11.5%
32619	Other Plastics Product Manufacturing	930	388	-542	-8.4%
32721	Glass & Glass Product Manufacturing	763	230	-533	-11.3%

Source: EMSI

activities, such as the crop and animal production industry, are projected to shed 4,300 net jobs between 2009 and 2019 (Figure 26). Even though health care overall is projected to generate significant new employment, general medical and surgical hospitals are projected to decline. This is due primarily to the growing prominence of specialty and outpatient clinics, as well as more home health care services being demanded by an aging population.

Several manufacturing industries, particularly those related to automotive manufacturing, like motor vehicle metal stamping (-1,085) and other plastics product manufacturing (-542), are also expected to be among the fastest-declining industries. One common thread throughout this diverse set of declining industries appears to be that they are undergoing internal structural change and are not declining in the Nashville area as a result of local competitive conditions. In many instances, technological advancements, even more than foreign competition, are changing the nature of these industries globally.

### Occupation Employment Trends and Projections

Not surprisingly, the region's occupational trends and projections mirror the industry trends and projections. However, whereas industry classification identifies what firms produce as goods or services, occupations describe what workers do.<sup>11</sup> This section assesses trends and opportunities among the largest occupation groups, the fastest-growing among all occupations, the fast-growing higher-skilled occupations, and declining occupations.

<sup>11</sup> The occupations presented in this report are based upon the Standard Occupational Classification (SOC) system. Much like the NAICS system, SOC codes are used to collect and analyze information about what workers do. More information about the SOC system can be found on the U.S. Bureau of Labor Statistics website, <http://www.bls.gov/SOC>.

industry’s largest occupation--represents the region’s eighth largest occupation with roughly 16,000 registered nurses in 2009. Another prominent group of occupations in the Nashville area is related to leisure and hospitality. The largest of these occupations relate to food service (e.g., food preparation workers, waiters and waitresses) and hotels (e.g., maids and housekeeping cleaners).

The trade, transportation and utilities industry is the region’s largest sector, so the industry’s largest occupations are also among the region’s overall largest. Some of these occupations include hand laborers and freight, stock and material movers, heavy and tractor trailer drivers, and stock clerks and order fillers. Health care represents another large segment of the economy, and registered nurses—that

**Figure 27: Largest occupations in the Nashville Economic Market Area**

SOC	Occupation	2009	2019	Annual %		Median Earnings	Educational Requirements
				Change 09-19	Change 09-19		
41-2031	Retail salespersons	32,047	37,979	5,932	1.7%	\$9.71	Short-term OJT
43-9061	Office clerks, general	21,466	25,048	3,582	1.6%	\$13.05	Short-term OJT
53-7062	Laborers & freight, stock, & material movers, hand	20,832	20,589	-243	-0.1%	\$10.93	Short-term OJT
43-4051	Customer service representatives	20,797	26,385	5,588	2.4%	\$14.23	Moderate-term OJT
35-3021	Combined food preparation & serving workers, including fast food	18,008	17,229	-779	-0.4%	\$8.07	Short-term OJT
35-3031	Waiters & waitresses	17,615	20,132	2,517	1.3%	\$8.44	Short-term OJT
41-2011	Cashiers, except gaming	17,041	17,359	318	0.2%	\$8.44	Short-term OJT
29-1111	Registered nurses	16,346	21,907	5,561	3.0%	\$28.76	Associate's degree
41-1011	First-line supervisors/managers of retail sales workers	15,911	17,847	1,936	1.2%	\$16.90	Work exp. in a related field
37-2012	Maids & housekeeping cleaners	15,510	18,540	3,030	1.8%	\$7.95	Short-term OJT
43-5081	Stock clerks & order fillers	15,203	17,313	2,110	1.3%	\$10.36	Short-term OJT
11-1021	General & operations managers	14,480	15,297	817	0.6%	\$38.37	Degree plus work exp.
53-3032	Truck drivers, heavy & tractor-trailer	14,178	15,274	1,096	0.7%	\$18.14	Moderate-term OJT
41-9022	Real estate sales agents	13,137	18,313	5,176	3.4%	\$8.03	Postsecondary vocational award
41-9021	Real estate brokers	12,946	18,026	5,080	3.4%	\$8.08	Work exp. in a related field
43-6014	Secretaries, except legal, medical, & executive	12,305	13,560	1,255	1.0%	\$13.15	Moderate-term OJT
43-1011	First-line supervisors/managers of office & administrative support workers	12,110	14,407	2,297	1.8%	\$20.66	Work exp. in a related field
43-3031	Bookkeeping, accounting, & auditing clerks	11,656	13,745	2,089	1.7%	\$15.25	Moderate-term OJT
39-9011	Child care workers	11,110	13,794	2,684	2.2%	\$7.82	Short-term OJT
51-2092	Team assemblers	11,085	9,983	-1,102	-1.0%	\$18.79	Moderate-term OJT

Source: EMSI

industry’s largest occupation--represents the region’s eighth largest occupation with roughly 16,000 registered nurses in 2009. Another prominent group of occupations in the Nashville area is related to leisure and hospitality. The largest of these occupations relate to food service (e.g., food preparation workers, waiters and waitresses) and hotels (e.g., maids and housekeeping cleaners).

By 2019, these occupations will remain important, with retail salespeople, office clerks, and customer-service representatives as the largest occupational categories. These occupations are also among those that will grow the most over the period from 2009 to 2019. Retail salespeople, customer service representatives, registered nurses, real estate agents and real estate brokers are each expected to add

more than 5,000 net new jobs. With both structural and cyclical forces pointing to change in the real estate market, real estate agents and real estate brokers are both expected to grow at the fastest rate, a 3.4 percent annual growth rate over this time. Food preparation, laborers and team assembler occupations are forecasted to decline slightly, though they will remain among the largest occupational categories.

Most of the leading occupations in the area have median earnings well below the region’s median hourly earnings (\$17.30). Fifteen of the 20 largest occupations made less than the median earnings.<sup>12</sup> Notably, most of these occupations require only limited educational requirements. Fourteen of the 20

**Figure 28: Fastest-growing high-wage occupations (2009-2019)**

SOC	Occupation	2009	2019	Annual %		Median Earnings	Educational Requirements
				Change 09-19	Change 09-19		
29-1111	Registered nurses	16,346	21,907	5,561	2.97%	\$28.76	Associate's degree
13-2011	Accountants & auditors	9,504	12,574	3,070	2.84%	\$21.89	Bachelor's degree
43-1011	First-line supervisors/managers of office & administrative support workers	12,110	14,407	2,297	1.75%	\$20.66	Work exp. in a related field
11-9199	Managers, all other	10,695	12,804	2,109	1.82%	\$20.27	Work exp. in a related field
13-1111	Management analysts	5,939	7,894	1,955	2.89%	\$25.36	Degree plus work exp.
29-2061	Licensed practical & licensed vocational nurses	6,128	7,835	1,707	2.49%	\$18.59	Postsecondary vocational award
11-1011	Chief executives	9,433	10,819	1,386	1.38%	\$39.94	Degree plus work exp.
25-2021	Elementary school teachers, except special education	8,969	10,306	1,337	1.40%	\$28.28	Bachelor's degree
23-1011	Lawyers	3,875	5,184	1,309	2.95%	\$38.64	First professional degree
41-3031	Securities, commodities, & financial services sales agents	3,640	4,825	1,185	2.86%	\$17.42	Bachelor's degree
29-1069	Physicians & surgeons	4,667	5,810	1,143	2.21%	\$91.81	First professional degree
25-1099	Postsecondary teachers	7,654	8,795	1,141	1.40%	\$32.38	Doctoral degree
11-3031	Financial managers	5,646	6,786	1,140	1.86%	\$33.40	Degree plus work exp.
47-2111	Electricians	4,230	5,351	1,121	2.38%	\$19.33	Long-term OJT
53-3032	Truck drivers, heavy & tractor-trailer	14,178	15,274	1,096	0.75%	\$18.14	Moderate-term OJT
47-1011	First-line supervisors/managers of construction trades & extraction workers	6,064	7,002	938	1.45%	\$23.39	Work exp. in a related field
15-1071	Network & computer systems administrators	2,841	3,769	928	2.87%	\$29.92	Bachelor's degree
15-1031	Computer software engineers, applications	2,083	2,945	862	3.52%	\$34.28	Bachelor's degree
11-9051	Food service managers	4,794	5,642	848	1.64%	\$18.22	Work exp. in a related field
23-2011	Paralegals & legal assistants	1,196	2,038	842	5.47%	\$19.26	Associate's degree

Source: EMSI

<sup>1</sup>Greater than Regional Median Earnings of \$17.30

largest occupations required either short- or moderate-term OJT. Registered nurses and general and

<sup>12</sup> It is important to note that earnings include not only wages and salaries, but also other compensation accrued to workers in the form of supplements such as paid health insurance, day care, transportation, and Social Security taxes, as well as proprietors' income. As a result, earnings are higher than wages, but present a more accurate depiction of a worker's total compensation. The gap between wages and earnings are greatest in jobs that provide significant benefits packages.

operations managers were the only two occupations among the 20 largest to require some form of postsecondary degree. While these two occupations were among the better-paying occupations on this list, several other occupations paid above the regional median earnings, including heavy truck and trailer drivers, team assemblers and supervisors/managers of office and administrative support workers.

Among the fastest-growing high-wage occupations (those above the median earnings level) are registered nurses, followed by accountants and managers. The health-care sector will likely provide a significant number of the area’s high-wage new jobs. In addition to 5,500 new registered nurse positions forecasted by 2019, the Nashville area will also likely require 1,700 licensed practical and vocational nurses and about 1,100 physicians and surgeons. Six of the 20 fastest-growing occupations are office and management positions, including several types of managers, first-line supervisors, analysts and executives. Construction-related positions, including construction managers and

**Figure 29: Fastest-declining occupations (2009-2019)**

SOC	Occupation	Annual %		Change 09-19	Change 09-19	Median Earnings	Educational Requirements
		2009	2019				
11-9012	Farmers & ranchers	9,161	5,705	-3,456	-4.63%	\$7.26	Long-term OJT
51-2092	Team assemblers	11,085	9,983	-1,102	-1.04%	\$18.79	Moderate-term OJT
35-3021	Combined food preparation & serving workers, including fast food	18,008	17,229	-779	-0.44%	\$8.07	Short-term OJT
11-9011	Farm, ranch, & other agricultural managers	2,218	1,564	-654	-3.43%	\$11.15	Degree plus work exp.
53-7064	Packers & packagers, hand	5,014	4,537	-477	-0.99%	\$9.38	Short-term OJT
51-4031	Cutting, punching, & press machine setters, operators, & tenders, metal & plastic	2,041	1,587	-454	-2.48%	\$14.33	Moderate-term OJT
51-2099	Assemblers & fabricators, all other	4,638	4,236	-402	-0.90%	\$15.73	Moderate-term OJT
51-1011	First-line supervisors/managers of production & operating workers	4,783	4,388	-395	-0.86%	\$23.49	Work exp. in a related field
51-5023	Printing machine operators	1,740	1,352	-388	-2.49%	\$19.03	Moderate-term OJT
51-9198	Helpers--Production workers	3,406	3,100	-306	-0.94%	\$11.16	Short-term OJT
43-3071	Tellers	3,505	3,218	-287	-0.85%	\$12.63	Short-term OJT
51-5011	Bindery workers	676	403	-273	-5.04%	\$13.00	Short-term OJT
51-6031	Sewing machine operators	872	603	-269	-3.62%	\$11.69	Moderate-term OJT
53-3031	Driver/sales workers	4,816	4,552	-264	-0.56%	\$14.65	Short-term OJT
51-9061	Inspectors, testers, sorters, samplers, & weighers	3,266	3,018	-248	-0.79%	\$15.30	Moderate-term OJT
53-7062	Laborers & freight, stock, & material movers, hand	20,832	20,589	-243	-0.12%	\$10.93	Short-term OJT
43-4151	Order clerks	1,138	912	-226	-2.19%	\$13.82	Short-term OJT
51-4041	Machinists	2,141	1,920	-221	-1.08%	\$20.43	Long-term OJT
51-9199	Production workers, all other	3,245	3,042	-203	-0.64%	\$13.57	Moderate-term OJT
41-3041	Travel agents	629	428	-201	-3.78%	\$19.28	Postsecondary vocational award

Source: EMSI

electricians, will expand by approximately 1,000 jobs each. These jobs typically require work experience, but some also require some college or long-term training. Eleven of the fastest-growing high wage occupations require a four-year college degree. Three of those 11 occupations (lawyers, doctors and postsecondary teachers) require a professional or advanced degree.

The continued decline of the region’s manufacturing industry employment is reflected in the occupations projected to lose the most net employment over the next decade. Eleven of the 20

occupations projected to lose the most employment over the next 10 years are production-related. Many of these jobs are assembly and machine operators. These occupations largely require OJT and may be lost due both to economic restructuring and production process-related technology changes. Other declining occupations are related to declining industries. For instance, among the largest projected declines are agriculture-related occupations such as farmers, ranchers and farm managers. Combined, these occupations are expected to lose 4,100 net jobs over the next decade. What many of these declining occupations have in common is that they pay wages below the area median (though above the wages paid by many of the fastest-growing occupations), and require relatively lower levels of education and training. Only five of the 20 fastest-declining occupations paid above the region's median hourly earnings, and 15 required only short- or moderate-term OJT.

### Educational Requirements and Occupational Demand

One of the common themes emerging from the data presented above is that many jobs requiring relatively lower levels of education and training, particularly those in declining industries, are at the greatest risk of being eliminated. Conversely, occupations that pay the best wages are those that either require some kind of postsecondary degree or long-term OJT. Therefore, one way to examine occupational opportunities is to look at occupations based on educational requirements. This approach provides a method for linking occupations by educational attainment requirements.<sup>13</sup> The educational bands used in analyzing occupational trends and projections include:

- **Band 1: Advanced Degree** — Occupations requiring advanced degrees (e.g., Ph.D., M.A. /M.S.) or professional degrees (e.g., M.D., J.D.)
- **Band 2: Four-year College Degree** — Occupations requiring either a baccalaureate degree or a bachelor's degree plus experience
- **Band 3: Tech-Some Postsecondary** — Occupations requiring an associate's degree, a postsecondary vocational award or certification, or those that require some college, but may not require a degree
- **Band 4: Long-Term Training and Experience** — Occupations requiring at least a high school diploma or GED, significant work experience, and/or more than a year of OJT
- **Band 5: Moderate Training** — Occupations requiring at least a high school diploma or GED plus moderate-term OJT (typically more than one month, but less than one year)
- **Band 6: Short-Term Training** — Occupations requiring short-term OJT (less than one month)

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<sup>13</sup> *The educational requirements for the occupational data are based on 11 different categories used by the U.S. Bureau of Labor Statistics. These categories identify the most common educational attainment requirements for each of several hundred occupations. Seven of these categories involve formalized postsecondary education, while the other four categories are based on work experience and OJT. It is important to note these classifications are minimum educational requirements. For instance, while most RN positions require a minimum educational attainment of an associate's degree, nationwide 56 percent of RNs between the ages of 25 and 44 have four-year degrees. Increasingly, the BS in nursing is becoming an industry norm for RNs as they take on more responsibility for direct patient care. For more detail about these 11 occupational education requirements, see: [http://www.bls.gov/emp/ep\\_nem\\_definitions.htm#education](http://www.bls.gov/emp/ep_nem_definitions.htm#education).*

Bands 1, 2, and 3 are characterized by having various amounts of formal postsecondary education, ranging from earning a postsecondary vocational award (Band 3) to acquiring a Ph.D. (Band 1). The occupations largely require either advanced technical skills or extensive expertise gained through postsecondary education. Bands 4, 5, and 6 are characterized by requiring various degrees of OJT and experience. These range from requiring less than a month of OJT (Band 6) to requiring over a year of OJT and experience (Band 4). These occupations largely provide career options for individuals with a high school diploma or equivalent to enter and possibly advance in the workforce. The key occupations within each of these education bands are discussed below. A full list of the occupations projected to add the most new and replacement jobs over the next decade by education band are listed in Appendix 1.

### ***Advanced Degree Occupations***

Postsecondary teachers, lawyers, and physicians and surgeons are among the occupations that require advanced degrees which are projected to expand the most by 2019. Postsecondary teachers and lawyers are expected to represent over 2,000 new and replacement<sup>14</sup> jobs between 2009 and 2019. Other education and health-related occupations that are projected to be leading job generators in this band include pharmacists, clergy, counselors and mental health professionals.

### ***Four-Year Degree Occupations***

In this band, key management and business occupations dominate the list of occupations requiring new and replacement workers between 2009 and 2019. For instance, general and operation managers, property managers, and accountants and auditors are all expected to require more than 4,500 new and replacement workers over this time period. Other occupations projected to require a significant number of new and replacement workers include chief executives (4,176); elementary school teachers (3,401); management analysts (3,085); and personal financial advisors (2,524). Two information technology-related occupations—computer systems analysts and computer software engineers (applications)—were also projected to need approximately 1,200 new and replacement workers over the next decade.

### ***Technical Degree and Some Postsecondary Education Degree Occupations***

Registered nurses are the most in-demand occupation in this category, with a forecasted increase of 8,472 new and replacement workers required. Other top occupations in this category tend to be in health-care, real estate, and professional support activities. Real estate agents (7,350 new and replacement workers) and appraisers and assessors (1,563 new and replacement workers) are each in the top 10. Other health-care occupations are nursing aides, orderlies and attendants (2,839 new and replacement workers); licensed practical and vocational nurses (3,651 new and replacement workers); and medical secretaries (899 new and replacement workers). Computer support specialists and preschool teachers are also expected to be in demand, requiring 1,705 and 1,649 new and replacement workers, respectively.

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<sup>14</sup> *New and replacement jobs include those caused by new job creation and those that will occur due to replacing workers who leave the occupation or retire.*

### ***Long-Term Training and Experience Occupations***

As mentioned above, as the economy and the property market recover, there will be increased demand for real estate brokers, with a projected 7,223 new and replacement workers required between 2009 and 2019. This makes it the highest-demand occupation in this education band, even though many of these workers will be contractors employed part-time or on a commission basis. A variety of supervisory occupations are also in-demand occupations requiring long-term training and experience. These occupations include supervisors of retail sales workers (5,454 new and replacement workers); supervisors of office and administrative staff (5,179 new and replacement workers); other managers (4,949 new and replacement workers); supervisors of construction trades and extraction workers (2,367 new and replacement workers); food-service managers (1,844 new and replacement workers); and supervisors of non-retail sales workers (2,098 new and replacement workers). The construction trades are another source of in-demand occupations within this education band. For instance, in-demand construction-related occupations include electricians, carpenters and plumbers, and heating, air conditioning and refrigeration mechanics. These occupations will need between 1,000 and 2,500 new and replacement workers between 2009 and 2019 to meet the expected demand. Several of these positions, especially the skilled trades and supervisory positions, have earnings above the median regional earnings.

### ***Moderate Training Occupations***

Customer service representatives are the most in-demand occupation in this band, with an anticipated 12,453 new and replacement jobs required between 2009 and 2019. The other top occupations include a mixed group with heavy representation from among administrative and skilled and semi-skilled positions. For example, bookkeeping clerks (3,645 new and replacement workers); executive secretaries and administrative assistants (3,419 new and replacement workers); secretaries (3,070 new and replacement workers); sales representatives (2,634 new and replacement workers); and medical assistants (1,350 new and replacement workers) will all require a significant number of new and replacement workers. Other occupations with a high demand for new and replacement workers include truck drivers (4,188); construction laborers (2,300); maintenance and repair workers (2,916); and pharmacy technicians (1,726). Most of these positions currently pay just below the area median for all occupations.

