# State of the North Carolina Workforce

## *2011-2020*

*"Preparing North Carolina's Workforce and Businesses for the Global Economy"*


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**The North Carolina Commission on Workforce Development**


*"Preparing North Carolina's Workforce and Businesses*
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# Executive Summary

This study examines the state of North Carolina's workforce in 2010-2011 as a result of in-depth analysis of economic and employment data as well as a number of interviews with key stakeholders across the state during the late fall of 2010. It also evaluates the impact of the 2008-09 recession (sometimes referred to as the "Great Recession") and the ongoing structural economic shifts described in the previous *2007 State of the Workforce Report.* An important goal is to assess North Carolina's readiness to meet current and future workforce challenges.

In short, these challenges are largely tied to the rapid effects of change on the state's industries, their workers, and its communities. Many of the most severely impacted industries are those traditionally competing for business based on relative cost advantages. Those industries are feeling the greatest global competitive pressures and must change to survive. Many are also located in communities that traditionally provided a large available low-skilled labor pool. For many years, these companies served as the state's backbone in creating a low-skilled, middle class. In order to survive and ultimately thrive again in this economic climate, these very same industries (including manufacturing, construction, and others) must make significant changes. This means that their workers, often employed in low-skilled occupations that offered moderate, family-sustaining wages are at greatest risk. Furthermore, it means that communities where these activities were most prevalent – such as the rural/micropolitan areas and a selected few metropolitan areas – are also suffering the greatest from economic dislocation and transition.

The impact of this dislocation is further complicated by the types of industries emerging as replacement employers for North Carolina workers. Because an emerging knowledge-based economy uses skilled talent to create a competitive advantage, emerging growth industries rely on workers who can demonstrate innovation and unique capabilities. These characteristics often derive from combining knowledge with creative instincts. For many low-skilled, dislocated workers, these skills may be beyond their reach without a significant investment of time and resources in education and training.

A key finding from this 2011 Report is that the recession accelerated the state's shift to this knowledge-based economy because firms had to adjust to this new reality in a much shorter timeframe. Unfortunately, many workers—incumbent and dislocated alike—as well as a large share of current jobseekers are simply not prepared for the transition and face severe challenges in adapting to this new economic reality.

## North Carolina's workforce challenges

Ultimately, this report seeks to articulate the state's most critical workforce challenges and offer a framework for setting policies that can address them. The following summarizes ten key challenges as well as the economic trends creating them.

1. **Worker dislocation accelerated during the recession due to long-term structural changes.**

   While manufacturing job losses have been particularly prominent in the NC economy since the sector's peak in the late 1990s, many industries are exploring ways to increase productivity by

changing the way they work. In manufacturing and in low-skilled service industries, off-shoring was a common strategy employed by many companies pursuing lower costs. They simply moved low-skilled jobs to countries offering lower wages. However, for other companies seeking a more sustainable U.S. business model, the focus has been on redesigning their business processes to increase efficiency and expand the use of technology. As firms begin to rehire during the recovery, they are not likely to simply replace the workers they shed before the recession. Instead, businesses are much more likely to seek more highly-skilled workers who can do very different jobs than workers did before the firm began transforming its business model and work process.

2. **Workers employed in low-skill, middle-wage jobs are competing for fewer good-paying jobs while opportunities offering similar wages (i.e., "new middle" jobs) demand higher skills.**

   The disappearing middle jobs highlighted in the *2007 State of the Workforce Report* – those that offered a family sustaining wage for individuals with limited educational experience – are not completely gone, but fewer of these types of good-paying jobs are available and they are at a greater risk of elimination as a result of technological change or globalization. Workers dislocated from these careers are finding that they seldom qualify for the available careers offering wages similar to what they once earned. Instead, these dislocated workers are having to settle for one of the growing number of low-wage, low-skilled occupations created by other industries. Consequently, these workers are also competing against other low-skilled workers for these lower-wage jobs with only limited opportunity for advancement. Furthermore, even if transitioning workers invest some time or resources in education or training, they are having to compete against other entry-level workers, with little guarantee that, in the short-term, their wages would be the same or higher than in their old jobs.

3. **While metropolitan workers have a more diverse set of career possibilities, they must continuously adapt to increasing demands in the workplace and a more competitive labor market.**

   In general, metropolitan economies are bouncing back from the recession at a more rapid pace than the state's micropolitan or rural areas, but the recovery is uneven. The largest proportion of available jobs will be in metropolitan areas and their success is crucial to help the state get people back to work and bring down the unemployment rate. For those metropolitan areas with high concentrations of industries undergoing structural change, the recovery is likely to take longer than elsewhere. In the rapid-growing metropolitan areas, the economic fundamentals – as measured by per capita income, educational attainment, and industry diversity – are strong, but many workers struggle to adapt. These high-growth areas will also be important assets for the state as it develops strategies for getting people back to work quickly.

4. **Dislocated or young workers in economically hard-hit micropolitan and rural areas have very limited alternatives for employment.**

   Job opportunities in rural and micropolitan areas are not always readily available for skilled workers, even during the best economic times, but those opportunities were particularly scarce during the recession. For that reason, job losses in manufacturing, which were especially severe in the state's small cities, created significant hardships in places, leaving no viable employment alternatives. As a

result, during the Great Recession, unemployment rates were much higher in the micropolitan areas. While the outflow of people to metropolitan areas will likely continue, it was mitigated during the recession by the poor economy elsewhere. As the economy recovers, many rural/micropolitan jobseekers will ultimately have to seek careers in new industries (because their old jobs will not likely return) or seek jobs elsewhere. Some of these jobs may be in places within a reasonable commuting distance, but many others will likely be in places that are not nearby. Thus, rural/micropolitan areas, already struggling economically to retain their best employers, are simultaneously struggling to keep their most skilled workers.

5. **Seeking good-paying jobs, more workers must increase their skills by accessing and completing education beyond high school or by earning industry-recognized credentials.**

   At least 42 percent, perhaps many more, of the new jobs being created in North Carolina will require **at minimum** some post-secondary education, many in Science, Technology, Engineering and Math—STEM—disciplines. This may represent an underestimate because businesses are increasingly opting to replace lower-skilled workers (lost through attrition and layoffs) with more highly educated or trained employees. An even higher share of new, higher-wage jobs will require STEM-related skills, and many of those jobs will require post-secondary education or industry-recognized credentials. In particular, STEM jobs will constitute an increasing share of higher and medium-wage jobs, creating significant barriers to employment for unprepared young adults and existing workers. For many low-skill workers and students, gaining access to STEM academic training, as well as affording the time and resources to take the training, could represent potential insurmountable barriers due to the breadth of the gap between their current skill level and the skill required for emerging or in-demand jobs.

6. **The recession slowed baby boomer retirements, but the impact is likely to be felt first and greatest in micropolitan and rural areas where more workers are near-retirement age.**

   A significant demographic challenge facing all communities is the retirement of the baby boom generation, which began turning 65 in 2011. The economy has delayed the on-set of retirement for many "experienced" workers by as much as three to four years. As industry labor force demands continue to increase, the ultimate exodus of baby boomers from the workforce will first ease the current high unemployment rates, but then ultimately could result in a subsequent shortage of experienced workers. While the recession-induced "retirement pause" among baby boomer workers can help companies in the short-term, this delay also has the unintended consequence of slowing career growth for many Generation X and Millennial workers waiting for those baby boomer retirements. Consequently, firms will need to create explicit succession plans, especially in mission critical occupations. At the same time, many dislocated, lower-skilled older workers must now learn completely new jobs that may require long-term education or training that some older workers may strongly resist.

7. **High-skill in-migrants recruited to help companies meet their talent requirements are seeking jobs in amenity-rich metropolitan areas.**

   The Census Bureau reports that North Carolina attracted more new in-migrants with a four-year degree or higher in 2008-09 than the state's university system graduated. Furthermore, if these trends continue, the number of people born outside of North Carolina will surpass the number of native North Carolinians within the next three years. As this shift continues, the very fabric of the state's culture will also continue changing. New high-skill in-migrants are helping to foster growth, but due to their diversity, they create a new set of challenges, especially since they tend to concentrate in certain parts of the state. For companies seeking high-skilled workers, national recruitment efforts are invaluable in finding the workers they need and filling the gap that exists in the current labor market. However, North Carolina's success in attracting workers has been concentrated to its metropolitan areas, but the talent is needed throughout the state. Furthermore, the prevalence of in-migration might also be masking a potential mismatch between the skills that students in the state's higher education system are learning and the skills that North Carolina industry requires.

8. **Migration of new workers continued at near pre-recession levels, even among low-skilled workers, despite the limited availability of jobs.**

   Migration also accounted for 80 percent of North Carolina's population growth during the past decade. Recent Census data suggests that in-migration continued at a relatively rapid pace even during the recession. This was true even among lower-skilled in-migrants locating in communities across the state. A relatively larger concentration of migrants is of Hispanic or African American origin. Growth among these groups accounted for 44 percent of urban population growth and more than half of rural/micropolitan growth during the past five years. Many more slow-growing rural counties would have experienced population decline without an influx of Hispanics. Thus, the areas that have endured the greatest economic dislocation also have been most successful in attracting minority workers because they are willing to take many of the low-wage, low-skill jobs being created in smaller communities.

9. **Lower-skilled workers accounted for most of the unemployed and required significantly greater social services during the recession.**

   North Carolina's unemployment rate has consistently been higher than the nation during the past few years. This can be attributed to the mix of industries located in the state as well as the educational qualifications of the state's workers. An examination of historical data finds that individuals with a baccalaureate degree were half as likely to be unemployed as the average worker, while individuals without a high school degree were twice as likely as the average worker to be unemployed. Furthermore, workers with a baccalaureate degree can expect to earn $1.5 million more over a 30 year career than a high school dropout, and this gap widened by nearly 50 percent during the past three years alone. Low-skill and high-skill jobs are being created at a rapid rate, but the chasm between the education required and earnings expected appears to be growing. This wage gap also limits the opportunities for lower-skilled workers to search for the "next" better paying job because the skill gap is so wide as well. With lower wages, these workers frequently

work two jobs to make ends meet, leaving little time to invest in the long-term education and training required to move into a better paying career. Ironically, this same gap is an important reason why there is a greater shortage of prepared, skilled workers available to take advantage of the better-paying jobs that are going unfilled in so many industries.

10. **Workers employed in certain industries – e.g., manufacturing, finance, distribution, or construction – were more likely to lose their jobs and to need retraining to find work.**

    Even before the recession started, net job declines were already occurring in some sectors – driven by industry-specific economic forces. Furthermore, because some areas of the state are more concentrated in these activities, those areas were especially hard-hit by lay-offs in these industries. The low-skilled workers most significantly impacted by lay-offs were not those who were unable to handle multiple tasks requiring different skill sets. Employers in a number of industries repeatedly cite examples of how skill demands are changing for jobs and how workers must be capable of doing multiple jobs. Furthermore, these companies often require fewer skilled workers to produce the same or more output. The most successful workers were those with post-secondary education at some level – university, community college, and industry-driven credentialing – who could adapt to these new workplace realities.

## Preparing a call to action

The Great Recession was felt across the full breadth of the state impacting all elements of industry, geography and occupation. The recession served to accelerate many long-term economic trends, and exposed the lingering truth that there is now an extreme imbalance between the demand for jobs and the supply of workers to fill those jobs. It significantly exposed the challenges facing workers across the state as particularly acute because so many are ill-prepared for the next generation economy.

While the study identified ten key challenges that could stand alone as a critical priority, it is notable that they are all interrelated and must be addressed as long-term issues that require time and investment to overcome. Addressing these workforce challenges as a whole will require intentional action. Furthermore, addressing one or more of these issues in isolation will not likely fundamentally shift the trajectory of the state's workforce. Only dealing with the issues holistically, and in collaboration with North Carolina's educational and economic development systems, will do so.

As leaders review the key workforce challenges facing the state, North Carolina must consider policies aimed at:

- *Transitioning workers dislocated due to structural change by considering questions about how North Carolina can help existing and dislocated workers adjust to a new work environment.*
- *Guiding dislocated middle-skilled workers competing for good-paying jobs by identifying at-risk workers in "old middle" jobs and helping those workers access the education and training required for careers in "new middle" jobs.*
- *Helping workers adapt to increased employer and labor market demands by assessing how to efficiently connect jobseekers to education and training, ensuring that the state's post-secondary educational system is prepared to deal with chronic skill mismatches, and enhancing the ability*

*of workers, jobseekers, or students to improve their skills to command better jobs with higher wages.*

- *Engaging education at all levels more actively in the state's future prosperity by ensuring that students enroll in educational programs that teach the right skills, linking the curriculum offered and industry needs, and integrating work-relevant learning into the academic experience.*
- *Enhancing economic opportunity for workers in micropolitan and rural areas by focusing on issues related to how far workers will commute, how to take advantage of changing rural workforce demographics, and making sure that community colleges, in particular, can adapt to the customized needs of small numbers of workers seeking specialized training.*
- *Encouraging employers and communities to adapt to the potential impact of large-scale retirements by helping older workers remain in the workforce, continue learning, and mentor other workers while also helping companies develop appropriate success plans, especially for key occupations.*
- *Increasing the availability of talent from high-skill in-migrants by ensuring that the state continues to maintain its competitive edge in attracting these in-migrants while also identifying ways to encourage out-of-state migration to the state's rural and micropolitan areas.*
- *Managing worker in-migration amid the limited availability of jobs in the short-term by promoting in-migration of entrepreneurs and skilled people into rural areas, addressing skill shortages in certain industries, and improving access to education and training for rural/micropolitan workers.*
- *Ensuring greater employment stability through earned post-secondary education or learned adaptable skills by guiding students more effectively in their career planning and addressing the substantial education or training gap that must be met for low-skilled jobseekers or workers to compete for good-paying jobs.*
- *Preparing workers for changes in certain sectors by targeting workforce development resources and the workforce system to the needs of key industries, especially those at-risk or those that offer the best opportunities while also ensuring that industry has workers prepared for the "mission critical" jobs in the state's economic driver industries.*

When all is said and done those individuals who are well prepared for the transformation will be best able to adapt to the needs of jobs that offer the greatest opportunity while ill-prepared workers are much more likely to be left behind. The tragedy in this context is two-fold -- a larger number of individuals will be at risk of being left behind while very good job opportunities go unfilled for lack of available workers. This creates a related pressure on the state's economy because if companies can't find the workers they need, then they cannot compete for global opportunities and will be left to stand by while global companies with better prepared workers elsewhere take advantage. This leaves North Carolina at risk of losing its competitive edge and losing even more jobs in the future.

An overarching goal for policy makers to consider is *"How do we set policy to remove or lower barriers to education and training to ensure that all of North Carolina's citizens can take advantage of opportunities to gain the required education and skills to create a competitive workforce advantage for them and the state?"* There are some occupations in which these barriers have created shortages while at the same time the state has many jobseekers who want to work. Improving this labor supply-demand match and

addressing the barriers to the efficient operation of this system provide the framework for action and will require direct involvement of local and state government, education, labor, economic development, businesses and community stakeholders.

# Chapter 1: Introduction and Overview

## Introduction

The Great Recession of 2008-2009 left a lasting imprint on North Carolina. Although the economy has begun to recover, making a living in the state remains difficult for many workers. In July 2008, as the recession began in earnest, the unemployment rate was still at 6.5 percent, but by the next summer, unemployment had grown to 11 percent. As the economy continues its slow recovery, unemployment has eased somewhat, but remained at a stubbornly high 9.9 percent as of January 2011.[1] About 440,000 people are unemployed in North Carolina, nearly 130,000 more than in 2008. This economic shock has altered the challenges facing North Carolina's workers and impacted the quality of the opportunities available to them.

In light of a changing economic landscape, this report provides an update to the North Carolina Commission on Workforce Development's *2007 State of the Workforce Report*[2] and a fresh look at how the state has fared against the challenges of the Great Recession. The 2007 report identified eight key trends affecting North Carolina's workforce:

- Many of North Carolina's traditional manufacturing industries continue to shed jobs as part of an on-going economic transition.
- North Carolina's traditional middle jobs—those that paid a family-sustaining wage and required minimal formal education or training—are disappearing as part of this transition.
- New job creation is concentrating in certain fast-growing metropolitan areas.
- Many areas of North Carolina are not prospering from the economic transformation.
- North Carolina's future prosperity depends on achieving higher educational attainment levels for all citizens.
- Impending baby-boomer retirements will exacerbate an emerging skills gap among experienced, skilled workers.
- High-skilled in-migrants will help fill part, but not all, of this skills gap.
- Low-skilled in-migrants present both opportunities and challenges in meeting the state's workforce needs.

[1] Employment Security Commission of North Carolina

[2] North Carolina Commission on Workforce Development, "*State of the North Carolina Workforce: An Assessment of the State's Labor Force Demand and Supply 2007-2017*," as prepared by Corporation for Skilled Workforce and the Center for Regional Economic Competitiveness, January 2007. Found on the web at http://www.nccommerce.com/NR/rdonlyres/CE53BE9D-DDF7-4AA9-9430-B9ACF559B197/0/StateoftheNorthCarolinaWorkforceFinal.pdf

In many ways, these trends continue to hold true; however, the shifting economic landscape has altered the pace at which they are transforming North Carolina's economy and workforce. For instance, the decline of many traditional manufacturing industries has accelerated, as has the number of opportunities for people who have historically filled jobs in those industries. Conversely, the state's urban areas continue to be the source of job creation, but even this growth has slowed substantially. Similarly, baby-boomer retirements could leave a potentially crippling skill gap, but the impact of the recession on housing values and savings has delayed retirement decisions and bought companies and communities more time to plan for an orderly exodus of these experienced workers. As the economy begins to rebound though, a potentially larger challenge will be to prepare a broader segment of the workforce for the available jobs that do emerge.

This report reviews evidence that illustrate these trends to describe the state of the workforce in 2010 and beyond. Its purpose is to articulate the most critical long-term workforce challenges facing North Carolina and offer a framework for designing policies to proactively address those challenges.

## Approach and methodology

Through extensive quantitative analysis of the supply of available workers and demand of available jobs, combined with interviews with businesses as well as other workforce, labor, and economic development stakeholders across the state, we have examined a number of North Carolina's long-term workforce challenges, including those previously identified in the earlier study, to assess their relative importance as key issues impacting the state's post-recession labor market.

It is important to note that no single data source, nor one type of data, can tell the whole story of the state and its regional labor markets. A wide variety of public and proprietary data sources are used herein to help paint a more complete picture of the complex workforce issues facing North Carolina. To describe the labor market supply, the report draws upon public data sources such as the U.S. Census Bureau, the American Community Survey, and the U.S. Internal Revenue Service. Labor market demand data are drawn directly from public data sources such as the U.S. Bureau of Economic Analysis (BEA) and the North Carolina Employment Security Commission (NCESC). In addition, many of the employment estimates and projections for the period 2010-2020 were generated by Economic Modeling Specialists, Inc. (EMSI). Despite the fact that they are slightly more conservative than recently released 2008-2018 projections from the North Carolina Employment Security Commission, EMSI also provides detailed employment estimates and projections for all industries and occupations at the county level, allowing geographic analysis at a level not otherwise possible due to public data suppression requirements.[3]

In addition to the insights derived from the analysis of secondary data sources, the project team also conducted a series of focus group interviews across the state. Working in conjunction with the state's economic development regional partnerships, the project team interviewed more than 100 key stakeholders from labor, economic development, workforce development and education, as well as

[3] In accordance with the BLS federal/state cooperative program policy, employment related data from the Quarterly Census of Employment and Wages (QCEW) are not published and are used only for specified statistical purposes when necessary to protect the identity and data of cooperating employers. NCESC withholds publication of these data for any industry level when necessary to protect the identity of cooperating employers.

from businesses in targeted industry clusters. The interview and focus group data inform this report in two important ways. First, they help to validate the quantitative research findings. Second, they offer context for the quantitative analysis. As a result, these qualitative data elements allow the project team to better understand the priorities and challenges facing employers across North Carolina.

## Report organization

The report is organized to reveal the findings from the quantitative and qualitative analysis. Chapter 2 focuses on the demand for workers across the state by examining key industry trends and how these trends affect current and future employment growth. Chapter 3 focuses on the available supply of workers by considering demographic and educational trends and how they affect the number and skills of people available for work. In the last study, we found that labor market supply and demand trends affect the state unevenly. Chapter 4 re-examines the different ways that these updated trends affect the state's metropolitan, micropolitan and rural regions. Finally, Chapter 5 summarizes the key challenges facing North Carolina and offers questions for policy makers to consider in framing potential responses to improve the state's work readiness.

# Chapter 2: Changing Demand for Workers

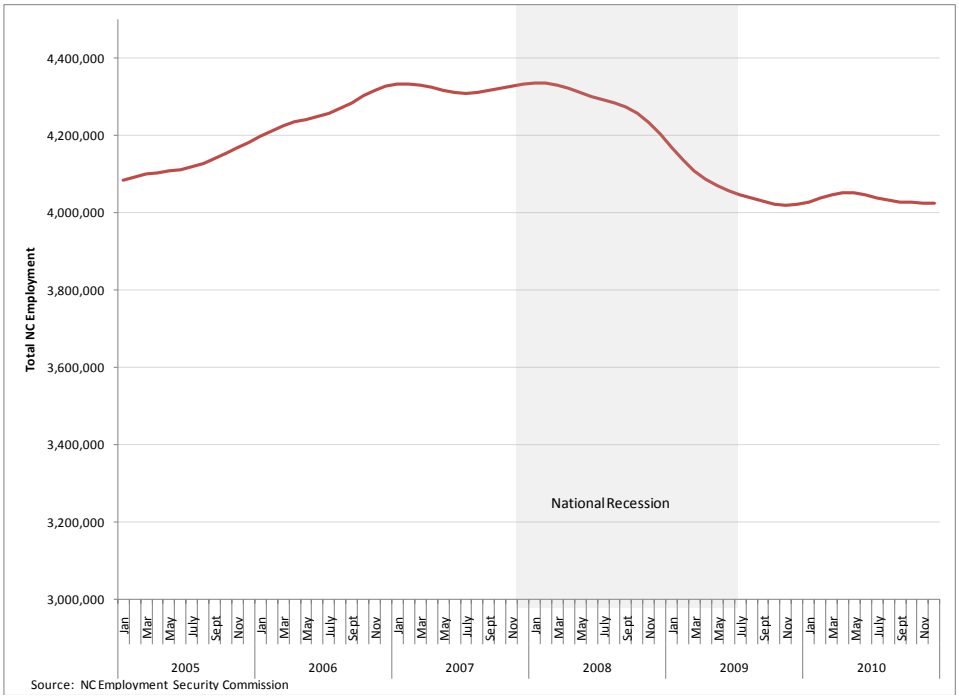
The Great Recession represented one of the most severe economic downturns in our lifetime. It had a significant impact on many aspects of the state's economy, destroying jobs, companies, and altering the lives of many in North Carolina. Yet, in its wake, signs of new growth and opportunity have sprouted to create a sense of hope and cautious optimism for many workers. This section highlights these broader economic trends that are shaping the future. These data provide important context for understanding where North Carolina's economy currently is, a critical first step for determining where the state's workforce must move in the future.

## Employment and unemployment

North Carolina's economic landscape has changed dramatically over the past half decade. Between 2005 and 2010, while the state's population increased by nearly 870,000, employment grew only a meager net 12,000, the result of rapid growth followed by a steep recessionary employment decline. Overall, however, the state of North Carolina compares favorably with the rest of the nation, which saw annual employment losses of around 0.4 percent during the 2005-2010 period.

Employment in the Tar Heel State reached its peak levels in 2007. However, between 2007 and 2010, the state lost nearly 200,000 jobs, cancelling out almost all of the gains garnered during the three previous years. Most of these job losses began occurring in earnest with the recession of mid-2008, picking up steam as the year rolled along. And while the national recession officially ended in June 2009, as Figure 1 illustrates, North Carolina's employment has not yet begun to recover. Moderate job

**Figure 1: Monthly North Carolina Employment, 2005-2010**

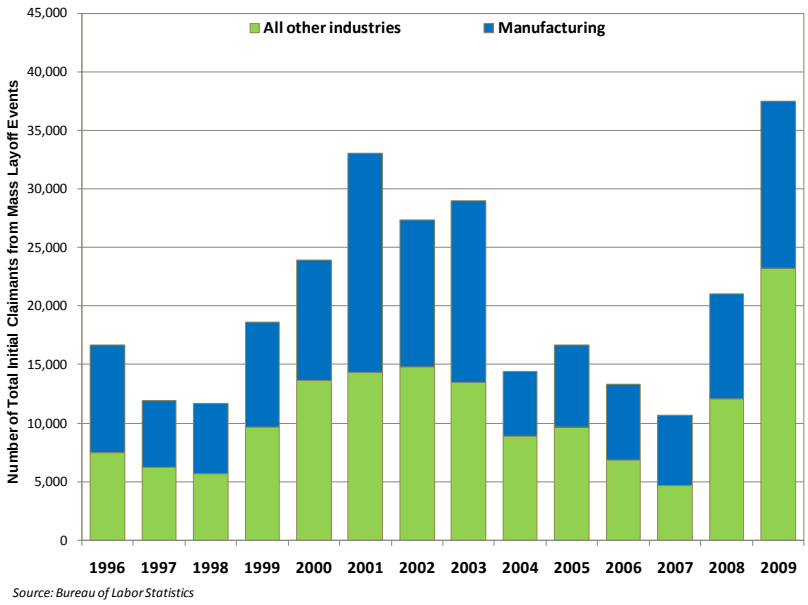


Source: NC Employment Security Commission

losses continued into late 2009, and sputtered throughout 2010. To achieve full employment levels last seen in 2006 and 2007, North Carolina's economy would need to create between 400,000 and 500,000 net new jobs from its current base.

These job losses were felt particularly hard in certain industries. Like many other parts of the country, manufacturing employment in North Carolina began declining well before the recession even began.[4] Once it did commence, moreover, the manufacturing sector lost jobs more rapidly than most other industries. Still, it is notable that North Carolina also experienced significant layoffs in the services sector as well. Figure 2 presents mass layoff statistics for manufacturing and non-manufacturing activities. Collected by NCESC and published by the U.S. Bureau of Labor Statistics, these data count employment losses stemming from plant closings and downsizings in North Carolina that affected more than 50 workers at a time.

**Figure 2: North Carolina Employment Lost Through Mass Layoffs**




*Source: Bureau of Labor Statistics*

During the past two decades, manufacturing firms typically accounted for a larger share of employment losses. This was especially true during past recessions. Manufacturers continued to account for a significant share of the most recent mass layoffs, but the Great Recession also clearly impacted other (non-manufacturing) industries more so than in previous years.

In 2009, 38 percent of the total initial claimants from mass layoff events were in manufacturing. This was the smallest proportion (though not number) of total mass layoffs attributable to manufacturing in 14 years. While manufacturing was certainly hard hit, the manufacturing sector actually suffered more mass layoffs in 2001-2003. These data, therefore, show that the Great Recession's impacts were much more broad-based than past recessions and hint at broader structural changes occurring within the economy over the past decade.

## Economic sector trends

While no economic sector within North Carolina has come through this recession completely unscathed, some were hit much harder than others. This section examines the state's economic structure and assesses how each of the state's major sectors and industries fared during the recession and how they

[4] *2007 State of the Workforce Report*

**Figure 3: NC Estimated Employment by Economic Sector 2010**

| NAICS Code | Industry Description | Jobs | Average Earnings Per Worker |
|---|---|---|---|
| 11 | Agriculture, Forestry, Fishing and Hunting | 27,310 | $27,120 |
| 21 | Mining, Quarrying, and Oil and Gas Extraction | 3,766 | $50,661 |
| 22 | Utilities | 12,140 | $72,341 |
| 23 | Construction | 185,584 | $39,497 |
| 31-33 | Manufacturing | 447,983 | $48,028 |
| 42 | Wholesale Trade | 171,111 | $56,475 |
| 44-45 | Retail Trade | 443,590 | $24,014 |
| 48-49 | Transportation and Warehousing | 125,640 | $42,112 |
| 51 | Information | 70,012 | $58,065 |
| 52 | Finance and Insurance | 145,946 | $66,552 |
| 53 | Real Estate and Rental and Leasing | 51,607 | $35,674 |
| 54 | Professional, Scientific, and Technical Services | 176,635 | $61,814 |
| 55 | Management of Companies and Enterprises | 73,693 | $77,554 |
| 56 | Administrative, Support, and Waste Mgt/Remediation Services | 227,149 | $28,363 |
| 61 | Educational Services | 63,294 | $40,292 |
| 62 | Health Care and Social Assistance | 461,376 | $38,321 |
| 71 | Arts, Entertainment, and Recreation | 54,332 | $28,574 |
| 72 | Accommodation and Food Services | 343,590 | $13,992 |
| 81 | Other Services (except Public Administration) | 92,719 | $26,157 |
| 90 | Government | 843,973 | $42,939 |
| | **Total / North Carolina** | **4,021,450** | **$39,840** |

*Source: EMSI*

are responding to the long-term confluence of globalization and technological change. Considering these trends and projected employment changes will allow us to develop a more complete understanding of the current and future demand for workers within North Carolina.

As illustrated in Figure 3, government is the state's largest single economic sector (i.e., 2-digit North American Industrial Classification or NAICS sector) in terms of employment. With over 840,000 workers statewide, federal, state, and local governments, as well as military workers[5], represent 21 percent of total employment. The "trade, transportation and utilities" (TTU) sector, which adds retail and wholesale trade to transportation, warehousing, and utilities, accounts for another 750,000 jobs and constitutes the next largest proportion (18.7 percent) of the state's total employment. Total employment in health care and social assistance (at 461,000 workers) recently moved into third place among the state's largest employing sectors, just ahead of manufacturing (at 448,000) and retail trade (at 444,000).

Figure 4 provides an overview of how employment in these, and other sectors, will likely change during the next decade. The government and TTU sectors are projected to add employment due largely to anticipated increases in population growth affecting the demand for state and municipal services as well as consumer goods and services.

Two other sectors expected to add employment at a faster rate than the rest of the state's economy include (1) education and health services and (2) professional and business services. Education[6] and health services represent significant areas for growth. These sectors currently employ almost 525,000 workers statewide, representing 13 percent of the state's total employment. Between 2010 and 2020, the "education and health services" sector is expected to add over 187,000 new jobs, increasing its share of the state's employment to 15.5 percent. However, these projections may be moderated if fiscal

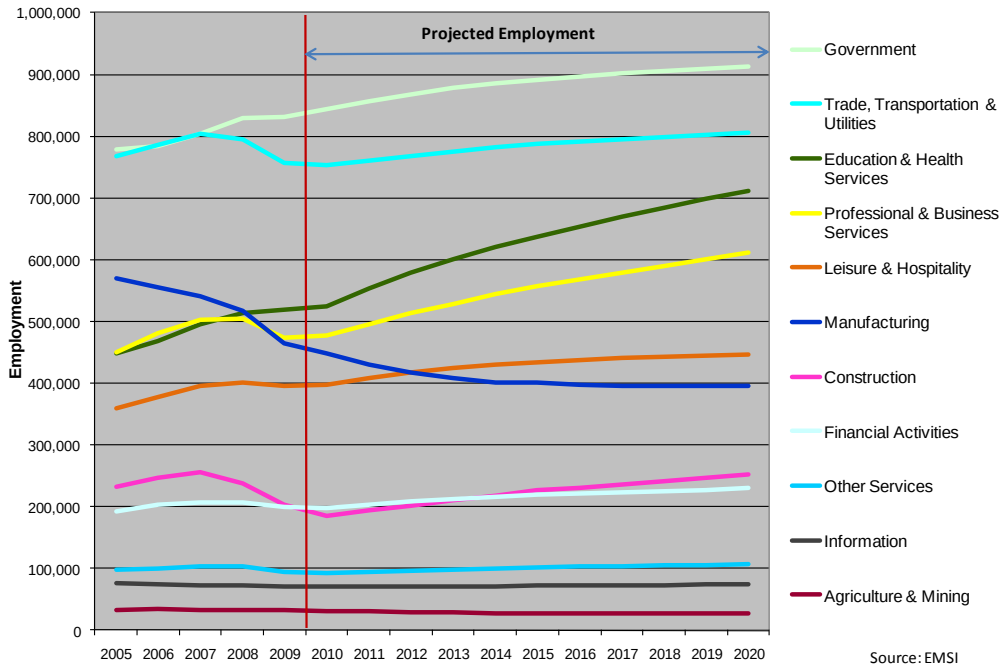
[5] EMSI employment definitions differ from the NCESC definition. These differences are discussed in greater length in Appendix A.
[6] Here education includes private secondary and post-secondary institutions, as well as private training providers.

pressures continue to inhibit the ability of government and education to retain their current employment levels. Proposed reductions in tax expenditures could mean larger classrooms and reduced curriculum offerings, thereby leveling off or even reducing employment in public sector educational institutions.

In the health care sector, the recent passage of health care reform and the greater role anticipated for government in this sector (combined with proposed federal and state budget reductions in these program areas) has created a great deal of employment uncertainty among service providers. It is not yet clear how these public policy proposals would actually affect the hiring plans of health care providers in the short- or long-term. The expanded use of information technology and increased cost pressures, for instance, are expected to both increase productivity in the sector, possibly leading to redundancies, while also requiring the addition of more IT professionals to healthcare payrolls.

Similarly, there are 474,000 jobs in North Carolina's professional and business services sector, which represents 11.9 percent of total employment. By 2020, this sector is projected to add another 135,000 jobs and become 13.4 percent of total employment. Yet, short-term growth in this sector has been slow as companies squeeze productivity improvements out of their current workforce and identify new approaches to providing professional and administrative support services.

**Figure 4: North Carolina Employment by Sector**




While these service industries are anticipated to add employment despite the many challenges facing them, manufacturing and agriculture and mining are anticipating continued net job losses over the long term. Manufacturing is expected to lose another 11 percent (or 50,000 of the roughly 450,000 jobs) of

its current employment base between 2010 and 2020. While a number of factors have contributed to declines in these sectors, increased use of technology to improve productivity has likely played the most important role in both agriculture and manufacturing. (Details about employment forecasts by industry can be found in Appendix A.)

These broad economic sector trends provide context for understanding how many of North Carolina's key industrial sectors were affected by the recession and how future trends might impact their growth. A closer look at detailed industry trends and projections within these economic sectors can provide a more nuanced understanding of these trends.

## Industry trends and projections

More detailed industry data not only reinforce the sectoral employment trends described, but they also point to other areas of potential future growth and decline. Examining more detailed data related to specific industries (at the 5-digit NAICS level) provides a greater understanding of how many and which industries have been most greatly affected by the recession as well as identifying those industries that may create employment opportunities in the future.

Figure 5 lists the 20 industries projected to add the most net new employment during the next decade. Not surprisingly, health care is expected to be a significant source of future employment, as six of these industries are related to health care and social assistance.

A dozen other fast-growing industries, including management consulting services, computer systems design and services, and general medical and surgical hospitals, pay above or close to the state annual average wage of $39,840. Over the same period, temporary help services are projected to add a large

**Figure 5: 20 Industries Projected to Add the Most Net Employment in North Carolina (2010-2020)**

| NAICS | Industry Name | Change Emp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 40,426 | $39,329 |
| 62111 | Offices of Physicians | 33,253 | $71,675 |
| 56132 | Temporary Help Services | 25,128 | $24,355 |
| 54161 | Management Consulting Services | 24,967 | $67,801 |
| 92000 | State government | 24,338 | $41,204 |
| 45291 | Warehouse Clubs & Supercenters | 23,811 | $24,621 |
| 62211 | General Medical & Surgical Hospitals | 22,958 | $47,337 |
| 72221 | Limited-Service Eating Places | 21,348 | $12,642 |
| 62161 | Home Health Care Services | 21,200 | $20,575 |
| 52211 | Commercial Banking | 16,058 | $67,654 |
| 62412 | Services for the Elderly & Persons with Disabilities | 14,513 | $16,347 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 14,061 | $39,357 |
| 42512 | Wholesale Trade Agents & Brokers | 13,165 | $75,114 |
| 54151 | Computer Systems Design & Related Services | 11,578 | $74,874 |
| 23611 | Residential Building Construction | 10,623 | $40,352 |
| 72211 | Full-Service Restaurants | 10,547 | $13,801 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | 10,537 | $38,758 |
| 62121 | Offices of Dentists | 10,461 | $52,874 |
| 62311 | Nursing Care Facilities | 9,917 | $25,764 |
| 56173 | Landscaping Services | 8,533 | $25,197 |

*Source: EMSI*

**Figure 6: 20 Industries Projected to Lose the Most Net Employment in North Carolina (2010-2020)**

| NAICS | Industry Name | Change Emp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 45211 | Department Stores | (5,763) | $18,632 |
| 31331 | Textile & Fabric Finishing Mills | (5,298) | $32,184 |
| 33712 | Household & Institutional Furniture MFG | (5,216) | $29,072 |
| 11A00 | Crop & animal production | (5,185) | $25,622 |
| 31311 | Fiber, Yarn, & Thread Mills | (5,021) | $28,150 |
| 31321 | Broadwoven Fabric Mills | (4,573) | $34,142 |
| 33411 | Computer & Peripheral eqpt MFG | (3,697) | $110,833 |
| 51711 | Wired Telecommunications Carriers | (3,437) | $61,838 |
| 33721 | Office Furniture (including Fixtures) MFG | (3,235) | $31,511 |
| 91200 | Federal government, military | (2,935) | $51,061 |
| 33441 | Semiconductor & Other Electronic Component MFG | (2,864) | $70,959 |
| 31222 | Tobacco Product MFG | (2,861) | $82,367 |
| 52229 | Other Nondepository Credit Intermediation | (2,837) | $64,855 |
| 44111 | New Car Dealers | (2,612) | $41,435 |
| 31324 | Knit Fabric Mills | (2,423) | $33,182 |
| 31511 | Hosiery & Sock Mills | (2,381) | $40,298 |
| 33341 | HVAC, & Commercial Refrigeration eqpt MFG | (2,317) | $39,898 |
| 51111 | Newspaper Publishers | (2,244) | $34,608 |
| 22111 | Electric Power Generation | (2,201) | $85,611 |
| 51721 | Wireless Telecommunications Carriers (except Satellite) | (1,966) | $51,805 |

*Source: EMSI*

number of jobs as well. This growth relates, in part, to a new strategy that companies now employ of using staffing agencies to manage their labor costs, recruit, screen, and test new personnel, as well as balance seasonal workflow requirements.

Figure 6 lists the 20 industries that are forecast to experience the greatest net loss in jobs between 2010 and 2020. Twelve of these 20 industries are involved with manufacturing or production activities. Many of these industries are in the midst of transformational change, reflecting a loss of business to firms located elsewhere (including offshore), a greater use of global outsourcing for key components in the industry's value chain, adoption of new business processes or new product lines, and an increased use of technology in lieu of low-cost labor. For example, the state's textiles, furniture, weaving, fabric, and computer equipment and semiconductor production have all been moving to offshore production, resulting in a reduction of their U.S.-based employment, even as they adopt computer numerically controlled (CNC) equipment that involves the need for regionally-based machine operators, CNC programmers, and installation and repair personnel.

Other sectors such as retailing, power generation, and telecommunications are also going through major shifts in their business models that are likely to impact the number and type of workers that those industries require. More detailed data about these and other sectors are included in Appendix B. These projections represent further reductions expected beyond those jobs already lost as a consequence of business downsizing during the recession. Some of the jobs lost during the recession may ultimately return, but many "replacement" jobs will likely be fewer and require higher skill levels than those previously shed.

In the following section, an assessment of several key North Carolina industries provides a foundation for understanding the economic and workforce trends in the past five years and into the future.

### *Construction*

According to the 2009 U.S. Bureau of Economic Analysis (BEA) data, total economic output in the state's construction industry was only 58 percent of its level in 2000. Construction output represented nearly 7 percent of North Carolina's GDP in 2000, and it has since fallen to less than 3.5 percent or about $12.1 billion in 2005 dollars. During 2009 alone, construction output declined another 20 percent, and economic forecasts suggest years before the industry returns to pre-recession levels.

Much like the rest of the country, employment in North Carolina's construction sector experienced rapid growth through the middle part of the past decade, providing a large number of job opportunities for low and semi-skilled workers. In the years leading up to the recession (2005 to 2007), while the industry's output had begun falling slightly, employment increased by nearly 23,000 new jobs to a peak of 256,000. The largest employment gains occurred in three construction-related industries: heating and air conditioning; electrical contracting; and residential building construction.[7] These three industries accounted for more than 40 percent of the construction sector's net new employment gains during those three years of rapid expansion.

From its peak in 2007 to 2010, North Carolina's construction sector shed more than 70,000 jobs, a 27 percent decline. These losses were felt in every construction-related industry.[8] As the economy begins to recover, so too should the construction sector, although it will likely take some time for it to recover to its pre-recession employment levels. Industry projections show that the construction sector may return to 2007 peak employment levels by 2019. This growth rate anticipates that the state will continue to attract new residents and that managers are once again willing to bring more permanent workers on-board. Recent interviews with construction firms suggest that they are particularly shy about adding jobs in the wake of the construction crash, vowing to work smaller crews and take fewer risks as they seek out future projects.

### *Manufacturing*

According to the BEA, manufacturing contributes more to North Carolina's state Gross Domestic Product (state GDP) than any other economic sector. In 2009, it represented about 18 percent of the state's GDP. However, just before the recession began in 2007, manufacturing represented nearly 22 percent of total economic output (in constant dollars), continuing to post gains over the previous decade despite experiencing significant employment declines. Manufacturing has long been an important component of the state's economy, bringing new money into the state and historically providing good paying jobs for many workers who did not have a high school degree. It will likely remain an important part of the state's economy, but the mix of jobs offered will change through attrition and the adaptation of firms and workers to emerging market niches that require greater technical skills and increased attention to customer service.

[7] Individual construction industries are compared at the 5-digit NAICS level.
[8] By comparison, the construction industry nationally declined by 23 percent from its 2007 peak levels.

Recent manufacturing growth has occurred particularly in non-durable goods production (driven by growth in food processing and pharmaceuticals). Except in computer and electronic equipment production, which barely slowed down during the recession, durable goods output declines started as early as 2007, presaging the onset of the Great Recession well before the rest of the economy began its contraction.

As manufacturing emerges from the recession, employers have significantly reduced their employment levels, as a result of their focus on increasing efficiencies to better compete. Many North Carolina companies have achieved significant productivity gains (higher output from fewer workers), both before and during the recession, through: (1) increasing off-shore production of price-driven commodity goods and (2) investing in technologies that significantly increased output with fewer workers. These dual trends help to explain the long term declines in manufacturing employment, especially in the state's nondurable sector, which included the traditional economic driver industries of furniture, textiles, and tobacco. Those trends were only accelerated by the recession, as reduced customer purchases drove many more firms to make these moves not only to better compete, but to simply survive.

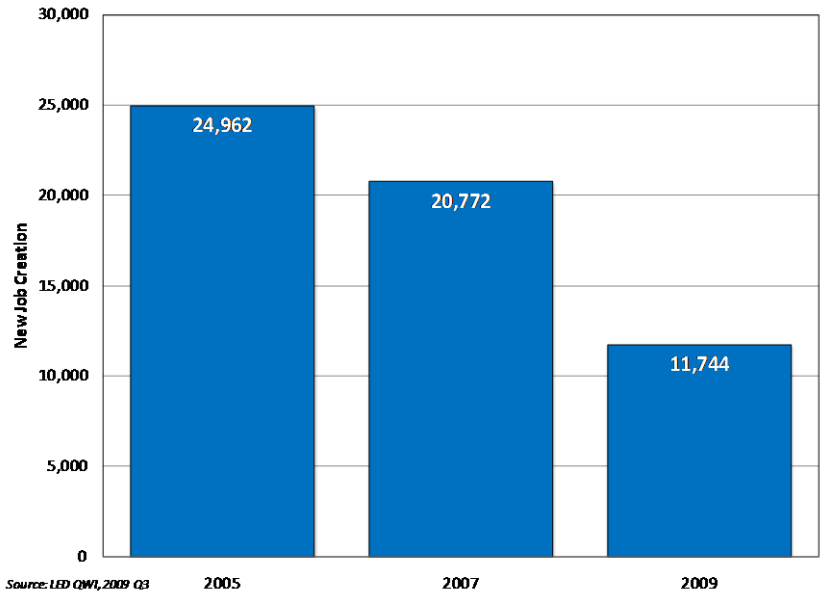
These trends are particularly evident when examining the state's more "traditional" manufacturing areas. For instance, North Carolina furniture manufacturers and textile mills lost 25,746 and 27,057 net jobs, respectively, from 2005 to 2010. While these two sectors represented 10 percent of the state's entire manufacturing base in 2005, their lost jobs represented 43 percent of all manufacturing jobs shed during the past five years. While virtually every firm in these industries was affected by the recession, firms serving niche markets and producing highly customized products fared better. Projections for manufacturing suggest further declines of 51,600 more jobs during the next decade (representing another 11.5 percent of the remaining 450,000).

However, not all manufacturing industries have lost employment over the past half decade. In some segments of the state's traditional industries, there has even been some modest job growth. For instance, nonwoven fabric mills added 468 net new jobs between 2005 and 2010. Similarly, tobacco stemming and re-drying gained 827 net new jobs during the same period as some of its firms chose North Carolina to concentrate their activities.

Further, between 2005 and 2010, manufacturing firms actually added net new jobs in two other main industry areas—food and high-technology. Food manufacturing in North Carolina is broad and diverse, ranging from animal slaughtering and processing to dry food manufacturing. The greatest source of new manufacturing jobs in the state has been from animal slaughtering and processing facilities, with its addition of a net 2,145 jobs between 2005 and 2010.

High-tech industries were another area of manufacturing job growth. Aerospace products and parts manufacturing, for instance, gained more than 1,300 net new jobs between 2005 and 2010. Other high-tech industries that have experienced net employment growth between 2005 and 2010 include navigational, measuring, electro-medical and control instruments manufacturing (592 net jobs) and medical equipment and supplies manufacturing (484 net jobs). Looking to the future, medical

**Figure 7: New North Carolina Job Creation in Manufacturing**




equipment and other miscellaneous manufacturing, transportation equipment manufacturing, and primary metals manufacturing are all expected to show modest gains through 2020.

Despite overall declines, manufacturers have continued to create jobs – though not at a pace sufficient to replace the jobs lost. Figure 7 shows that, in 2005, manufacturing job creation was much higher than it was during 2009. While nearly 25,000 manufacturing jobs were created in the third quarter of 2005, North Carolina manufacturers created less than half that number four years later during the height of the recession.[9] This lack of new job creation, combined with much higher lay-offs, resulted in the observed significant net job losses.

Furthermore, manufacturers indicated that many of the new jobs being created required a different kind of worker. New manufacturing jobs require workers with more advanced levels of training and education. In addition to traditional skills like welding and equipment maintenance, new manufacturing jobs increasingly require workers to have knowledge of computer numerical control (CNC) machining or computer-aided design (CAD) systems. In addition, workers must be much more capable of understanding complex technical systems as they piece components from multiple suppliers with minimal engineering tolerances.

Interviews with manufacturers in the state revealed that companies took advantage of periods in which they had to lay-off workers during the recession to intentionally reassess their skill requirements. As these companies see business demand return to pre-recessionary levels, many are using expected hiring in 2011 and beyond to replace their former workforce with differently skilled workers. This pattern is likely to continue as attrition (due to retirement and normal turnover) provides companies with the opportunity for replacement hiring. Furthermore, most firms interviewed indicated that they were willing to pay a premium to the more skilled workers, especially if they possess transferrable skills that would allow the individual to do multiple jobs in the facility.

[9] These data are drawn from the Census Bureau's Local Employment Dynamics Quarterly Workforce Indicators. These data note the total number of jobs created, not the NET number of jobs created (which would subtract the total number of jobs eliminated from this number).

### *Transportation and warehousing*

Transportation and warehousing grew steadily during the past decade, according to the BEA, in terms of economic output. The sector contributed about $8.9 billion in constant 2005 dollars (or about 2.4 percent) to the state GDP in 2006. The sector's output stagnated during the two years prior to the recession and then dropped significantly by 2009 to about 85 percent of its peak level.

Trucking, in particular, is often viewed as a leading indicator of economic downturns and recoveries. As fewer products were sold, the trucking industry had fewer goods to ship, leading to a net loss of total billings that then resulted in these firms deciding to shed nearly 10,000 jobs between 2007 and 2010. Much like trucking, warehousing and storage grew prior to the recession and then lost significant employment as a result. The warehousing and storage industry lost over 2,000 jobs between 2007 and 2010. Within the industry, only refrigerated warehousing and storage firms (which accounts for only 4 percent of the total industry—674 jobs) were already losing employment before the recession began, but then began gaining employment during the recession when inventories began to mount. This employment increase may also be due in part to growth in the state's food manufacturing industry.

Industry projections show that truck transportation is expected to grow modestly (0.8 percent annually) in the future, but at that rate, the industry is not likely to return to 2005 employment levels before 2020. However, growth is expected for specialized freight trucking, which will account for 52 percent of the net new employment in this industry. Warehousing and storage is also projected to rebound stronger than truck transportation and exceed its peak 2007 employment levels again by 2015.

### *Retail trade*

Retailing grew steadily during the past decade until reaching its peak year of 2007, when total value-added output represented 6 percent of the state GDP. Between 2007 and 2009, retail's contribution to the state GDP declined to slightly more than 5 percent of state GDP, according to the BEA.

In general, change in retail employment is often driven by population growth, but it is also affected by the capacity of individuals to spend. This is important because, although retail is generally not considered to be an economic driver,[10] the sector remains an important source of employment for many, especially low-skill, low-wage North Carolinians. During the recession, from 2007 to 2010, retail employment declined by more than 24,000.

The recession most affected those retail industries that were associated with some of the other hard hit segments of the economy. For instance, between 2007 and 2010 new car dealers eliminated 6,000 jobs. Retailers associated with the housing and construction industries also experienced downsizing, including furniture stores (2,100 net jobs lost) and building materials dealers (2,700). Department stores also lost significant employment, though these job losses had been occurring prior to the recession, reflecting structural changes in the retail business model involving a move away from traditional retail outlets.

The retail industries that grew during the recession—and that are projected to grow most rapidly in the future—reflect this new business model. These include warehouse clubs and supercenters and internet

[10] In some instances, retail can drive economic growth. For example, large outlet malls or specialty stores can attract people from long distances and therefore bring new money into a community.

shopping and mail-order houses. These retailers were more likely to rapidly adopt a variety of technologies that allowed them to sell more products to consumers with fewer workers.

As the economy recovers and North Carolina continues to import new citizens, retail employment will rebound, though it is likely that these firms may need fewer low-wage, low-skilled workers, due to changes in the way customers are served, and more skilled employees who can manage large inventories and communicate effectively over the telephone or in writing. Overall, retail trade is forecasted to add 30,000 net new jobs and grow at a rate of 0.7 percent annually over the next decade. Warehouse clubs and supercenters, probably the most rapid technology adopters, will likely be the most important source of growth, providing an anticipated 24,000 new jobs between 2010 and 2020, representing 80 percent of the net retail employment growth.

### *Finance and insurance*

One of the fastest growing economic sectors in North Carolina, finance and insurance activities represented 12.2 percent of the state's GDP in 2005, according to the BEA. After 2005, output in the sector began declining (in constant dollar terms), as the ill effects of the credit crisis and subsequent housing bubble began to take hold. By 2007, the finance and insurance sector's output declined by 11.4 percent, only to start a turnaround in late 2008. However, with significant changes in banking and credit procedures, construction and other sectors that required access to credit were stalled, threatening to restructure how Americans finance consumer and investment debt.

The finance and insurance sector, with a particularly high concentration of activity in Mecklenburg County, has experienced significant employment swings during the past five years. Between 2005 and 2007, the financial industry added 10,600 workers as commercial banking, investment banking, and securities dealing continued growing very rapidly. From 2007 through 2010, the financial sector then lost over 7,500 net jobs (approximately 5 percent of its total workforce) as the financial crisis changed the landscape. These losses were distributed throughout the sector. Some signs of recovery emerged in 2010, however, as new job openings began to appear.

As the economy recovers, the employment forecasts show a return to robust growth for much of the finance and insurance sector, accounting for 22,000 net new jobs across North Carolina by 2020. Many of the sector's industries, like credit unions and insurance agencies, will be expanding to serve the demand of North Carolina's growing population. The industries expected to add the most net new employment over the next decade include: commercial banking, credit unions, insurance agencies and brokerages, as well as securities brokerages.

### *Professional, scientific, and technical services*

Illustrating the rapid transformation of the state's economy and the importance of knowledge-based economic activity, the professional, scientific, and technical services sector nearly doubled in terms of total economic output between 2000 and 2008. With $19.7 billion in total value-added output (in constant 2005 dollars), the sector represents more than 5 percent of overall economic output in the state. The recession served to slow growth, but the outlook for the sector still remains bright.

The professional, scientific, and technical services sector encompasses many industries offering relatively high-paying jobs, ranging from law firms to computer design companies. The sector tends to employ highly educated people who are often the source of the state's entrepreneurship and innovation. Average annual wages within this sector were roughly $62,000—well above the state average wage. Almost 177,000 people work within this sector.