### ***Short-Term Training Occupations***

Most jobs requiring short-term OJT tend to be relatively low-skilled, low-wage occupations. Moreover, many are often the kinds of occupations that have high turnover and include many part-time jobs. The top occupation in this band includes retail salespeople, with 15,098 new and replacement workers required between 2009 and 2019. Many of the other top occupations involve care and cleaning, along with some entry-level office positions. Waiters and waitresses (12,599 new and replacement workers); childcare workers (5,996 new and replacement workers); maids and housekeepers (5,850 new and replacement workers); home care aides (2,812 new and replacement workers); home health aides (2,212 new and replacement workers); building cleaning workers (2,046 new and replacement workers); and landscaping workers (1,625 new and replacement workers) are all leading occupations in this category. Office clerks, stock clerks, and cashiers are also in the top 10, requiring 21,090 new and

replacement workers over the next decade. Median earnings tend to be well below the area median for all occupations and are especially low for waiters/waitresses and childcare workers.

### Synopsis of Occupational Trends by Employment Band

Roughly half of all jobs in the Nashville region and the U.S. are in the first two bands (Short-Term and Moderate Training,

Figure 30: Employment composition by education

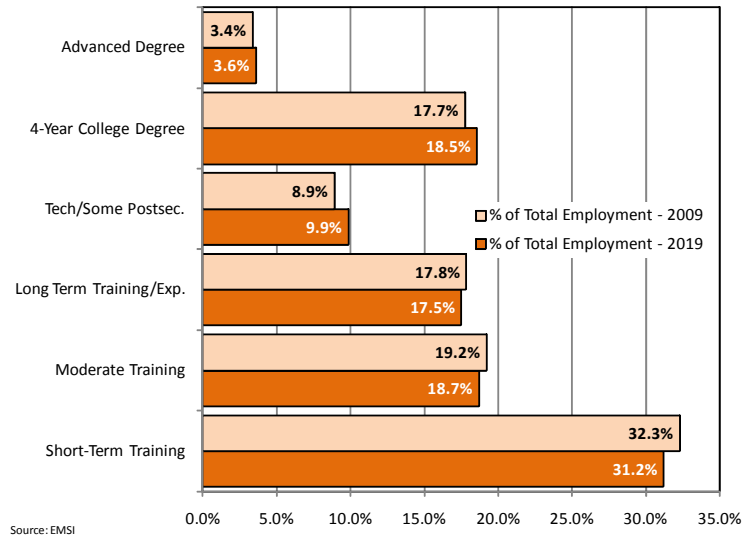


Figure 30), a percentage that has dropped since the 2008 report. However, 38.9 percent of net new jobs will be in these two bands in Nashville, compared to 35.4 percent in the U.S. Often these jobs require a minimum high school diploma, but increasingly, employers prefer some college experience as well. It will be important for workers in these education bands to continually enhance and develop their skills. The survey of Nashville-area employers showed that, once hired, 91 percent of employers provide either OJT or external training, with an average of 32 hours per worker per year. Unfortunately, however, the recent recession has affected training activities, as 54 percent of respondents decreased training budgets as a result of the recession.

At the other end of the education spectrum, 21.1 percent of current jobs require a four-year degree as a

Figure 31: Greater education leads to greater earnings

Nashville Area						
Education	2009 Jobs	Change 2009-19	Total Annual Earnings	Average Earnings	% of Total Employment - 2009	% of New Jobs
Short-Term Training	343,629	36,223	\$8,441,788,202	\$24,567	32.5%	23.7%
Moderate Training	204,391	23,547	\$7,541,840,758	\$36,899	19.3%	15.4%
Long Term Training/Exp.	189,903	23,049	\$8,052,385,474	\$42,403	17.9%	15.1%
Tech/Some Postsec.	95,067	25,125	\$3,911,021,941	\$41,140	9.0%	16.5%
4-Year College Degree	188,899	36,683	\$11,368,865,726	\$60,185	17.9%	24.0%
Advanced Degree	36,103	8,047	\$3,099,966,064	\$85,865	3.4%	5.3%
<b>Grand Total</b>	<b>1,057,992</b>	<b>152,674</b>	<b>\$42,415,868,165</b>	<b>\$40,091</b>	<b>100.0%</b>	<b>100.0%</b>

Source: EMSI

Nation						
Education	National 2009	National Change 09-19	Total National Annual Earnings	Average Earnings	% of Total Employment - 2009	% of New Jobs
Short-Term Training	56,440,465	4,356,082	\$1,370,370,932,237	\$24,280	32.7%	22.6%
Moderate Training	30,700,259	2,459,281	\$1,149,810,055,742	\$37,453	17.8%	12.7%
Long Term Training/Exp.	29,265,238	3,024,023	\$1,237,068,325,709	\$42,271	17.0%	15.7%
Tech/Some Postsec.	16,556,889	3,032,903	\$679,776,501,830	\$41,057	9.6%	15.7%
4-Year College Degree	32,657,706	5,212,263	\$2,126,718,100,021	\$65,121	18.9%	27.0%
Advanced Degree	7,025,992	1,220,170	\$587,870,520,494	\$83,671	4.1%	6.3%
<b>Grand Total</b>	<b>172,646,549</b>	<b>19,304,722</b>	<b>\$6,240,794,662,274</b>	<b>\$36,148</b>	<b>100.0%</b>	<b>100.0%</b>

Source: EMSI

minimum requirement (representing the last two minimum education bands). It is difficult to neatly match minimum education requirements for occupations and the educational attainment of the workforce. For instance, approximately 28 percent of the Nashville region's population aged 25 and over has at least a four-year degree. This does not imply that the difference (28 percent of workers with a college degree and 21 percent of jobs requiring one as a minimum requirement) represents underemployment for those educated workers seeking jobs requiring a college degree. Increasingly, many jobs that once required less than a baccalaureate degree increasingly demand one. Nurses provide a high-profile illustration, as the data indicate that nursing positions require an associate's degree as a minimum, but many nursing positions increasingly require four years and more of university education.

For many jobs that once required only high school, an associate's degree (or at least some college experience) is in high demand. Employers that once sought workers with lesser education are now searching for those who can be innovative and solve problems. Looking primarily at the net new jobs, the mix of jobs requiring some college or a college degree is increasing substantially, while fewer jobs (as a proportion of the total new jobs) will be available to workers with only a high school education. Many of the lowest-skill jobs represent part-time work often taken by young adults as they pursue their education or find their preferred career, but they are not intended as family-sustaining jobs. This means continuing education will increasingly be critical to incumbent workers, as well as those new to a career.

Based on the projected job creation, nearly 30 percent of *new* jobs in Nashville will require at least a four-year degree, so there will be a growing need to better match qualified workers with those jobs that require more education, training and experience. By comparison, 22.7 percent of all current jobs nationally require at least a four-year degree, but 33.3 percent of new jobs will. More than a quarter (26.9 percent) of Nashville's current jobs fall in the middle categories (Long-Term Training and Experience and Technical Degree and Some Postsecondary Education), while 31.6 percent of new jobs will. The U.S. trends for these education bands closely mirror the regional trends.

Clearly, jobs that require at least some postsecondary education are growing faster than those that require a high school diploma or less, even when experience is considered. Jobs requiring a four-year college degree will account for about one-fourth of all new jobs. Figure 30 shows that jobs requiring at least a four-year degree will comprise 22.1 percent of all jobs in 2019, up from 21.1 percent of jobs in 2009. Jobs requiring some postsecondary education, but not necessarily a four-year degree, will increase at the fastest rate over the next decade and will comprise 9.9 percent of all jobs in 2019, up from 8.9 percent of jobs in 2009.

When examining the average earnings associated with each of these education bands, there appears to be strong evidence that workers receive a return on their investment in education. As demonstrated in Figure 31, occupations requiring an advanced degree pay an annual average of \$85,865, well above the regional average of \$40,091. Occupations requiring a four-year degree pay an average of \$60,185. Occupations requiring a technical degree pay on average \$41,140, still above the regional average. By contrast, jobs requiring short-term training pay only an average of \$24,567 per year. Jobs requiring

moderate training pay an average of \$36,899, and jobs requiring long-term training and experience pay an average of \$42,403. In 2009, Nashville's average earnings for people with short-term training, long-term training/experience, some postsecondary education and those with an advanced degree were above the U.S. averages, a change from 2007, when earnings in all bands were below the U.S. averages.

## Evaluating Supply and Demand

Current employment projections suggest that the Nashville region's economy will likely create almost 152,000 jobs by 2019. Based on the current employment conditions, there are about 1.2 jobs per person – due to the dynamics of the labor market resulting from a combination of new job creation and destruction, labor turnover, and workers holding multiple jobs simultaneously. Assuming that same rate, the economy will need about 117,500 people to fill those 152,000 jobs.

At the most basic level, determining the extent to which worker supply and industry demand align can be determined by comparing the available number of workers and the projected employment level. Figure 32 shows these estimates at the broadest level. The Nashville Economic Market Area's total labor force (ages 16+) is projected to grow by 48,000 people due to increased population combined with lower labor force participation rates.

At a 9.3 percent unemployment rate, the region also currently has about 80,000 unemployed workers. In the short term, job growth will likely outpace labor force growth, helping to reduce unemployment rates over the next two to three years. To achieve a full employment level (typically considered to be about 4 percent), at least another 46,000 persons will be available as workforce supply. Together nearly 94,000 persons will be available for projected employment levels. However, total employment is projected to need an additional 24,000 workers by 2019.

If the projected scenario plays out as described, the region will likely return to pre-recession unemployment levels by 2015 or 2016, and worker shortages likely will intensify in the second half of the decade. Labor force growth will be critical to the Nashville region's ongoing success in talent and

Figure 32: Aggregate supply and demand

<i>Estimated Need for Workers</i>		
A	Labor Force Aged 16+ (2009)*	894,051
B	Labor Force Aged 16+ (2019 Projected)*	942,188
C	Projected Net New Workers (B-A)	48,137
D	Available Unemployed Workers (2009)	80,231
E	Unemployed at "Full Employment" (est. 4%)	34,508
F	Total Available Workers 2009 Due to Recession (D-E)	45,723
G	Total existing local workers available by 2019** (C+F)	93,860
H	Projected New Job Creation (2009-2019)	151,637
I	Projected Additional People Required for these New Jobs***	117,548
J	Projected Gap by 2019 (H-G)	23,688

Calculations: CREC based on Data from EMSI, DemographicsNow  
 \*Based on Population times estimated labor force participation rate in 2008 and 2018 as published in BLS, "Labor Force Projections to 2018," Monthly Labor Review, November 2009.  
 \*\*Assumes unemployment rate of 4.0%  
 \*\*\*Assumes 1.2 jobs filled by each person in the labor force (similar ratio as 2009) due to combination of turnover and individuals holding multiple jobs

competitiveness. The area relies on many unique and vibrant industry clusters that employ large numbers of workers in critical occupations. Further, the region displays an ever-increasing interdependence within 10 counties and adjacent areas for workforce supply and demand. Responding to these realities clearly will necessitate assertive measures to guide and shape not only attraction and retention of sufficient talent, but also transportation, education and infrastructure as fully coordinated systems that understand and respond to the region's workforce dynamics for the decade ahead.

## Key Industry Clusters

As part of the Nashville area's economic development strategy, regional leaders have identified several industry clusters that are likely to serve as the basis for future regional growth and workforce opportunities. Those clusters include health care services and administration, information technology and management, headquarters operations, finance and shared services, advanced manufacturing, distribution and logistics, hospitality and construction. In the following section, those clusters are examined more closely regarding the key trends and likely implications for workforce development. It is important to note, however, that the industries in different clusters are not necessarily mutually exclusive and some overlap does exist between some clusters (e.g., the health-care and information technology clusters both include computer design and engineering-related industries). The use of clusters in this analysis helps to identify related sectors whose future success may rely on one another.

An emerging area of interest for Nashville and the rest of the U.S. is the "green" economy. Data on the green economy are not yet reliable because there has been little consensus on how best to define the industries and occupations that reflect this sector, and because that consensus is just beginning to take shape under the leadership of BLS. Earlier in 2010, BLS released a draft definition for the green economy that focuses on seven categories of economic activity: (1) renewable energy; (2) energy efficiency; (3) greenhouse gas reduction; (4) pollution reduction and clean-up; (5) recycling and waste management; (6) agricultural and natural resource conservation; and (7) education and compliance. The challenge in measuring this sector is that few companies perform any of these activities exclusively, and even among focused companies, not all jobs are green. As such, identifying data on the green economy from secondary sources is fraught with ambiguities.

Researchers at the Tennessee Department of Labor and Workforce Development have undertaken a survey of Tennessee companies to identify green jobs and emerging occupational opportunities. Other studies that have examined green jobs have focused on classifying individual companies (rather than whole industries), requiring access to detailed lists of companies and additional market intelligence about what those companies do. While green industries are an important consideration for this analysis, data about the region's green economic activities will not be available until late 2010 or early 2011. Consequently, discussion about the region's green activities remains largely anecdotal and related to opportunities in the other clusters highlighted in this study.

Furthermore, much like the earlier industry employment analysis, the cluster industry trends and projections in this section are derived from EMSI. Each cluster industry analysis is then followed by an examination of related occupations found in that particular cluster, tapping data about the composite

industries using BLS's national staffing pattern for those industries. Therefore, the occupation data presented here represent the occupational employment *within* each of the key clusters, not necessarily the employment throughout the entire economy.

The key occupations are then used to determine the most relevant educational programs within the region and their overall output. These programs are not the only source of future workers for the key occupations, but nevertheless provide some indication of the region's capacity to produce graduates in these fields.

### **Health Care Services and Administration**

Nashville's health care services and administration sector includes a diverse set of health-care-related activities. Like many regions of its size, Nashville has important medical centers serving the region—such as Vanderbilt University Medical Center, St. Thomas Health Services, and HCA TriStar Health System hospitals—along with regional facilities, like Maury Regional Hospital. These centers serve not only the Nashville area, but many rural and smaller metro areas throughout Middle Tennessee and beyond. What makes Nashville truly unique, however, is that in addition to high quality health-care services, the region is also home to a large number of national headquarters operations and health-care information technology companies.<sup>15</sup> Furthermore, the region's health care sector also differs because it is home to numerous biological and medical service firms, such as DaVita and Aegis Sciences Corporation, that serve multi-state regional and national markets. These companies offer unique products or services that are not found in most metropolitan areas. However, it is the presence of global leaders in health-care administration, such as Hospital Corporation of America, Community Health Systems and Healthways, Inc., that truly sets Nashville's health-care sector apart from other regions. These companies explain why Nashville is such an important locus for corporate decision making regarding the management of the health-care business.

Defining this cluster, then, is quite challenging. The traditional elements of the health-care sector include three broad North American Industrial Classification System (NAICS) categories focused largely on the provision of health care services: ambulatory health-care services (621), hospitals (622) and nursing care facilities (623). However, many other segments – such as the development of medical devices and diagnostic support services to the industry, as well as the administration of health-care operations or the management of health-care information technologies – are not easily segregated under current industry classification schemes. For the most part, facilities (such as hospitals and medical centers) that provide most health-care-related employment, the administrative operations, diagnostic laboratories, and health-care-related technology providers directly related to those facilities are included in these three NAICS industries. However, companies that function largely as headquarters operations or information technology companies are not included in these industries – even if their focus is serving the health-care sector. They are included as part of a later analysis of the overall headquarters industries.

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<sup>15</sup> *Some of the workforce implications related to HQ operations and IT will be addressed in subsequent sections.*

## Cluster Trends

While much of the economy has struggled in recent years, the health-care sector remains strong, particularly in the Nashville area. As shown in Figure 33, health care employment grew by over 18,000 jobs between 2004 and 2009. Despite the recession’s impact on employment, average annual growth in health care was 4.4 percent during that period. Our supplemental survey of area employers further revealed that these industries generated a significant amount of employment, with 59 percent of health-care industry survey respondents hiring more than 25 workers in the last year.

Figure 33: Health-care industry employment

Industry	2004	2009	2014	2019	Emp Δ	Emp Δ	Emp Δ	2009 LQ
					2004-2009	2009-2014	2014-2019	
Ambulatory health care services	36,936	46,094	55,099	61,480	9,158	9,005	6,381	1.06
Hospitals	27,545	35,417	40,949	45,031	7,872	5,532	4,082	1.26
Nursing and residential care facilities	13,245	14,674	17,274	19,407	1,429	2,600	2,133	0.77
<b>Health Care Cluster</b>	<b>77,726</b>	<b>96,185</b>	<b>113,322</b>	<b>125,918</b>	<b>18,459</b>	<b>17,137</b>	<b>12,596</b>	<b>1.06</b>

Source: Economic Modeling Specialists, Inc.

Within the health-care sector, hospitals grew at the most rapid rate from 2004 to 2009, adding nearly 8,000 jobs at a pace of 5.2 percent annual growth. Hospitals are also relatively highly concentrated in the region, as evidenced by a location quotient<sup>16</sup> which shows that the region has approximately 26 percent more hospital employment than would a “typical” region.<sup>16</sup> Growth in the hospital industry is expected to slow in the next few years, growing at a 2.4 percent annual rate during the next decade. Instead, growth is expected to increase among nursing and residential care facilities as Baby Boomers continue to age. Ambulatory health care is expected to add jobs at a faster pace as well. The growth rates for these industries are expected to range from 2.8 to 2.9 percent annually during the next decade.

While growth is projected for the health-care sector, the amount of growth and the types of businesses growing are both less certain. Specifically, recent legislation which mandates significant changes to the health-care industry will affect the sector in a number of yet-to-be-determined ways. One of the most obvious changes will be in the continued increase in the use of information technology as a way to improve the efficiency and effectiveness of health-care records management. Nashville’s health-care cluster is well positioned to lead industry efforts in this area, as the region’s health-care sector is driven not only by growth in direct care but also by the cluster’s administrative operations. These business activities will likely undergo significant changes as health-care reform leads to new industry rules and regulations. With health-care reform, the number of patients to be managed is expected to climb, creating pressures on the system to become more productive. This suggests that health informatics may be at the center of a soon-to-arrive health care productivity boom that could begin to transform the mix of workers required for the industry and reduce the pressures on health-care providers as they improve

<sup>16</sup> “Location quotients,” or LQs, are a measure of industry concentration in a region. LQs represent a ratio of each Nashville economic market industry as a share of the region’s employment compared with a similar ratio of that same industry’s national employment total as a share of all U.S. employment. An LQ of 1.0 means that the region has the same share of industry employment as the industry has nationally. LQs over 1 mean that the industry is more concentrated in the region than it is nationally, and LQs below 1 mean that the industry is relatively less concentrated than it is nationally.

their ability to serve patients. Also, there may be emerging opportunities in the green sector that focus largely on waste minimization and recycling hazardous waste materials.

### Occupational Trends

As the health-care sector grows, so too will the demand for workers in health-care occupations. Nursing occupations account for a large share of workers in the health-care cluster. In 2009, registered nurses; nursing aides, orderlies and attendants; and licensed practical and licensed vocational nurses combined accounted for more than 24,000 of the workers in the health care industry, or 25 percent of the total health-care workforce. Along with the traditional role of nurses in hospitals and clinics, a growing number of nurses in the Nashville region are taking on increased management and administrative responsibilities within the region’s numerous health-care administration companies. These businesses are finding that the nurses’ knowledge of the health-care system allows them to be more effective in these positions than those individuals without health-care experience.