Four technical industries—engineering services, computer systems design and services, management consulting services, and research and development (R&D) in the physical, engineering and life sciences—the latter of which, it should be noted, was even able to grow throughout the recession— account for half of the employment in the broader professional, scientific and technical services sector. Computer systems design and services is the largest of these industries, with management consulting services not far behind. Looking forward, all of these industries are expected to grow rapidly. Whereas the entire North Carolina economy is expected to grow at an annual rate of 1.3 percent between 2010 and 2020, industries within the professional, scientific and technical services sector employment will grow at a much faster rate of 3.3 percent.

### *Administrative support services*

Administrative support represents another key sector that has elicited a high level of attention from economic developers seeking to spark job creation. The industries in the sector include telephone call centers and data processing centers. In the years before the recession, value-added output in the sector grew by 5 percent annually between 2000 and 2008.

North Carolina-based call centers added jobs every year between 2005 and 2010, now employing approximately 9,700 people in the state. Recent company trends involve on-shoring work that was once conducted in India and the Caribbean will only contribute to future growth.

Data processing, hosting and related services is another service-related industry of note. While it has declined from 14,400 jobs in 2005 to 9,900 in 2010, recent investments in the state herald a probable change in the industry's fortunes. Statewide, this industry is projected to add 6,500 new jobs between 2010 and 2020.

### *Health care*

In 2009, the health care sector accounted for nearly 7 percent of state GDP in North Carolina, an increase from 5.6 percent in 1997. It contributes $24.5 billion to the state's economy, representing a steady and rapid 4.2 percent annual growth rate for the period. Health care was one of only three sectors (including government and wholesale trade) that continued to expand in terms of economic output throughout the recession.

Health care-related employment also continued to grow during the recession, albeit at a slower pace. Health care-related job creation in the third quarter of 2009 was only 72 percent of what it was in the third quarter of 2007. Nevertheless, the health care sector created almost 20,000 jobs during this period, led by several specific industries.

General medical and surgical hospitals, for instance, added almost 17,000 net new jobs during the period, while services for the elderly and persons with disabilities gained approximately 7,000 on net. The only two health care-related industries to lose employment were nursing care facilities and vocational rehabilitation facilities.

The health care sector, given the aging of the baby boomer generation, the increased services demanded by a continually expanding population, and the implementation of new state and federal initiatives, is likely to continue growing in North Carolina into the future. Forecasts currently show the sector adding another 130,000 of these (often well-paying) jobs by 2020.

In spite of recent hardships, industry activities across sectors of North Carolina's economy show that opportunities do exist throughout the economy for significant job growth. Even within declining sectors like manufacturing or construction, new job opportunities are emerging.

In many of these instances, however, workers entering these industries will be asked to perform different tasks and possess different skills than the workers who are leaving those industries. The types of jobs and skills expected – both at the present time and into the future – are now examined in greater detail. (More details about the workforce issues in North Carolina's key targeted industry clusters can be found in Appendix C.)

## Occupational trends

While a review of North Carolina's key industries focuses on the kinds of companies hiring people, this section focuses on what workers do for those firms. It examines what occupations are growing and declining, and as a result, the areas where North Carolina may need to develop a stronger supply of skills among workers.

**Figure 8: NC Employment by Occupation Grouping, 2005-2010**

| Occupation Groupings | 2005 | 2010 | Change 2005-2010 |
|---|---|---|---|
| Management | 184,229 | 183,951 | (278) |
| Business and financial operations | 143,827 | 153,075 | 9,248 |
| Computer and mathematical science | 88,312 | 93,892 | 5,580 |
| Architecture and engineering | 52,934 | 52,270 | (664) |
| Life, physical, and social science | 37,271 | 41,166 | 3,895 |
| Community and social services | 48,295 | 56,823 | 8,528 |
| Legal | 20,891 | 21,612 | 721 |
| Education, training, and library | 238,234 | 264,407 | 26,173 |
| Arts, design, entertainment, sports, and media | 36,849 | 37,394 | 545 |
| Healthcare practitioners and technical | 201,606 | 227,317 | 25,711 |
| Healthcare support | 128,736 | 148,584 | 19,848 |
| Protective service | 86,648 | 94,483 | 7,835 |
| Food preparation and serving related | 316,053 | 347,229 | 31,176 |
| Building and grounds cleaning and maintenance | 123,285 | 126,436 | 3,151 |
| Personal care and service | 76,683 | 85,771 | 9,088 |
| Sales and related | 411,801 | 410,782 | (1,019) |
| Office and administrative support | 595,657 | 599,739 | 4,082 |
| Farming, fishing, and forestry | 21,238 | 19,606 | (1,632) |
| Construction and extraction | 184,708 | 152,334 | (32,374) |
| Installation, maintenance, and repair | 166,722 | 158,810 | (7,912) |
| Production | 410,546 | 327,675 | (82,871) |
| Transportation and material moving | 308,060 | 280,101 | (27,959) |
| Military | 126,331 | 137,991 | 11,660 |
| **Total All Occupations** | **4,008,916** | **4,021,448** | **12,532** |

*Source: EMSI*

Overall, net employment rose slightly between 2005 and 2010, but the mix of these jobs shifted significantly. Job growth occurred most rapidly in food preparation, education, and health care occupations while it declined most significantly in production, construction, and transportation-related occupations (See Figure 8). In many of the declining occupations, the skills used by workers were more "traditional," focused on manual dexterity and physical strength. These skills alone are of only modest usefulness to those industries that are growing. Firms in these areas, generally, are more apt to value skills – which can be acquired – including complex problem solving, teamwork, and communication. Making transitions

between declining and expanding industries – through workforce training – will be critical for workers as many look for alternate, well-paying career pathways.

This section will also assess the relationship between occupational demand and educational attainment. In the *2007 State of the Workforce Report*, one of the key findings was the reinforcement of the importance of middle jobs (i.e., those jobs that do not require a 4-year degree but still pay a family sustaining wage within about 20 percent of the state's median). This report introduces findings about the transformation of work in certain occupations as well as the changing demand for skills to better understand where new middle-wage jobs are available in North Carolina's emerging economy. Finally, this section examines the importance of science, technology, engineering and math (STEM) skills to growing occupations in North Carolina, especially for those middle jobs.

## Fastest growing and declining occupations

The changing demand for occupations very much reflects the transformation occurring in North Carolina's economic structure. Figure 9 lists the 20 occupations anticipated to add the most employment over the next decade. Many of the occupations listed are those that will require more workers because the state has more people. For instance, the projections anticipate that the state will need more post-secondary and elementary teachers to educate an increasing number of students. Increased demand for retail means more food service workers, retail salespersons, customer service representatives and cashiers, many of whom will be lower skilled and earn relatively lower wages. Furthermore, a larger number of older North Carolinians will require more health care workers of all types, including physicians and surgeons, registered nurses, home health aides and personal and home care aides.

When considering these 20 occupations as a group, several commonalities emerge. The list includes several low-skilled, low-wage occupations that employ a large number of people. For example, nine of these occupations require no more than short-term on-the-job training (OJT).[11] Moreover, 12 of the 20

**Figure 9: 20 Occupations Projected to Gain the Most Net Employment in North Carolina (2010-2020)**

| SOC | Occupation Description | Change Emp 10-20 | Avg Hourly Wages 2010 | Educational Requirements |
|---|---|---|---|---|
| 31-1011 | Home health aides | 34,951 | $9.73 | Short-term OJT |
| 29-1111 | Registered nurses | 25,557 | $28.36 | Associate's degree |
| 35-3021 | Combined food prep & serving workers, including fast food | 21,607 | $8.27 | Short-term OJT |
| 43-4051 | Customer service reps | 16,064 | $15.13 | Moderate-term OJT |
| 41-2031 | Retail salespersons | 13,862 | $11.11 | Short-term OJT |
| 43-9061 | Office clerks, general | 9,862 | $12.53 | Short-term OJT |
| 47-2061 | constr. laborers | 9,036 | $12.12 | Moderate-term OJT |
| 43-6011 | Executive secretaries & admin. assistants | 8,804 | $18.64 | Moderate-term OJT |
| 39-9021 | Personal & home care aides | 8,173 | $9.23 | Short-term OJT |
| 25-1099 | Postsecondary teachers | 7,913 | $41.12 | Doctoral degree |
| 37-3011 | Landscaping & groundskeeping workers | 7,606 | $10.95 | Short-term OJT |
| 47-1011 | First-line spvrs/mgrs of constr. trades & extraction workers | 7,476 | $24.34 | work exp. in a related field |
| 43-4171 | Receptionists & information clerks | 7,136 | $11.76 | Short-term OJT |
| 53-3032 | Truck drivers, heavy & tractor-trailer | 7,087 | $18.71 | Moderate-term OJT |
| 25-2021 | Elementary school teachers, except special education | 7,062 | $27.36 | Bachelor's degree |
| 43-3031 | Bookkeeping, accounting, & auditing clerks | 6,865 | $15.78 | Moderate-term OJT |
| 43-1011 | First-line spvrs/mgrs of office & admin. support workers | 6,691 | $22.01 | work exp. in a related field |
| 41-2011 | Cashiers, except gaming | 6,212 | $8.50 | Short-term OJT |
| 33-9032 | Security guards | 6,115 | $11.92 | Short-term OJT |
| 29-1069 | Physicians & surgeons | 5,862 | $106.47 | First professional degree |

*Source: EMSI*

[11] The minimum education and training requirements are defined by the U.S. Bureau of Labor Statistics and short-term OJT represents jobs that typically require less than one month of OJT.

occupations projected to add the most jobs between 2010 and 2020 pay below the state's average wage of $18.41/hour. Four occupations pay less than $10/hour.

For workers in these lowest wage occupations, sustaining a family would likely require at least two full-time paychecks, even if there were not two adult earners. Furthermore, the rising cost of health care, transportation, child care, and housing may push the very goal of self-sufficiency out of reach for many low-skill workers. Furthermore, accessing even low-cost educational opportunities can be nearly impossible for adults whose limited time is spent in a constant struggle to balance the competing demands of work with feeding and sheltering a family.

Whereas none of the 20 occupations expected to add the most employment are production-related, Figure 10 shows that production occupations -- a traditional source of middle jobs -- account for 12 of the 20 occupations expected to lose the most employment by 2020. As noted earlier, this is not to say that there are no jobs available in manufacturing, but rather there will be fewer production-related jobs overall and those available will require a different skill level. In fact, many of the most at-risk occupations are tied to relatively lower skill manufacturing activities. Workers in occupations such as sewing machine operators, various textile machine operators and upholsterers are employed in traditional industries that have lost significant employment over the past 20 years. It is notable that only one of these 20 occupations requires a 2- or 4-year degree (farm, ranch and other agricultural managers) reflecting the role that higher skills can have in protecting jobs. Only five of these 20 at-risk occupations required more than short- or medium-term OJT, and only three of these occupations paid average wages above the state average wage ($18.41/hr).

To add to the challenges facing the lower skilled, they are much more likely to be laid off because it is their jobs that are most at risk in this economy. These workers, already living precariously on wages

**Figure 10: 20 Occupations Projected to Lose the Most Net Employment in North Carolina (2010-2020)**

| SOC | Occupation Description | Change Emp 10-20 | Avg Hourly Wages 2010 | Educational Requirements |
|---|---|---|---|---|
| 51-6031 | Sewing machine operators | (3,860) | $11.19 | Moderate-term OJT |
| 51-6064 | Textile winding, twisting, & drawing out machine setters, operators, & tenders | (2,917) | $11.40 | Moderate-term OJT |
| 45-209A | Miscellaneous agricultural workers | (2,912) | $10.28 | Short-term OJT |
| 51-1011 | First-line spvrs/mgrs of production & operating workers | (1,984) | $24.57 | work exp. in a related field |
| 51-6063 | Textile knitting & weaving machine setters, operators, & tenders | (1,776) | $12.17 | Long-term OJT |
| 51-6061 | Textile bleaching & dyeing machine operators & tenders | (1,354) | $11.82 | Moderate-term OJT |
| 53-7063 | Machine feeders & offbearers | (1,253) | $13.05 | Short-term OJT |
| 43-4151 | Order clerks | (1,209) | $13.76 | Short-term OJT |
| 43-5071 | Shipping, receiving, & traffic clerks | (1,147) | $13.88 | Short-term OJT |
| 53-7064 | Packers & packagers, hand | (1,041) | $10.06 | Short-term OJT |
| 43-5053 | Postal service mail sorters, processors, & processing machine operators | (1,015) | $22.72 | Short-term OJT |
| 51-9061 | Inspectors, testers, sorters, samplers, & weighers | (955) | $14.91 | Moderate-term OJT |
| 11-9011 | Farm, ranch, & other agricultural managers | (808) | $27.27 | Degree plus work exp. |
| 51-9196 | Paper goods machine setters, operators, & tenders | (780) | $14.84 | Moderate-term OJT |
| 51-6093 | Upholsterers | (649) | $16.93 | Long-term OJT |
| 51-2022 | Electrical & electronic equipment assemblers | (618) | $15.20 | Short-term OJT |
| 51-4031 | Cutting, punching, & press machine setters, operators, & tenders, metal & plastic | (591) | $13.01 | Moderate-term OJT |
| 51-9197 | Tire builders | (564) | $12.02 | Moderate-term OJT |
| 51-5023 | Printing machine operators | (552) | $15.97 | Moderate-term OJT |
| 51-6021 | Pressers, textile, garment, and related materials | (551) | $9.47 | Short-term OJT |

*Source: EMSI*

below those needed for self-sufficiency, are also more likely to be employed in jobs that are being lost due to structural economic change caused by business investments in technology and global outsourcing. For many who worked in the now-lost middle jobs offered by manufacturing and construction, the low-wage, high growth services industry jobs are the only alternative for employment because those industries provide the only jobs for which they can now qualify. Moreover, this condition could become chronic because few have the wherewithal to spend the requisite time and resources gaining the education or long-term training required to move into the higher-skill, medium-wage occupations that would offer family-sustaining wages.

## Occupations and educational requirements

The U.S. Bureau of Labor Statistics conducts an on-going business survey to identify the minimum education that employers require of their new hires for each occupation. Many of the occupations that require the highest and lowest skills are projected to add jobs while many with lower- to middle-skill requirements are projected to lose jobs.[12] In 2007, the *State of the Workforce Report* revealed that significant job losses were occurring in the state's low-skill, medium-wage or middle jobs.

That trend continues in this analysis, with the lower skill jobs offering the highest wages appearing to be at greatest risk. Furthermore, many middle-wage, low-skill jobs have already been lost, and they are decreasing as a proportion of the state's overall employment. Instead, the state's new middle-wage jobs are more likely to require education beyond high school – often in the form of some post-secondary credential. In addition, the fastest growth in new job creation is likely to be among jobs requiring an associate degree or higher. As illustrated in Figure 11, on average, individuals can earn a significant return from their investments in post-secondary education in terms of career opportunities and future wages.

This pattern is neither new, nor unique, to North Carolina. The large proportion of workers with a high school degree or less nationally represents a long-term challenge since those individuals are much less likely to earn family sustaining wages. Based on these average wage data, a worker with a 4-year

**Figure 11: North Carolina Employment and Wages by Education Band**

| Educational Band | Emp 2010 | Net New Jobs (10-20) | Annual Growth Rate (10-20) | Average Wages 2010 |
|---|---|---|---|---|
| Advanced Degree | 150,103 | 38,494 | 2.3% | $99,634 |
| 4-year College Degree | 615,400 | 111,523 | 1.7% | $73,909 |
| Tech Degree-Some Post | 353,273 | 81,105 | 2.1% | $43,771 |
| High School with Some Exp. | 667,049 | 59,980 | 0.9% | $42,677 |
| High School Degree | 793,478 | 94,882 | 1.1% | $33,615 |
| Below High School | 1,442,115 | 169,167 | 1.1% | $22,774 |
| ***Total**** | ***4,021,418*** | ***555,151*** | ***1.3%*** | ***$38,293*** |

*Source: Economic Modeling Specialists, Inc.*
**Does not include military occupations, or other occupations that do not have a defined minimum education requirement*

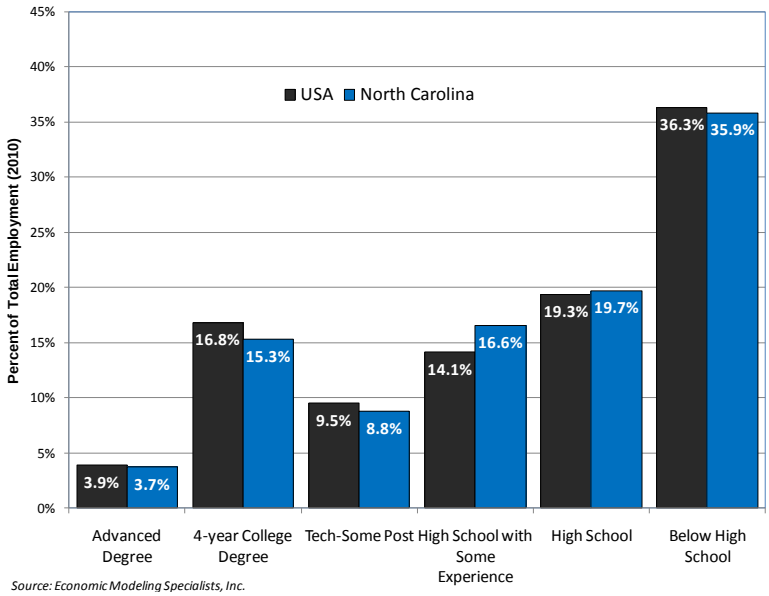
[12] It is notable that the education requirements associated with each occupation are the *minimum* education requirements for a large share of workers in a particular occupation. As a result, many people in the occupations listed may have higher levels of educational attainment or they may be in positions that require higher levels of education. A more complete description of each education band and the listing of the occupations with the most employment and potential to add new jobs can be found in Appendix C.

degree can expect to earn—over a 30 year career—$1.5 million more than a worker who has not completed high school. Since the recession began, that difference has grown significantly from less than $1 million as reported in the *2007 State of the Workforce Report*, reflecting the continued polarization of the workforce into "haves" (those with a post-secondary education) and "have-nots" (those who have no formal post-secondary training).

In fact, average wages among individuals without a high school degree have actually declined relative to the 2007 data while average wages for individuals with a college degree continue to increase at a rate faster than inflation. In 2010, average wages for jobs requiring some college experience or an associate degree average about $10,000 more annually than the average pay for a job requiring only a high school degree and nearly double the average for jobs that do not require a high school degree.

As shown in Figure 12, North Carolina has a somewhat smaller proportion of these jobs that require at least a 4-year degree (the first two education bands) than the rest of the nation. Nationally, 20.7 percent of jobs require at least a 4-year degree as compared to 19 percent in North Carolina. At the other end of the spectrum, companies indicate that more than 55 percent of current jobs require a minimum education of a high school degree or less. (Appendix D provides detailed data on the educational requirements for NC occupations and identifies the educational band within which each is assigned.)

**Figure 12: Proportion of Workforce by Education Band, 2010 (U.S. and NC)**



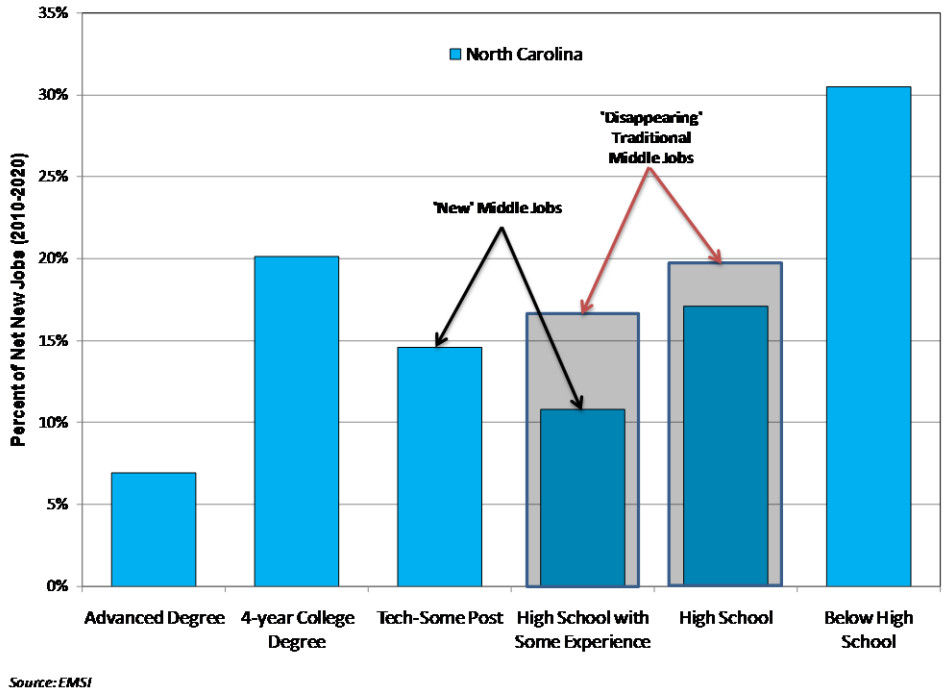

*Source: Economic Modeling Specialists, Inc.*

This pattern in North Carolina is similar to the rest of the U.S. North Carolina has a larger share of its workforce in occupations that require only a high school degree plus experience. However, this does not mean that employers are restricting their hiring for these occupations to just those with high school degrees. Companies interviewed for this study reinforced our assessment of the changing nature of work will mean that lower skill workers are at particular risk if they are not able to adapt to rapid changes occurring in their respective industries.

Workers with a high school degree or less are at particular risk because they frequently are not well positioned to adapt quickly to new business models or technologies without significant skill development, including the need for remedial skills in a variety of STEM-related fields. Furthermore, these workers, often ill-prepared for emerging new skilled, medium waged jobs, will increasingly have to settle for lower skill, lower wage jobs that would otherwise probably not require a high school degree.

The imperative of these trends is further reflected in Figure 13 that shows that almost 15 percent of the

**Figure 13: Proportion of Workforce by Education Band, 2010 (U.S. and NC)**




net new jobs created in the next decade will be those within the "Tech Degree-Some Post" education band. This includes many jobs that will require an associate degree or some post-secondary vocational award.[13] The share of all net new North Carolina jobs created during the next decade that require a "High School with Some Experience" will decline to about 10.8 percent, down from the current proportion of 16.6 percent.

At the same time, there will continue to be a growing demand for workers with education beyond high school. Currently, only 27.8 percent of overall jobs in North Carolina require at least some college education (the top 3 education bands), but over the next decade, nearly 42 percent of the state's net new jobs created will require some form of post-secondary education as a minimum. Furthermore, this may be an underestimate of the educational requirement as many jobs that once did not require a post-secondary education are increasingly asking for certifications and other industry-recognized credentials as a demonstration that the jobseeker has the knowledge and skills required to succeed.

[13] "Tech Degree-Some Post" includes occupations that require either an associate degree or some other post-secondary vocational award or credential.

These occupational projections also show that job growth will also continue at the lower end of education spectrum. Just as in the 2007 Report, these findings show a growing polarization of the workforce along education lines. The data reflect a declining share of "traditional middle" occupations (low-skill, middle-wage), and a growing share of "new middle" occupations (medium- to higher-skill, middle-wage).

## Middle-wage jobs are increasingly requiring higher skills

In the 2007 Report, the data demonstrated the extent of the loss of the state's middle-wage, lower-skill middle jobs. These jobs have been important because they offered family sustaining wages to workers who may not have had a high school degree or who may have seen the high school diploma as the end of their academic career. These jobs were accessible to more workers and offered a pathway to prosperity for the traditionally disadvantaged.

This section considers the changing nature of the state's middle-wage jobs to reveal the state's "new middle" jobs.[14] Using a definition that takes into account both livability and accessibility developed by the North Carolina Department of Commerce, middle jobs account for approximately one-fifth of North Carolina's total workforce. Broadly, this trend has continued and has changed only minimally since 2002. Looking to the future, significant changes in the mix of these middle jobs are already underway.

As detailed in more depth in Appendix E, the Commerce Department's research finds that the majority of middle job losses that occurred during the recession were found in the construction industry or in production and equipment maintenance jobs widely found in North Carolina's traditional manufacturing industries. For instance, since 2002, production-related occupations lost more middle jobs than any other occupational category due to significant downsizing in manufacturing that began long before the onset of the current recession. Fortunately, other sectors offset some of these job losses.

In particular, significant growth in the need for workers in allied health and technical occupations as well as in business and financial operations "replaced" some of the jobs lost in production and construction. In fact, 45 percent of the state's total middle jobs growth since 2002 resulted from increased demand for health care practitioners and allied technical workers. The recession stalled growth in these service occupations while exacerbating the challenges in manufacturing and construction, creating an even more obvious middle jobs crisis, but the structural skills mismatch was already in place well before the recession's impact on the economy.

Looking to the recovery, "new middle" jobs will be found primarily in three occupational groups—health care practitioners and allied technical occupations, business and financial operations occupations, and sales occupations. Many of these occupations are in industries that are likely to grow as the state's economy recovers and the population continues to grow. Furthermore, they will require a different set of skills related to customer service, communications, and math or science proficiency.

### *Important considerations about middle jobs*

While the total number of middle jobs has not changed dramatically and is not projected to do so in the

[14] The research presented in this section was prepared by the North Carolina Department of Commerce's Policy, Research and Strategic Planning Division. It is intended to identify where future middle job opportunities may lie as North Carolina's economy continues to change.

future, there has been a great deal of shifting in terms of the occupations within those middle jobs. For instance, many middle jobs were not immune from the effects of the Great Recession. Within some occupational groups, the job losses are part of more long-term trends such as the decline of traditional manufacturing and the loss of production-related occupations. At the same time, other losses were directly attributable to the recession, and those jobs are expected to ultimately return as the economy rebounds.

Additionally, those middle jobs that are projected to gain employment may require dislocated workers to make significant sacrifices to complete the transition. For instance, throughout interviews, several stakeholders provided examples of how displaced production workers seeking careers in health care-related fields, opted for lower-wage occupations, such as Certified Nurses Assistants (CNAs), because they required a shorter period of time to entry. With sufficient ambition, motivation, and social support, this type of job could represent the first rung on an entirely new career ladder, but it also means accepting an entry-level wage for workers who may have once earned significantly more in their old career.

Many of the workers losing jobs in manufacturing and other industries are older - often in their 50s – now faced with the task of going back to school to learn a new career and competing with workers half their age for jobs. Others have opted not to even compete, electing to survive on low-wage, low-skill work until they can reach retirement age and draw Social Security. Clearly, addressing the unique needs of older dislocated workers may remain an important challenge to the state for next decade and beyond.

## Science, technology, engineering and math (STEM) occupations

A common theme among high growth occupations is that they increasingly require mastery of STEM skills. Jobs that extensively require these skills are often considered "mission critical" – meaning that companies build their competitive advantage on the talents of people in these occupations and that companies risk losing customers or market share if they do not have this talent readily available or if the workers who occupy these positions have obsolete skills.

Even during periods of the highest unemployment, companies still expressed difficulties in finding workers to fill these STEM-related, "mission critical" jobs. It is also worth noting that these STEM occupations are drawn from a wide range of industries and at many different skill levels. Certainly, they include scientists in white lab coats, but they also include occupations with varied levels of knowledge or abilities in an array of science and math fields.

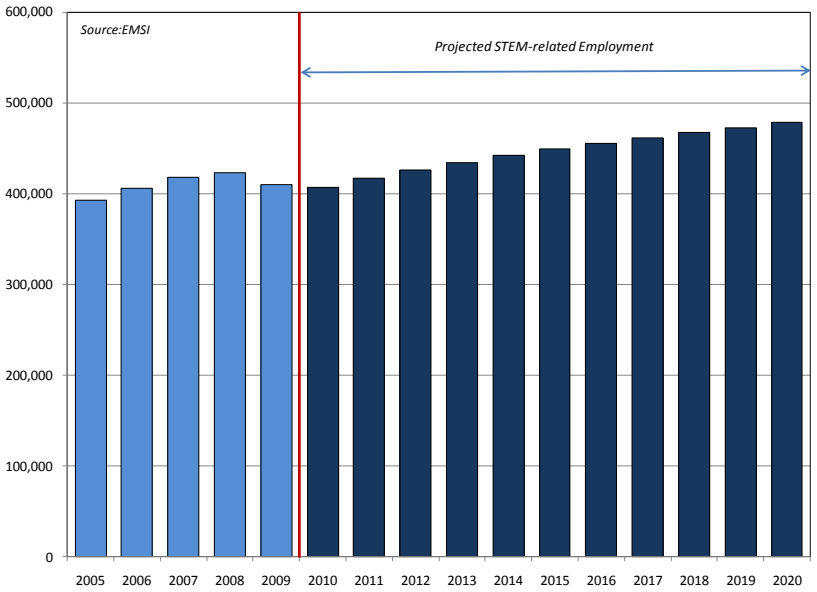
The U.S. Bureau of Labor Statistics defines STEM-related occupations as those that are related to science (such as agriculture and food scientists, biological and chemical technicians), technology (often primarily related to computing and information technology), engineering (including the design of physical facilities or products as well as the related drafting activities), and math fields (including statistician, actuaries, accountants, and bookkeepers).[15] This distinction is important since not all jobs within high-technology

[15] A complete listing of the occupations defined as STEM occupations can be found at: http://online.onetcenter.org/find/stem

industries, for instance, are STEM-related jobs, just as not all STEM-related jobs are found in high-technology industries.

In fact, STEM-related occupations can be found throughout the economy in fields ranging from agriculture to food service, as well as in more traditional science-oriented fields, such as engineering and computer science. Moreover, not all STEM-related jobs require a 4-year degree. Approximately one-third of all STEM-related jobs require less than a 4-year degree.[16] Many of these are middle-skill jobs include occupations such as computer support specialists, survey and mapping technicians or mechanical drafters that all require a minimum of either a 2-year degree or some form of post-secondary certification.

**Figure 14: STEM-related Employment in NC**

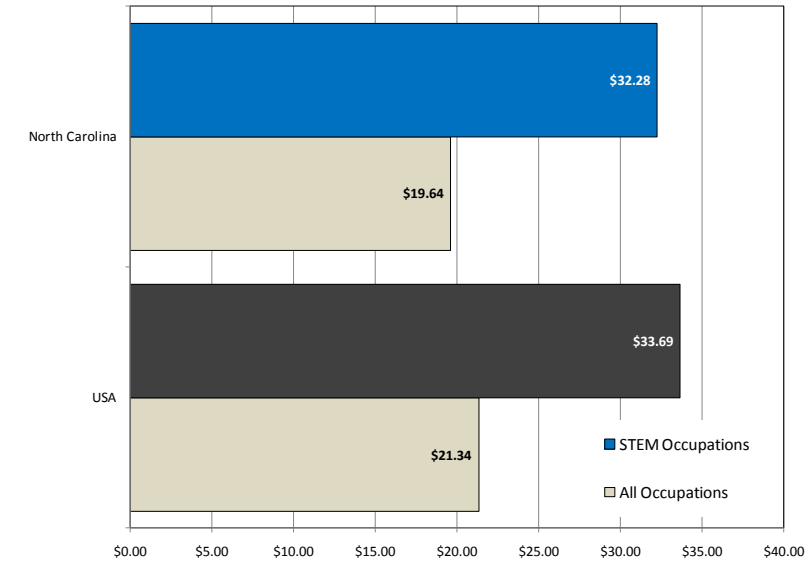



Within North Carolina, there are approximately 400,000 STEM-related jobs. As seen in Figure 14**,** the number of STEM-related jobs declined slightly during the recession, but is projected to grow by a rate of 1.6 percent annually over the next decade, faster than the rate for all other jobs in North Carolina (1.3 percent). Growth at this rate will result in the creation of more than 70,000 net new STEM-related jobs by 2020. This projected North Carolina STEM-related growth rate is also faster than the projected national growth rate (1.4 percent annually) for STEM jobs. However, even though STEM jobs are expected to grow at a faster pace in North Carolina than they are nationwide, they currently remain a smaller proportion of the state's total employment. Whereas 10.1 percent of North Carolina's jobs are STEM-related as of 2010, this number stands at 10.8 percent nationally. Thus, North Carolina still has some "catching up" to do in capturing its share of what tends to be higher-skill, higher-wage jobs.

STEM-related jobs will continue to serve as the economic foundation for the state's future, providing employees with wages well above that of the state, as illustrated in Figure 15**.** While the average 2010 U.S. wage for all occupations was $21.34/hr, workers in STEM-related occupations earned $33.69/hr, 58 percent more. This disparity is equally striking in North Carolina's labor market. On average in North Carolina, STEM-related jobs pay 64 percent more than the average job.

[16] Kenneth Poole, "Preparing Low-Skilled Workers for the Jobs of Tomorrow", *The Working Poor Families Project Policy Brief*, Fall 2008. Available at: http://www.workingpoorfamilies.org/pdfs/WPFP_policy_brief_fall08.pdf

**Figure 15: Comparative Average Wages in STEM and All Occupations**




*Source: EMSI. BLS STEM Definition. CREC estimates*

## Key labor market demand findings

Chapter 2 revealed that while the state's economy grew from 2005 to 2007, the Great Recession led to job losses equal to that growth. Moreover, total employment in 2010 was at 2005 levels, even though the state had 870,000 new residents and more than 400,000 new potential workers. The state's key economic drivers, such as manufacturing, finance, and traded services, took particularly hard hits to their employment base during the recession.

Furthermore, interviews with companies across the state revealed that these sectors also face structural challenges to recovery. While growth is expected in the economy, many industries are responding to these structural challenges in new ways. For instance, manufacturing will likely rebound, although it will do so employing fewer workers, as firms incorporate learned productivity lessons. On the surface, construction's future employment prospects look slightly stronger, but in reality there is much uncertainty, given the housing market's oversupply and changes in the credit market. Likewise, health care and finance are projected to rebound from the recent recession. Notably, major public policy changes affecting health care (such as universal health care) and financial services (such as changes in consumer credit laws) are being implemented that could influence future worker hiring practices and create uncertainty for economic forecasters. Clear growth opportunities exist in many technology sectors -- engineering services, computer systems design – and in services - management consulting services, and R&D in the physical, engineering and life sciences. The state does seem to be well poised to grow not only its high- technology, but also related sectors such as distribution and data processing industries.

For many of the company executives interviewed, the shift toward technology and services explains the growing demand for higher skill levels within the workforce. Despite the recession-related slowdown, companies in almost every sector continued to demand workers with specialized skills, many of which required post-secondary degrees in STEM-related fields. They also sought workers that had the knowledge and ability to cross-train in different, but related, occupations and with the willingness to continue enhancing their skills. This is clearly reflected in recent occupational trends and projections.

The state's growth occupations are largely service-based. Even within production occupations where continued employment declines are anticipated, those individuals who were skilled with computer

technologies or in maintaining equipment remain in high demand. Those at greatest risk of losing their jobs permanently had obsolete skills -- because they were used to performing repetitive tasks that had been replaced by machines -- or were unable or unwilling to adapt to new technologies or business processes.

These trends were reflected in the changing nature of the state's middle jobs. Middle income workers with limited ability to continuously adapt or whose companies were unable to redeploy the worker's skills were at greatest risk of losing their jobs even before the recession. As the recovery begins, these individuals will have the most difficult time re-entering the workforce. The "new middle" jobs in fields as wide ranging as health care, manufacturing, construction, distribution, and professional services will offer many good paying career opportunities. However they will require workers and companies alike to make a greater investment in the educational backgrounds of the workforce – often in developing STEM-related skills.

# Chapter 3: Changing Supply of Workers

The Great Recession displaced many workers, leaving some temporarily unemployed while others may be permanently unable to find new work without significant skill upgrades. This chapter focuses on longer term demographic trends that impact North Carolina's ability to provide a competitive workforce. The issues reviewed include the continued growth in the overall number of workers, the types of workers available, the source of those workers, and their willingness to participate in the labor force. Furthermore, young, new-to-career workers will be an important source of labor market supply so this section also examines the state's ability to produce the educated and skilled workers that employers are increasingly demanding.

## Population and workforce trends

The availability of workers in North Carolina is affected by a number of demographic characteristics, including how many people live in the state, how that is changing over time, and how willing or able the state's adult population is to work. Furthermore, it is vital to understand the make-up of working age North Carolinians to better understand their skills and abilities as well as the barriers that workers face in obtaining a job. Educational attainment, in particular, is a key factor in determining the ability of workers to perform increasingly knowledge-driven work in every industry and occupation. This section focuses on these key indicators to understand the availability of workers to meet industry demand.

### Population growth

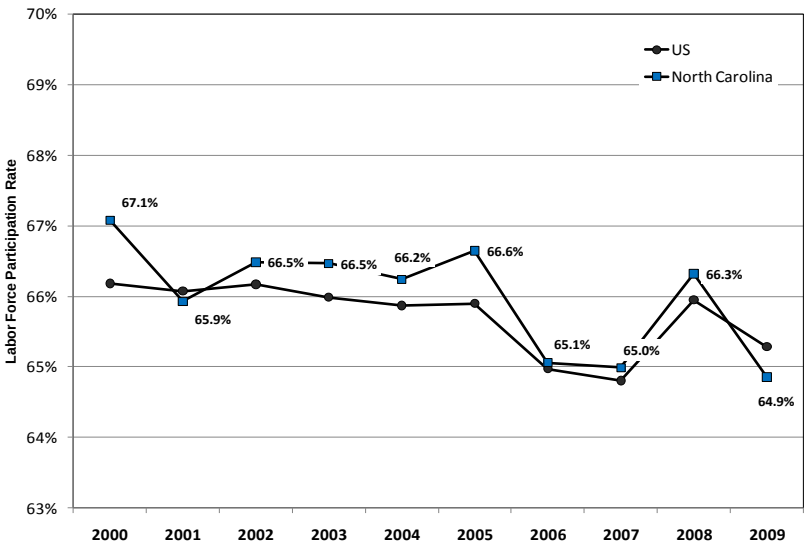
North Carolina has been, and continues to be, one of the nation's fastest growing states in terms of population. During the 1990s and 2000s, the state added 2.9 million new residents, growing by 44 percent. According to the U.S. Census Bureau, North Carolina's population grew at an annual rate of 1.7 percent during the past decade, far exceeding the nation's rate of 1.0 percent. The State's 2010 population stands at 9.5 million people. Much of this growth has occurred in the state's metropolitan areas, which are home to 6.7 million people and 71 percent of the state's population. According to the Census, one-third of the state's growth between 2000 and 2010 occurred in just two counties -- Mecklenburg and Wake -- while 75 percent of the growth occurred in the 20 largest counties. Growth, in general, contributes to a state's economic vitality and represents a net positive for a state's long-term employment prospects, providing a new source of workers for growing companies.

In the future, North Carolina is projected to continue adding people, albeit at a slower pace. Between 2010 and 2020, North Carolina is projected to grow at an annual rate of 0.7 percent, with a higher mortality rate expected as the population ages. While this is significantly slower than what the state has experienced over the past two decades, these projections still suggest that North Carolina will continue growing faster than the U.S. (0.4 percent annually). This projected population growth will be important not only for growing the state's workforce, but also for supporting demand for many local goods and services.

## *Labor Force Participation*

Changes in the state's overall population provide important indications of the scale of the state's potential workforce. A more precise assessment of the available workforce can be determined by examining the state's labor force and the willingness of working age adults to participate in the workforce. The participation rate actually measures the share of the population aged 16 and older that is either employed or looking for a job. High labor force participation rates are generally seen as a sign of economic strength, indicating a readily available workforce, and usually the presence of opportunities that draw people to the region.

**Figure 16: Labor Force Participation Rate**




*Source: Amercian Community Survey (2000-2009)*

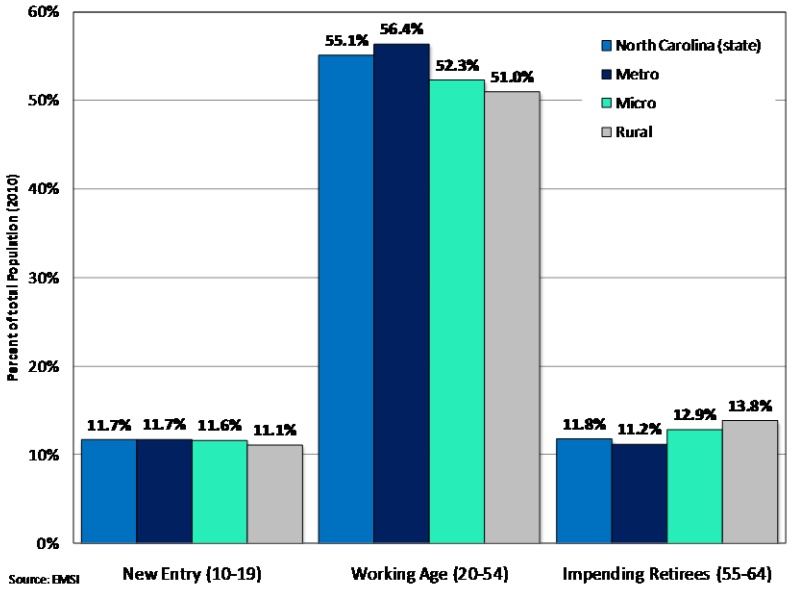
As shown in Figure 16, North Carolina's labor force participation rate has remained relatively consistent with the U.S. rate since 2000, typically hovering just above the U.S. at around 66 percent for most of the past decade. However, North Carolina's labor force participation rates declined more significantly during the recessions in 2001-2002 and 2008-2009 as North Carolina workers appeared to be more willing to leave the job market when jobs did not exist. During the Great Recession, the labor force participation rate dropped below 65 percent for the only time during the past decade. Despite the decrease in the participation rate in 2009, the labor force still grew along with the population, from 4.1 million workers in 2000 to 4.8 million in 2009, a 17 percent increase.

An important reason for the participation decline has been the significant drop among young workers. The labor force participation rate among 16 to 19 years olds dropped from 49 percent in 2005 (before the recession) to 40 percent in 2009. A similar decline in labor force participation rate can also be seen among the 20 to 21 year old cohort. The labor force participation rate for this age group decreased almost 7 percentage points, from 75 percent in 2005 to 68 percent in 2009. This can be explained by increased competition with older workers, especially for the part-time and seasonal jobs typically filled by teenagers (e.g., retail, tourism) as well as increased recognition that young adults need to stay in school and expand their education to compete for good jobs.

## *Aging population*

North Carolina's age distribution is similar to that of the United States as a whole. In 2010, 27 percent of both the U.S. and North Carolina populations were less than 20 years of age, and 48 percent of the U.S. population and North Carolina's were between 20 and 54 years of age (or of "Prime Working Age").

**Figure 17: Proportion of Population by Age Cohort**




Similarly, both also have virtually identical ratios of those over 54, at around 24 percent. However, there are some distinct differences within North Carolina that are worth noting.

Given that metropolitan areas comprise of the majority of the state's population, it should not be surprising to see, as in Figure 17, that the proportion of people in the three important age cohorts tracks very closely to the state proportions in 2010. Metropolitan areas have a slightly greater proportion of people in the 20-54 age cohorts, and a slightly smaller proportion of people among pending retirees. Where the differences begin to emerge are within the state's micropolitan and rural areas. Generally, these counties have a higher proportion of older adults than their metropolitan peers. For instance, while the proportion of people likely to enter the workforce over the next decade (ages 10 to 19) is consistent throughout the state, the prime working age (ages 20 to 54) cohort in rural counties comprises almost a 5.5 percent smaller share of the total population than in metropolitan counties.

About 12 percent of the state's population is between the ages of 55 and 64, and this segment of the population is expected to leave the workforce at some point over the next decade. This figure is roughly proportionate to the number of people expected to join the workforce during the same period. That said, numerous stakeholders observed that these impending retirees are likely to stay in the workforce longer than they originally expected as the recession caused them to lose expected value from their homes and retirement savings.

The proportion of pre-retirees (55-64) is also higher in both micropolitan and rural counties than it is in metropolitan counties. Across the state, retirees (over age 65) comprise 12.8 percent of the total population, but in rural counties that share jumps to 16.8 percent. Not only do these trends show that micropolitan and rural areas are left with a potentially disproportionate low number of people earning wages, but given that the number of new entrants (ages 10-19) is consistent throughout the state, it may also illustrate an important pattern of migration as young adults, many students and young workers, leave micropolitan and rural areas for places that offer greater opportunities.

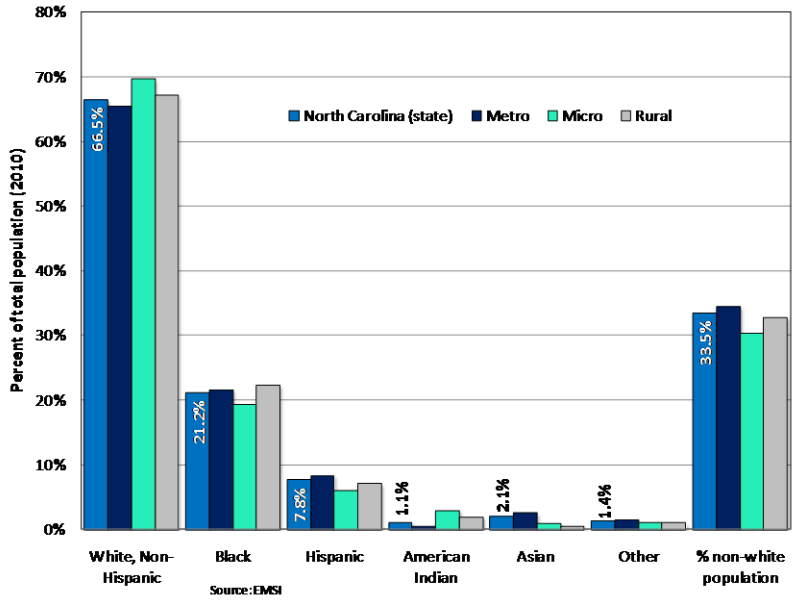
This becomes even more evident when examining the cohort of people ages 20 to 39. Approximately 27 percent of North Carolina's population falls within this "young worker" demographic, but in rural areas

that number is significantly lower, at only 23.6 percent. This continued demographic shift will have a significant impact on the quality and availability of the labor force in many of the state's rural locales, which will be at a competitive disadvantage in attracting high-skill, high-paying jobs.

## Race and ethnicity

Much like North Carolina's age profile, the state's overall racial and ethnic profile is also relatively consistent with the rest of the country and across metropolitan, micropolitan and rural areas (Figure 18). This is particularly true when only drawing the simple distinction between the White, non- Hispanic and non-white populations. In 2010, 65 percent of the nation was white as compared to 66.5 percent of North Carolinians. Similarly, as Figure 18 illustrates, the proportion of the population in minority racial and ethnic groups ("non-white") increased. When the non-white group is de-constructed, clear differences, however, do appear between the U.S. and North Carolina, as well as between the different geographic areas of North Carolina.

**Figure 18: Proportion of Population by Race/Ethnicity**




For instance, overall, the U.S. population is around 12 percent Black or African American, but in North Carolina, the black population accounts for greater than 21 percent of the state's total. Not surprisingly, most of African American North Carolinians live in the Research Triangle and Charlotte regions. African Americans also comprise an especially large share of the population in eastern North Carolina where they represent over 30 percent of the population.

The state's Hispanic population is one of its fastest growing racial/ethnic groups. Between 2005 and 2010 the Hispanic population grew 6.6 percent annually. However, this is largely a function of small numbers as this increase resulted in roughly 202,000 net new residents. To place this number in context, consider that about 8 percent of North Carolina's population is Hispanic as compared to the national share of 16 percent. Several other racial and ethnic groups account for a smaller proportion of the state's population. For instance, Asians represent 5 percent of the population nationally, but only 2 percent of North Carolina's population.

## Migration

One of the reasons that North Carolina's population continues to grow is the state's success in attracting migrants from elsewhere. According to the U.S. Internal Revenue Service, North Carolina gained a net

total of 84,902 new residents through migration between 2007 and 2008. The state's major metropolitan areas lead the way (see Figure 19). One third of the net in-migrants moved either to Wake or Mecklenburg Counties. However, migration benefits most of the state, with 78 of the state's 100 counties experiencing growth through migration.

**Figure 19: NC Counties with Most Net Migration (2007-2008)**

| County | Net In migrants | Net Out migrants | NET MIGRANTS |
|---|---|---|---|
| *North Carolina* | *538,171* | *453,269* | *84,902* |
| Wake | 56,403 | 38,092 | 18,311 |
| Mecklenburg | 57,744 | 48,503 | 9,241 |
| Union | 14,526 | 8,308 | 6,218 |
| Johnston | 11,371 | 7,090 | 4,281 |
| Cabarrus | 12,992 | 9,252 | 3,740 |
| Brunswick | 7,819 | 4,475 | 3,344 |
| Iredell | 9,796 | 6,891 | 2,905 |
| Gaston | 10,519 | 7,742 | 2,777 |
| Guilford | 23,461 | 20,909 | 2,552 |
| Harnett | 9,728 | 7,451 | 2,277 |

*Source: US Internal Revenue Service*

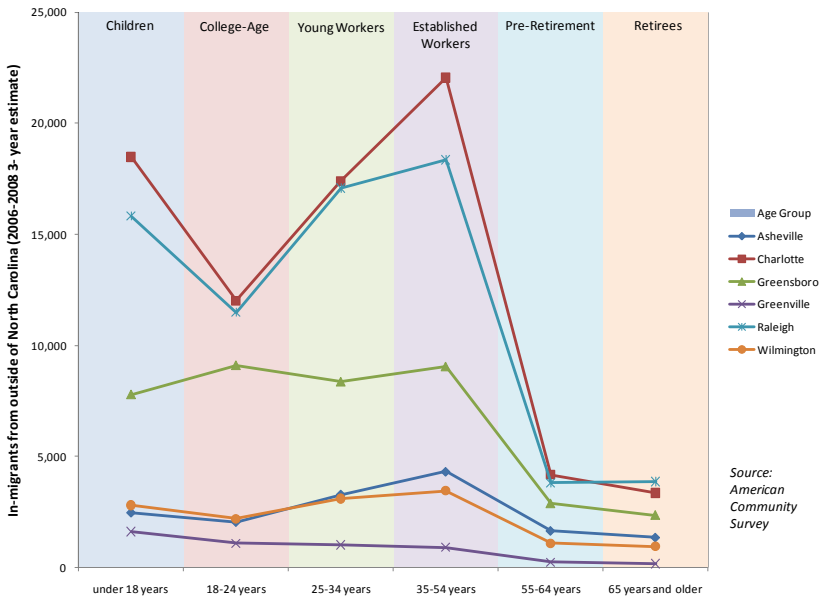
An assessment of characteristics of in-migrants reveals that net new migrants have become a significant share of the state's total population. Figure 20 illustrates just how significant an impact new North Carolinians have had on the labor force. In North Carolina, in 2009, there were about 6.1 million people aged 25 years or older according to the American Community Survey (ACS). Only 3.2 million, or slightly more than half of the population aged 25 and older, were actually born within North Carolina. The remaining 2.9 million people, currently living, residing, and, for many, working, in North Carolina were born elsewhere – out of the state or out of the country. Moreover, the growth rate of people born outside of the state is four times that of those born in the state. If these trends continue, the number of people born outside of North Carolina will surpass the number of native North Carolinians within the next three years.

**Figure 20: Birthplace of Population (age 25+)**

| | 2005 | 2009 | Change | CAGR 05-09 |
|---|---|---|---|---|
| Born in NC | 3,072,162 | 3,214,764 | 142,602 | 1.1% |
| Born outside NC | 2,496,727 | 2,935,483 | 438,756 | 4.1% |
| *Total* | *5,568,889* | *6,150,247* | *581,358* | *2.5%* |

*Source: American Community Survey (2005, 2009)*

**Figure 21: Age of In-migrants to North Carolina**




When non-native North Carolinians arrive in the state, they are most likely to be families with children under age 18, or young

workers ages 25 to 34. Figure 21 illustrates the ages of in-migrants for six of the state's major metropolitan areas.[17] The rolling average of in-migrants between 2006 and 2008 within these metropolitan areas shows that most migrants are working age adults, many with school-aged children. Charlotte and Raleigh are particularly attractive to these demographics while other areas of the state attract different types of in-migrants.

Not only do migrants to North Carolina trend toward established workers, but they also tend to have higher levels of educational attainment. For instance, 35.4 percent of North Carolina residents born outside of the state had at least a bachelor degree in 2009, whereas only 18.5 percent of the people born in North Carolina had a similar level of educational attainment as illustrated in Figure 22. Moreover, this gap between non-native North Carolinians and native North Carolinians has grown since 2005 when only 28.9 percent of people born outside of the state had at least a bachelor degree.

Clearly, North Carolina has benefited from in-migration as a strategy for enhancing its skilled workforce. For instance, in 2009, 73,665 new North Carolina residents moved to the state with a bachelor degree or higher including about 11,578 from abroad (see Figure 22), representing a larger source of new skilled workers for North Carolina than the state's university system.