Figure 34: Health-care occupation employment

SOC	Occupation	Est Cluster Emp 2009	Est Cluster Emp 2019	Δ Emp 2009 - 2019	Median Earnings	Educational Requirements
29-1111	Registered nurses	13,158	18,182	5,024	\$28.76	Associate's degree
31-1012	Nursing aides, orderlies, & attendants	6,109	8,121	2,012	\$11.90	Postsec. voc. award
29-2061	Licensed practical & licensed vocational nurses	5,051	6,617	1,566	\$18.59	Postsec. voc. award
29-1069	Physicians & surgeons	4,433	5,535	1,102	\$91.81	First professional degree
31-1011	Home health aides	3,485	4,780	1,295	\$10.34	Short-term OJT
43-9061	Office clerks, general	2,835	3,738	903	\$13.05	Short-term OJT
31-9092	Medical assistants	2,477	3,485	1,008	\$14.12	Moderate-term OJT
43-4171	Receptionists & information clerks	2,155	2,610	455	\$12.09	Short-term OJT
43-1011	First-line supervisors/managers of office & administrative support workers	2,089	2,739	650	\$20.66	Work exp. in a related field
39-9021	Personal & home care aides	2,076	2,448	372	\$9.46	Short-term OJT

Source: EMSI

Some health-care providers are partnering with retail outlets, such as drug stores or “big-box” retailers, in many places to provide primary care. These facilities rely on access either to general physicians or experienced nurses. In particular, nurse practitioners are being called upon to meet the shortage of primary-care physicians, especially in these retail settings and other clinic settings. Hospitals and community facilities are competing with the retail clinics for a very limited number of nurse practitioners. Hospitals indicate that they are somewhat better able to compete for these employees because those workers seem to prefer a medical setting, but large health-care providers are not as competitive in recruiting and retaining pharmacists, particularly clinical pharmacists, due to the pay differential between retail and hospital facilities for those jobs.

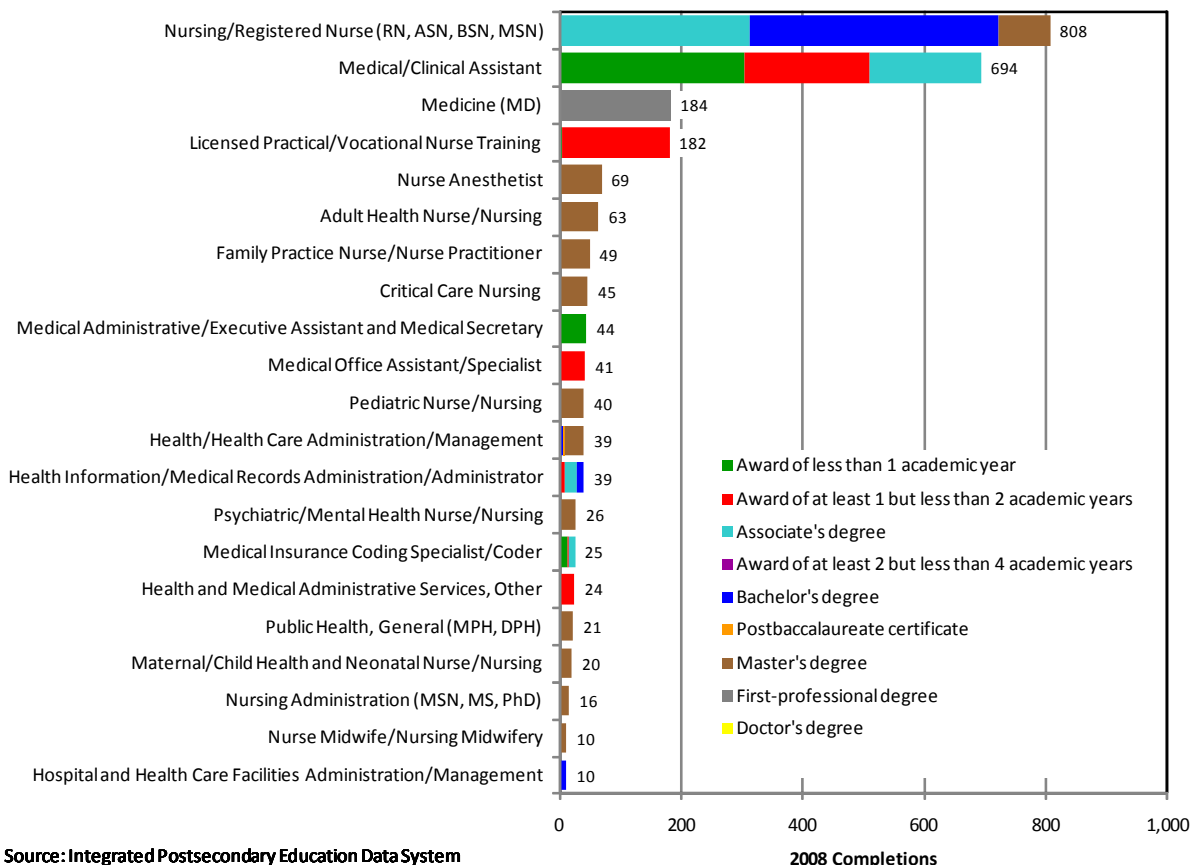
As Figure 34 shows, each of the 10 largest occupations within the health-care industry is projected to grow between 2009 and 2019. While nursing and nursing aide occupations are all projected to grow rapidly over the next 10 years, physicians and surgeons, home health aides and medical assistants are also projected to add more than 1,000 net new jobs in the Nashville area’s health-care cluster in the next 10 years. A common thread between these and nearly all other health-care occupations is that these jobs will increasingly require strong computer skills as the health-care industry increases its reliance on computers and technology for everything from drug prescriptions to insurance processes to hospital records.

With the growth of the health-care services industry, finding qualified workers continues to be a frequent concern among area companies. In particular, several often-cited challenges include: (1) a shortage of family practice physicians; (2) difficulties in recruiting medical professionals to non-medical settings; (3) an insufficient number of information technology professionals with health-care experience; and (4) the limited availability of nurses for demanding nursing disciplines. Most companies interviewed indicated that they were successful in retaining qualified workers, but they admitted that that success of late was due in part to the recession reducing employee turnover. However, company executives expect that retention difficulties will increase as the economy recovers, particularly for in-demand occupations such as nursing. They also indicated that finding managers with experience in health care (especially hospital management) could become a greater challenge. At the same time, they lamented that few unemployed information technology workers were qualified to transition into jobs that supported health informatics because few of these jobseekers had technical knowledge of health-care information system requirements.

### Educational Programs

To meet the need for workers in Nashville’s health-care industry, area postsecondary institutions offer numerous programs that train graduates for work in this field. As Figure 35 shows, more graduates complete the region’s nursing programs than any other health-care-related programs. The nursing programs include 313 associate’s degree recipients, 409 bachelor’s degree recipients, and 88 master’s

Figure 35: Health-care educational programs



Source: Integrated Postsecondary Education Data System

degree recipients annually. A number of schools in the region offer these degrees, including large programs at Tennessee State University, Middle Tennessee State University, Columbia State Community College, Belmont University, Austin Peay State University and Aquinas College. Vanderbilt University also plays an important role, as it offers many of the graduate-level programs that prepare nurses in more specialized fields.

Even though the region's higher-education institutions produced more than 800 graduates in 2008, companies that employ nurses indicate there are areas where the skills of these graduates could be strengthened. For instance, there is a demand for more and better instructors. Moreover, several of those interviewed indicated that there is an ongoing need for nurses in particular disciplines that tend to be less appealing. In addition, since so many nurses are now asked to work more independently, they increasingly need to hone their skills related to management, problem-solving and IT competencies. Addressing these issues may prove challenging in the current budget environment, as one interviewee noted that state budget cuts are forcing UT-Knoxville to cut back its nursing programs.

In addition to registered nursing programs, other large programs include medical/clinical assistants (694 graduates); medicine (MD) (184 graduates); and licensed practical/vocational nurse training (182 graduates). While a number of community colleges and technical schools offer a medical/clinical assistant program, only two postsecondary institutions (Vanderbilt University and Meharry Medical College) offer a medicine (MD) program. Similarly, the Tennessee Technology Centers at Murfreesboro, Nashville and Dickson are the institutions that offer a licensed practical/vocational nurse training program.

Pharmacists were another area of identified need from the companies interviewed. Lipscomb University and Belmont University are regional producers of pharmacists. The hospitals interviewed noted that because hospital care can be relatively complex, many pharmacy graduates are often more inclined to go into retail pharmacy. It is important to note that the Nashville area also draws workers in health care and other sectors from public and other higher education institutions across the state, such as the University of Tennessee.

### **Information Technology and Management**

Information technology (IT) and management is an integral part of most business operations, and Nashville's role as a headquarters locale helps to explain the value of IT as an emerging industry sector. The region's IT sector is unique because of Nashville's importance as a global health-care administration center, the large data processing and shared service sector, as well as the regional banking activity concentration. Key companies such as Emdeon, eMids, IMI Health and Health Care Management Systems, to name just a few, illustrate the importance of health-care information management to the region, while the presence of companies like Convergys illustrates that customer-service management is also a vital opportunity for workers with strong general computer systems and networking capabilities.

## Industry Trends

For the purposes of this analysis, the IT sector is defined as companies focused on a variety of computer software, programming, management, systems design and related services. Certainly, IT activities exist

Figure 36: IT industry employment

Industry	2004	2009	2014	2019	Emp Δ	Emp Δ	Emp Δ	2009 LQ
					2004-2009	2009-2014	2014-2019	
Software publishers	801	1,093	1,235	1,280	292	142	45	0.61
Data processing and related services	1,847	3,983	5,486	7,478	2,136	1,503	1,992	2.04
Custom computer programming services	3,372	3,580	4,383	4,990	208	803	607	0.71
Computer systems design services	2,677	3,838	5,088	6,186	1,161	1,250	1,098	0.76
Computer facilities management services	95	259	318	395	164	59	77	0.60
Other computer related services	375	325	207	173	-50	-118	-34	0.36
Other management consulting services	613	391	210	122	-222	-181	-88	0.48
<b>IT Cluster</b>	<b>9,780</b>	<b>13,469</b>	<b>16,927</b>	<b>20,624</b>	<b>3,689</b>	<b>3,458</b>	<b>3,697</b>	<b>0.84</b>

Source: Economic Modeling Specialists, Inc.

in other companies that produce their own products or provide their own services, but it is notoriously hard to analyze the IT specialization in those industries, as some companies hire their own IT specialists, while others contract the service out to small network administration, web development and computer programming firms. Without data on the IT activities of different types of businesses, the analyst must focus on activities that can definitively be counted. As Figure 36 shows, the IT industry has grown significantly since 2004 and is projected to continue growing through 2019. Between 2004 and 2009, employment increased by more than 3,600 workers for an average annual growth rate of 6.6 percent. Between 2009 and 2019, the industry is projected to grow at an average of 4.4 percent per year by adding over 7,100 jobs. Despite this sustained growth, this industry is less concentrated in Nashville than in the rest of the country, as evidenced by an LQ of 0.84. Since the IT industry is primarily a service

Figure 37: IT occupation employment

SOC	Occupation	Est Cluster Emp 2009	Est Cluster Emp 2019	Δ Emp 2009 - 2019	Median Earnings	Educational Requirements
15-1021	Computer programmers	1,028	1,612	584	\$26.69	Bachelor's degree
15-1031	Computer software engineers, applications	699	1,597	898	\$34.28	Bachelor's degree
15-1051	Computer systems analysts	638	1,400	762	\$27.81	Bachelor's degree
15-1041	Computer support specialists	475	1,222	747	\$19.90	Associate's degree
15-1081	Network systems & data communications analysts	444	897	453	\$23.09	Bachelor's degree
15-1032	Computer software engineers, systems software	406	832	426	\$32.69	Bachelor's degree
11-3021	Computer & information systems managers	356	832	476	\$39.19	Degree plus work exp.
15-1071	Network & computer systems administrators	333	1,048	715	\$29.92	Bachelor's degree
43-9021	Data entry keyers	319	791	472	\$12.40	Moderate-term OJT
43-4051	Customer service representatives	310	903	593	\$14.23	Moderate-term OJT

Source: EMSI

provider to other businesses, the nature and composition of this industry is largely determined by the other types of businesses found in the region. Certainly, the region's strong health care, finance and shared services, and distribution and logistics industries account for a substantial portion of IT activity in Nashville.

## Occupational Trends

The largest occupations within the IT industry include computer programmers, followed by software engineers, applications, and computer systems analysts. These occupations, as shown in Figure 37, typically require a postsecondary degree and provide better-than-average median earnings. Specifically, seven of the 10 largest occupations in the industry require a bachelor's degree and some require work

experience as well, while one—computer support specialist— requires an associate’s degree. The remaining occupations, data entry keyers and customer service representatives, require moderate-term OJT. The occupations with the strongest earnings, each with median earnings over \$30 per hour, include computer and information systems managers, computer software engineers (applications) and computer software engineers (systems). Each of these occupations is expected to grow in the next 10 years, while computer software engineers, applications (898 net new jobs), computer systems analysts (762 net new jobs), and computer support specialists (747 net new jobs) are expected to grow the most over that time period.

Focus-group participants noted that the Nashville-area labor market for IT occupations is very tight despite the recession, with more positions available than qualified candidates. While employers indicated that they frequently receive a large number of applications, qualified candidates with relevant work experience are still difficult to find. Furthermore, company recruiters suggest that it is difficult to recruit candidates to the Nashville area. Despite the relatively good wages offered in IT compared to other occupations, Nashville’s IT workers can frequently earn more elsewhere. During interviews with company representatives, several noted that their workers need to continuously refresh and renew their skills. Several noted that many of the area’s available IT programs were often too basic or were sometimes too theoretical to help workers prepare for the future.

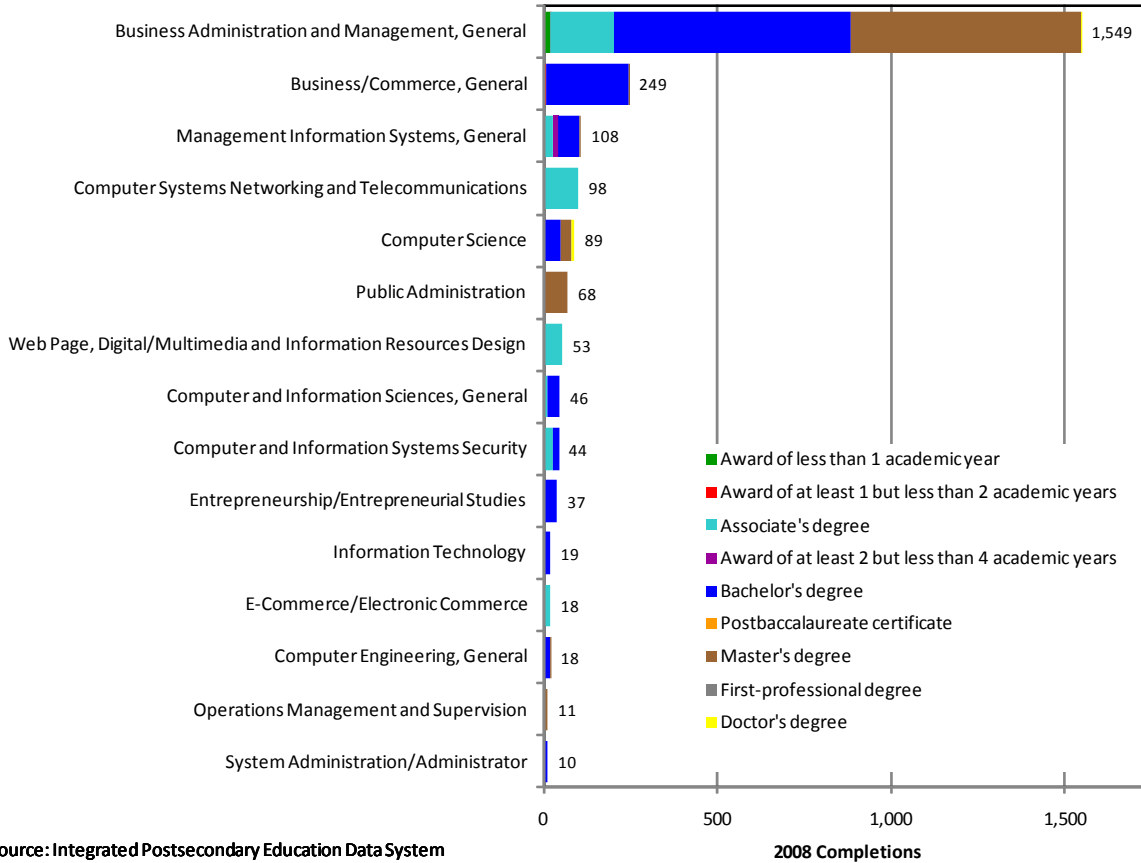
The region’s IT sector also demands a significant number of health informatics professionals – a group that is notoriously difficult to find. These individuals must have a combination of health-care experience and computer-programming or networking skills. One key issue is that the skills of trained professionals in this field can quickly erode because of continuous and rapid industry changes. Furthermore, employers typically seek candidates with experience and take few candidates that do not possess it. This means that graduates from area educational programs must have gained hands-on experience through internships during their academic career in order to compete successfully for jobs. In today’s tough labor market, these internships are increasingly difficult to obtain.

### ***Educational Programs***

As shown in Figure 38, several educational programs train workers for the large and in-demand occupations within the IT industry. However, these programs tend to provide students with IT experience as a sideline to more general business and management degrees, so the students rarely get sufficient training in specialized fields required to manage IT workers. Still, there are a number of IT-related programs offered in the Nashville area, including general management information systems; computer systems networking and telecommunications; and computer science. These programs also provide a combination of associate’s, bachelor’s and master’s degrees. Area schools offering such programs include Vanderbilt University, Lipscomb University, Belmont University, Tennessee State University, Middle Tennessee State University, Columbia State Community College and Nashville State Community College. In some cases, specialized certifications are required to supplement those degrees (or should be included as a pre-requisite for a student to receive his/her degree). Focus-group participants commented that they often have to recruit candidates from outside of the Nashville region,

which they view as an expensive way to address their needs. In general, they would prefer to hire more local degree holders to fill IT positions.