**Figure 22: Educational Attainment of 2008-09 In-migrants**

| | Total Pop. 25+, 2009 | Less than high school graduate | High school graduate (incl. equivalency) | Some college or associate's degree | Bachelor's degree | Graduate or professional degree |
|---|---|---|---|---|---|---|
| ***TOTAL (NC)*** | ***6,065,043*** | ***995,867*** | ***1,706,044*** | ***1,774,577*** | ***1,060,751*** | ***527,804*** |
| **Moved from Out of State, 2008-09** | **201,394** | **21,959** | **45,125** | **60,645** | **44,422** | **29,243** |
| Moved from Different State, 2008-09 | 171,888 | 15,975 | 39,938 | 53,888 | 37,658 | 24,429 |
| Moved from Abroad, 2008-09 | 29,506 | 5,984 | 5,187 | 6,757 | 6,764 | 4,814 |
| **Out of State % of Total** | **3.3%** | **2.2%** | **2.6%** | **3.4%** | **4.2%** | **5.5%** |

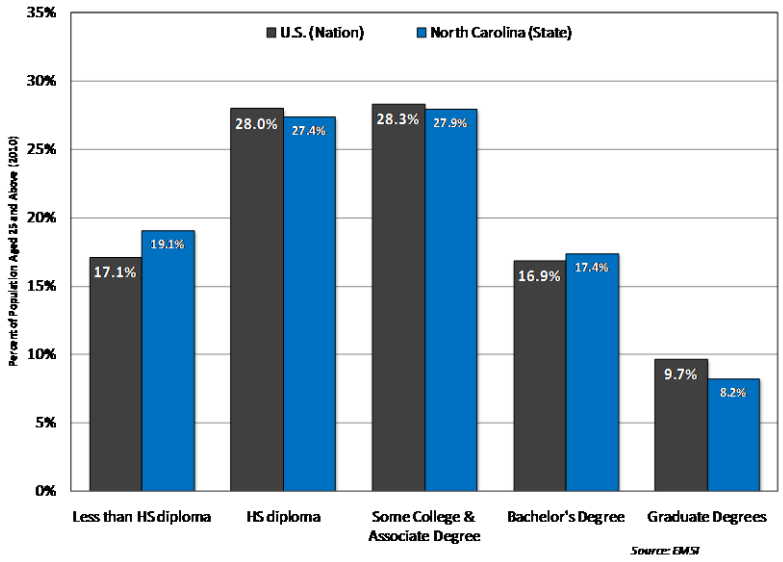
*Source: ACS*

## Trends in education and training

Education and training is the foundation on which workers develop the skills that industry requires. An assessment of how prepared workers are for emerging jobs must begin with determining their educational preparation, including degree attainment and the academic disciplines that students are pursuing. Not all jobs will require post-secondary education so it is also important to look at other indicators representing a worker's preparation for the world of work. Career Readiness Certificates represent one such indicator for which data are available. This section provides an overview of the state workforce's current educational attainment level as well as the importance of that success in sustaining good paying, secure jobs in the workforce. Furthermore, it also provides an overview of the progress that post-secondary students are making in achieving the knowledge and skills required for the future world of work.

[17] The American Community Survey (ACS) uses a 3-year rolling average methodology to collect basic population and housing information. This results in reliable information that is available at a metropolitan statistical area. Smaller geographic areas, such as county level, require multi-year estimates and current estimates are unavailable.

**Figure 23: Proportion of Adults (age 25+) by Educational Attainment Level**



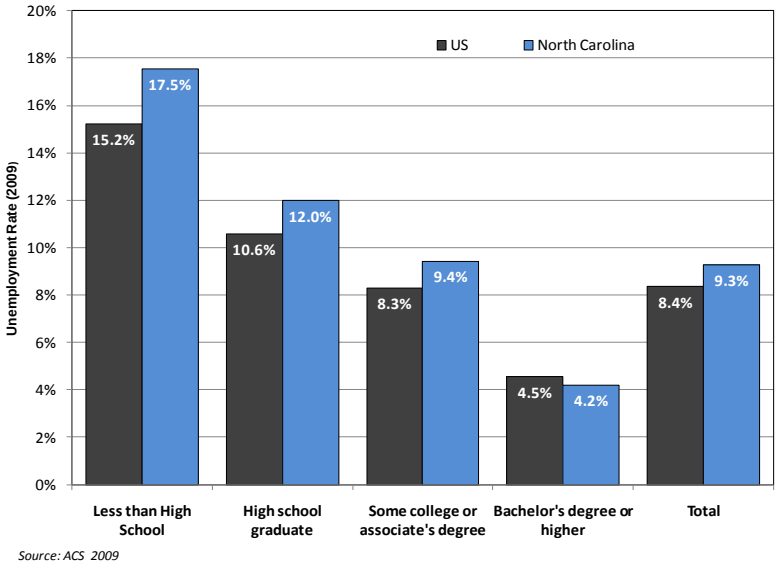

## *Educational Attainment*

As seen in Figure 23, North Carolina's 25 year old plus population tracks closely to the rest of the country in terms of educational attainment, with a few exceptions. North Carolina has a slightly higher proportion of adults (19.1 percent) that have less than a high school degree than the US overall; while, at the other end of the spectrum, it has a slightly higher proportion of adults (17.4 percent) with a bachelor degree.

While not everyone needs a 4-year degree to prosper, one of the resounding messages repeated frequently during statewide focus groups with businesses and other stakeholders was that a high school diploma is often necessary, but by no means sufficient, to succeed in today's economy. At least some post-secondary education is required for most jobs that provide a "middle-income wage," whether in the form of a 4-year degree, 2-year degree or a certification program, as well as the capability and willingness to engage in lifelong learning to keep these skills current. Employers noted that requiring such a degree allows their human resource managers to shorten stacks of applications much more quickly.

Figure 24 highlights how the recession has disproportionately affected those individuals with lower levels of educational attainment. Largely mirroring national trends, the NC unemployment rate in 2009 for people with at least a 4-year degree (4.2 percent) is half the unemployment rate for the state overall (9.3 percent). By contrast, the unemployment rate for people without high school degrees is almost double the overall state unemployment rate.[18]

**Figure 24: Unemployment Rate by Educational Attainment**




[18] The American Community Survey defines unemployment differently than the BLS and NCESC so the data are slightly different.

## Overall educational output

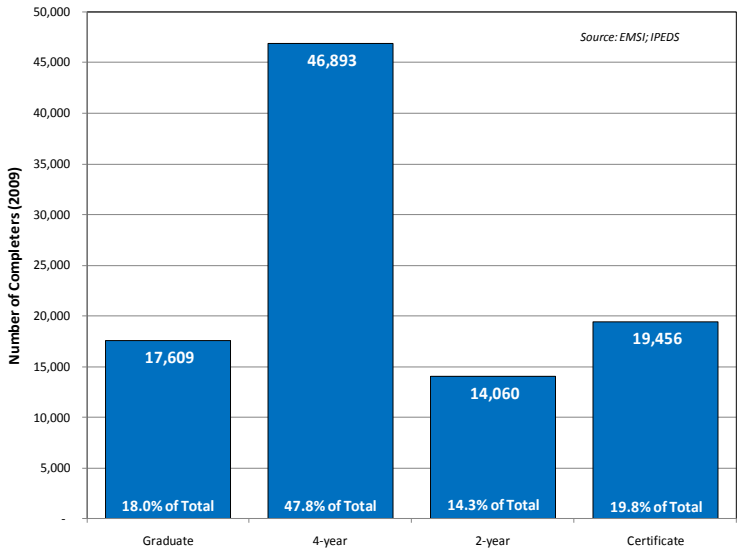
North Carolina has continued to improve its overall educational attainment levels, but firms still indicate that they often cannot find workers with the right set of skills. Given this deficiency, these firms then turn to new in-migrants to satisfy their workforce needs. A good sign, in this regard, is that many more individuals laid off from their past jobs are seeking education and training at the community college and university level. This trend may help firms find more of the skills they seek within the existing labor pool if the education and training are closely tied to industry needs.

North Carolina will not only need its post-secondary institutions to produce an adequate supply of 4-year and post-graduate degrees, but also sufficient numbers of workers with 2-year degrees and various certifications in order to meet these increased demands at all levels of the workforce. The supply of new workers with post-secondary degrees will need to increase to meet both the anticipated demand for new jobs requiring that level of education, as well as the demand for replacement workers resulting from attrition in traditional high-skill jobs and in middle-skill jobs requiring workers to have ever greater technical proficiency.

### *Educational output*

As highlighted in Figure 25, in 2009, 98,000 people completed a graduate degree, 4-year or 2-year degree, or certification program at one of the North Carolina's post-secondary institutions. Four-year degrees accounted for almost half (46,893 4-year degrees) of these completions, while an additional 17,600 received graduate or professional degrees. Below the 4-year degree level, over 14,000 associate degrees and approximately 19,500 certificates or awards were granted across the state during the year.

**Figure 25: Post-Secondary Completions by Degree-Type**




Unlike their four-year counterparts, community colleges often train workers that will or already work in the local area. Community colleges represent a critical, more financially-accessible resource for preparing and training the next generation of the workforce, both initially – through assisting displaced or at-risk workers obtain a high school diploma or pass the general educational development (GED) exam – and through lifelong learning. During interviews with firms, economic developers and other workforce stakeholders, respondents continually emphasized the importance of community colleges as key champions, workforce development partners, and local leaders. Many of the colleges have been creating specialized programs designed to address the fundamental challenges of developing an educated and skilled workforce, ranging from technical training to "early college" opportunities for high

school students.

### *Programs of Study*

The key concern among many policymakers is whether the programs of study offered at the state's colleges and universities were relevant to business. Figure 26 lists the ten instructional program areas[19] with the most completers in North Carolina during 2009. The largest cohort of program graduates – 16,805 – was in areas related to business, management, marketing and related support services. Business expertise is relevant to virtually all industries throughout the economy. A major growth area for the state's universities was in providing business-related graduate degrees. Almost one-quarter (nearly 4,000) of these graduates were MBA and other related graduate degrees from the state's public and private universities.

**Figure 26: Postsecondary Completions by Instructional Program**

| Instructional Program | # of Completers |
|---|---|
| Business, Management, Marketing, and Related Supp Services | 16,805 |
| Health Professions and Related Programs | 15,967 |
| Education | 9,291 |
| Social Sciences | 4,889 |
| Homeland Security, Law Enforcement, Firefighting and Protective Serv. | 3,712 |
| Psychology | 3,322 |
| Biological and Biomedical Sciences | 3,180 |
| Engineering | 3,010 |
| Computer and Information Sciences and Support Services | 2,986 |
| Visual and Performing Arts | 2,956 |

*Source: EMSI; IPEDS*

The health profession, with almost 16,000 completers in 2009, was the second largest field of study. The programs graduating these individuals ranged from certification programs running less than one year to full PhD programs. UNC-Chapel Hill and East Carolina University medical schools and their allied health programs provided the largest source of new graduates, supplemented by completers from medical programs at Wake Forest University and Duke University.

Almost 6,500 of the 16,000 completers in the health profession were from various nursing programs. Winston-Salem State University and East Carolina University had among the greatest numbers of completers for 4-year nursing programs. The largest sources of new nursing graduates were Forsyth Community College, Queens University of Charlotte, Wake Technical Community College, and the Carolinas College of Health Sciences, providing either Registered Nurses (RNs) or nursing graduates with associate degrees. In fact, two-year graduates in all the health care-related fields represented almost 37 percent of all associate degrees conferred in 2009.

Like health care, other STEM-related fields are also important to the state's workforce. STEM-related programs, such as biological and biomedical sciences, engineering and computer and information sciences and support services, each had roughly 3,000 completers in 2009. Overall, STEM-related programs produced 36 percent of all completers (35,331). The universities and colleges in the Research

[19] These data are based on the National Center for Educational Statistics' Classification of Instructional Programs (CIP) codes. CIP codes allow for the tracking of completions by field of study at U.S. institutions of higher education. The instructional programs listed here are at the 2-digit CIP level and therefore are at a relatively high level of aggregation.

Triangle represented 51 percent of that total.

### *Career Readiness Certifications*

While the data for college and university participation is widely available, information about training and skills is sketchier. Certification represents an increasingly important tool that many companies are utilizing to assess a worker's value in the marketplace. In North Carolina, Career Readiness Certificates (CRCs) represent one example of how employers can match their job-specific skill needs with a standardized assessment of worker skills. Based on ACT WorkKeys assessments, CRCs provide a third-party measurement of worker skill levels in applied mathematics, reading for information, and locating information.[20] In some cases, employers are turning to these and other objective evaluation tools because they are concerned about whether high school or college graduates are effectively learning job-relevant skills. Across the state, CRCs and other tools are being used to varying degrees.

## Conclusions about North Carolina's population and workforce

North Carolina's population continued to grow unabated during the recession. Rapid in-migration continued with higher-skilled workers moving to the state, especially to the metropolitan areas (as discussed in the next section). Of adults aged 25 and above moving to North Carolina during the past year, 37 percent had a college degree or higher and many of these new residents are filling high-skill, high-wage jobs. This influx of new, educated citizens and workers helped companies to meet their skilled employment needs, but forced existing workers in North Carolina to compete for the limited number of available jobs, particularly in lower-skilled occupations. Migration is certainly beneficial, but North Carolina's companies continue to maintain that the state is not producing enough "homegrown" workers with the right skills. It is critical that North Carolina continue to enhance the educational attainment and skill level of its existing population.

Future trends in occupational demand suggest that education and training will continue to grow in importance. The benefits to workers are clear in terms of better wages. Furthermore, the benefits can also be seen in greater job security, as those with lower educational attainment were much more likely to lose their job and had a harder time returning to the workforce.

North Carolina's post-secondary institutions produced almost 100,000 graduates in 2009 – ranging from certifications to advanced degrees. These institutions play a vital role in preparing North Carolina's future workers – whether through their 4-year degree programs or their 2-year degree programs and certification programs. North Carolina's educational institutions must continue to expand the supply of workers with in-demand skills, particularly STEM-related skills. Furthermore, continuous change in industry demand suggests that the curriculum in post-secondary institutions at the universities as well as the community colleges should prepare workers to learn and adapt in a dynamic economic environment, emphasizing STEM.

[20] Other areas are evaluated including applied technology, teamwork, observation, listening, writing and business writing. However, the three areas listed above represent the overwhelming majority of the evaluation.

# Chapter 4: Geographic Disparities in North Carolina's Workforce

Many key workforce challenges facing North Carolina impact workers across the state. Labor markets differ in how important these issues are. Local labor markets function with unique workforce characteristics and, in an era of rising gas prices that serve to limit long-distance commuting and decreased home values that impede worker mobility, the challenges in one region can often be quite different from another. Certainly, jobseekers would benefit if they could find good-paying jobs close to their residence. The economic history of a place often determines the kinds of skills available in the local workforce, and companies increasingly make location choices that concentrate activities where there is already a critical mass of activity and adequate infrastructure in place to meet their needs. Different parts of the state have advantages or impediments based on the workforce they already have in place and their attractiveness to new in-migrants.

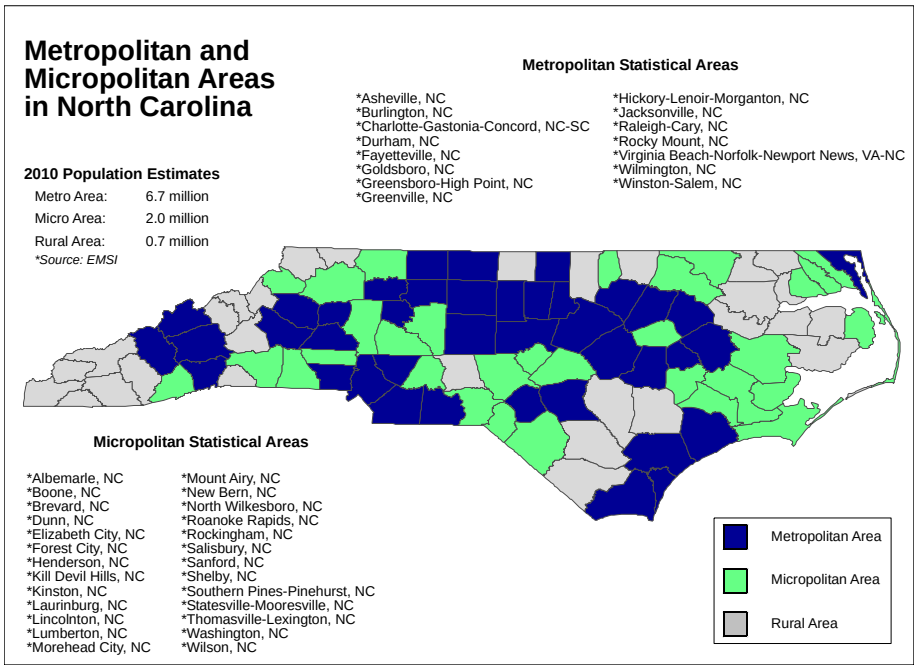
As the economy becomes more service oriented, growing companies tend to locate in major population centers where their markets and a diverse workforce can be found. This growth pattern further concentrates employment opportunities in metropolitan areas, leaving rural and micropolitan areas with limited prospects for replacing the jobs lost as a result of industrial restructuring. Thus, in the metropolitan areas, the painful transition in some industries is masked by growth in others while in the rural and micropolitan areas, the consequences of structural change can be quite profound.

The *2007 State of the Workforce Report* recognized these disparities across North Carolina in terms of how well the economy was performing in different geographic areas. Certain regions, especially larger metropolitan areas, were doing better than other areas of the state, and they often managed better during the most recent recession. In particular, the state's two largest metropolitan areas -- Charlotte and the Research Triangle -- as well as other smaller areas with a diverse economic base have done relatively better than the rest of the state. Those areas that struggled most during the recession, experiencing meager growth beforehand, often relying too heavily on a single, highly cyclical industry – often manufacturing – as their most important employment generator.

Forty of North Carolina's 100 counties are located in metropolitan areas. These counties are home to roughly 6.7 million residents, or 71 percent of the state's total population (See Figure 27). These counties also represent the state's major employment centers, providing 76 percent of the state's total employment. The remaining 60 counties include 31 micropolitan counties (i.e., counties with small cities of 10,000 to 50,000 people that serve as local trade centers and employment hubs). Those counties represent about 21 percent of the state population (2 million people) and 18 percent of its employment. The remaining 29 counties are described as rural, representing 7.7 percent of the state's population and 6 percent of its total employment.

This section addresses how the state's metropolitan, micropolitan, and rural areas have fared during the most recent downturn and examines the prospects for their future recovery. First, the section focuses on the state's economic engines in the metropolitan counties, examining the industrial mix and how well they are likely to recover, as well as the demographic challenges that could represent potential

**Figure 27: North Carolina's Metropolitan and Micropolitan Areas**

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impediments to the state's future prosperity. The section then considers the economic and workforce challenges in the state's micropolitan and rural communities. The 2007 Report noted that less densely populated areas faced the most severe structural problems, and this updated research reveals how those problems have been exacerbated during the recession, creating a potential drag on the state's recovery and its future prosperity.

## Workforce demand and supply in the state's metropolitan areas

These urban centers are a vital resource in supporting state economic and population growth. They represent the state's greatest concentration of talent and assets, attracting high growth firms that create jobs. These new jobs further draw more people, and the resulting population growth generates additional demand for other goods and services that spurs further demand for teachers, cashiers, police officers, accountants, doctors, nurses and scores of other jobs that serve the area population and comprise the bulk of the workforce. For many of North Carolina's metropolitan areas, population and job growth go hand-in-hand, but not every metropolitan area in the state has been as fortunate. The recession has dampened the growth in even the most successful of the state's metropolitan economies.

## Metropolitan areas drive the state's growth

The recession eliminated a large number of the jobs created between 2005 and 2007. Overall, the state's employment levels were roughly the same in 2005 and 2010, but some metropolitan counties managed to add net new jobs, even against the headwinds of recession. Overall, the state's metropolitan areas gained nearly 40,000 jobs between 2005 and 2010; however, that growth was concentrated in a few counties.

Figure 28 highlights the counties that gained and lost the most net employment between 2005 and 2010. For instance, Wake County added 30,000 net new jobs during the five year period, Mecklenburg added 20,300 new jobs, and Durham added another 12,128. At the same time, other metropolitan areas suffered even more than the state as a whole. In particular, the western Piedmont and Foothills areas experienced declining employment, with nearly 11,000 net jobs lost in Guilford and almost 20,000 jobs lost in the four-county Hickory-Morganton-Lenoir area.

**Figure 28: NC Counties that Gained and Lost the Most Net Employment (2005-2010)**

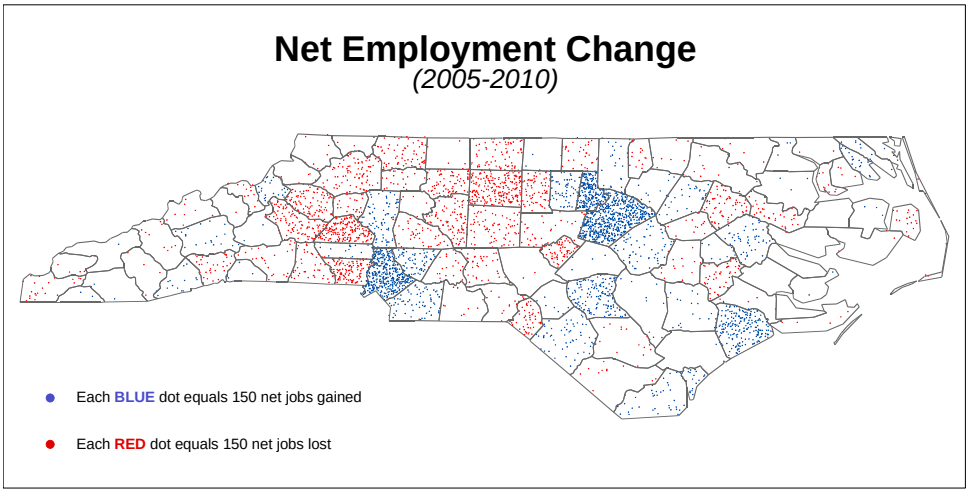
| County | Emp. Change 05-10 |
|---|---|
| Wake | 29,995 |
| Mecklenburg | 20,295 |
| Durham | 12,128 |
| Onslow | 10,475 |
| Cumberland | 7,260 |
| Caldwell | -4,706 |
| Burke | -4,811 |
| Gaston | -6,049 |
| Catawba | -9,204 |
| Guilford | -10,919 |

*Source: EMSI*

Figure 29 illustrates the regional disparities in job growth and decline in North Carolina between 2005 and 2010. A key factor in whether or not a metropolitan area gained or lost jobs during the recession was the industry mix already located in that region. Overall, the Research Triangle, Charlotte and its northeastern suburbs gained jobs as a result of their diverse mix of economic activity, particularly in technology, health care, and professional services. Employment in the Research Triangle's manufacturing base actually grew modestly as a result of the expansion of medical device and electronic equipment production in the region. The areas around Camp Lejeune and Fort Bragg benefited due to growth in defense spending and added employment due to activities being relocated to these bases from other parts of the country.

Meanwhile, job losses were most severe in those metropolitan areas that were more reliant on manufacturing for employment. The Piedmont Triad, the greater Hickory area, and the western suburbs of Charlotte were particularly hard hit by the twin forces of globalization and technology on traditional manufacturing industries like furniture, textiles, and tobacco. While these particular metro economies sputtered long before the recession began, other metro areas with high concentrations of

**Figure 29: Net Employment Change by County (2005-2010)**




*Source: EMSI*

Center for Regional Economic Competitiveness

manufacturing managed to endure the downturn with less severe disruptions. For instance, some of the smaller metropolitan areas with large concentrations of food production (especially in the eastern counties) experienced only limited job losses in their manufacturing sector. Recent aerospace investments aided growth in Wilmington, Fayetteville, Durham, and the upper northeast (Hampton Roads area) and offset losses in other sectors in the Piedmont Triad.

For other areas, their relative economic position reflected how well industries such as financial services and distribution did during the recession. For instance, the banking crisis spurred early job losses that led the Charlotte area to experience unprecedented unemployment levels. As the sector recovers, the area is now undergoing a slow but steady recovery. More than 50,000 people work in finance and insurance in Mecklenburg County alone, accounting for 34.4 percent of the sector's total state employment in the finance and insurance industry; therefore, when the financial sector experiences a downturn, its effects are much more severe in Mecklenburg than anywhere else in the state. In addition, the downturn in manufacturing had a major impact on transportation and warehousing along the entire I-85 corridor, but especially in the Piedmont Triad and Charlotte areas.

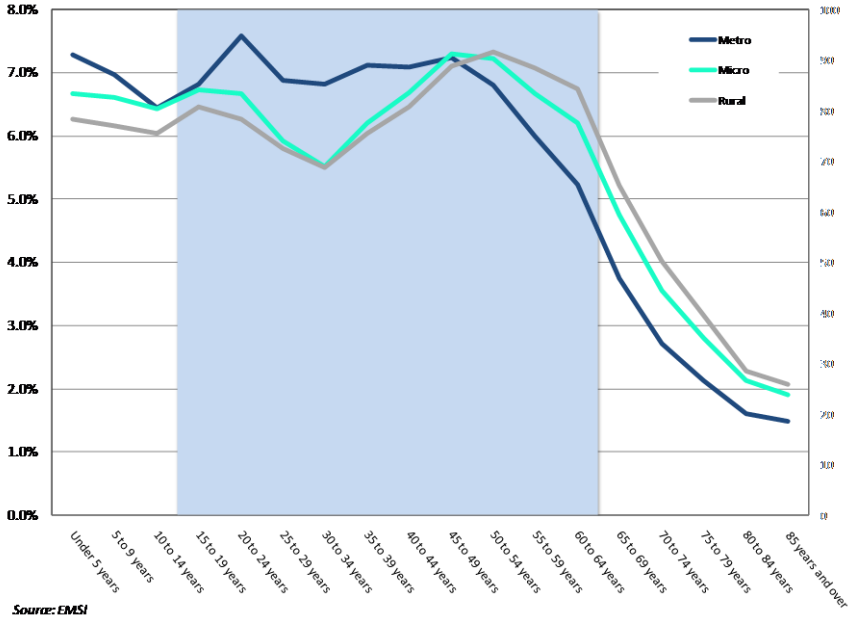
Despite job losses during the downturn in professional and technical services, that economic sector appears to offer one of the state's best prospects for new job growth. Fully 58,000, or about one-third of the state's 177,000 professional and technical workers, are employed in Durham or Wake Counties. Other traded services like telephone call centers offer significant employment opportunities, especially in defense-dependent communities around Fort Bragg or Camp Lejeune where military spouses can be an invaluable source of available labor. Data processing also offers potential opportunities in some of the traditional Foothills manufacturing areas that still offer relatively low-cost power.

Robust employment growth in the state's health care sector will be largely tied to facilities in urban locations. The greatest concentration of specialized regional health care providers is found in the Research Triangle, Piedmont Triad and Charlotte regions. The Research Triangle area alone is home to one in four (24 percent) of the state's health care jobs, and represents the location of well over one in three (36 percent) new jobs likely to be created in health care. Anticipated rapid growth in the health care sector provides a wide array of new job opportunities for workers in the state's metropolitan areas.

## Metropolitan demographics are more attractive to high growth industries

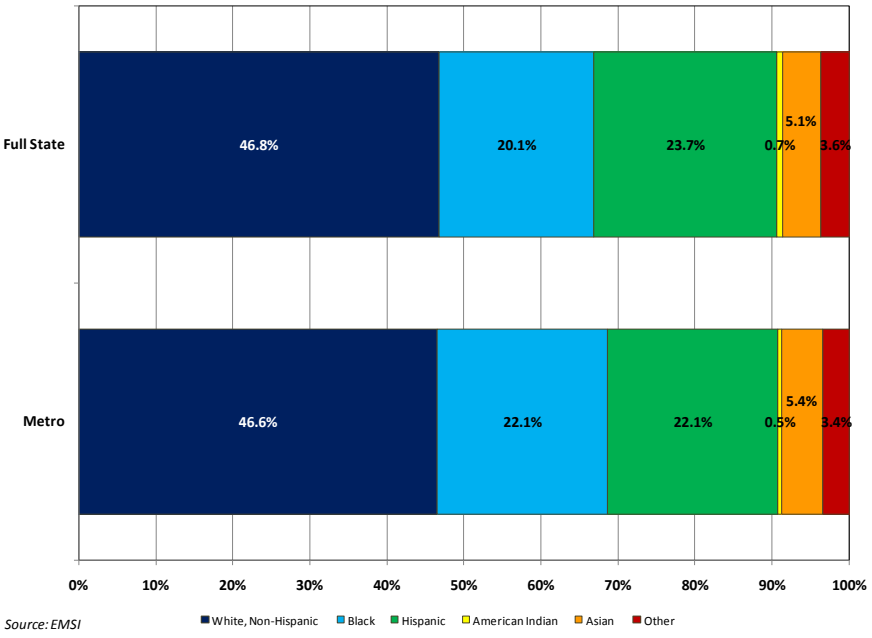
As described in the 2007 report, North Carolina's ethnic mix continues to shift with rapid growth in the state's Hispanic population and an aging workforce. That pattern continues in all regions of the state, but with some unique aspects in terms of where new Hispanic residents choose to live and where the age structure of the population varies. This section also examines the importance of the state's cities as magnets for talent. In the state's metropolitan areas, the population tends to trend younger than in the state's micropolitan and rural communities. Metro areas have a larger concentration of young and prime working age adults as a proportion of their overall population. These areas also tend to have more pre-school and young children suggesting that young families are more likely to find their economic opportunities in the cities and suburbs (See Figure 30).

**Figure 30: The Age Profile of Metro, Micro and Rural NC**




As the state's ethnic diversity increases, the urban areas have been particularly attractive to these groups. For instance, African Americans represent 21.5 percent of the state's population and about the same in terms of new metro residents. The faster growing (in terms of percent change) Hispanic population accounts for about as many metro in-migrants as African Americans. Combined, the two groups account for 44 percent of new metropolitan area residents (see Figure 31), nearly matching the total number of White, non-Hispanics moving into the state's metros.

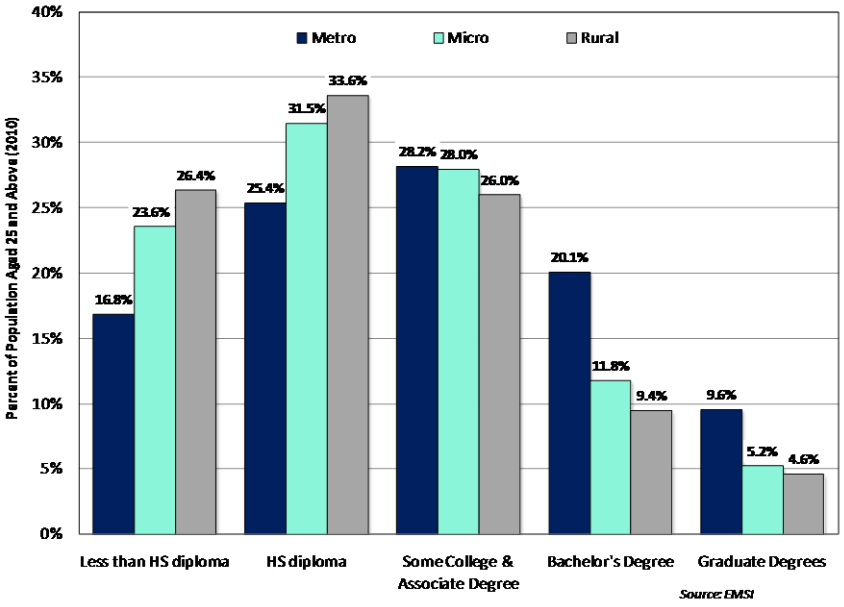
**Figure 31: Mix of Net New Residents in Metropolitan NC (2005-2010)**



Job and population growth in the urban areas has served as a magnet, not only for North Carolinians moving to the cities, but also for in-migrants of all racial and ethnic backgrounds from outside the state. In 2007-08, for instance, 81 percent of the state's net in-migrants moved to metropolitan counties. Wake and Mecklenburg Counties are particularly important destinations, attracting almost one-third of the state's net in-migrants. Not only do the Raleigh and Charlotte metropolitan areas possess the state's largest and most diversified economies, but they also have the state's greatest concentration of employment in the state's high growth industries related to healthcare, education and finance – a key rationale for relocating to the state.

Furthermore, the state's metropolitan areas tend to have a more highly-educated population, attracting jobs and other high-skilled workers. A review of the metropolitan area population mix reveals that about 29 percent of the population has a bachelor degree or higher and another 28 percent of the metropolitan population has some college experience (see Figure 32). This provides a much richer and deeper pool of talent for high-skill, high-wage industries. Not surprisingly, workers also earn much higher wages in the metropolitan areas.

**Figure 32: Proportion of Population (age 25+) by Highest Level of Educational Attainment**




## Key workforce challenges in the metropolitan areas

The economies of the state's metropolitan areas serve as the engine for North Carolina's economic growth. It is in these communities where the bulk of new job creation will occur, thus it is important to ensure the workforce is well prepared for these opportunities. A clear challenge facing the metro areas is the continued demand for highly-educated workers. The availability of good jobs in these communities is helping to attract many new residents, but continued high unemployment levels suggest that many current residents are not prepared for the available opportunities. Metro-located companies repeatedly complain that they cannot find skilled workers for the specific jobs they are creating, so they turn to national labor markets to fill their needs.

While in-migration is indeed a positive benefit to the state – bringing new talent, new entrepreneurial spirit, and new income – the state should be concerned that, in a time of labor surplus even in high-growth metro areas, existing residents and workers are simply not prepared to meet the skill needs of growth companies. They must adjust from jobs that are in industries under severe stress and that required skills very different from those needed in the emerging economy.

Ironically, many of the largest university institutions are located in these metropolitan areas. These are invaluable resources in this effort to respond to changing workforce demands and they will need to become more efficient in anticipating and meeting the needs of a demanding economy.

## Workforce needs of the state's micropolitan and rural areas

Small cities and rural communities often feel the sting of de-industrialization most intensely than their larger, more diversified urban counterparts, since one or two plant closures can change the entire economic and leadership structure of the region. The identity as well as the economy of many of these communities are tied to one or two large employers. As manufacturing continues to shed employment, the communities most directly affected are often left with a sense of loss that goes to the very core of the community's reason for existing.

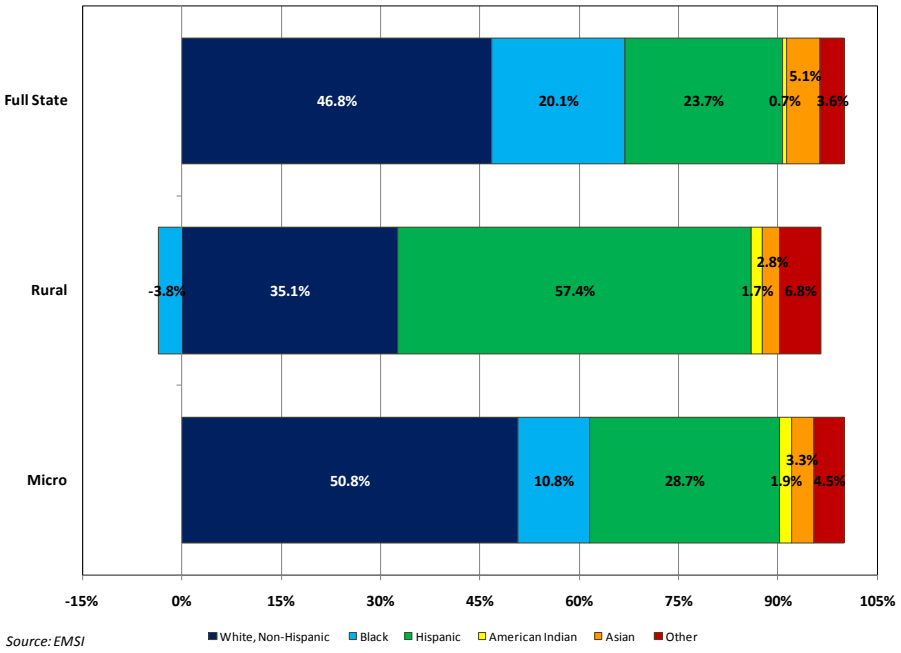
### Rural/micropolitan areas added people more slowly and lost jobs more quickly

Whereas, the state's largest metropolitan areas propel the state's economy, many rural areas serve as a backbone for it. However, these less urbanized areas must overcome significant challenges in order to compete. The state's smaller cities are concentrated in 31 micropolitan counties. Those counties comprise about 21 percent of the state population (2 million people) and 18 percent of its employment. Another 29 counties are considered rural, and they have 7.7 percent of the state's population and 6 percent of its total employment.

One of the most significant challenges facing the state's micropolitan and rural counties is that population growth has been relatively slow and in some counties has even declined during the past decade. Consider that between 2005 and 2010, the state grew at an annual rate of 2.3 percent and added 900,000 new citizens, but the growth rate in micropolitan and rural areas was significantly slower at a rate of 1.1 percent for micropolitan areas and 0.6 percent for rural counties. All seven North Carolina counties that lost population between the 2000 and 2010 were micropolitan or rural counties, and six were in the eastern part of the state. This demographic challenge is not unique to North Carolina as the same pattern was repeated in each of five other states (Virginia, South Carolina, Georgia, Tennessee, and Pennsylvania) in which measures of state progress were benchmarked.

In the rural areas in particular, African Americans account for a relatively larger share of non-whites, especially in rural eastern North Carolina. However, African Americans are moving to urban North Carolina, with the rural population declining in real terms. In some cases, Hispanics are moving to those locations to fill the void (although Hispanics are still moving to urban areas in greater numbers). As illustrated earlier in Figure 33, more than half of new residents moving to rural North Carolina in 2005 to 2010 were Hispanic.

**Figure 33: Racial/Ethnic Mix of New Residents in Micro and Rural NC (2005-2010)**




*Source: EMSI*

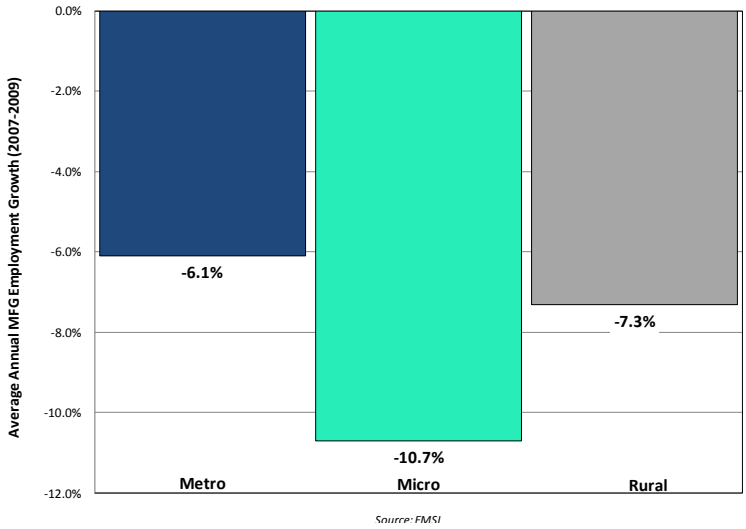
An important reason for rural out-migration is simply that economic opportunities in micropolitan and rural areas are much more limited. During the recession, the bulk of unemployed workers were located in metropolitan areas because that is where most of the state's workforce is located. However, micropolitan areas were disproportionately affected by the recession. For instance, unemployment rates were highest in the state's micropolitan counties. At 11.1 percent, the rate was 1.2 percent higher than the state's July 2010 rate of 9.9 percent. During that same month, about one in five (20.6 percent) jobs were located in micropolitan areas, but nearly one in four (23.5 percent) of the state's unemployed jobseekers were as well.

While most metropolitan areas have a relatively diverse base of economic activity, micropolitan areas have been much more reliant on manufacturing, with rural areas much more likely to have a single dominant private or public employer (e.g., manufacturer, mining operation, public school, prison, state post-secondary institution, etc.). While the economy reduced revenues for many private employers, employment in government has also been under increased pressure as a result of fiscal challenges facing the state and localities. When workers lose their jobs in these communities, they seldom have few alternatives for employment and spend a longer time trying to find work near their home. Those with specialized skills may never find work in their occupation if they stay in their home community.

As illustrated in Figure 34, micropolitan areas were particularly hard hit by the loss of manufacturing employment because they represent such a large share of the employment base. In addition, rural areas also struggled from manufacturing job losses but not by as much as micropolitan areas. Furthermore, the data illustrate that rural counties were even less likely to have any other opportunities for workers beyond the long-declining employment options in agriculture. The recent recession exacerbated these long-standing structural changes.

Dislocated manufacturing workers in smaller communities may not be academically prepared for the few replacement jobs that might become available as companies start hiring again. So, with few alternatives, these dislocated workers are left in a worker's limbo, forced from jobs in declining industries but unable to find work in their same field or in any other, for that matter. For many unemployed rural residents, education and training initiatives may simply create a false sense of hope because growing industries are not located in their communities.

**Figure 34: Manufacturing Employment Change in Metro, Micro, Rural NC**




## Benchmarking North Carolina to other states

Most of the research presented in this report focuses on economic and workforce trends within the state. However, it is important to consider North Carolina's performance relative to other states. Three comparative metrics give some indication of current performance (per capita income),[21] past trends (change in manufacturing employment),[22] and future potential (educational attainment).[23] These benchmarks were in turn used to compare North Carolina to key southeastern competitor states—Georgia, South Carolina, Tennessee, and Virginia. Pennsylvania was also included as a fifth comparison state because its heavy levels of manufacturing make it similar to North Carolina's industry and workforce mix. The benchmarks examined not only how North Carolina as a state compared, but also how the metropolitan, micropolitan, and rural areas of each state compared.

The comparisons with the micropolitan and rural areas were particularly instructive and the results of that data are shared here. North Carolina's small cities (micropolitan areas) were uniquely affected by the transformation of the economic base, even when compared with other states. These areas of North Carolina and Georgia experienced the most rapid decline in manufacturing during the 2005 to 2010 period among the five benchmark states.

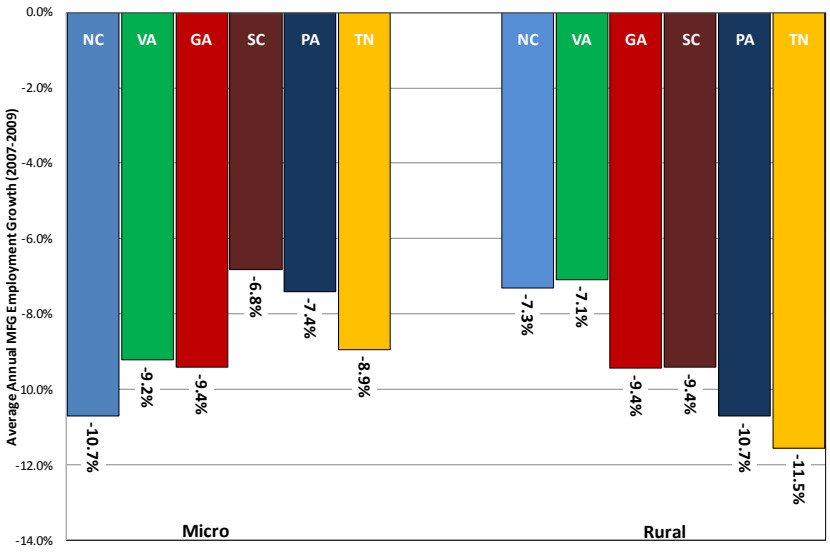
In actual job loss numbers, North Carolina's micropolitan areas lost nearly 26,000 manufacturing jobs, while Pennsylvania, the state with the second greatest job loss, experienced a decline of nearly 16,000

[21] *Per Capita Income* offers an indication of the state's current economic performance. States with higher per capita incomes are more apt to have strong economic drivers.
[22] *Change in manufacturing employment* shows the extent to which a state's economy is transforming. Manufacturing remains an important part of the economic base for many states. Beyond the base jobs and products that bring new money into the state, manufacturing also serves as the foundation for key supply chains of activity that range across many industries. Therefore, rapid decreases in manufacturing employment can have negative consequences for state and its regions.
[23] *Educational attainment* levels are an important factor in determining a state's future capacity to develop more knowledge-intensive, higher value added activities, and thereby improve their overall economic competitiveness.

jobs in its micropolitan areas. While these numbers are smaller than in the state's metropolitan counties, the job losses are nevertheless highly significant. Micropolitan areas include places such as Forest City, Thomasville-Lexington, and Sanford, which were heavily dependent on traditional industries such as furniture, textiles and apparel manufacturing.

Rural counties face many similar challenges to those experienced by micropolitan counties, but the job losses in these North Carolina counties have been less drastic, often because there were many fewer jobs to lose. As illustrated in Figure 35, micropolitan areas lost 10.7 percent of their manufacturing jobs between 2007 and 2009. The rural counties of North Carolina lost a large share of their manufacturing employment as well, about 7.3 percent during the 2007 to 2009 period. Also, because they may never have had as much of an economic base, NC's rural areas were somewhat less affected by manufacturing employment losses than the rural areas of other states. For instance, Tennessee and Pennsylvania's rural counties lost manufacturing jobs at annual rates of 11.5 and 10.7 percent, respectively.

**Figure 35: Change in Manufacturing Employment**




Source: EMSI

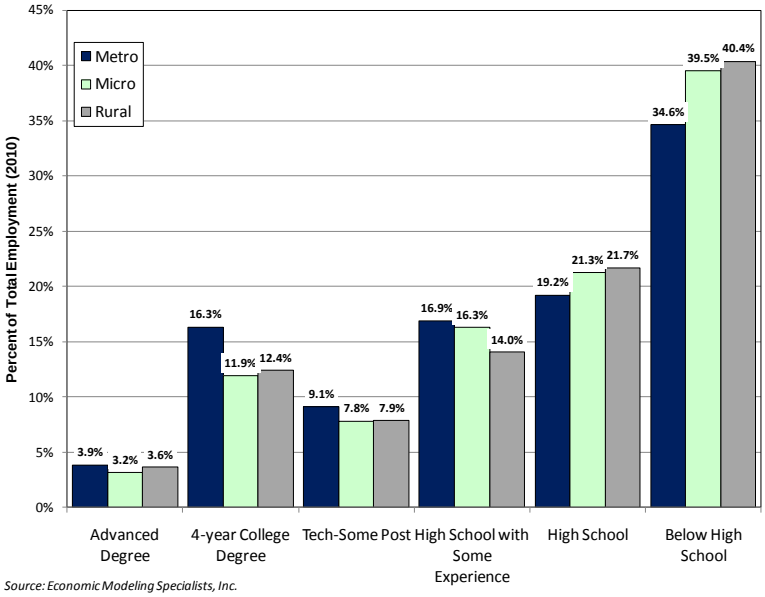
## Rural/micropolitan areas have fewer post-secondary graduates in their workforce

Historically, manufacturing jobs in these smaller communities of North Carolina and other states known for their low-cost production labor did not require more than a high school diploma. Recently that has been changing, and newer manufacturing jobs have required education beyond high school. Workers in traditional manufacturing jobs that are being eliminated may be underprepared to transition to new manufacturing jobs or into new careers.

Most of the remaining jobs currently located in micropolitan and rural areas are relatively lower-skill positions. As illustrated in Figure 36, a much lower proportion of jobs demand a minimum education beyond high school and fewer jobs exist in these communities to attract educated workers.

It follows then that educational attainment in micropolitan and rural communities tends to be lower than in the rest of the state. This creates a challenge for micropolitan and rural communities in that individuals with higher educational attainment tend to be more adaptable to changing economic circumstances and better prepared to transition from one job to another. High educational attainment is particularly important when jobs that require a high school education or less are being eliminated and the demand for people with the capacity for lifelong learning grows. An educated workforce is also important for economic development as firms are better able to locate and grow in areas with higher-skilled talent.

**Figure 36: Proportion of Employment by Education Band**

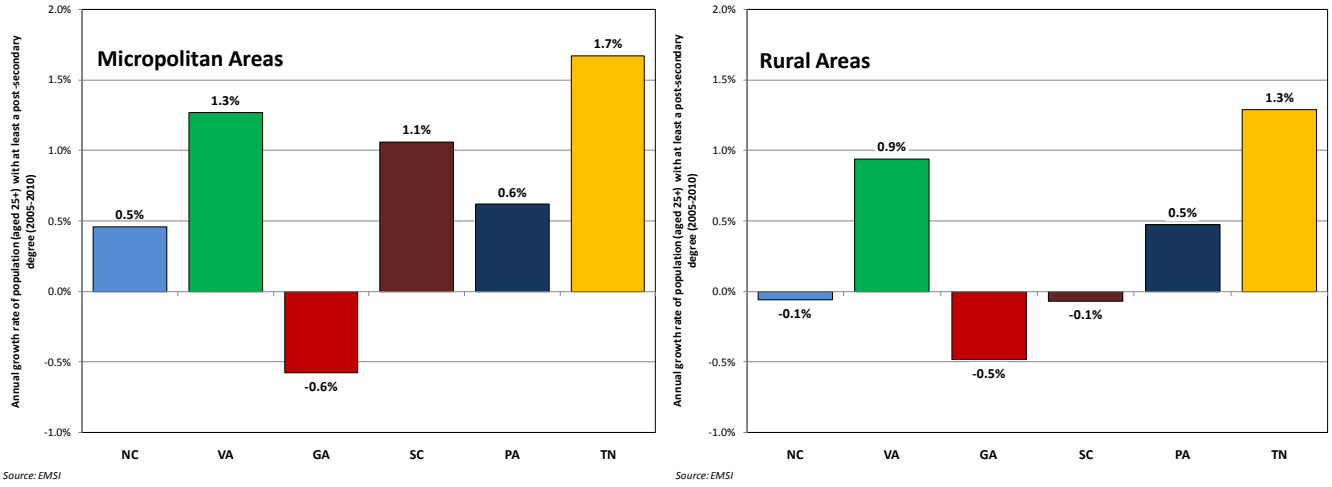



*Source: Economic Modeling Specialists, Inc.*

While educational attainment levels are lower in the state's micropolitan and rural areas, the pattern reflects a larger national trend rather than a problem unique to North Carolina.

Further, it is worth noting that 45 percent of adults in micropolitan areas and 40 percent in rural areas in North Carolina do have at least some college experience. This can partially be attributed to the state's community colleges which are the primary resource for post-secondary education for people outside of North Carolina's metropolitan areas. When compared to five nearby or similar states, only South

**Figure 37: Change in Postsecondary Degree Attainment among 25+ Year Olds in Micropolitan and Rural Areas**




*Source: EMSI*

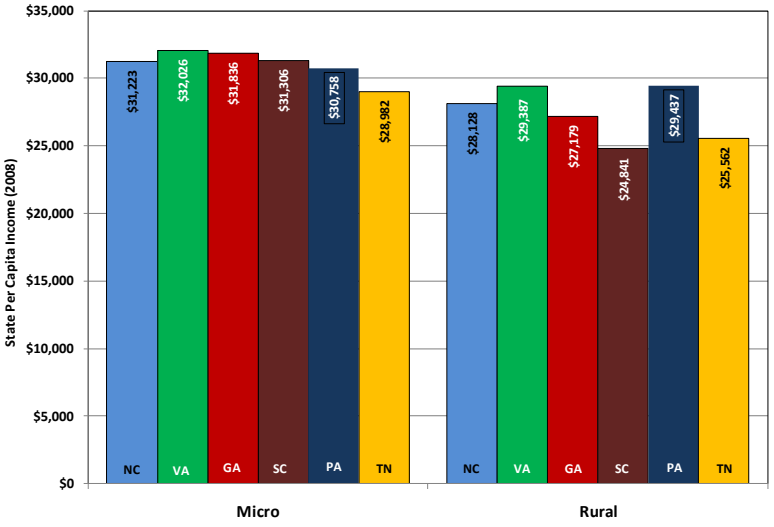
*Source: EMSI*

Carolina's micropolitan counties outperformed North Carolina's respective regions in post-secondary attainment. Pennsylvania shows similar college attainment rates to North Carolina in micropolitan areas. However, educational attainment trends between 2005 and 2010, as indicated in Figure 37, show that changes in North Carolina's post-secondary attainment level in the state's micropolitan and rural regions lags behind every comparative state except Georgia.

## Rural/micropolitan income trails in NC at about the same rate as the benchmark states

Per capita income provides a broad indicator of economic performance and prosperity. Because of the mix of jobs and lower educational attainment, per capita income in the micropolitan and rural areas across comparative states lagged levels for metro areas. Figure 38 shows that per capita income in NC's micropolitan areas fell in the middle of the range for the comparison states. Virginia, Georgia, and South Carolina had per capita income levels that were higher in their micropolitan counties, but the rural areas differed. Among rural counties, North Carolina lagged behind Pennsylvania and Virginia, but otherwise the income differences were not as great as the metropolitan areas.

**Figure 38: Per Capita Income for Micropolitan and Rural Areas in 6 States**




*Source: Bureau of Economic Analysis*

## Key workforce challenges in the micropolitan and rural areas

The workforce challenges facing the state's micropolitan and rural areas are very closely tied to the economic makeup of these communities and the broader array of structural economic issues facing the state. Private sector industries located in rural and micropolitan regions tend to be even more cost-driven than companies located in urban areas so many more of these firms have opted to shift jobs off-shore or consider other ways to reduce costs, especially since many of these factories are controlled by interests located far away. As a consequence, job losses have often been more severe -- especially in micropolitan communities reliant on one or a few small firms that had to lay off workers during the recession. Employment alternatives were few in these communities, leaving limited options for jobseekers -- either take whatever they could find, often at lower wages, move away to metropolitan locations where the competition for the few available jobs was tough, or remain unemployed.