**Figure 38: IT educational programs**

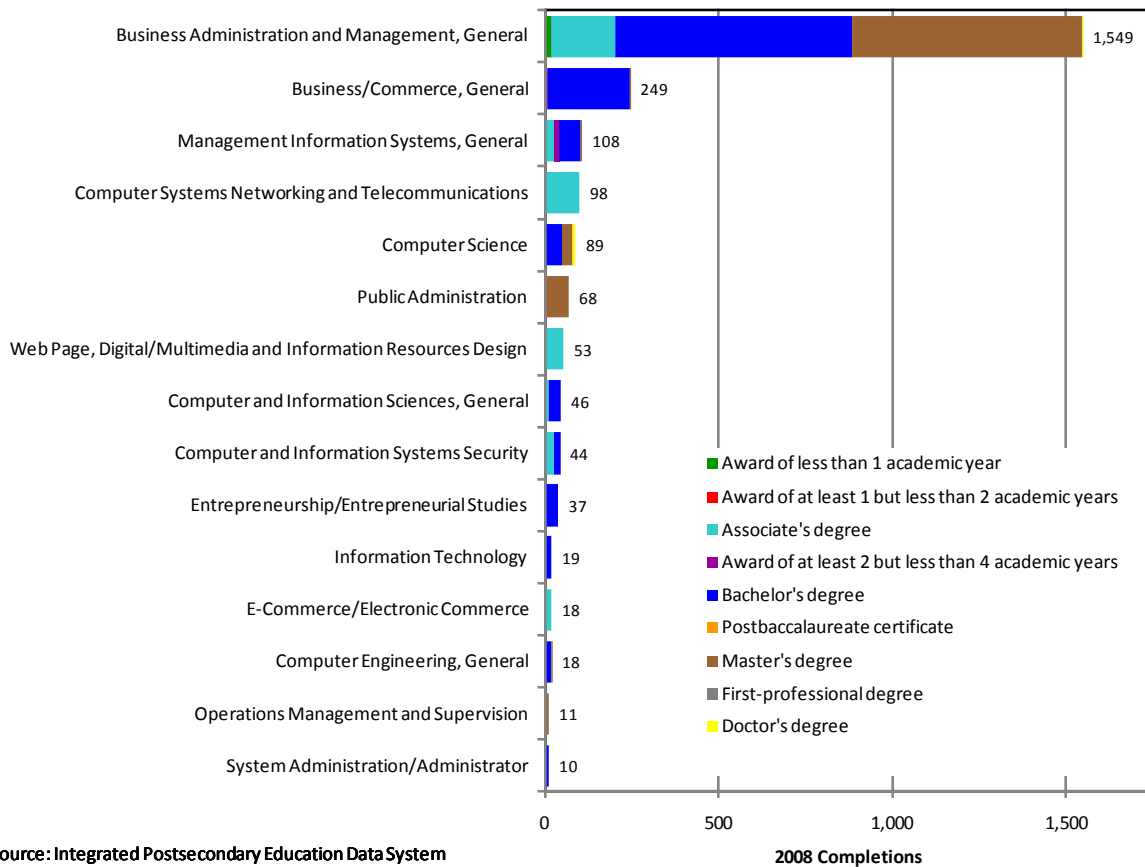


### Headquarters Operations

Headquarters operations are a high-profile component of the Nashville-area economy, and they can be found in a variety of industries, including health care, IT, publishing, music and finance. Certainly, companies such as Healthways, HCA, HealthSpring, Community Health Systems, and LifePoint Hospitals provide excellent examples of traditional health care corporate administration, but the region also has the headquarters for Emdeon (a health information data processing center); Psychiatric Solutions, Inc., Hospice Compassus and America Service Group (health provider for correctional facilities). The region is also home to the headquarters for Cracker Barrel and Shoney's North America restaurants. Likewise, the region's well-known printing and publishing industry includes LifeWay Christian Resources, United Methodist Publishing House and the Southwestern Company. There are numerous other well-known major Nashville-based companies, including Nissan North America, Bridgestone Americas Holding, Gaylord Entertainment, Ingram Industries, Tractor Supply and Dollar General.

The region is also highly regarded for its headquarters in other key clusters. In the advanced manufacturing cluster, Nissan and Bridgestone are joined by corporate offices for Johnson Electric Automotive, Orchid International and Gibson International. Examples of locally based construction-industry-related headquarters include Rogers Group and ABG Caulking and Waterproofing. Barge

**Figure 39: Headquarters industry employment**



Waggoner Sumner and Cannon and Gresham, Smith and Partners are major engineering and architectural firms in the region. Similarly, Corrections Corporation of America, headquartered in Nashville, manages and builds detention facilities.

### Industry Trends

As Figure 39 shows, this industry cluster grew rapidly between 2004 and 2009, adding over 3,400 jobs for an average annual growth rate of 7.7 percent. Growth is projected to continue into the future, although slowing from this rapid pace. The region’s headquarters operations are also gaining relative to the U.S., as Nashville is viewed as an increasingly attractive place to manage a corporate enterprise. By 2019, if projected growth patterns persist, Nashville’s “headquarters cluster” is expected to grow relatively quickly, even faster than the U.S. growth rate for this sector.

Figure 39: Headquarters industry employment

Industry	2004	2009	2014	2019	Emp Δ 2004-2009	Emp Δ 2009-2014	Emp Δ 2014-2019	2009 LQ
Managing offices	7,694	11,157	14,945	17,524	3,463	3,788	2,579	0.99
<b>HQ Cluster</b>	<b>7,694</b>	<b>11,157</b>	<b>14,945</b>	<b>17,524</b>	<b>3,463</b>	<b>3,788</b>	<b>2,579</b>	<b>0.99</b>

Source: Economic Modeling Specialists, Inc.

### Occupational Trends

A wide range of administrative support personnel can be found in most corporate headquarters locations. This mix of occupations means that the number of people required for individual occupations is relatively smaller than those required for the largest occupations in other sectors. Among the occupations requiring the least amount of training include customer-service representatives, administrative assistants, bookkeepers and office clerks. These are also among the largest employment categories, all requiring moderate to short-term OJT, but they typically offer limited long-term earnings growth. Figure 40 shows that customer-service representatives, with 570 workers in 2009, account for the largest employment category in the industry, while secretaries/administrative assistants include more than 340 workers. These positions typically require OJT, but many also require some postsecondary experience. The median earnings for these lower-skilled positions are between \$13.05 and \$17.12 per hour, below the regional median. Among more highly educated workers, general and operations managers represent the largest occupation, accounting for more than 500 jobs in 2009. Financial managers, general managers, and chief executives are also among the largest of these occupations, most of which—like many careers with the best earning potential—require a bachelor’s degree combined with experience.

Many of these positions offer clear pathways to success. For instance, one potential career pathway along these lines may involve bookkeeping, accounting or auditing clerks, a position which earns \$15.25 per hour. Individuals in those jobs could pursue a bachelor’s degree to become accountants and auditors and raise their average earnings to \$21.89 per hour. With additional work experience, these individuals could eventually become financial managers and earn \$33.40 per hour.

Figure 40: Headquarters occupation employment

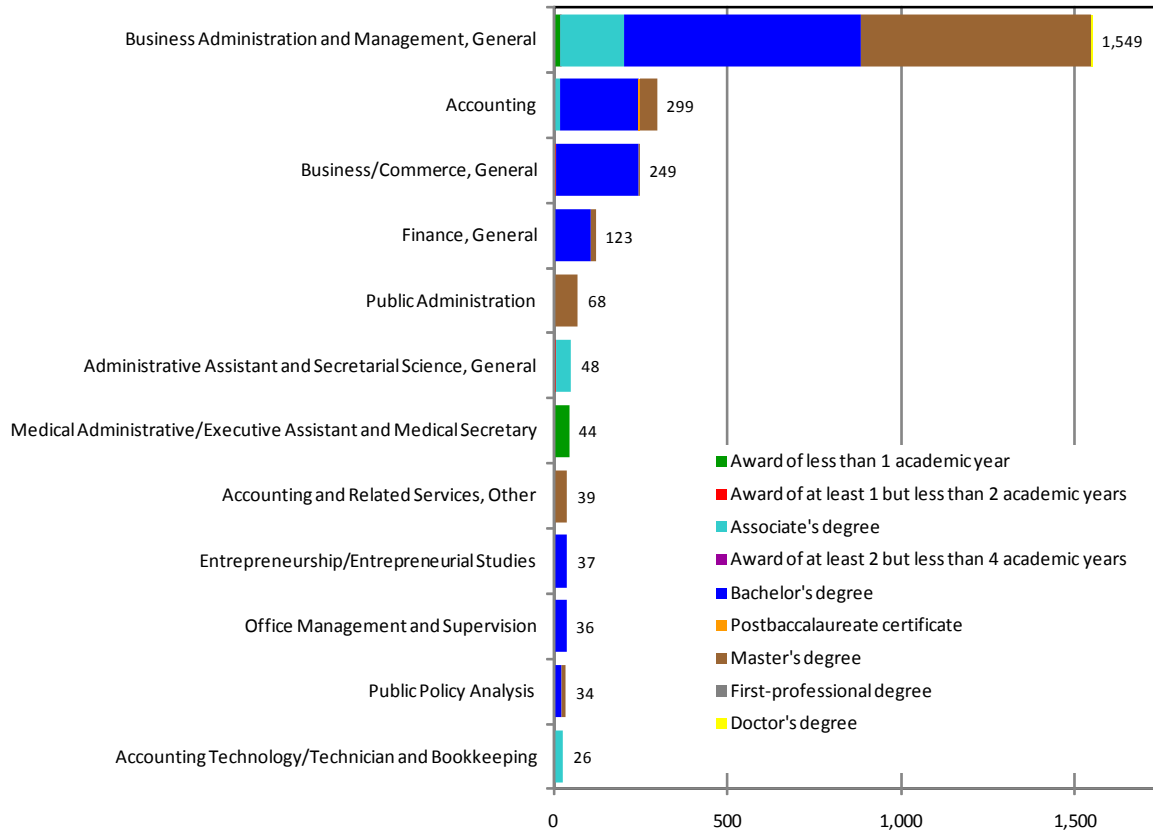
SOC	Occupation	Est Cluster Emp 2009	Est Cluster Emp 2019	Δ Emp 2009 - 2019	Median Earnings	Educational Requirements
43-4051	Customer service representatives	570	990	420	\$14.23	Moderate-term OJT
11-9199	Managers, all other	514	600	86	\$20.27	Work exp. in a related field
11-1021	General & operations managers	505	803	298	\$38.37	Degree plus work exp.
11-1011	Chief executives	422	522	100	\$39.94	Degree plus work exp.
11-3031	Financial managers	376	657	281	\$33.40	Degree plus work exp.
43-6011	Executive secretaries & administrative assistants	346	549	203	\$17.12	Moderate-term OJT
43-9061	Office clerks, general	338	535	197	\$13.05	Short-term OJT
43-3031	Bookkeeping, accounting, & auditing clerks	323	512	189	\$15.25	Moderate-term OJT
43-1011	First-line supervisors/managers of office & administrative support workers	278	441	163	\$20.66	Work exp. in a related field
13-2011	Accountants & auditors	257	466	209	\$21.89	Bachelor's degree

Source: EMSI

## Educational Programs

As shown in Figure 41, programs that provide workers for the headquarters industry cluster are generally management- or finance-related. Business administration and management programs graduated 1,549 students in 2008, with 184 awarded associate's degrees, 684 receiving bachelor's degrees and 661 earning master's degrees. The largest of these programs are offered at Vanderbilt University, Middle Tennessee State University, Trevecca Nazarene University, Tennessee State

Figure 41: Headquarters educational programs



University and Belmont University. Accounting is also a large program in the region, with 299 total graduates comprised primarily of bachelor's and master's degree graduates. Middle Tennessee State University, Tennessee State University and Belmont University offer the region's largest accounting programs.

## Finance and Shared Services

The finance and shared services industry, comprised largely of financial activities combined and related services, exists to meet the needs of businesses and individuals in the Nashville area and throughout the country. The sector includes many large life, health, home, auto, business and even technology insurance companies, including CIGNA, Asurion, Tennessee Farmers, State Farm, American General and Permanent General Insurance. The sector also includes data mining, medical utilization management, insurance intermediation, and employee benefit consulting, as illustrated by AIM Health Care,

MedSolutions, Willis Group and Paradigm Group. The cluster also includes a variety of companies that provide more traditional accounting-related services, such as KraftCPAs and Lattimore Black Morgan and Cain. The financial services vary from traditional regional banking centers, such as Regions, Pinnacle National, and SunTrust, to investment operations, such as UBS Financial. The Nashville area also hosts a variety of equipment and consumer financial institutions, such as Ford Motor Credit and Caterpillar Financial.

### Industry Trends

The finance and insurance services industries include a few unique concentrations in Nashville, as evidenced by those industries shown in Figure 42 with an LQ above 1. These industries serve people well beyond the Nashville market area. During interviews with these companies, many confirmed that they serve clients throughout Tennessee and across the nation.

This sector added more than 10,000 jobs between 2004 and 2009 for an average annual growth rate of 4.4 percent. This growth was largely driven by the insurance and related business services segments, which, combined, added more than 8,300 jobs between 2004 and 2009. As the economy rebounds, these finance and shared service industries are likely to add another 11,700 jobs during the next decade. Interviews conducted with individual companies corroborated this estimate. The survey respondents predicted a 5.1 percent average annual employment growth rate during the next five years. While both the finance and insurance industries will continue to grow, the projections suggest that most growth in

Figure 42: Finance and shared services industry employment

Industry	2004	2009	2014	2019	Emp Δ 2004-2009	Emp Δ 2009-2014	Emp Δ 2014-2019	2009 LQ
<b>Finance</b>								
All other financial investment activities	186	344	413	473	158	69	60	0.36
Commodity contracts brokerage	57	91	131	160	34	40	29	0.43
Commodity contracts dealing	57	35	42	47	-22	7	5	0.26
Health and welfare funds	110	218	235	286	108	17	51	0.62
Investment banking and securities dealing	1,014	967	1,224	1,539	-47	257	315	0.73
Miscellaneous intermediation	741	795	860	917	54	65	57	0.56
Open-end investment funds	59	8	4	2	-51	-4	-2	0.02
Other financial vehicles	24	198	248	283	174	50	35	0.69
Other insurance funds	11	98	69	64	87	-29	-5	0.18
Pension funds	365	597	733	843	232	136	110	1.21
Portfolio management	1,533	2,361	2,861	3,232	828	500	371	0.69
Securities brokerage	1,507	1,304	1,244	1,351	-203	-60	107	0.51
Trusts, estates, and agency accounts	447	950	1,151	1,315	503	201	164	2.90
<b>Finance Total</b>	<b>6,111</b>	<b>7,966</b>	<b>9,215</b>	<b>10,512</b>	<b>1,855</b>	<b>1,249</b>	<b>1,297</b>	<b>0.64</b>
<b>Insurance</b>								
Direct insurers, except life and health	4,966	6,031	6,112	6,051	1,065	81	-61	1.74
Direct life and health insurance carriers	1,941	2,198	1,500	1,288	257	-698	-212	0.53
Insurance agencies and brokerages	8,333	9,505	9,922	10,026	1,172	417	104	1.35
Other insurance related activities	3,600	5,229	6,094	6,481	1,629	865	387	2.06
Reinsurance carriers	212	214	209	204	2	-5	-5	1.22
<b>Insurance Total</b>	<b>19,052</b>	<b>23,177</b>	<b>23,837</b>	<b>24,050</b>	<b>4,125</b>	<b>660</b>	<b>213</b>	<b>1.33</b>
<b>Service</b>								
Accounting and bookkeeping services	13,398	14,993	17,406	19,868	1,595	2,413	2,462	1.72
Consumer lending	959	855	1,160	1,438	-104	305	278	1.14
Investment advice	3,349	6,083	7,790	8,919	2,734	1,707	1,129	1.05
<b>Service Total</b>	<b>17,706</b>	<b>21,931</b>	<b>26,356</b>	<b>30,225</b>	<b>4,225</b>	<b>4,425</b>	<b>3,869</b>	<b>1.44</b>
<b>Finance and Shared Services Cluster</b>	<b>42,869</b>	<b>53,074</b>	<b>59,408</b>	<b>64,787</b>	<b>10,205</b>	<b>6,334</b>	<b>5,379</b>	<b>1.18</b>

Source: Economic Modeling Specialists, Inc.

the financial services industry will occur in the related “service” segment during the next decade, where more than 8,000 of the new finance and shared services jobs are anticipated.

### Occupation Trends

Figure 43 shows that key occupations within the finance and shared services industry cover a range of skill levels, but most require four-year postsecondary degrees or more. Among lower-skilled jobseekers, customer-service representatives, claims adjusters and general office clerks offer the greatest opportunity for employment. They offer median earnings of \$13 to \$15 per hour for jobs requiring short- or moderate-term OJT. Claims adjusters and investigators offer the best wages, but they require significant experience as a pre-requisite. Most other key positions require a four-year degree and often require experience as well. These pay anywhere from \$15 to \$33 per hour, and all are expected to grow significantly during the next decade. Personal financial advisors, accountants and auditors, and securities, commodities, and financial service sales agents are all occupations that are projected to add more than 1,000 workers between 2009 and 2019.

**Figure 43: Finance and shared services occupation employment**

SOC	Occupation	Est Cluster Emp 2009	Est Cluster Emp 2019	Δ Emp 2009 - 2019	Median Earnings	Educational Requirements
41-3021	Insurance sales agents	5,247	5,710	463	\$17.20	Bachelor's degree
13-2052	Personal financial advisors	4,230	5,832	1,602	\$14.93	Bachelor's degree
43-4051	Customer service representatives	3,564	4,009	445	\$14.23	Moderate-term OJT
13-2011	Accountants & auditors	3,540	4,804	1,264	\$21.89	Bachelor's degree
41-3031	Securities, commodities, & financial services sales agents	3,036	4,124	1,088	\$17.42	Bachelor's degree
13-1031	Claims adjusters, examiners, & investigators	2,711	2,986	275	\$23.87	Long-term OJT
43-9061	Office clerks, general	1,753	1,958	205	\$13.05	Short-term OJT
11-3031	Financial managers	1,591	2,055	464	\$33.40	Degree plus work exp.
43-3031	Bookkeeping, accounting, & auditing clerks	1,562	1,891	329	\$15.25	Moderate-term OJT
13-2051	Financial analysts	1,476	2,030	554	\$20.42	Bachelor's degree

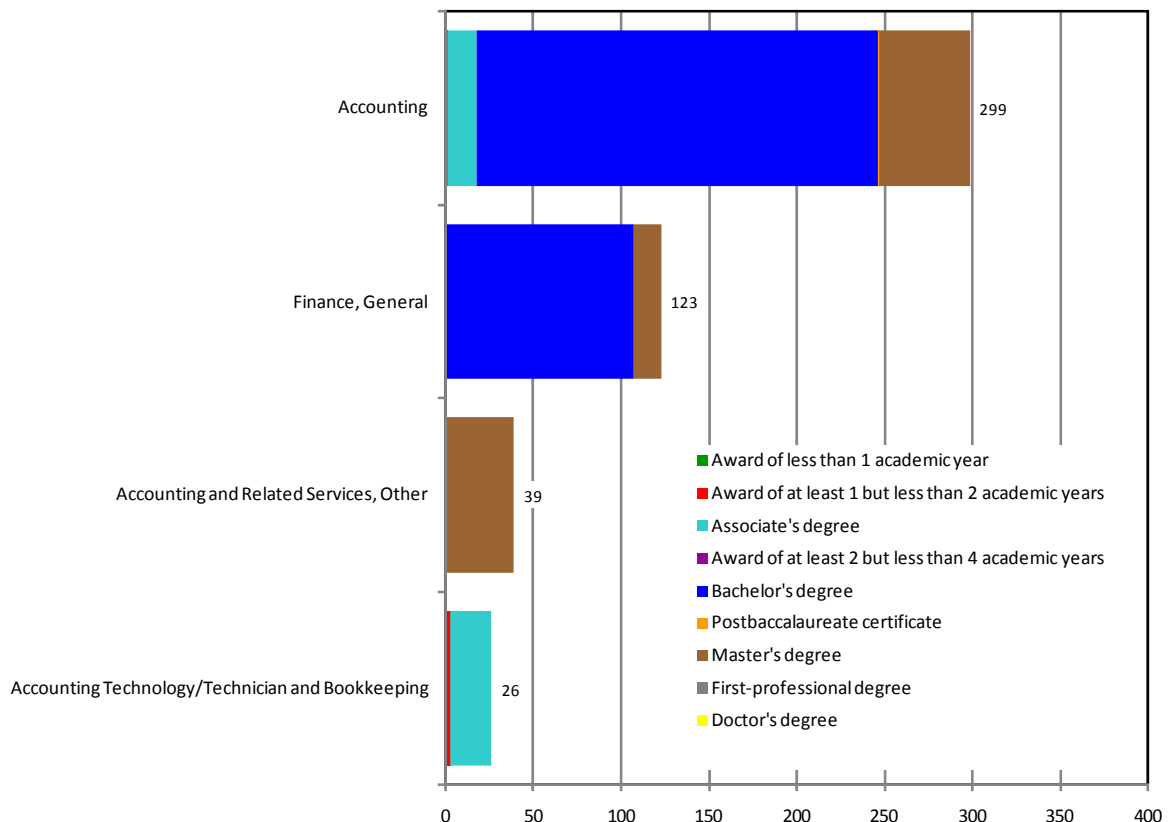
Source: EMSI

During the past few years, employers in the finance and shared services industry have looked to labor sources well beyond Nashville, including business schools across the U.S. Key skill requirements for their best employees include problem solving, people skills, and client service skills. Increasingly, these companies are seeking greater leadership skills, especially among young workers and aspiring middle managers. Additionally, the companies are increasingly demanding that employees have basic IT skills. Workers in the IT departments of these companies are among the fastest-growing hiring segment according to several local executives. Once employees are hired, few interviewees cited any retention difficulties, which the companies largely attribute to continued training and mentoring of employees as well as the general appeal of Nashville as a place for young professionals to live. However, 56 percent of finance and shared services companies survey respondents noted that they have decreased their training budgets due to the recession. Still, 88 percent of these respondents stated that they provide an average of 40 hours of training per worker per year. These training and mentoring activities have the potential to support employee transition into management and leadership positions, an area in which some businesses are reporting challenges.