As employment opportunities begin to rebound in these areas of the state, jobseekers must be ready for the challenge of different kinds of work – increasingly influenced by the deployment of new

technologies and shaped by structural economic change in which the jobs may be in different occupations or industries. For middle-skill workers, employment opportunities will increasingly take the form of machine operators or repair personnel as well as technicians in allied health fields and paraprofessionals to support small entrepreneurial firms in finance, technical, and administrative services. These jobs continue to change and the community colleges are critical to preparing a workforce ready to adapt to these new opportunities.

## Key findings about geographic disparities

Like other states across the U.S., North Carolina's growth before the recession was uneven and the impact of the resulting economic dislocation was more strongly felt in certain parts of the state than others. At first glance, there appears to be a rural/metropolitan dichotomy in North Carolina's growth patterns, but closer examination reveals the differences to be more nuanced. While both rural and micropolitan areas are facing much slower growth economically and demographically as a result of the recession, the impact of the recession was also felt most strongly in communities that had high concentrations of industries that were most directly impacted by structural economic change, regardless of size.

In the early months of the recession, industries such as housing construction, real estate, and finance were most heavily hit. The job losses associated with those industries were concentrated in the state's metropolitan areas. As the recession became more severe, the manufacturing and distribution sectors took a much harder hit and the toll mounted in those communities with high concentrations of these industries—including many of the state's micropolitan areas as well as the metropolitan areas in the western Piedmont and Foothills.

As these sectors rebound, it is likely that job growth in these industries will also improve, although the kinds of jobs created will not necessarily be congruent to those previously lost in terms of skills required. Where area community colleges have been quick to prepare workers for new jobs often in new industries the transition will likely be easier, but the severity of the changes will mean that the transition will probably not be smooth. For many, the transition will be long and tough and may require direct public leadership to improve the labor market exchange and bridge the skill divide.

For companies located in small, low-cost labor markets, the threat to survival – even for companies in otherwise high growth industries – is real if they cannot find the workers they need. It is unlikely that smaller micropolitan communities will be able to easily transform their economic base in a short period of time so worker transitions are likely to be longer and tougher. For larger metropolitan areas, diversity of growth is likely to be the most important mechanism they will have to help workers return to work more quickly. This means that the demographic pressures are likely to increase on small towns and rural communities as frustrated jobseekers pick up and move to job centers in larger cities or discouraged workers leave the workforce entirely. For the companies left behind in these smaller communities, skill shortages in a climate of labor surplus are likely to be increasingly commonplace without significant action by state and local leaders.

# Chapter 5: Key Conclusions and Implications for Action

In examining recent economic trends, it is clear that the recession has drastically stalled the state's growth trajectory. For most economic sectors, the Great Recession reined in the rapid growth that occurred in the second half of the last decade; however, for a few important industries, economic structural change was eroding gains elsewhere well before the recession began. The Great Recession's impact was particularly harsh to companies and workers employed in manufacturing, construction, tourism, and transportation. Because these industries are concentrated in different parts of the state, their effects were felt greatest in those areas. For instance, manufacturing declines that have been on-going since the late 1990s have impacted the Piedmont Triad and western Piedmont especially hard. Workers in the Research Triangle's construction sector, Charlotte's transportation sector, and rural agricultural and tourism industries also suffered as a consequence of the downturn. Overall, the recession served to rapidly accelerate many long-term economic trends with workers, unprepared for the requirements of the next generation economy, bearing the brunt of the transition.

In reviewing the findings from this research, ten major challenges were identified. Eight were identified previously in the 2007 Report. These issues provide an important foundation on which North Carolina might develop a cohesive workforce strategy. While the recession exacerbated many of the issues identified in 2007, the fact that so many are still relevant suggests that the state should focus on developing long-term solutions to prepare the workforce for the state's continued transformation from a low-cost production-based economy to an economy that relies more on integrating knowledge and service content into goods and services.

At the same time, although some previously identified challenges were temporarily abated by the effects of the recession, the workforce supply is dramatically changing with a more diverse, younger, and more highly educated population replacing the current experienced and aging workforce. The key is whether this on-going replacement can occur fast enough to meet the needs of a growing North Carolina economy, as well as whether those workers at greatest risk of falling behind can be helped in catching up.

Described below include the most critical workforce challenges facing North Carolina, how the recession has impacted each, and key questions for policy makers to consider in addressing those challenges.

1. **Worker dislocation accelerated during the recession due to long-term structural changes.**
   The recession increased the pace of the job-shedding and productivity enhancing activities of many North Carolina companies. Interviews with those companies that survived the recession revealed many examples in which firms adopted world-class business practices and are focused on competing successfully in global niche markets.
   In the months ahead, companies are expected to start hiring again, but slowly. They also seek to hire new types of workers who have more advanced skills than did the workers that were let go during the recession.

Policy responses to **transition workers dislocated due to structural change** should consider the following questions:

- How can North Carolina better help ease the shift for dislocated workers to new careers in growing occupations?
- What types of assistance should North Carolina provide to incumbent workers to help them prepare for careers in new industries or to better compete for jobs in their current industry?
- What special help to workers, if any, should be provided to overcome personal barriers that make adapting to a new career particularly difficult, including such challenges as meeting the responsibilities of family, accessing help to remediate basic academic skill deficiencies (e.g., math or communication), as well as accessing specialized training that may not be locally available?

2. **Workers employed in low-skill, middle-wage jobs are competing for fewer good-paying jobs while opportunities offering similar wages (i.e., "new middle" jobs) demand higher skills.**
   The disappearing of middle jobs, as highlighted in the 2007 report (i.e., those jobs that do not require a 4-year degree but still pay a family sustaining wage within about 20 percent of the state's median), are not completely gone, but fewer are certainly available. Those seeking moderate income jobs must now demonstrate more advanced skills, often involving formal post-secondary training, credentials, or even degrees. Experienced workers without these in-demand skills often must settle for low-wage, low-skill work, especially in the service sector.

   Even with further education and training, many jobseekers in this category will need to seek employment in new industries, which may initially mean taking lower paying entry level positions in order to start on a new career ladder. Older workers in these new careers must compete for jobs with younger workers whom employers may consider to be more adaptable to a changing work environment or more willing to take a lower salary than their older counterparts.

   Policy responses to **help dislocated middle-skill workers compete for good-paying jobs** should consider the following questions:
   - How can North Carolina help low-skill, middle-wage workers recognize that they are in an at-risk occupation before they lose their job?
   - How can low-skilled workers efficiently identify appropriate career pathways and training requirements that will lead to good-paying "new middle" job opportunities?
   - How can these workers gain access to education and training opportunities while remaining employed, either in their current jobs or in apprenticeships related to their new careers?

3. **While metropolitan workers have a more diverse set of career possibilities, they must continuously adapt to increasing demands in the workplace and a more competitive labor market.**
   In general, metropolitan economies are bouncing back from the recession at a more rapid pace than the state's micropolitan or rural areas, but the recovery is uneven. Metropolitan areas whose economies were dominated by industries that were already in structural decline (such as traditional

manufacturing) were particularly hard hit during the recession, and they are expected to take much longer to rebound.

Skilled or educated workers who can cross-train, engage in lifelong learning, and demonstrate flexibility in skills, especially in STEM fields – workers who are disproportionately located in metropolitan areas – will have access to the most opportunities.

Policy responses to **aid workers in adapting to increasingly competitive employer and labor market demands** should consider the following questions:

- How can workers and jobseekers, especially lower-skilled individuals, gain access to and pay for the education and training required to compete for higher-skilled work?
- In areas with large concentrations of traditional industries, how can workers best find work, particularly if there continues to be fewer jobs than jobseekers in those industries?
- How well does the state's post-secondary educational system prepare new workers for jobs in emerging or growth industries or prepare replacement workers for traditional industries?
- How should the university and community college curricula respond to chronic skill mismatches as well as particular emerging career opportunities?
- What strategies should North Carolina consider to improve STEM skills in existing workers so that they can command higher wages, compete for internal promotions, or improve their ability to compete for jobs in the labor market?

4. **Dislocated or young workers in economically hard-hit micropolitan and rural areas have very limited alternatives for employment.**

Job opportunities in rural and micropolitan areas, already limited, were particularly scarce during the recession. Manufacturing job losses were most devastating in the state's small cities; especially in communities that were once dominated by one or a few companies. These communities offered most laid-off workers few, if any, viable alternative employment options.

Even as the economy recovers, many jobseekers will ultimately have to find new careers. Whether they change industries or opt to migrate elsewhere for work, many laid off workers will likely need a different set of skills to compete in the workplace. Community colleges will continue to play an especially critical role in providing those skills for rural and micropolitan communities.

Policy responses to **enhance economic opportunity for workers in micropolitan and rural areas** should consider the following questions:

- What approaches, if any, should North Carolina pursue to encourage commuting from rural and micropolitan areas to high growth areas that have more job opportunities?
- What approaches should North Carolina consider to manage current and future migration from rural/micropolitan communities to metro areas?
- How does the relatively rapid growth in Hispanic population in rural/micropolitan North Carolina affect the preparation of workers for available job and career opportunities?

- What changes in community college curriculum (in particular) should be considered to reflect changes affecting the rural/micropolitan North Carolina's economic base?

5. **Seeking good-paying jobs, more workers must increase their skills by accessing and completing education beyond high school or by earning industry-recognized credentials.**
   Projections suggest that at least 42 percent of new jobs being created during the next decade will require **at minimum** some post-secondary education (many in STEM disciplines) – an increase from the current level of 35 percent. The proportion of newly created jobs requiring education beyond high school may be even higher than this share, as many current employers are seeking candidates who have post-secondary experience (including certifications and degrees) for jobs that did not previously need them.

   While some may currently be seeking these higher-skilled workers because the job pool has more available at the present time, many company representatives argue that these higher-skilled workers are more productive and add greater value to the company's bottom line – and they are willing to pay a wage premium for the added skills going forward.

   Policy responses to **engage education at all levels more actively in the state's future prosperity** should consider the following questions:

   - How should the state's universities, colleges, trade schools, and K-12 education system adapt to the increased need for STEM skills in the workplace and the increased demand for worker skills in areas such as complex problem solving, reading for understanding, oral communication, and teamwork?
   - Should the state consider implementing increased requirements for STEM-related education for all secondary and post-secondary education?
   - Should North Carolina consider approaches to better coordinate industry-recognized credentials with post-secondary or high school curriculum requirements, including the integration of work experience as a requirement to earn some degrees?
   - How can the state engage industry more effectively to ensure that post-secondary and high school graduates have the skills that companies expect from entry level workers?
   - How should the state help citizens to value education more highly to ensure that they are fully prepared for the opportunities that the state's emerging new industries offer?

6. **The recession slowed baby boomer retirements, but the impact is likely to be felt first and greatest in micropolitan and rural areas where more workers are near-retirement age.**
   For many, retirement plans were delayed by the combined lost wealth in stock and home prices that occurred during 2008 and 2009. Experts estimate that these losses may have delayed retirement for many by as much as three to four years. Once the retirement exodus begins, industry labor force demand is expected to increase, creating a potential shortage of experienced workers. It will become particularly critical for all firms with a large share of their workforce near retirement age to develop explicit succession plans, especially for "mission critical" occupations.

With a greater share of its workforce aged 55 and over, a larger proportion of workers are likely to retire in micropolitan and rural areas, leaving potentially gaping holes in the available experience workforce firms located in smaller communities. Small communities and rural areas also have a relatively large share of their older workers who were dislocated from traditional industries (e.g., manufacturing, etc.) that would need significant skill upgrades in order to return to good-paying jobs. This means that a larger share of jobseekers in these rural/micropolitan areas will be comprised of older workers who will need the insights into how to adapt, the motivation to make significant skill investments at a later stage of their career, and help to make the commitment required.

Policy responses to **help employers and communities adapt to the potential impact of large-scale retirements** should consider the following questions:

- How can North Carolina encourage older skilled workers to stay in the workforce longer, especially in rural/micropolitan areas?
- How can North Carolina best help industries in workforce succession planning, especially for "mission critical" occupations?
- What types of incumbent worker training and mentoring programs ought to be available, especially in rural/micropolitan areas, to help prepare workers to take over leadership roles in their companies and industries?
- How should North Carolina address concerns about dislocated older workers with outdated skills who may not be ready for retirement but who also cannot find work in their old careers (especially in rural/micropolitan areas) or may be frustrated by the need to start over late in their career?

7. **High-skill in-migrants recruited to help companies meet their talent requirements are seeking jobs in amenity-rich metropolitan areas.**

The Census Bureau reports that North Carolina attracted more new in-migrants with a four-year degree or higher in 2008-09 than the state's university system graduated. Clearly, these new in-migrants represent a critical source of talent. Some areas of North Carolina – the Research Triangle and Charlotte, in particular – have been more successful in attracting high-skill, high-wage talent than other parts of the state, but North Carolina may need this talent in firms located all over the state. Net in-migration continued at a relatively rapid pace throughout the recession, slowing only slightly as a result of the housing crisis that affected migration elsewhere.

Policy responses to **increase the availability of talent from high-skill in-migrants** should consider the following questions:

- What amenities have made North Carolina such an attraction to high-skilled talent and how can they be better leveraged to enhance areas of the state that might not otherwise attract high-skilled talent?
- How can North Carolina better retain the talent developed at significant expense through its universities to contribute to the state's economic prosperity?

- How can the state use it success in attracting high-skill workers to the Research Triangle and Charlotte areas to leverage in-migrants to the rest of the state, especially rural and micropolitan areas that may be losing their best and brightest talent?

8. **Migration of new workers continued at near pre-recession levels, even among low-skilled workers, despite the limited availability of jobs.**

   Recent Census data suggests that in-migration continues at the same rapid pace as before the recession. Data also suggest that in-migration is bifurcated, with a substantial group of new low-skilled workers complemented by a large number of high-skilled in-migrants. The continued in-migration of low-skilled workers appears to be widely spread across the state and many are taking lower-skill work, particularly in rural/micropolitan areas.

   Policy responses to **help manage worker in-migration amid the limited availability of jobs in the short-term** should consider the following questions:

   - Should the state consider alternative approaches to in-migrant attraction that focus on pro-actively attracting entrepreneurs or individuals who already have STEM-skills to the state or to certain regions of the state?
   - Should the state consider preferential policies designed to encourage migration in industries with in-demand jobs or skill shortages?
   - How do we ensure that low-skilled workers in rural and micropolitan areas gain access to education and training opportunities near their homes or job sites?

9. **Lower-skilled workers accounted for most of the unemployed and required significantly greater social services during the recession.**

   While not a new phenomenon, the unemployment rate among individuals with a baccalaureate degree was less than half the overall unemployment rate during the recession while individuals without a high school degree were twice as likely to be unemployed. Furthermore, the average earnings for a university graduate was about $1.5 million greater (over a 30 year career) than a high school dropout. This difference increased by nearly 50 percent since 2007. For lower-skilled workers, opportunities are far fewer and the wage gap with higher-skilled workers is growing even wider. Help for these vital workers will frequently require significant investment of time in education as well as access to opportunities for training and credentialing.

   Policy responses to **ensure greater employment stability with post-secondary education and adaptable skills** should consider the following questions:

   - How can the state help students and workers better plan for careers and understand the direct correlation between education and economic success for so many?
   - How can the state best reach out to lower-skilled workers and jobseekers to help increase access to opportunities for training and acquiring credentials?

10. **Workers employed in certain industries – e.g., manufacturing, finance, distribution, or construction – were more likely to lose their jobs and to need retraining to find work.**
    A few industries accounted for a significantly higher share of job losses during the past few years. These industries, such as manufacturing, are undergoing significant transformations. While they remain important to the state and could add net new jobs in the future, the workers they require must adapt to new business processes, technologies, and market realities. In general, workers employed in these industries increasingly need STEM-related knowledge and skills, increased communication skills, and entrepreneurial skills. Preparation of workers for opportunities in these targeted industry sectors will likely require new efforts from post-secondary education at all levels – university, community college, and industry-driven credentialing. Furthermore, the needs for each sector are evolving rapidly and require on-going insights from industry.

    Policy responses to **prepare workers in certain key sectors for the likelihood of job loss and the need for transition** should consider the following questions:

    - How should the state target its resources, if at all, to specific "at-risk" industry sector targets to help the companies prepare themselves and their workers for the future?
    - How should the state approach efforts to focus help for emerging growth industry sector targets in preparing workers for those jobs?
    - What role should the state play in helping companies in preparing low-skilled workers for the increased skill demands resulting from improving business processes, adopting new technologies, making new capital investments, and/or pursuing new market opportunities?
    - How do we ensure that workers enter “mission critical” careers in industries that require fewer overall workers or that may be perceived as declining?

## Final thoughts

These trends suggest that the recession served to accelerate many of the economic and related workforce trends identified before the recession as challenges facing North Carolina, severely impacting many workers. However, the recession has highlighted a few new trends, including the increased speed of the structural economic transformation that is occurring and how that transformation must occur to ensure that North Carolina can continue to compete in the global marketplace. Addressing any of the workforce challenges noted in the above issues in isolation will not likely fundamentally shift the trajectory of the state's workforce. Only dealing with the issues holistically, and in collaboration with the state's educational and economic development systems, will do so.

North Carolina’s educational system is a critical partner, as it represents probably the single most important factor in ensuring the state has the best available supply of workers. A high school diploma alone will no longer offer even a remote pathway for future success. For most, the pre-requisites to achieve middle class status is the “new middle” job’s post-secondary credential – often a two-year associate degree at minimum –sometimes combined with an industry credential and/or a four year degree. In other words, the past methods of simply connecting a low-skilled worker with another job for which they are deemed qualified, will become increasingly antiquated.

The system will need to develop a new primary mission that looks at creating truly career-ready, skilled individuals who can compete for higher wage jobs. The current focus on short-term impacts related to job placement will need to be replaced with a long-term outlook that focuses on education and skill achievements such as academic degrees, industry-recognized credentials, and duly measured skill competencies. Furthermore, North Carolina has succeeded, in part, because the state has been able to attract highly educated and motivated new workers to the state, but this strategy must be complemented with a "homegrown workforce" strategy, aimed at building a truly competitive workforce advantage.

The state's workforce strategy must also not ignore the demand side of the workforce: creating a hospitable environment for hiring firms, and integrating the needs of economic development goals into this process. The challenges facing the state's workforce, especially those living in rural/micropolitan areas or in traditional manufacturing centers, cannot be fully addressed without integrating job creation activities as a key priority. Economic diversification, moving a regional economy away from reliance on a single industry, is one important step in addressing economic development, and a particular challenge for the state's rural and micropolitan locales. Aligning such economic development plans and initiatives with a workforce strategy is critical to meet the needs of new, emerging, and growing industries.

In this regard, despite its recent employment declines, manufacturing will likely remain as North Carolina's economic engine, though decreasingly so as a job generator as the years unfold. Rural and micropolitan communities that have relied on manufacturing as a source of middle class income - likewise, other communities that relied solely on other industries such as agriculture, tourism, finance, and even the military - should be wary of the potential ill effects that could occur as a result of significant changes in consumer behavior, government spending, or other external economic forces. Economic development goals need to recognize such risks, helping communities achieve greater stability by expanding the economic base and finding new engines of growth that ultimately lead to long-term job creation.

Those sectors that are expected to add jobs share a common demand for increasingly higher-skills, and education will remain a key factor in predicting worker success. The "new middle" job that requires a post-secondary or industry credential will be the mainstay of emerging new and rebounding traditional industries. To prepare for these jobs will require the workforce system to re-examine its policies and objectives, elevating the goal of creating truly career-ready individuals to ensure North Carolina has an industry-recognized, work-ready labor force.

In describing the key themes impacting North Carolina, a starting point has been provided for policy makers to discuss and evaluate strategic options to address North Carolina's workforce challenges. Such policy options should focus around two major goals: (1) enhancing workforce development efforts in response to industry demand, and (2) deepening the supply of workers necessary to meet the state's future economic and workforce needs. These high level goals should provide a framework for action by local and state government, education, labor, economic development, businesses and community stakeholders.

## Appendices

**Appendix A:** About the employment data and forecasts

**Appendix B:** Fastest growing and declining industries

**Appendix C:** NC occupations by educational band (2010-2020)

**Appendix Ci:** Workforce issues in select targeted clusters

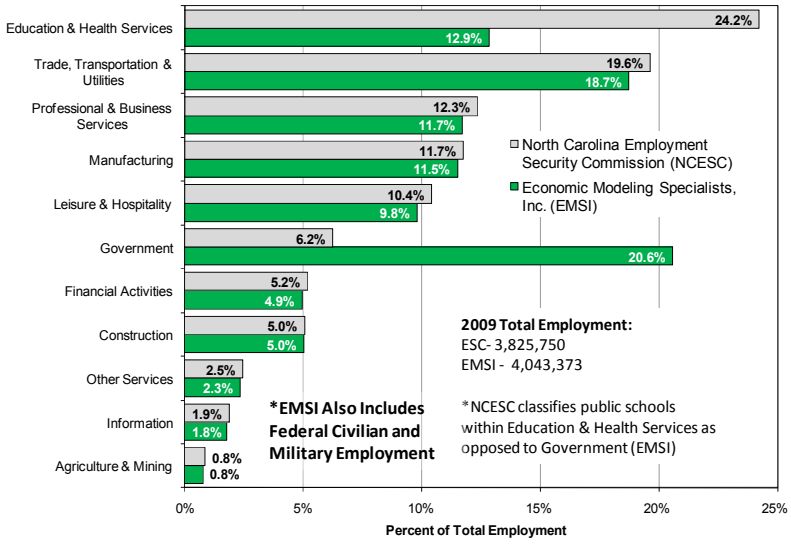
**Appendix D:** Defining Middle Jobs in Sub-state Geographies—Metro, Micro, and Rural Areas in 2010

## Appendix A: About the Employment Data and Forecasts

These data are primarily drawn from Economic Modeling Specialists Inc. (EMSI), which provides past industry and occupational employment. It should be noted that the employment data provided here represent "covered" employment. As a result, it includes those workers covered by the unemployment insurance program. Consequently, it defines employment in a manner similar to the North Carolina Employment Security Commission or the U.S. Bureau of Labor Statistics. It does not include sole proprietorships and many farmers, which is the method used by the U.S. Bureau of Economic Analysis to define employment ("complete employment").[1]

The EMSI data were from their 2nd Quarter of 2010 covered employment data series. These data rely heavily on the quarterly census of employment and wages produced by NCESC. In most instances the difference between the two datasets are not significant, but there are some important differences that need to be recognized. Figure A shows the differences between EMSI and NCESC for 2009. Two major differences stand out. First, NCESC has a lot more employment within the education and health services sector. This is because NCESC classifies public schools within the education and health services sector, and EMSI includes the public schools within the government sector. In this regard, EMSI resembles the U.S. Bureau of Economic Analysis classification of employment. The other significant difference between EMSI and NCESC occurs within the government sector, where EMSI has a much larger proportion of employment than does NCESC. This is due not only to the inclusion of the public schools, but EMSI also incorporates federal and military employment, which in North Carolina accounts for a substantial amount of employment. This is another instance where EMSI's data resembles the US BEA classification of employment.

**Figure A: EMSI and NCESC North Carolina data by economic sector**




Another important difference between EMSI and NCESC relates to its forecasts. Given that the two organizations use different forecasting models, it should not be a surprise that their forecasts differ. NCESC's most recent forecasts show that North Carolina's employment will grow at a rate of 0.9 percent annually between 2008 and 2018. EMSI's forecast for the same 2008 to 2018 time period offers a somewhat more conservative forecast and predicts annual growth of 0.6 percent annually. The EMSI

[1] The 2007 report used complete employment which is the definition similar to the U.S. BEA definition.

forecasts used in this report (2010 to 2020) use somewhat more contemporary data and consequently capture more of the recession, which started in earnest in 2008. Given that the recession has ended (technically, at least), EMSI's 2010 to 2020 forecast is more optimistic than the 2008 to 2018 forecast. It projects North Carolina to grow 1.3 percent annually. It is important to remember, however, no projection or forecast will be completely accurate or completely the same as those produced by other models. Projections merely provide some kind of best guess estimate of what will happen in the future, based upon what has happened in the past and assumptions about the future. Given that both the EMSI and NCESC forecasts for 2008 to 2018 were similar, the conclusions drawn about the state's overall economic conditions should hold whichever the dataset; however, in some instances, the forecasts may differ on the rate and sometimes even the direction of anticipated industry or occupational employment growth. In those cases, the user should place much greater caution in accepting the conclusions drawn.