### Educational Programs

The educational programs offered in the Nashville area that provide graduates for the finance and shared services industry are geared towards meeting the need for key occupations in accounting and finance. As Figure 44 shows, accounting is the largest program, with 299 graduates comprised of associate's, bachelor's and master's degree recipients. Other programs include finance (123 graduates),

**Figure 44: Finance and shared services educational programs**



accounting and related services (39 graduates), and accounting technology/technician and bookkeeping (26 graduates). A critical need is for staff with basic information technology skills and staff with communication skills sufficient to make technical projects understandable to laypersons. In addition, incumbent workers, especially in technical fields, increasingly need help transitioning into management occupations within their companies.

## Creative Industries

Nashville has a long history as a center for creativity and entrepreneurial activity in fields as diverse as health care, retailing, restaurant franchising and publishing; however, the most famous industry cluster remains the music and entertainment sector. While the worldwide reputation of Nashville centers on country music, the city has also become the leading hub for North America's music industry, significantly outpacing New York, Los Angeles and Austin, Texas, as cited in a 2010 study by the Martin Prosperity Institute<sup>17</sup>. From a music-creation standpoint, the city is the headquarters for genres including country, Americana, international bluegrass, gospel and even barbershop harmony. Some of America's most popular current music is being created by Nashville-based bands, from Kings of Leon to Jack White to Ke\$ha to Taylor Swift, providing a mainstream prominence in the entertainment world.

The music business includes many creative categories—from songwriting, publishing, video and film production to scoring, copyright administration, booking agents and artist management. Technology innovations in the music and entertainment field include firms like Landmark Digital, a BMI subsidiary that has developed a highly sophisticated musical performance monitoring technology platform. There are more than 2,000 music and entertainment companies in Nashville, many of them sole proprietorships or small entrepreneurial ventures working to solve the challenges in the industry as it faces a dramatically shifting business model. These entrepreneurial ventures, coupled with sizable operations from international entertainment conglomerates such as Sony, Viacom and BMI, add up to an industry whose impact on the city's creative reputation far exceeds the statistics.

The Blair School of Music and the Nashville Symphony Association are key assets supporting the development of a thriving international music and entertainment industry. These and other assets, such as Belmont University's unique music and entertainment business management program and Middle Tennessee State University's recording industry management program, serve as vital components of Nashville's attraction to numerous music publishers and music studios. The prevalence of the music business cluster in the region also makes the area a magnet for creative individuals who may hold office jobs during the day and "moonlight" as musicians.

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<sup>17</sup> [http://www.martinprosperity.org/insights/insight/The\\_Great\\_Musical\\_North](http://www.martinprosperity.org/insights/insight/The_Great_Musical_North)

Figure 45: Creative-cluster industry employment

Industry	2004	2009	2014	2019	Emp Δ 2004-2009	Emp Δ 2009-2014	Emp Δ 2014-2019	2009 LQ
<b>Manufacturing</b>								
Musical instrument mfg	686	800	858	1,009	114	58	151	8.25
<b>Manufacturing Total</b>	<b>686</b>	<b>800</b>	<b>858</b>	<b>1,009</b>	<b>114</b>	<b>58</b>	<b>151</b>	<b>8.25</b>
<b>Motion Picture</b>								
Motion picture and video distribution	2,346	2,386	1,824	1,539	40	-562	-285	43.26
Motion picture and video exhibition	612	911	822	820	299	-89	-2	1.08
Motion picture and video production	1,301	1,328	1,331	1,300	27	3	-31	0.93
Postproduction and other related industries	80	178	106	80	98	-72	-26	1.10
<b>Motion Picture Total</b>	<b>4,339</b>	<b>4,803</b>	<b>4,083</b>	<b>3,739</b>	<b>464</b>	<b>-720</b>	<b>-344</b>	<b>1.93</b>
<b>Music</b>								
Integrated record production and distribution	87	476	398	283	389	-78	-115	15.23
Music publishers	609	1,323	1,515	1,665	714	192	150	28.32
Musical groups and artists	2,256	2,950	2,790	2,552	694	-160	-238	6.10
Other sound recording industries	72	75	32	28	3	-43	-4	2.41
Record production	371	373	340	291	2	-33	-49	15.88
Sound recording studios	444	422	324	305	-22	-98	-19	4.42
<b>Music Total</b>	<b>3,839</b>	<b>5,619</b>	<b>5,399</b>	<b>5,124</b>	<b>1,780</b>	<b>-220</b>	<b>-275</b>	<b>7.90</b>
<b>Performance</b>								
Dance companies	30	51	45	41	21	-6	-4	0.54
Independent artists, writers, and performers	13,685	15,603	17,125	18,034	1,918	1,522	909	2.31
Other performing arts companies	74	58	48	47	-16	-10	-1	0.78
Performing arts companies	2,558	3,294	3,088	2,848	736	-206	-240	2.78
<b>Performance Total</b>	<b>16,347</b>	<b>19,006</b>	<b>20,306</b>	<b>20,970</b>	<b>2,659</b>	<b>1,300</b>	<b>664</b>	<b>2.34</b>
<b>Services</b>								
Agents and managers for public figures	1,610	1,917	2,078	2,168	307	161	90	4.49
Promoters with facilities	841	616	471	386	-225	-145	-85	1.11
Promoters without facilities	601	803	975	1,108	202	172	133	2.18
<b>Services Total</b>	<b>3,052</b>	<b>3,336</b>	<b>3,524</b>	<b>3,662</b>	<b>284</b>	<b>188</b>	<b>138</b>	<b>2.47</b>
<b>Creative Cluster</b>	<b>28,263</b>	<b>33,564</b>	<b>34,170</b>	<b>34,504</b>	<b>5,301</b>	<b>606</b>	<b>334</b>	<b>2.63</b>

Source: Economic Modeling Specialists, Inc.

### Industry Trends

The concentration of creative-cluster activities in the Nashville area is illustrated in Figure 45, which shows that each creative-cluster category has an LQ significantly above 1. Employment in the cluster is about 2.7 times greater than one might expect. Between 2004 and 2009, the creative cluster overall added more than 7,300 jobs. A large portion of that job growth occurred among independent artists, writers and performers. This industry, in particular, has a very large number of self-employed workers. They do not frequently show up as workers when looking at traditional payroll statistics (as defined by those who are “covered” by the unemployment insurance program), but they often report significant amounts of earned income to the Internal Revenue Service. Since this analysis focuses on using “complete” employment counts rather than “covered” employment statistics, it found a very large number of independent, self-employment individuals in this sector. To illustrate how important self-employment is to this sector, the “complete” count of jobs identifies about 15,600 independent artists, writers and performers in the Nashville area. A review of “covered” employed (artists, writers and performers that are on the payroll of an area firm) to be about 830.

Looking forward, creative-cluster employment is expected to continue growing, albeit not as rapidly as during the past several years. Since 2004, cluster employment has grown at an annual rate of 3.5 percent despite the severe recession. This is due in part to the fact that recessions are often a time in which Americans demand more from the performing arts, and there is much less risk (especially to the unemployed or underemployed) for individuals (who may already be unemployed or underemployed) to

try out their talent in the private marketplace. The democratization of the media – through such innovations as reality television and greater Internet bandwidth – has also made it possible for aspiring artists, actors and musicians to try their hand at producing and recording entertainment.

This explosive growth in new media may help to offset job losses expected in some sectors. Declines in motion picture distribution and music publishing can be explained by new business models that are transforming how recorded video and audio are delivered to consumers. The Internet is already changing the way motion pictures and musical recordings are distributed. Despite the increase in the number of performers, overall projected annual growth rates in the creative industries are expected to be about 0.3 percent between 2009 and 2019. The slower growth can be attributed in part to anticipated losses occurring in some creative industries – such as motion pictures and organized musical and performing arts groups – that will likely be offset by net new job opportunities available to independent artists, writers and performers as well as music publishing and management, recording production and event production.

### Occupation Trends

Among the largest occupations in this sector are writers, authors, musicians, singers and entertainers. These workers require a wide array of educational experience to be successful, but most often success is tied to some innate talent or specialized knowledge combined with personal characteristics—such as perseverance and the ability to communicate—as well as experience. A large number of self-employed workers often perform their tasks as an avocation so it should come as little surprise that only a limited group of musicians, performers, writers and actors earn enough to make a living. This is offset by a few local superstars, who likely earn substantial fortunes and raise the average wages for performing-arts occupations.

**Figure 46: Creative cluster occupation employment**

SOC	Occupation	Est Cluster Emp 2009	Est Cluster Emp 2019	Δ Emp 2009 - 2019	Median Earnings	Educational Requirements
27-3043	Writers & authors	3,696	4,329	633	\$11.23	Bachelor's degree
27-2042	Musicians & singers	3,348	3,068	-280	\$18.05	Long-term OJT
27-2041	Music directors & composers	1,898	2,193	295	\$10.15	Degree plus work exp.
27-2099	Entertainers & performers, sports & related workers, all other	1,697	1,560	-137	\$12.33	Long-term OJT
27-1014	Multi-media artists & animators	1,048	1,206	158	\$12.70	Bachelor's degree
27-1012	Craft artists	1,040	1,223	183	\$11.65	Long-term OJT
27-1019	Artists & related workers, all other	1,035	1,208	173	\$12.53	Long-term OJT
27-1013	Fine artists, including painters, sculptors, & illustrators	995	1,170	175	\$11.38	Long-term OJT
27-1011	Art directors	994	1,163	169	\$12.10	Degree plus work exp.
13-1011	Agents & business managers of artists, performers, & athletes	854	915	61	\$17.98	Degree plus work exp.

Source: EMSI

Figure 46 shows the median earnings of workers in these occupations, with only two—musicians and singers and agents and business managers of artists, performers and athletes—providing median earnings over the regional median wage of \$17.30. This reinforces the perception that many workers in these occupations earn minimal wages, supplementing the income of a primary career. This is further indicated by the earnings differences between those covered by the unemployment insurance system, and all workers in these industries, which also includes self-employed workers. For instance, the median

earnings of musicians and singers employed by companies providing unemployment insurance are \$32.31 per hour, while the median earnings for all musicians and singers are much lower, at \$18.05 per hour.

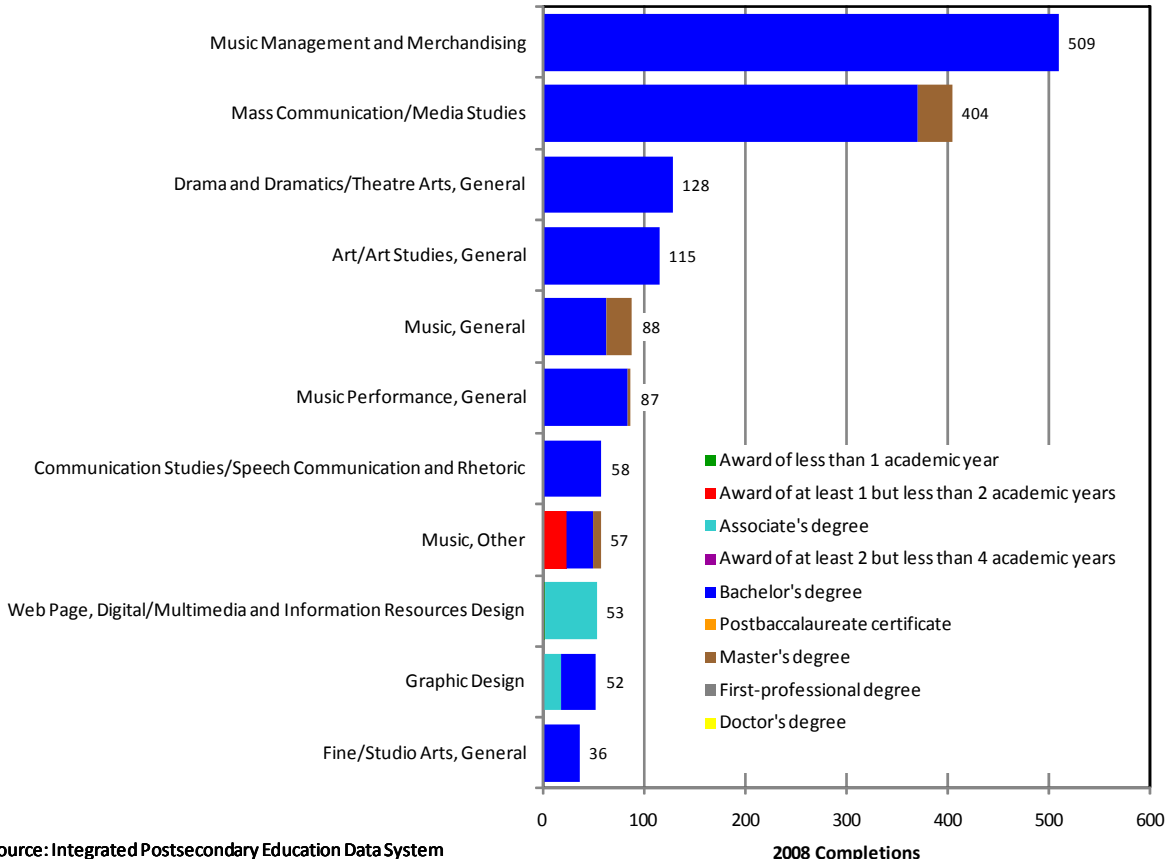
The two largest occupations in the creative cluster of industries are writers/authors and musicians/singers, each with more than 3,000 workers in 2009. An analysis of “complete” and “covered” employment (as reported by EMSI) reveals that these workers are mostly self-employed. Many more self-employed writers and authors are expected to work in Nashville in the future as more individuals create freelance projects that are distributed digitally. Figure 46 provides an employment estimate for key creative occupations and illustrates how vital self-employed workers are to the sector.

Many of the key occupations in the area’s creative economy, as defined here, require a four-year degree and/or long-term OJT. While these educational requirements represent the minimum education or training levels needed, they certainly do not guarantee success in the creative-cluster industries. Occupations in the cluster, probably more than any other sector, require a combination of a strong education and training, experience and talent. Even so, the data indicate that median earnings within these occupations are lower than what one would earn in an occupation that requires similar levels of education or training.

### ***Educational Programs***

The majority of programs that provide education or training for workers hoping to enter and be successful in the creative cluster are at the bachelor’s degree level. Music management and merchandising has the most graduates, with more than 500 students completing bachelor’s degree programs in this discipline. With 266 graduates and 230 graduates respectively, Middle Tennessee State University and Belmont University account for nearly all of the graduates in this discipline. The mass communications/media studies program also has a large number of graduates, with 404 graduates total from the bachelor’s degree level (370) and the master’s degree level (34). Middle Tennessee State University’s program graduated more than 300 students in 2008, while Austin Peay State University was the next largest program, with 80 graduates in 2008. Other large programs available to train aspiring workers for the creative cluster include drama and dramatics/theatre arts, art/art studies, music and music performance. Of course, it is important to note that the liberal arts are also an important source for creative talent, but they are not reflected in the data prepared for this report.

**Figure 47: Creative-cluster educational programs**



### Advanced Manufacturing

The Nashville area relies on the success of several key industries that are leading the region’s transformation to advanced manufacturing. This group of industries is comprised largely of automobile and transportation-related industries, including automobile, motor vehicle parts, tire, and boat building, as well as other durable goods industries, such as the manufacture of major appliances, audio and video equipment, and commercial and service industry machinery. Large businesses within the advanced manufacturing industries include businesses like Nissan Automotive, Triumph Aerostructures - Vought Aircraft Division, Unipres, Johnson Controls and TRW Commercial Steering. The sector also includes companies like A.O. Smith, which manufactures residential and commercial water heaters.

### Industry Trends

As Figure 48 shows, the advanced manufacturing cluster shed about 11,200 jobs between 2004 and 2009, for an average annual decline of 6.9 percent. A key contributor to this decline resulted when General Motors halted Saturn vehicle production. This is illustrated by the jobs losses during that period in automobile manufacturing (5,223 jobs lost) and motor vehicle parts manufacturing (1,937 jobs lost). The region also lost about 1,000 jobs in major appliance manufacturing and almost as many in audio and video equipment manufacturing between 2004 and 2009, due to downsizing and closures. The area’s audio and video equipment manufacturing industry is projected to become obsolete within the next 10 years, as digital production and distribution transforms the way Americans consume audio and video media.

**Figure 48: Advanced manufacturing industry employment**

Industry	2004	2009	2014	2019	Emp Δ	Emp Δ	Emp Δ	2009 LQ
					2004-2009	2009-2014	2014-2019	
Motor vehicle parts mfg	7,609	5,672	4,126	3,296	-1,937	-1,546	-830	2.11
Tire mfg	1,963	1,378	1,429	1,500	-585	51	71	3.94
Construction machinery mfg	57	263	498	714	206	235	216	0.61
Commercial and service industry machinery	686	602	442	322	-84	-160	-120	0.95
Metalworking machinery mfg	1,862	1,747	1,566	1,774	-115	-181	208	1.57
Audio and video equipment mfg	1,147	180	35	21	-967	-145	-14	1.18
Small electrical appliance mfg	433	309	99	65	-124	-210	-34	3.64
Major appliance mfg	5,067	4,066	3,844	3,854	-1,001	-222	10	13.52
Battery mfg	111	104	1,428	1,434	-7	1,324	6	0.68
Flat glass mfg	710	527	160	50	-183	-367	-110	8.14
AC, refrigeration, and forced air heating	2,844	2,096	1,061	755	-748	-1,035	-306	3.73
Semiconductors and related device mfg.	5	8	500	500	3	492	0	0.01
Automobile mfg	14,074	8,851	8,423	8,643	-5,223	-428	220	14.48
<b>Adv Mfg Cluster Cluster</b>	<b>37,520</b>	<b>26,315</b>	<b>23,927</b>	<b>23,105</b>	<b>-11,205</b>	<b>-2,388</b>	<b>-822</b>	<b>3.08</b>

Source: Economic Modeling Specialists, Inc.

However, employment in other advanced manufacturing industries is expected to remain stable or experience modest growth during the next decade. Some of this growth will be the result of an increased demand for products related to green technologies. For instance, the automobile manufacturing industry may reflect this, as it adds a projected 220 jobs by 2019 after reductions in the near term. However, related sectors, including battery manufacturing, are expected to add new jobs. This projection is driven by the construction of the Nissan’s lithium-ion battery manufacturing facility in Smyrna to power their new Leaf, an all-electric vehicle.

Another significant green-related investment is the planned construction of the Hemlock Semiconductor facility in Clarksville. With a projected 35 to 40 percent annual growth in the solar industry, the Hemlock facility is expected to produce hyper-pure polycrystalline silicon for semiconductors and solar panels. Once completed, this plant is expected to create 500 full-time jobs. Hiring is expected to begin in late 2011. Hemlock Semiconductors has indicated that the company will be looking for people to fill positions such as reactor core operators, equipment care and process control operators, and a variety of technicians, as well as numerous electrical, chemical and mechanical engineers. Contract workers will be used for poly-material handling and packaging services.

Even though these two significant projects reflect unique growth opportunities, overall projections suggest that they may not be sufficient to turn around the region’s automotive and machine parts manufacturing sector, where continued declines are expected. Other durable goods, especially major appliance manufacturing, rely on growth in the construction sector. The appliance manufacturing sector is expected to lose an additional 212 jobs by 2019. Tire manufacturing construction machinery manufacturing, metalworking machinery manufacturing and battery manufacturing are expected to see slight employment increases by 2019.

The attraction of the Nissan Leaf battery production builds on the region’s growing expertise in automotive production. The Hemlock photovoltaic production facilities serve as the nucleus of a potential new manufacturing cluster related to green production.

## Occupation Trends

As noted earlier, many of the region’s fastest-declining occupations are within the manufacturing sector. All of the leading occupations in the advanced manufacturing cluster are expected to decline between 2009 and 2019, led by a drop in team assemblers. However, several occupations may need new people as older workers begin to retire or as companies transform their jobs into higher-skilled occupations. Despite the weak employment outlook for this sector, a number of production occupations are expected to require an influx of new workers to replace pending retirees among an increasingly aging workforce. For instance, one Nashville-area manufacturer noted that 70 percent of its workforce is approaching retirement in the next decade, leading that firm to develop a 10-year workforce replacement plan. Many other companies will need to do likewise, which, in many cases, will require adjusting the skill set for production workers.

**Figure 49: Advanced Manufacturing occupation employment**

SOC	Occupation	Est Cluster Emp 2009	Est Cluster Emp 2019	Δ Emp 2009 - 2019	Median Earnings	Educational Requirements
51-2092	Team assemblers	5,673	4,851	(822)	\$18.79	Moderate-term OJT
51-2099	Assemblers & fabricators, all other	3,020	2,696	(324)	\$15.73	Moderate-term OJT
51-9199	Production workers, all other	1,003	873	(130)	\$13.57	Moderate-term OJT
51-1011	First-line supervisors/managers of production & operating workers	981	795	(186)	\$23.49	Work exp. in a related field
51-4041	Machinists	942	740	(202)	\$20.43	Long-term OJT
51-9061	Inspectors, testers, sorters, samplers, & weighers	890	708	(182)	\$15.30	Moderate-term OJT
51-4031	Cutting, punching, & press machine setters, operators, & tenders, metal & plastic	836	552	(284)	\$14.33	Moderate-term OJT
53-7062	Laborers & freight, stock, & material movers, hand	748	541	(207)	\$10.93	Short-term OJT
51-4121	Welders, cutters, solderers, & brazers	683	527	(156)	\$16.18	Long-term OJT
53-7051	Industrial truck & tractor operators	608	481	(127)	\$14.05	Short-term OJT

Source: EMSI

Taking the Leaf and Hemlock facilities into consideration, there may be slight increases in future regional demand for occupations such as team assemblers, first-line supervisors/managers of production and operating workers, and machinists. Hemlock Semiconductors will also be looking for workers with electrical and instrumentation skills, millwrights and pipefitters, and people experienced in process instrumentation controls. However, in addition to these hard skills and at least two years of industry experience, the company will also require training and aptitude in safety, computer and technical skills, as well as problem-solving. In short, that company’s high expectations from workers for both hard and soft skills are consistent with those required by many advanced manufacturing employers.

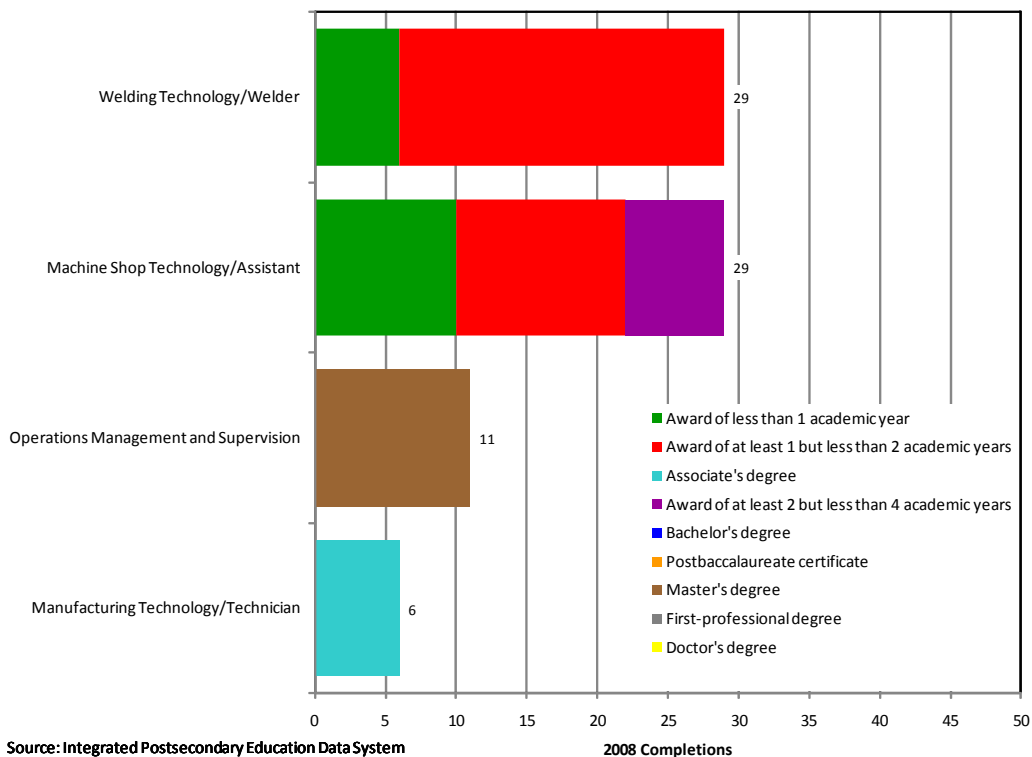
Throughout the advanced manufacturing cluster, the largest production-related occupations require varying levels of experience and OJT and have earnings that range between \$10.93 per hour (laborers and freight, stock and material movers, hand) and \$23.49 per hour (first line supervisors/managers of production & operating workers). Employer survey results suggest that companies find it particularly difficult to retain laborers, many of which receive relatively lower wages and do more strenuous work. By comparison, employers indicate that they are successful in retaining machine operators, but that recruiting new skilled operators is particularly challenging.

### Educational Programs

Programs that train workers for key advanced manufacturing occupations generally lead to associate’s degrees or industry certifications. Some welding and machine shop technology programs require less than one year to complete. With the exception of the operations supervision and management master’s program offered by Vanderbilt University, these programs are offered through Tennessee Technology Centers (Dickson, Murfreesboro and Nashville), and Nashville State Community College. As shown in Figure 50, these programs have relatively low numbers of completers, as throughout the region fewer than 30 people completed welding programs. In part, the low numbers of completers among manufacturing-related programs relative to other clusters reflects the nature of the work. Many of the occupations involved in this area require primarily OJT, rather than other formal education programs.

Where more training is required, it is often company-specific or customized training rather than a degree program. For technical occupations that require at least a four-year degree, such as engineering, firms often cast a wider net than just Middle Tennessee in finding workers as in several industries. They not only go to places like UT-Knoxville’s College of Engineering and Tennessee Technological University, but also to other large engineering schools like Georgia Tech, Purdue or North Carolina State. Area colleges and universities have worked with companies to help meet an identified need. For instance, Hemlock Semiconductors is working with Austin Peay State University to develop a chemical engineering lab and programs, as well as establishing a dual-enrollment program to connect APSU to area high school students. They are also working with Tennessee Technology Center in terms of preparing skilled trades training.

Figure 50: Advanced manufacturing educational programs



Additional programs at Vanderbilt University in chemical engineering (with its bachelor's and doctoral programs) might serve as a resource for workers and applied industrial research. In addition, Vanderbilt University, Lipscomb University, and Tennessee State University all have baccalaureate degree programs in electrical and electronics engineering programs, graduating a combined 42 bachelor's degree holders last year. Vanderbilt's master's degree program in the field graduated 20 students. Overall, though, companies involved in advanced manufacturing will have a continued need for increasingly skilled workers, and if certain hiring and replacement needs expand as forecasted, demand for these training programs can also be expected to expand.

### **Distribution and Logistics**

The distribution and logistics sector is comprised of companies that move and store goods. An integral part of this sector is the wholesaling function, the transaction between producer and user. In some cases, the transaction may involve an interim user who plans to add value to the good for resale. This transaction and movement process requires substantial coordination; thus the more obvious shipping, receiving, and inventory functions are often supplemented with sophisticated information-management systems designed to make the logistics of transporting and storing goods as efficient as possible. Increasingly, retailers and wholesalers have become more directly involved in this process as a way to capture more of the value from the goods they sell to consumers. As a result, distribution and logistics are an important component to many firms' success.

The Nashville area has a number of important regional trucking and distribution companies, including YRC Worldwide (which operates YRC and Holland) and FedEx Freight. Area motor vehicle manufacturing and sales activities such as Nissan North America, Ozark Automotive Parts Distributors, MAHLE North America (which fabricates and distributes automotive parts), Bridgestone Americas, and Manheim Nashville (a major automotive auction house) also contribute to the region's importance as a distribution center for motor vehicles and related parts. In addition, area companies such as OHL are providing supply chain management services to area companies large and small, while the Nashville area's Ingram, Macy's and Gap distribution centers provide just a few examples of the importance of wholesale and inventory management to big box, traditional and online retail stores.

## Industry Trends

As shown in Figure 51, between 2004 and 2009 most distribution and logistics industries increased employment while selected industries, such as long-distance freight trucking, logistics consulting and construction equipment wholesaling lost employment. These declines were likely directly related to the national recession. All of these sectors are expected to rebound in the coming years. Electronic wholesaling, a sector that gained 1,205 jobs despite the recession and at an average annual rate of 3.6 percent, is among the fastest-growing segments of the distribution and logistics industry. General warehousing and storage also grew significantly, up by nearly 900 jobs since 2004.

Figure 51: Distribution and logistics industry employment

Industry	2004	2009	2014	2019	Emp Δ 2004-2009	Emp Δ 2009-2014	Emp Δ 2014-2019	2009 LQ
<b>Wholesalers</b>								
All other durable goods merchant wholesalers	1,583	2,017	2,251	2,330	434	234	79	2.28
Construction equipment merchant wholesalers	928	689	678	716	-239	-11	38	1.35
Druggists' goods merchant wholesalers	1,311	1,891	1,975	1,944	580	84	-31	1.52
Industrial machinery merchant wholesalers	2,303	2,004	2,244	2,538	-299	240	294	1.06
Medical equipment merchant wholesalers	1,399	1,660	1,931	2,078	261	271	147	1.43
Motor vehicle merchant wholesalers	1,917	1,809	1,699	1,532	-108	-110	-167	2.38
New motor vehicle parts merchant wholesalers	1,933	2,157	1,844	1,675	224	-313	-169	2.15
Tire and tube merchant wholesalers	165	499	541	622	334	42	81	3.50
Wholesale electronic markets and agents and brokers	6,196	7,401	9,009	10,030	1,205	1,608	1,021	1.38
<b>Wholesalers Total</b>	<b>17,735</b>	<b>20,127</b>	<b>22,172</b>	<b>23,465</b>	<b>2,392</b>	<b>2,045</b>	<b>1,293</b>	<b>1.55</b>
<b>Distribution</b>								
General freight trucking, local	936	1,334	1,460	1,553	398	126	93	0.48
General freight trucking, long-distance	12,961	12,228	12,294	12,488	-733	66	194	1.85
Other specialized trucking, local	759	995	998	1,039	236	3	41	0.69
Other specialized trucking, long-distance	788	659	757	831	-129	98	74	0.86
<b>Distribution Total</b>	<b>15,444</b>	<b>15,216</b>	<b>15,509</b>	<b>15,911</b>	<b>-228</b>	<b>293</b>	<b>402</b>	<b>1.31</b>
<b>Logistics</b>								
Freight transportation arrangement	1,544	1,860	1,994	2,138	316	134	144	1.48
Process and logistics consulting services	716	678	731	793	-38	53	62	0.79
<b>Logistics Total</b>	<b>2,260</b>	<b>2,538</b>	<b>2,725</b>	<b>2,931</b>	<b>278</b>	<b>187</b>	<b>206</b>	<b>1.20</b>
<b>Warehousing</b>								
General warehousing and storage	2,868	3,723	4,204	4,473	855	481	269	1.05
Other warehousing and storage	391	471	626	728	80	155	102	1.38
Refrigerated warehousing and storage	229	241	198	220	12	-43	22	0.77
<b>Warehousing Total</b>	<b>3,488</b>	<b>4,435</b>	<b>5,028</b>	<b>5,421</b>	<b>947</b>	<b>593</b>	<b>393</b>	<b>1.06</b>
<b>Distribution and Logistics Cluster</b>	<b>38,927</b>	<b>42,316</b>	<b>45,434</b>	<b>47,728</b>	<b>3,389</b>	<b>3,118</b>	<b>2,294</b>	<b>1.37</b>

Source: Economic Modeling Specialists, Inc.

Looking forward, projected growth in the distribution and logistics industries will be spearheaded by continued increases in electronics wholesaling, general warehousing and storage, and a rebound in long-distance general freight trucking. However, employment in the motor-vehicle-related wholesaling and distribution segment is likely to remain stagnant during the next decade as the U.S. auto market continues its transformation.

## Occupation Trends

Figure 52 shows that tractor-trailer truck drivers comprise the largest segment of employment in the distribution and logistics industries, accounting for approximately 22 percent of employment in these industries. Employers noted that commercial truck drivers of all types are difficult to hire, especially those who can pass background inspections for safe driving. Growth in the sector is anticipated to continue increasing during the next decade, as the forecast suggests 769 additional drivers will be needed by 2019.

Figure 52: Distribution and logistics occupation employment

SOC	Occupation	Est Cluster	Est Cluster	Δ Emp 2009 -	Median	Educational Requirements
		Emp 2009	Emp 2019	2019	Earnings	
53-3032	Truck drivers, heavy & tractor-trailer	8,658	9,427	769	\$18.14	Moderate-term OJT
53-7062	Laborers & freight, stock, & material movers, hand	3,587	3,591	4	\$10.93	Short-term OJT
53-3033	Truck drivers, light or delivery services	1,787	1,944	157	\$16.31	Short-term OJT
41-4011	Sales representatives, wholesale & manufacturing, technical & scientific products	1,370	1,471	101	\$23.73	Moderate-term OJT
41-4012	Sales representatives, wholesale & manufacturing, except technical & scientific products	1,289	1,343	54	\$23.81	Moderate-term OJT
53-3031	Driver/sales workers	1,242	1,428	186	\$14.65	Short-term OJT
53-7051	Industrial truck & tractor operators	1,102	1,218	116	\$14.05	Short-term OJT
43-5081	Stock clerks & order fillers	951	1,067	116	\$10.36	Short-term OJT
49-3031	Bus & truck mechanics & diesel engine specialists	810	786	-24	\$20.05	award Postsecondary vocational
43-4051	Customer service representatives	778	923	145	\$14.23	Moderate-term OJT

Source: EMSI

Furthermore, area companies note that many current drivers will be retiring in the coming years, dramatically increasing demand in future years. In addition, the Federal Motor Carrier Safety Administration introduced the Comprehensive Safety Analysis 2010 (CSA 2010) enforcement and compliance model that includes a driver safety assessment tool to help state enforcement staff better evaluate drivers' safety as part of motor carrier investigations. Scheduled for full implementation later in 2010, CSA 2010 allows states to target their efforts by profiling individual drivers and addressing potential safety concerns problems before crashes occur. Small trucking firms are particularly concerned about the potential implications for their ability to hire and retain drivers with the best safety records and creating a greater barrier for drivers to keep or find new jobs if they have prior safety violations, and the impact that poor performance by any individual driver can potentially have on a small company's overall CSA 2010 compliance rating.

Sales representatives and sales workers employed by wholesalers and manufacturers also represent a large proportion of the workforce. These jobs require customer service and related sales skills that they can often prepare for with short- or moderate-term jobs. For increasingly technical- and scientific-related industries, these workers also must have an understanding of the specifications and capabilities of increasingly complex products. These occupations employ nearly 3,500 workers (including customer service and sales) in these industries and are projected to add nearly 300 jobs between 2009 and 2019. Survey responses from area companies noted that sales representatives, in particular, are both hard to hire and hard to retain. For the distribution and logistics business, competition from other sectors also makes retaining sales representatives difficult. As one company representative mentioned, it is often easier to teach technical product specifications than it is to find and keep the people with the personality and disposition to succeed in sales.

The companies interviewed indicated that finding qualified trucking industry managers is also a challenge, as logistics management is a completely different skill set than that required by drivers. Increasingly, jobs require information technology and operational support skills, many of which are generated from postsecondary education and training. Similarly, many logistics operations also need access to information technology, finance and mechanical engineering personnel. Firms indicate that

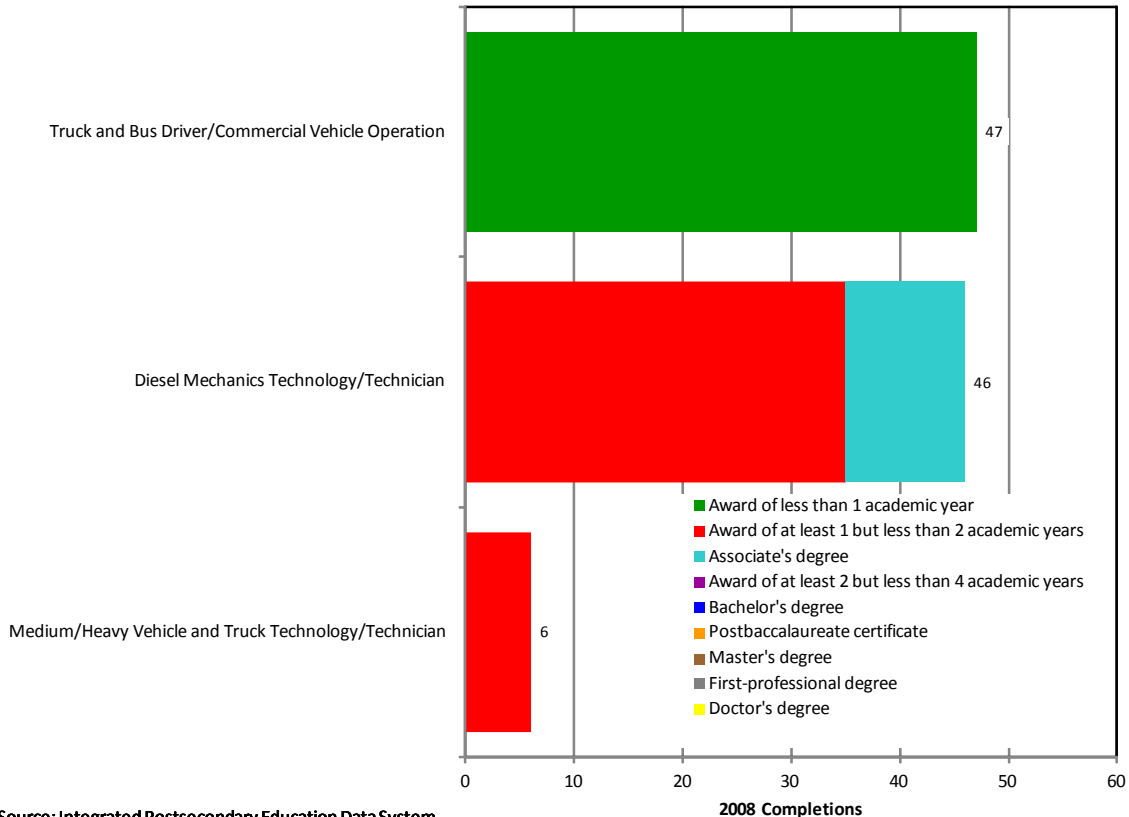
these high-wage positions are also difficult to fill, but rarely does an individual firm require very many of these types of workers.

With the exception of bus and truck mechanics and diesel engine specialists, which require a postsecondary vocational award, the key distribution and logistics industry occupations require short -to moderate-term OJT and earn between \$10.36 per hour (stock clerks and order fillers) and \$23.81 per hour (sales representatives, wholesale and manufacturing, except technical and scientific products). However, focus-group participants noted that some occupations within the distribution and logistics industries require advanced education and are difficult to fill, including industrial and mechanical engineers as well as industrial and operations managers. Often employers must look beyond the Nashville area to find qualified workers for these occupations.

**Educational Programs**

Programs providing graduates for the distribution and logistics industries train workers to be drivers, mechanics or technicians. As shown in Figure 53, 47 graduates completed a less-than-one-year program in truck and bus driver/commercial vehicle operation (all from Tennessee Technology Centers), while 46 graduates completed diesel mechanics technology/technician programs (all from Nashville Auto Diesel College) and six graduates completed medium/heavy vehicle and truck technology/technician programs.

**Figure 53: Distribution and logistics educational programs**



Source: Integrated Postsecondary Education Data System

Another 32 received certificates in vehicle maintenance and repair, with four more students receiving associate's degrees in the field. Additionally, a new program at Nashville State Community College will train graduates in a logistics technology program, while Volunteer State Community College has a certificate program in logistics management which conferred 13 certificates last year.

Additionally, many positions within the distribution and logistics industries require no special education or training, with 82 percent of survey respondents noting that a high school diploma was a sufficient qualification for a position in their business. However, 100 percent of respondents said that they provide training to their workers (either on-the-job or external) with an average of 50 hours of training offered annually to each employee.

## Hospitality

The Nashville area possesses a large hospitality cluster serving millions of national and international tourists annually. For this purpose, the study defines the "hospitality" cluster to include a variety of economic activities that include food service and drinking places; accommodation; museums, historical sites, zoos, and parks; and gaming. While the area's hotel and restaurant industries form a sizable part of the hospitality cluster, the largest single industry is food services and drinking places. Of course, many food and drinking jobs rely not only on visitors but also on local residents going to their favorite restaurants and bars. Even so, the Nashville area has more people working in these industries than might be expected given the size of the region's economy. The data suggest that about 68,500 people work in the region's food and drinking places, and at least 12 percent (if not more) of these workers rely on business provided by the region's travelers and tourists.<sup>18</sup>

More clearly tied to travel and tourism expenditures; the accommodations industry includes some of the region's most high-profile employers, such as the Gaylord Opryland Resort and Convention Center. The accommodations industry also relies on demand created by area residents patronizing these enterprises, as well as tourists and business travelers. This is exemplified by the use of area hotels for family or civic events, yet the industry is much more clearly tied to providing lodging to guests from out of town.

Furthermore, perhaps more than any other, this sector was greatly affected by the spring 2010 floods that devastated so much of the area. These floods forced the area's largest hospitality employer (employing 1,500 workers)—the Gaylord Opryland Hotel and Convention Center—to close public spaces for renovations until the facility's planned November 2010 re-opening. Other retailing at nearby Opry Mills was severely impacted and important for historically drawing significantly on tourism as a base of consumers.

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<sup>18</sup> This estimate is based on the LQ for food services and drinking places. At 1.12, this LQ suggests that the industry's employment is about 12 percent higher than what one might expect the industry's total to be (as a share of U.S. employment). Of course, many other U.S. regions also rely on tourists, so 12 percent is likely a very conservative estimate of the total number of food service and drinking place jobs that rely on travelers or tourists.

As these enterprises rebound from the dual effects of the recession and the floods, they, like many other aspects of the region’s tourism industry, are also expected to benefit from the 2013 completion of the new convention center. Once completed, that facility is likely to greatly increase Nashville’s ability to compete for much larger national and international conventions as well as increase the entire region’s capacity to accommodate many more business travelers.

### Industry Trends

Figure 54 shows that employment in the hospitality industry increased by more than 5,000 jobs between 2004 and 2009, for an average annual growth rate of 1.3 percent. Food services and drinking places led the growth in the cluster, while accommodations reduced employment slightly. Declines in some related industries reflect the sizable reduction in business and recreational travel that occurred during the most recent recession. Several area accommodations managers see the industry rebounding and expect employment levels to increase in the near future. The industry is projected to gain 535 jobs by 2019, which includes the anticipated recall of workers at Gaylord’s Opryland property in late 2010. In addition, food services and drinking places are increasingly growing, with full-service establishments gaining, while the fast-food restaurants sector will struggle to maintain their current overall employment levels.

Looking forward, employment growth in the hospitality sector is anticipated to slow down, driven by slower growth in the food services and drinking places industry. The entire cluster, which is dominated by the food services and drinking places industry, can anticipate an annual rate of 0.5 percent annually. Employment growth is expected in all hospitality industries, with food services leading the way in the next few years. The accommodations sector will begin to increase employment in the second half of the decade, once the new convention center opens and begins to draw more travelers.

Figure 54: Hospitality industry employment

Industry	2004	2009	2014	2019	Emp Δ 2004-2009	Emp Δ 2009-2014	Emp Δ 2014-2019	2009 LQ
Food services and drinking places	63,470	68,511	71,705	71,948	5,041	3,194	243	1.12
Accommodation	13,082	12,997	12,916	13,532	-85	-81	616	1.11
Museums, historical sites, zoos, and parks	762	849	1,076	1,282	87	227	206	1.06
Gambling industries	58	91	113	125	33	22	12	0.09
<b>Hospitality Cluster</b>	<b>77,372</b>	<b>82,448</b>	<b>85,810</b>	<b>86,887</b>	<b>5,076</b>	<b>3,362</b>	<b>1,077</b>	<b>1.10</b>

Source: Economic Modeling Specialists, Inc.

## Occupation Trends

An analysis of the hospitality staffing patterns examined trends and projections for key occupations within the accommodations, food services and recreational industries. These hospitality-related occupations include many that focus on serving patrons and guests at restaurants and other food-service establishments, as well as those employed in hotels and related lodging facilities. As Figure 55 shows, these occupations include many lower-skilled occupations, such as maids and housekeeping cleaners, hosts and hostesses, cooks, waiters and waitresses. In large part, these jobs require workers to demonstrate basic work-ready skills as the foundation for participating in short-term OJT. Most of the jobs also offer earnings of about \$10 or less per hour with the exception of restaurant cooks, food service managers and supervisors. Most hospitality industry occupations are projected to grow during the next decade, except when automation or technology seem to be intervening to help companies increase their productivity (e.g., food preparation restaurant workers being replaced by the greater use of pre-made or pre-processed foods purchased from distributors).

**Figure 55: Hospitality occupation employment**

Hospitality						
SOC	Occupation	Est Cluster Emp 2009	Est Cluster Emp 2019	Δ Emp 2009 - 2019	Median Earnings	Educational Requirements
35-3031	Waiters & waitresses	16,717	19,093	2,376	\$8.44	Short-term OJT
35-3021	Combined food preparation & serving workers, including fast food	15,462	14,241	-1,221	\$8.07	Short-term OJT
35-2014	Cooks, restaurant	6,196	7,153	957	\$10.90	Long-term OJT
11-9051	Food service mgrs.	4,441	5,205	764	\$18.22	Work exp. in a related field
35-1012	First-line spvrs./mgrs. of food preparation & serving workers	4,324	4,380	56	\$13.20	Work exp. in a related field
37-2012	Maids & housekeeping cleaners	3,110	3,216	106	\$7.95	Short-term OJT
35-9021	Dishwashers	3,010	3,599	589	\$9.09	Short-term OJT
35-9031	Hosts & hostesses, restaurant, lounge, & coffee shop	2,971	3,448	477	\$8.79	Short-term OJT
35-2021	Food preparation workers	2,629	2,599	-30	\$9.18	Short-term OJT
35-9011	Dining room & cafeteria attendants & bartender helpers	1,832	1,996	164	\$7.93	Short-term OJT

Source: EMSI

Employer survey respondents noted that customer-service workers were both difficult to hire and difficult to retain. This is important because these low-skilled, low-wage jobs tend to have much greater worker turnover. This constant “job churn” has meant that many employers with low-skilled workers had to review a large volume of job applicants seeking these jobs. Additionally, even in this economic climate with surplus labor available, industry focus-group participants noted that a sizable number of job applicants at this level were still under-qualified and lacked basic customer-service skills. In particular, servers were especially hard to retain, with pay and/or scheduling issues often cited as the primary reason for changing jobs. Cooks and chefs were also difficult to hire and retain, which is leading some businesses in these industries to turn to international sources for these workers.

While food-service positions have high turnover, front-desk and housekeeping positions have seen relatively lower turnover. Employers indicated that turnover rates appear to drop dramatically for workers over the age of 40, many of whom are primarily looking for stable and secure employment. However, for employees of all ages, there are opportunities for relatively quick advances to supervisory

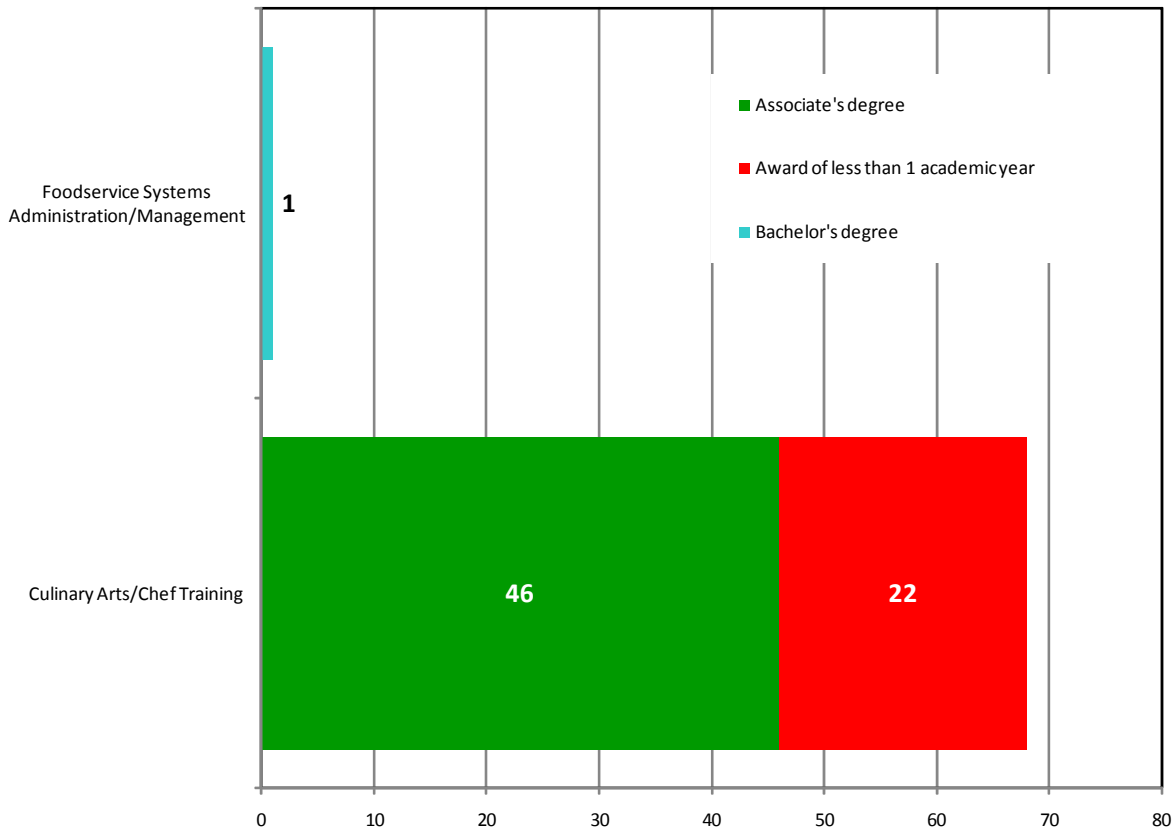
and management positions, with one to two years of experience in the organization often leading to positions with more responsibility and increased earnings.

### **Educational Programs**

For customer-service and management-related positions within the hospitality industries, programs provided through area postsecondary institutions generate relatively few graduates for the area’s hospitality cluster. There are only a few specialized training programs that address the large cohort of restaurant employment. As Figure 56 shows, the region graduated 68 people from culinary-arts programs at Nashville State Community College and The Art Institute of Tennessee-Nashville. Lipscomb University also graduated one person from their food-service systems administration and management program.

Overall, many hospitality occupations largely rely on OJT and draw on resources and institutions outside the area for more substantive or advanced programs and credentials. Given the size and importance of this industry in the area, more training and educational programs appear needed to accommodate easier hiring and retention of skilled employees in these growing occupational sectors. In particular, this suggests a potentially significant demand for food-service management and supervisory training – whether through formal degree programs or professional development and/or certification.

**Figure 56: Hospitality educational programs**



Source: Integrated Postsecondary Education Data System

2008 Completions

## Construction

As in many other cities, the Nashville area’s construction industry has suffered during the recent economic downturn. In particular, residential construction has struggled in recent years, but continued growth in the health-care sector and other key economic clusters has helped to sustain some commercial and industrial construction activity. When looking at employment change between 2004 and 2009, huge construction employment growth before the recession helped to mask the tremendous declines felt across all construction sectors in 2008 and 2009. The construction firms have survived because they were able to compete for a variety of commercial and institutional development projects, especially hospital, correctional, hotel and office projects, to retain their edge. Certainly, the most significant construction project currently underway in Nashville is the downtown Music City Center. Construction of the Hemlock Semiconductor plant in Clarksville has also created roughly 800 construction-related jobs. Nashville is considered a prime location for companies that specialize in health-care-related projects. Renovations following the spring 2010 flood also have helped to kick-start the recovery, as area building owners, as exemplified by the Gaylord properties, reinvest in damaged property.

### Industry Trends

Despite the economic downturn, Figure 57 shows that employment in the construction sector today is still larger by more than 3,000 jobs than it was in 2004, representing an average annual growth rate of 1 percent. Like many other sectors, the construction industry was growing much more rapidly, but declined substantially in 2008 and 2009. While projections suggest a “reset” of the industry, many construction business owners are concerned that changes in the financing of commercial and residential construction may inhibit the industry’s future prospects.

Increasingly, area companies indicate that few projects are ready to start – due in large part to the credit crunch facing the commercial real estate industry. They also indicate that competition is keener as out-of-state contractors appear to be willing to “low-ball” their project bids as a way to keep their existing workforce busy. The same is true of subcontractors who are willing to do jobs much further away from home than they did in the past.

**Figure 57: Construction industry employment**

Industry	2004 Jobs	2009 Jobs	2014 Jobs	2019 Jobs	Emp Δ 2004-2009	Emp Δ 2009-2014	Emp Δ 2014-2019	2009 LQ
Residential Construction	27,187	29,100	32,886	36,584	1,913	3,786	3,698	1.06
Non-Residential Construction	28,302	28,709	30,164	33,218	407	1,455	3,054	1.07
Heavy construction	5,153	5,860	5,922	6,100	707	62	178	0.86
<b>Construction Cluster</b>	<b>60,642</b>	<b>63,669</b>	<b>68,972</b>	<b>75,902</b>	<b>3,027</b>	<b>5,303</b>	<b>6,930</b>	<b>1.04</b>

Source: Economic Modeling Specialists, Inc.

Looking forward, employment growth is likely to begin again, but the recovery is expected to be slow and painful for many construction companies. Long-term growth looks solid, with a 1.6 percent average annual growth rate anticipated during the next five years. By 2014 or 2015, many believe that the recession and the credit crunch will be overcome, but many are concerned about the ability of firms to survive over the next 12 to 18 months as the recovery gains momentum.

The construction industry in Nashville offers numerous opportunities to align with the region's emphasis on green economic activity. For one, regional architecture, engineering and construction companies are developing capabilities in implementing Leadership in Environmental and Energy Design (LEED) principles, and there are also a number of area builders with expertise in constructing health-care facilities. Given that ownership of most hospital and other health-care facilities remain with the company building the facility, there is greater interest in integrating operating as well as construction costs in the design. Thus, Nashville has a unique advantage, especially given that many of the facility design decisions are made at area health-care headquarters.

The federal government is currently investing billions of dollars nationally in energy-efficiency activities. The Energy Efficiency and Conservation Block Grant program, funded through the U.S. Department of Energy, has increased public funding for retrofitting older homes of low-income individuals. Furthermore, increased support for energy auditing activities among some utilities has also encouraged middle-income homeowners to assess their energy usage and make investments in energy efficiency. This has helped to increase demand among contractors for electrical, insulation and window/door installation activities, providing many needed jobs among construction workers who once helped build new homes. This activity is greatly driven by public subsidies that may be temporary as the economy begins to recover. The participation of the region's utility companies in these programs will be essential for sustaining these programs in the long term.

In addition, a number of area companies now install solar photovoltaic, solar thermal and geothermal energy systems. Driven by increased consumer interest in renewable energy, improvements in the relative costs associated with renewable energy systems, federal energy tax incentives and utility rebate programs in some communities, the demand for residential and commercial renewable energy systems is beginning to grow. Several solar photovoltaic, geothermal and solar thermal companies have emerged, but Tennessee's support for renewable energy has been relatively modest compared with other states, so the industry is still nascent. Increased state and utility company involvement in renewable energy sources will be a primary means of promoting the region as a more substantial area for renewable energy activities.

### ***Occupation Trends***

The construction trades and management occupations will be directly impacted by the opportunities being created. Shortages that existed two years ago are now not felt as keenly, but there are still long-term growth opportunities, and the industry will eventually require a growing number of semi-skilled laborers and skilled occupations such as carpenters, electricians and plumbers/pipefitters. As illustrated in Figure 58, the sector also will require an increasing number of supervisors and managers with construction experience.

Most of these skilled jobs require apprenticeships ranging in length from a few months to years. One of the biggest challenges for workers to gain apprenticeship credit is for them to be working, no small feat for many in the current economic climate. Jobs for low-end, semi-skilled workers and inexperienced trades workers are particularly hard to find now.

Figure 58: Construction occupation employment

SOC	Occupation	Est Cluster Emp 2009	Est Cluster Emp 2019	Δ Emp 2009 - 2019	Median Earnings	Educational Requirements
47-2031	Carpenters	7,805	8,512	707	\$20.87	Long-term OJT
47-2061	Construction laborers	6,767	8,074	1,307	\$16.37	Moderate-term OJT
47-1011	First-line supervisors/managers of construction trades & extraction workers	5,501	6,362	861	\$23.39	Work exp. in a related field
11-9021	Construction managers	5,035	5,653	618	\$23.60	Bachelor's degree
47-2111	Electricians	3,476	4,660	1,184	\$19.33	Long-term OJT
47-2141	Painters, construction & maintenance	2,756	2,946	190	\$20.63	Moderate-term OJT
47-2152	Plumbers, pipefitters, & steamfitters	2,106	2,724	618	\$19.72	Long-term OJT
49-9021	Heating, air conditioning, & refrigeration mechanics & installers	1,656	2,405	749	\$19.38	Long-term OJT
47-2073	Operating engineers & other construction equipment operators	1,321	1,602	281	\$17.37	Moderate-term OJT
47-2051	Cement masons & concrete finishers	1,216	1,536	320	\$16.14	Moderate-term OJT

Source: EMSI

Many companies have managed to compete by not actually hiring skilled workers as payroll employees, but instead taking them on as independent contractors. When examining data for “covered” employees (meaning those that participate in the unemployment system), the number of workers is declining even though there may be plenty of jobs. This means that there is less of a safety net for those workers when they lose their jobs.

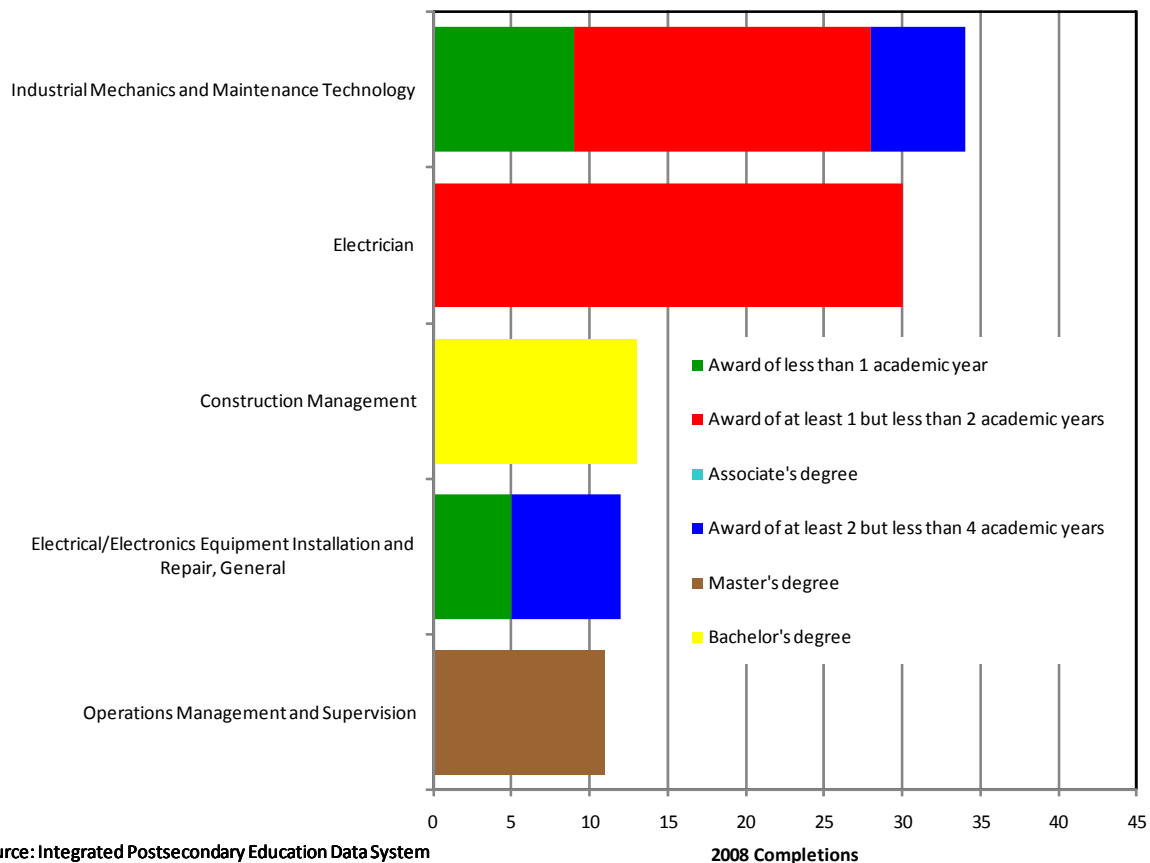
Furthermore, it is becoming tremendously challenging to attract young adults into the field. With few jobs today and reported employment rates in the trades at more than one in four workers, the inability to attract new workers does not seem to be an immediate priority. However, it may well become a much more important concern as the economy recovers. In such a case, many trades-related craft skills may be lost. This is a special concern for certain trades – like carpentry – where average worker age is rising very rapidly and few younger workers are filling those jobs. In the past, many firms turned to immigrants, but recent national immigration rhetoric and public policies have made attracting and retaining immigrants more challenging as well.

Employers interviewed felt that the industry could be at the cusp of a change in the way construction is done. The implementation of lean construction techniques – including the introduction of tools like Building Information Modeling– could eliminate waiting time and increase efficiency in an industry that still constructs buildings in the same way it has for decades. Moreover, pre-assembled and manufactured building components (e.g., pre-assembled bathrooms, walls for hospital rooms) may further speed up the construction process, and jobs in the industry may become more related to manufacturing than construction in the way the industry has traditionally been known. Furthermore, with the introduction of LEED certification and related construction design principles, trades workers will need to become increasingly familiar with energy-efficiency principles and related skills. This will likely mean that all construction occupations – from engineers to laborers – will need to continue to enhance their skills. In addition, the management skills required for construction are becoming increasingly complex, and more university-level education programs are increasingly required to support management and technical careers in the field, according to many employers.

### Educational Programs

Figure 59 illustrates that the area's construction trades rely on some postsecondary programs to provide certifications, but much of the training is done through OJT and apprenticeships. Area construction management programs at Middle Tennessee State and Nashville's ITT Technical Institute are relatively small programs that likely meet only a modest proportion of the real industry need. MTSU also has a concrete industry management program that provides a four-year degree through the school's engineering technology & industrial studies department. About one-half of the 22 graduates from 2009 who registered on the program's website found jobs in Tennessee. Other educational programs important to the cluster include degrees and certificates for industrial mechanics and maintenance, especially for heating ventilation and air conditioning. Also, Nashville State Community College has begun to meet the need for electricians, but there are no formal programs in carpentry to support that industry. Further expansions of these programs are likely needed to meet the long-term challenges facing the construction industry as it begins to recover.

Figure 59: Construction educational programs



## Industry Cluster Workforce Gap Analysis

Determining the actual supply of, and demand for, workers in each of these target industry clusters with any precision can prove difficult. Each of these key industry clusters will meet their workforce needs in a number of ways. For many of the key occupations that require people with postsecondary educations, the region's institutions will play a key part in helping meet this demand. In other instances, worker demand will be met by providing workers with appropriate OJT and moving workers through career pathways. They might also attract workers from other industries. The demand for workers can also be complicated in that the recession forced many older workers to reconsider their retirement plans.

From our analysis of the key clusters, different patterns emerge. For instance, within the health-care cluster, there appear to be enough graduates to meet the demand for the net new positions, with two important issues remaining. First, certain occupations already have a significant shortage, with a backlog, for instance, of nursing jobs to be filled. Furthermore, the pace at which people retire from these key health-care positions will be critical in determining the extent to which these graduates can meet the replacement needs. For the IT industry, a different pattern emerges, in which companies suggest there are an adequate number of programmers and software engineers available to meet current and expected new demand, especially among baccalaureate and advanced degree holders. If IT support specialists with associate's degrees are mentored and receive further training and education, they can move up their career ladders, representing a potentially important source of workers capable of meeting the need for programmers and software engineers. Within the headquarters cluster, there is an ample supply of people with general management degrees, but companies interviewed expressed the frequent concern that workers have sufficient experience in key administrative areas, particularly finance and accounting.

Within manufacturing, distribution and construction, many of the key occupations require OJT and experience. However, there are several occupations that require more formal training and education. For instance, tractor trailer drivers must take a commercial driver's license course before they are able to become truck drivers. Other courses are similarly relevant for careers such as welders, machinists or electricians. Even though the output from related programs does not appear to meet all of the new demand for workers in these industries, these programs remain important for workers.

## Conclusions

Like the rest of the U.S., Nashville's economy has struggled to keep pace during the past two years. Relative to many other regions, however, Nashville has not experienced as much economic hardship. The story of the Nashville area represents a microcosm of America's story during the Great Recession. Overall, more workers are employed today than in 2004, despite the setbacks of the past two years. The region's diverse mix of finance, education, tourism and health-care positions will continue to allow the region to succeed in the future. Meanwhile, professional business services and health care are expected to account for nearly half of future job growth. In fact, data suggest that, despite the current high unemployment rates, the area will experience a worker shortage by mid-decade, one that could become severe as the economy continues to grow in the final years of the 2010s.

Like many prosperous metropolitan regions, the Nashville area attracts net in-migration to take advantage of economic opportunities. However, the region will also need to attract a significantly increasing number of next-generation workers and retain many more recent graduates from area colleges and universities. The region's success in preparing for its future demand for workers will also depend on its ability to help existing workers continue to upgrade their skills as the economy creates high-wage, high-skilled jobs that are likely to appeal to highly skilled jobseekers moving to the area. Furthermore, the region has created a brand identity that has helped attract young adults, although that has also slowed, as anecdotal evidence suggests that the weak housing market in many parts of the U.S. is curtailing higher levels of household migration. The key question is how slower in-migration might affect the region's talent pool in the future.

At the same time, like the rest of the U.S., the region is working to defuse a potential demographic time bomb – the impending retirement of the Baby Boom generation. Currently, not enough next generation workers will be entering the workforce to replace anticipated retiring Baby Boomers – even though the Baby Boomers may not be retiring as early as predecessor generations. Like many other areas, the Nashville region must continue to successfully retain working-age pre-retirees in the workplace for a longer period of their work life.

An important issue remains: Younger adults are not entering the workforce fast enough, since they often must remain in school longer, preparing for careers that require more education and training than preceding generations in the job market. At the same time, Baby Boomers are remaining in the workforce longer, but they are often transitioning out of work – taking on part-time work and tapping into their Social Security retirement accounts at an earlier age. Many workers lost a great deal of personal wealth during the Great Recession and are staying in the workforce longer to repair their retirement savings portfolios. This likely is delaying retirement among many Boomers in the Nashville area, as it is doing elsewhere.

Another key change occurring in the Nashville area is the increasing significance of the southern and eastern suburbs of the region as an employment center. The region's appeal has helped to affect internal migration patterns as Davidson County residents continue to relocate to suburban locations, and an increasing number of jobs follow that talent to the suburbs. This interrelatedness of supply and

demand in workforce dynamics in the region is significant as a phenomenon and also for policy and program planning over the decade ahead. While Davidson County remains the largest job center, nearly half of the region's residents cross a county line to go to work. Furthermore, nearly half of the region's new population and job growth occurred in Williamson and Rutherford counties. Yet, at the same time, some counties faced economic challenges in manufacturing, agriculture and other sectors, with examples from Maury, Dickson, and Cheatham counties and elsewhere. Job losses in one part of the region affect not only residents in one community or county, but they also impact employment trends and options throughout the Nashville region.

Self-employment plays a very important role in the Nashville region and will continue to do so. Boosting opportunities for greater earning power and occupational choices for the self-employed in smaller and more isolated parts of the region is one desirable outcome. Also, further expanding clusters in the region which depend so heavily on self-employed persons will help grow employment opportunities and earning power. As just one example, Davidson County has a relatively large proportion of self-employed workers, and those workers earn significantly higher-than-average wages – tied to higher-skilled occupations like writers, artists, management consultants and technical workers.

For many, higher-wage self-employment opportunities are possible because workers with higher educational attainment levels have greater flexibility to control their work environment, have lower entry costs to do business (i.e., a computer, a phone and clients), and a greater number of job possibilities. Quite often, for these workers, the greatest barrier to entry into the world of self-employment – an area of expertise and the knowledge about how to “sell” that expertise – has already been overcome through a combination of a college education and related work experience. With well over one-third of workers having a college degree, Williamson and Davidson counties have a significantly higher concentration of skilled workers than other counties in the region, and the economies in those areas reflect this talent advantage with much higher-than-average wages and a greater share of proprietors able to command higher-than-average earnings.

The region's 2009 unemployment rate, at 9.3 percent, reflects the overall national economic challenge that also faces Nashville. But that rate was slightly below the national rate of nearly 10 percent for that same period. While 45,000 more people were unemployed in 2009 than in 2007, the region still had more working adults in 2009 than in 2004. Furthermore, in an early 2010 employer survey, most companies reported that they were continuing to offer job opportunities for the best candidates – despite the severe recession. In sectors such as health care, companies continued to add jobs even in the midst of the deepest and longest recession since the Great Depression. However, in nearly all sectors, layoffs far outpaced hiring activities last year. Manufacturing was particularly hard-hit, and the region's share of employment in that sector fell well below 10 percent for the first time.

Employers interviewed during this study suggested that they believe the recovery still remains in its early stages. Certainly, economists nationally remain concerned about the potential for stagnant job growth during the next year or more. Even so, as the economy recovers more fully and as the overall base of employment expands, longer-term projections suggest that the area will likely again begin adding jobs at a more rapid pace – ultimately creating enough new jobs for about 12,500 workers a

year. That is an annual rate of 1.4 percent, more robust than the anticipated 1.1 percent growth rate anticipated for Tennessee and the U.S. overall. But hiring will likely be much more aggressive in some sectors than in others and from the current vantage point will not occur immediately and will be sporadic. Considering the recession's lingering impact on many industries, the uncertainties of the decade ahead remain substantial. Sectors such as health care, professional business services, corporate headquarters operations and full-service restaurants might expect to add workers. At the same time, many expect the construction sector to rebound slowly and the advanced manufacturing and agricultural sectors to stabilize the recent hemorrhaging of jobs.

These growth patterns suggest that service occupations in related industries will likely demand workers more rapidly. Jobs in sales, office administration, business, finance and health care are expected to offer the most future employment opportunities. Many of these jobs – registered and licensed practical nurses, managers and management analysts, accountants and office supervisors – offer relatively good wages. However, it is also important to note that these higher-paying and growing occupations require workers to have a strong background of education, training and experience.

At the same time that these industries are adding jobs, fewer workers will be required in production, machine operations and farming jobs. Many of these jobs are likely lost to a combination of technological change and global outsourcing. However, some exceptions can be expected. For instance, Nissan's proposal to build the Leaf in Middle Tennessee and Hemlock Semiconductor's plan to produce the silicon used in products such as solar panels reflect the importance of area employers adapting to new market realities. Those that find new market niches may succeed, but those that do not will likely continue to shed jobs. Furthermore, the available skills required for any company to adapt will likely need to increase – demanding continuous and lifelong learning for workers. All workers will need to refresh and renew their skills in order to remain competitive in the labor market.

During the next decade, the Nashville area is expected to add nearly 153,000 jobs, about 45 percent of which will require some form of college experience. About 29 percent of the 153,000 new jobs will require a four-year or advanced university degree, while about 16 percent will require an associate's degree or some college experience. For jobs requiring a baccalaureate or higher, this represents a substantial increase from the current level (of 21 percent) and a large increase for the associate's degree level as well (from the current 9 percent) of all jobs. These data reflect how the economy and composition of new jobs are truly transforming. In the past, companies relied much more on OJT to prepare their workers. About 70 percent of the current job base could qualify with some form of OJT as the minimum education required beyond high school. In the future, that share will likely drop to 55 percent of new jobs being created that will require OJT only after high school. The remainder of new jobs will require college experience.

Obviously, this demand for highly educated workers will vary widely from industry to industry and job to job. Even among existing jobs, the minimum education required continues to increase and the kinds of jobs are changing to reflect the industry's transformation. One of the most highly visible and touted challenge is for nurses where the demand for skilled nurses remains high, but those with selected specialties or the greatest flexibility are among the most in demand. Furthermore, many health-care

firms also now lament the lack of health-care IT programmers and support professionals, as well as the need for IT skills among their nursing workforce, as those jobs change to reflect new technologies. Industry experts maintain that the region's educational system is simply not producing enough IT graduates with this kind of background to meet these specialized needs for health care. Likewise, jobs requiring a sales or finance background at all levels are also tough to fill, and too few students are exploring these fields.

Certainly, the creative sector and the hospitality industry are seeking more individuals with sales and customer-service skills to help translate their products and services into commercial value – whether it is a musician composing a song or a desk clerk working with a traveler. Sales and customer-service skills are critical. This shortage of sales representatives is felt keenly in the distribution and logistics business, where sales representatives and truck drivers required to also sell products do not have access to adequate education and training opportunities.

Even in the struggling construction and manufacturing sectors, companies cite shortages of personnel with the appropriate technical skills. Machining and fabrication require welding and craft skills that are not widely available. Supervisory skills are also desperately needed in an aging workforce where many of the experienced workers will be retiring and those below them were lost in past layoffs. As the construction industry rebounds, it must be prepared for a likely shortage of skilled trades – carpenters, electricians, HVAC installers, and equipment mechanics. Furthermore, supervisors will also likely be in short supply as the industry rebounds.

In the region, it is not surprising that many jobs requiring a college degree or some college experience tend to offer higher earnings on average. However, certain jobs offer even better salaries than the average, and those are some of the ones in shortest supply. Furthermore, this pattern is even more pronounced in Nashville where area workers, on average, can earn as much or more than their counterparts in the same occupations in other regions. The same cannot be said for workers in lower-skill jobs, nor did this pattern of nationally competitive wages hold when analyzing earnings for higher-skill jobs in the past. In fact, Nashville companies were more apt to offer lower-than-average wages to their high-skilled workers. Clearly, the shortage for key personnel has encouraged area companies to sustain wages in Nashville when they might have fallen elsewhere. If this pattern continues to hold, it suggests that Nashville-area companies are not only demanding more highly skilled workers, they are willing to pay a wage premium to attract skilled workers who can help improve the firm's competitive position and productivity.

## **Appendices**

*Appendix 1: In-demand Occupations in the Nashville Economic Market Area, by Required Education*

*Appendix 2: Nashville Area's Fastest-Growing Career Pathways and Related Occupations*