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in North Carolina, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 32,575 | $39,329 |
| 62211 | General Medical & Surgical Hospitals | 16,970 | $47,337 |
| 72221 | Limited-Service Eating Places | 16,369 | $12,642 |
| 92000 | State government | 14,989 | $41,204 |
| 72211 | Full-Service Restaurants | 13,527 | $13,801 |
| 91200 | Federal government, military | 11,660 | $51,061 |
| 45291 | Warehouse Clubs & Supercenters | 10,747 | $24,621 |
| 55111 | Management of Companies & Enterprises | 10,096 | $77,554 |
| 62412 | Services for the Elderly & Persons with Disabilities | 6,963 | $16,347 |
| 42512 | Wholesale Trade Agents & Brokers | 6,631 | $75,114 |
| 62111 | Offices of Physicians | 6,334 | $71,675 |
| 91100 | Federal government, civilian, except postal service | 5,619 | $61,261 |
| 54151 | Computer Systems Design & Related Services | 5,148 | $74,874 |
| 62419 | Other Individual & Family Services | 4,959 | $27,915 |
| 62331 | Community Care Facilities for the Elderly | 4,870 | $20,339 |
| 54161 | Management Consulting Services | 4,805 | $67,801 |
| 52211 | Commercial Banking | 4,718 | $67,654 |
| 71394 | Fitness & Recreational Sports Centers | 4,535 | $12,518 |
| 56142 | Telephone Call Centers | 3,919 | $22,223 |
| 54171 | Research & Development in the Physical, Engineering, & Life Sciences | 3,733 | $87,367 |

*Source: EMSI*

**Fastest Growing Industries in NC's Metropolitan Areas, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 24,378 | $40,894 |
| 62211 | General Medical & Surgical Hospitals | 15,965 | $48,935 |
| 72221 | Limited-Service Eating Places | 13,170 | $13,085 |
| 92000 | State government | 11,640 | $43,262 |
| 72211 | Full-Service Restaurants | 11,317 | $14,191 |
| 91200 | Federal government, military | 10,889 | $52,602 |
| 45291 | Warehouse Clubs & Supercenters | 8,779 | $24,575 |
| 62111 | Offices of Physicians | 5,935 | $74,105 |
| 42512 | Wholesale Trade Agents & Brokers | 5,823 | $79,128 |
| 55111 | Management of Companies & Enterprises | 5,779 | $81,537 |
| 91100 | Federal government, civilian, except postal service | 4,915 | $60,049 |
| 71394 | Fitness & Recreational Sports Centers | 4,714 | $12,523 |
| 54161 | Management Consulting Services | 4,589 | $70,039 |
| 62412 | Services for the Elderly & Persons with Disabilities | 4,567 | $16,943 |
| 52211 | Commercial Banking | 4,242 | $73,389 |
| 62419 | Other Individual & Family Services | 4,148 | $28,881 |
| 54151 | Computer Systems Design & Related Services | 4,128 | $79,158 |
| 56142 | Telephone Call Centers | 3,872 | $22,191 |
| 54171 | Research & Development in the Physical, Engineering, & Life Sciences | 3,563 | $87,922 |
| 62331 | Community Care Facilities for the Elderly | 3,500 | $20,995 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in NC's Micropolitan Areas, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 6,178 | $36,437 |
| 55111 | Management of Companies & Enterprises | 2,751 | $65,167 |
| 72221 | Limited-Service Eating Places | 2,460 | $11,402 |
| 72211 | Full-Service Restaurants | 2,202 | $12,694 |
| 92000 | State government | 2,071 | $34,920 |
| 62412 | Services for the Elderly & Persons with Disabilities | 2,014 | $15,038 |
| 45291 | Warehouse Clubs & Supercenters | 2,001 | $25,340 |
| 32541 | Pharmaceutical & Medicine Manufacturing | 1,854 | $73,758 |
| 31161 | Animal Slaughtering & Processing | 1,494 | $23,298 |
| 49311 | General Warehousing & Storage | 1,154 | $33,332 |
| 54151 | Computer Systems Design & Related Services | 1,017 | $49,614 |
| 42512 | Wholesale Trade Agents & Brokers | 831 | $58,412 |
| 62111 | Offices of Physicians | 701 | $64,567 |
| 91200 | Federal government, military | 626 | $41,908 |
| 62142 | Outpatient Mental Health & Substance Abuse Centers | 605 | $25,080 |
| 61111 | Elementary & Secondary Schools | 570 | $25,177 |
| 62134 | Offices of Physical, Occupational & Speech Therapists, & Audiologists | 555 | $39,101 |
| 62331 | Community Care Facilities for the Elderly | 547 | $19,175 |
| 62121 | Offices of Dentists | 513 | $50,361 |
| 52211 | Commercial Banking | 510 | $40,072 |

*Source: EMSI*

**Fastest Growing Industries in NC's Rural Areas, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 2,019 | $34,072 |
| 55111 | Management of Companies & Enterprises | 1,566 | $46,659 |
| 62211 | General Medical & Surgical Hospitals | 1,303 | $39,067 |
| 92000 | State government | 1,277 | $36,058 |
| 31161 | Animal Slaughtering & Processing | 980 | $28,437 |
| 62331 | Community Care Facilities for the Elderly | 824 | $17,831 |
| 72221 | Limited-Service Eating Places | 741 | $11,101 |
| 44411 | Home Centers | 472 | $23,537 |
| 62161 | Home Health Care Services | 468 | $15,311 |
| 32622 | Rubber & Plastics Hoses & Belting Manufacturing | 427 | $39,022 |
| 62419 | Other Individual & Family Services | 391 | $24,851 |
| 62412 | Services for the Elderly & Persons with Disabilities | 382 | $15,294 |
| 33441 | Semiconductor & Other Electronic Component Manufacturing | 366 | $45,460 |
| 62149 | Other Outpatient Care Centers | 360 | $35,275 |
| 71391 | Golf Courses & Country Clubs | 341 | $25,943 |
| 56111 | Office Administrative Services | 315 | $41,427 |
| 56132 | Temporary Help Services | 250 | $19,295 |
| 54121 | Accounting, Tax Preparation, Bookkeeping, & Payroll Services | 248 | $29,275 |
| 56173 | Landscaping Services | 244 | $23,591 |
| 54161 | Management Consulting Services | 239 | $36,822 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in Charlotte Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 15,565 | $42,652 |
| 55111 | Management of Companies & Enterprises | 7,890 | $91,776 |
| 72221 | Limited-Service Eating Places | 5,079 | $14,508 |
| 72211 | Full-Service Restaurants | 4,228 | $14,442 |
| 45291 | Warehouse Clubs & Supercenters | 3,415 | $25,939 |
| 54161 | Management Consulting Services | 3,267 | $74,678 |
| 52211 | Commercial Banking | 3,006 | $86,829 |
| 71394 | Fitness & Recreational Sports Centers | 2,755 | $12,196 |
| 42512 | Wholesale Trade Agents & Brokers | 2,704 | $75,665 |
| 92000 | State government | 2,409 | $36,243 |
| 62412 | Services for the Elderly & Persons with Disabilities | 2,307 | $15,957 |
| 62111 | Offices of Physicians | 1,980 | $81,793 |
| 62211 | General Medical & Surgical Hospitals | 1,565 | $44,523 |
| 56172 | Janitorial Services | 1,427 | $17,548 |
| 61111 | Elementary & Secondary Schools | 1,402 | $33,765 |
| 61131 | Colleges, Universities, & Professional Schools | 1,185 | $39,248 |
| 54151 | Computer Systems Design & Related Services | 1,121 | $76,169 |
| 56111 | Office Administrative Services | 1,120 | $89,261 |
| 71121 | Spectator Sports | 1,096 | $109,206 |
| 56142 | Telephone Call Centers | 1,084 | $24,201 |

*Source: EMSI*

**Fastest Growing Industries in Advantage West Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 2,507 | $35,355 |
| 72221 | Limited-Service Eating Places | 1,453 | $11,775 |
| 92000 | State government | 1,308 | $36,393 |
| 62211 | General Medical & Surgical Hospitals | 1,141 | $41,583 |
| 62331 | Community Care Facilities for the Elderly | 1,047 | $19,826 |
| 54151 | Computer Systems Design & Related Services | 915 | $35,013 |
| 44511 | Supermarkets & Other Grocery (except Convenience) Stores | 850 | $17,563 |
| 72211 | Full-Service Restaurants | 806 | $13,175 |
| 62161 | Home Health Care Services | 805 | $22,888 |
| 49311 | General Warehousing & Storage | 569 | $34,330 |
| 45299 | All Other General Merchandise Stores | 543 | $12,797 |
| 71391 | Golf Courses & Country Clubs | 478 | $25,665 |
| 32622 | Rubber & Plastics Hoses & Belting Manufacturing | 420 | $37,303 |
| 61111 | Elementary & Secondary Schools | 386 | $28,371 |
| 62134 | Offices of Physical, Occupational & Speech Therapists, & Audiologists | 369 | $34,435 |
| 56142 | Telephone Call Centers | 358 | $18,014 |
| 62412 | Services for the Elderly & Persons with Disabilities | 339 | $16,371 |
| 56161 | Investigation, Guard, & Armored Car Services | 331 | $17,056 |
| 62142 | Outpatient Mental Health & Substance Abuse Centers | 316 | $22,148 |
| 42441 | General Line Grocery Merchant Wholesalers | 300 | $44,950 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in Piedmont Triad Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 3,588 | $37,986 |
| 62211 | General Medical & Surgical Hospitals | 2,642 | $43,580 |
| 72221 | Limited-Service Eating Places | 2,134 | $12,154 |
| 72211 | Full-Service Restaurants | 1,964 | $13,304 |
| 62111 | Offices of Physicians | 1,838 | $72,689 |
| 45291 | Warehouse Clubs & Supercenters | 1,768 | $26,138 |
| 56133 | Professional Employer Organizations | 1,680 | $26,463 |
| 92000 | State government | 1,530 | $37,204 |
| 55111 | Management of Companies & Enterprises | 1,323 | $65,582 |
| 62412 | Services for the Elderly & Persons with Disabilities | 1,230 | $14,730 |
| 61131 | Colleges, Universities, & Professional Schools | 1,193 | $58,024 |
| 32619 | Other Plastics Product Manufacturing | 1,184 | $34,772 |
| 62161 | Home Health Care Services | 985 | $24,843 |
| 62151 | Medical & Diagnostic Laboratories | 923 | $45,163 |
| 62331 | Community Care Facilities for the Elderly | 919 | $20,550 |
| 33411 | Computer & Peripheral Equipment Manufacturing | 912 | $40,405 |
| 45411 | Electronic Shopping & Mail-Order Houses | 860 | $31,282 |
| 31221 | Tobacco Stemming & Redrying | 677 | $50,904 |
| 45299 | All Other General Merchandise Stores | 596 | $12,798 |
| 62149 | Other Outpatient Care Centers | 539 | $40,856 |

*Source: EMSI*

**Fastest Growing Industries in Research Triangle Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 62211 | General Medical & Surgical Hospitals | 11,421 | $54,068 |
| 92000 | State government | 6,305 | $46,834 |
| 72221 | Limited-Service Eating Places | 4,708 | $13,015 |
| 72211 | Full-Service Restaurants | 3,508 | $14,706 |
| 93000 | Local government | 3,471 | $39,905 |
| 42512 | Wholesale Trade Agents & Brokers | 3,345 | $92,644 |
| 45291 | Warehouse Clubs & Supercenters | 2,824 | $22,045 |
| 54171 | Research & Development in the Physical, Engineering, & Life Sciences | 2,708 | $89,892 |
| 71394 | Fitness & Recreational Sports Centers | 1,938 | $12,700 |
| 54151 | Computer Systems Design & Related Services | 1,875 | $85,728 |
| 62111 | Offices of Physicians | 1,674 | $72,137 |
| 62412 | Services for the Elderly & Persons with Disabilities | 1,454 | $16,570 |
| 62331 | Community Care Facilities for the Elderly | 1,453 | $21,794 |
| 32541 | Pharmaceutical & Medicine Manufacturing | 1,428 | $102,209 |
| 62419 | Other Individual & Family Services | 1,414 | $28,220 |
| 56142 | Telephone Call Centers | 1,395 | $21,575 |
| 52211 | Commercial Banking | 1,311 | $59,961 |
| 62441 | Child Day Care Services | 1,253 | $19,489 |
| 56172 | Janitorial Services | 1,206 | $15,910 |
| 91100 | Federal government, civilian, except postal service | 1,122 | $65,567 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in NC's Northeast Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 913 | $35,702 |
| 72221 | Limited-Service Eating Places | 685 | $10,956 |
| 45291 | Warehouse Clubs & Supercenters | 618 | $24,661 |
| 92000 | State government | 485 | $34,563 |
| 62211 | General Medical & Surgical Hospitals | 421 | $40,454 |
| 62419 | Other Individual & Family Services | 348 | $24,043 |
| 61169 | All Other Schools & Instruction | 339 | $24,864 |
| 56133 | Professional Employer Organizations | 312 | $20,226 |
| 56111 | Office Administrative Services | 274 | $61,630 |
| 32599 | All Other Chemical Product & Preparation Manufacturing | 259 | $74,873 |
| 42512 | Wholesale Trade Agents & Brokers | 240 | $40,666 |
| 72111 | Hotels (except Casino Hotels) & Motels | 235 | $16,246 |
| 62142 | Outpatient Mental Health & Substance Abuse Centers | 228 | N//A |
| 23731 | Highway, Street, & Bridge Construction | 223 | $64,973 |
| 55111 | Management of Companies & Enterprises | 208 | $42,960 |
| 54161 | Management Consulting Services | 200 | $46,845 |
| 48819 | Other Support Activities for Air Transportation | 178 | $46,012 |
| 42472 | Petroleum & Petroleum Products Merchant Wholesalers (except Bulk Stations & Terminals) | 173 | $21,447 |
| 32541 | Pharmaceutical & Medicine Manufacturing | 168 | $73,487 |
| 44812 | Women's Clothing Stores | 161 | $13,437 |

*Source: EMSI*

**Fastest Growing Industries in NC's Eastern Region Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 91200 | Federal government, military | 5,148 | $49,318 |
| 93000 | Local government | 2,994 | $38,583 |
| 92000 | State government | 1,664 | $39,191 |
| 55111 | Management of Companies & Enterprises | 1,646 | $57,713 |
| 72221 | Limited-Service Eating Places | 1,493 | $11,359 |
| 72211 | Full-Service Restaurants | 1,486 | $12,303 |
| 62419 | Other Individual & Family Services | 1,467 | $24,717 |
| 31161 | Animal Slaughtering & Processing | 1,387 | $25,688 |
| 45291 | Warehouse Clubs & Supercenters | 1,028 | $24,523 |
| 91100 | Federal government, civilian, except postal service | 1,006 | $51,806 |
| 42345 | Medical, Dental, & Hospital Equipment & Supplies Merchant Wholesalers | 932 | $51,729 |
| 56142 | Telephone Call Centers | 884 | $20,634 |
| 45411 | Electronic Shopping & Mail-Order Houses | 872 | $23,644 |
| 62111 | Offices of Physicians | 779 | $63,643 |
| 33361 | Engine, Turbine, & Power Transmission Equipment Manufacturing | 755 | $46,495 |
| 51821 | Data Processing, Hosting, & Related Services | 693 | $47,851 |
| 56111 | Office Administrative Services | 618 | $44,244 |
| 61169 | All Other Schools & Instruction | 526 | $13,037 |
| 31211 | Soft Drink & Ice Manufacturing | 507 | $38,322 |
| 44411 | Home Centers | 472 | $25,156 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in NC's Southeast Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 91200 | Federal government, military | 4,516 | $61,709 |
| 93000 | Local government | 3,538 | $38,604 |
| 31161 | Animal Slaughtering & Processing | 2,439 | $27,192 |
| 91100 | Federal government, civilian, except postal service | 2,429 | $58,339 |
| 72211 | Full-Service Restaurants | 1,890 | $13,215 |
| 62161 | Home Health Care Services | 1,547 | $18,202 |
| 92000 | State government | 1,287 | $36,906 |
| 45291 | Warehouse Clubs & Supercenters | 1,200 | $24,089 |
| 62412 | Services for the Elderly & Persons with Disabilities | 1,182 | $19,078 |
| 56172 | Janitorial Services | 1,028 | $17,067 |
| 23832 | Painting & Wall Covering Contractors | 987 | $63,856 |
| 72221 | Limited-Service Eating Places | 817 | $11,204 |
| 54171 | Research & Development in the Physical, Engineering, & Life Sciences | 753 | $77,593 |
| 33641 | Aerospace Product & Parts Manufacturing | 748 | $89,660 |
| 62142 | Outpatient Mental Health & Substance Abuse Centers | 741 | $24,560 |
| 62441 | Child Day Care Services | 633 | $15,397 |
| 54161 | Management Consulting Services | 621 | $49,838 |
| 54151 | Computer Systems Design & Related Services | 605 | $62,715 |
| 52211 | Commercial Banking | 530 | $42,428 |
| 56161 | Investigation, Guard, & Armored Car Services | 506 | $32,333 |

*Source: EMSI*

**Fastest Growing Industries in North Carolina, 2010-20**

| NAICS | Industry Name | Change Emp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 40,426 | $39,329 |
| 62111 | Offices of Physicians | 33,253 | $71,675 |
| 56132 | Temporary Help Services | 25,128 | $24,355 |
| 54161 | Management Consulting Services | 24,967 | $67,801 |
| 92000 | State government | 24,338 | $41,204 |
| 45291 | Warehouse Clubs & Supercenters | 23,811 | $24,621 |
| 62211 | General Medical & Surgical Hospitals | 22,958 | $47,337 |
| 72221 | Limited-Service Eating Places | 21,348 | $12,642 |
| 62161 | Home Health Care Services | 21,200 | $20,575 |
| 52211 | Commercial Banking | 16,058 | $67,654 |
| 62412 | Services for the Elderly & Persons with Disabilities | 14,513 | $16,347 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 14,061 | $39,357 |
| 42512 | Wholesale Trade Agents & Brokers | 13,165 | $75,114 |
| 54151 | Computer Systems Design & Related Services | 11,578 | $74,874 |
| 23611 | Residential Building Construction | 10,623 | $40,352 |
| 72211 | Full-Service Restaurants | 10,547 | $13,801 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | 10,537 | $38,758 |
| 62121 | Offices of Dentists | 10,461 | $52,874 |
| 62311 | Nursing Care Facilities | 9,917 | $25,764 |
| 56173 | Landscaping Services | 8,533 | $25,197 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in NC's Metropolitan Areas, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 29,171 | $40,894 |
| 62111 | Offices of Physicians | 27,601 | $74,105 |
| 54161 | Management Consulting Services | 22,474 | $70,039 |
| 56132 | Temporary Help Services | 20,763 | $25,488 |
| 62211 | General Medical & Surgical Hospitals | 19,405 | $48,935 |
| 92000 | State government | 18,733 | $43,262 |
| 45291 | Warehouse Clubs & Supercenters | 17,700 | $24,575 |
| 72221 | Limited-Service Eating Places | 16,626 | $13,085 |
| 52211 | Commercial Banking | 13,914 | $73,389 |
| 62161 | Home Health Care Services | 12,875 | $23,062 |
| 42512 | Wholesale Trade Agents & Brokers | 11,755 | $79,128 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 10,601 | $41,042 |
| 62412 | Services for the Elderly & Persons with Disabilities | 10,588 | $16,943 |
| 54151 | Computer Systems Design & Related Services | 9,407 | $79,158 |
| 72211 | Full-Service Restaurants | 9,357 | $14,191 |
| 62121 | Offices of Dentists | 8,637 | $53,787 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | 8,594 | $40,227 |
| 54171 | Research & Development in the Physical, Engineering, & Life Sciences | 8,274 | $87,922 |
| | | | |
| 56173 | Landscaping Services | 6,820 | $25,955 |
| 62311 | Nursing Care Facilities | 6,816 | $26,437 |

*Source: EMSI*

**Fastest Growing Industries in NC's Micropolitan Areas, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 7,897 | $36,437 |
| 45291 | Warehouse Clubs & Supercenters | 5,320 | $25,340 |
| 62111 | Offices of Physicians | 5,099 | $64,567 |
| 62161 | Home Health Care Services | 4,660 | $18,036 |
| 72221 | Limited-Service Eating Places | 3,666 | $11,402 |
| 92000 | State government | 3,307 | $34,920 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 2,962 | $34,543 |
| 62412 | Services for the Elderly & Persons with Disabilities | 2,955 | $15,038 |
| 56132 | Temporary Help Services | 2,944 | $18,167 |
| 62311 | Nursing Care Facilities | 2,744 | $24,605 |
| 23611 | Residential Building Construction | 2,539 | $32,329 |
| 62211 | General Medical & Surgical Hospitals | 2,044 | $43,045 |
| 52211 | Commercial Banking | 2,008 | $40,072 |
| | | | |
| 49311 | General Warehousing & Storage | 1,924 | $33,332 |
| 31161 | Animal Slaughtering & Processing | 1,823 | $23,298 |
| 32541 | Pharmaceutical & Medicine MFG | 1,749 | $73,758 |
| 91100 | Federal government, civilian, except postal service | 1,671 | $64,772 |
| 44611 | Pharmacies & Drug Stores | 1,633 | $33,140 |
| 54151 | Computer Systems Design & Related Services | 1,598 | $49,614 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | 1,594 | $34,468 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in NC's Rural Areas, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 62161 | Home Health Care Services | 3,664 | $15,311 |
| 93000 | Local government | 3,358 | $34,072 |
| 92000 | State government | 2,299 | $36,058 |
| 62211 | General Medical & Surgical Hospitals | 1,509 | $39,067 |
| 56132 | Temporary Help Services | 1,420 | $19,295 |
| 23611 | Residential Building Construction | 1,309 | $31,294 |
| 72221 | Limited-Service Eating Places | 1,055 | $11,101 |
| 62412 | Services for the Elderly & Persons with Disabilities | 970 | $15,294 |
| 54161 | Management Consulting Services | 959 | $36,822 |
| 62149 | Other Outpatient Care Centers | 814 | $35,275 |
| 45291 | Warehouse Clubs & Supercenters | 789 | $22,086 |
| 23891 | Site Preparation Contractors | 742 | $30,509 |
| 54151 | Computer Systems Design & Related Services | 574 | $36,460 |
| 62111 | Offices of Physicians | 554 | $54,494 |
| 56172 | Janitorial Services | 523 | $19,403 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 497 | $30,595 |
| 56173 | Landscaping Services | 491 | $23,591 |
| 72111 | Hotels (except Casino Hotels) & Motels | 476 | $16,433 |
| 71391 | Golf Courses & Country Clubs | 475 | $25,943 |
| 55111 | Management of Companies & Enterprises | 474 | $46,659 |

*Source: EMSI*

**Fastest Growing Industries in Charlotte Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 15,132 | $42,652 |
| 54161 | Management Consulting Services | 11,541 | $74,678 |
| 52211 | Commercial Banking | 9,473 | $86,829 |
| 62111 | Offices of Physicians | 8,332 | $81,793 |
| 45291 | Warehouse Clubs & Supercenters | 7,163 | $25,939 |
| 56132 | Temporary Help Services | 6,242 | $27,528 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 4,593 | $43,034 |
| 62412 | Services for the Elderly & Persons with Disabilities | 4,123 | $15,957 |
| 72221 | Limited-Service Eating Places | 3,977 | $14,508 |
| 42512 | Wholesale Trade Agents & Brokers | 3,705 | $75,665 |
| 62211 | General Medical & Surgical Hospitals | 3,383 | $44,523 |
| 62311 | Nursing Care Facilities | 3,003 | $26,424 |
| 62121 | Offices of Dentists | 2,933 | $53,414 |
| 92000 | State government | 2,861 | $36,243 |
| 71394 | Fitness & Recreational Sports Centers | 2,828 | $12,196 |
| 56173 | Landscaping Services | 2,755 | $26,258 |
| 51821 | Data Processing, Hosting, & Related Services | 2,481 | $83,355 |
| 61131 | Colleges, Universities, & Professional Schools | 2,474 | $39,248 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | 2,410 | $41,396 |
| 61111 | Elementary & Secondary Schools | 2,405 | $33,765 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in Advantage West Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 4,608 | $35,355 |
| 92000 | State government | 3,209 | $36,393 |
| 62161 | Home Health Care Services | 2,871 | $22,888 |
| 62111 | Offices of Physicians | 2,544 | $67,750 |
| 23611 | Residential Building Construction | 2,483 | $32,309 |
| 72221 | Limited-Service Eating Places | 2,391 | $11,775 |
| 62211 | General Medical & Surgical Hospitals | 2,387 | $41,583 |
| | | | |
| 54161 | Management Consulting Services | 1,690 | $41,417 |
| 62412 | Services for the Elderly & Persons with Disabilities | 1,642 | $16,371 |
| 62311 | Nursing Care Facilities | 1,635 | $24,835 |
| 72211 | Full-Service Restaurants | 1,265 | $13,175 |
| 54151 | Computer Systems Design & Related Services | 1,263 | $35,013 |
| 56132 | Temporary Help Services | 1,256 | $21,472 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 1,096 | $34,273 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | 1,094 | $34,699 |
| 44611 | Pharmacies & Drug Stores | 1,002 | $34,049 |
| 45291 | Warehouse Clubs & Supercenters | 941 | $25,041 |
| 62121 | Offices of Dentists | 934 | $47,498 |
| 56173 | Landscaping Services | 932 | $22,837 |
| 23891 | Site Preparation Contractors | 903 | $30,272 |

*Source: EMSI*

**Fastest Growing Industries in Piedmont Triad Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 56132 | Temporary Help Services | 9,737 | $20,102 |
| 62111 | Offices of Physicians | 7,446 | $72,689 |
| 62211 | General Medical & Surgical Hospitals | 4,869 | $43,580 |
| 62161 | Home Health Care Services | 4,691 | $24,843 |
| 93000 | Local government | 4,123 | $37,986 |
| 72221 | Limited-Service Eating Places | 4,100 | $12,154 |
| 45291 | Warehouse Clubs & Supercenters | 4,094 | $26,138 |
| 54161 | Management Consulting Services | 3,268 | $63,874 |
| 61131 | Colleges, Universities, & Professional Schools | 3,024 | $58,024 |
| 62151 | Medical & Diagnostic Laboratories | 2,498 | $45,163 |
| 72211 | Full-Service Restaurants | 2,366 | $13,304 |
| 62412 | Services for the Elderly & Persons with Disabilities | 2,190 | $14,730 |
| 52211 | Commercial Banking | 2,117 | $55,373 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 1,987 | $39,065 |
| 92000 | State government | 1,813 | $37,204 |
| 31323 | Nonwoven Fabric Mills | 1,676 | $44,973 |
| 62311 | Nursing Care Facilities | 1,644 | $25,999 |
| 62121 | Offices of Dentists | 1,524 | $55,471 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | 1,488 | $37,601 |
| 54111 | Offices of Lawyers | 1,340 | $54,080 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in Research Triangle Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 62211 | General Medical & Surgical Hospitals | 11,820 | $54,068 |
| 92000 | State government | 11,566 | $46,834 |
| 93000 | Local government | 7,277 | $39,905 |
| 62111 | Offices of Physicians | 6,765 | $72,137 |
| 42512 | Wholesale Trade Agents & Brokers | 6,732 | $92,644 |
| 54171 | Research & Development in the Physical, Engineering, & Life Sciences | 5,906 | $89,892 |
| 54151 | Computer Systems Design & Related Services | 5,589 | $85,728 |
| 45291 | Warehouse Clubs & Supercenters | 4,753 | $22,045 |
| 72221 | Limited-Service Eating Places | 4,688 | $13,015 |
| 54161 | Management Consulting Services | 4,463 | $79,097 |
| 56131 | Employment Placement Agencies & Executive Search Services | 4,247 | $47,994 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | 3,642 | $41,773 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 3,439 | $41,791 |
| 23611 | Residential Building Construction | 3,104 | $41,648 |
| 56173 | Landscaping Services | 3,043 | $27,119 |
| 51121 | Software Publishers | 2,780 | $89,770 |
| 62412 | Services for the Elderly & Persons with Disabilities | 2,761 | $16,570 |
| 62161 | Home Health Care Services | 2,734 | $19,844 |
| 62121 | Offices of Dentists | 2,650 | $54,733 |
| 33422 | Radio & Television Broadcasting & Wireless Communications eqpt MFG | 2,615 | $111,879 |

*Source: EMSI*

**Fastest Growing Industries in NC's Northeast Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 62161 | Home Health Care Services | 2,437 | $12,123 |
| 93000 | Local government | 1,553 | $35,702 |
| 72221 | Limited-Service Eating Places | 1,461 | $10,956 |
| 92000 | State government | 852 | $34,563 |
| 62111 | Offices of Physicians | 801 | $53,028 |
| 45291 | Warehouse Clubs & Supercenters | 669 | $24,661 |
| 48819 | Other Support Activities for Air Transportation | 563 | $46,012 |
| 53121 | Offices of Real Estate Agents & Brokers | 548 | $23,199 |
| 42512 | Wholesale Trade Agents & Brokers | 529 | $40,666 |
| 54161 | Management Consulting Services | 508 | $46,845 |
| 62211 | General Medical & Surgical Hospitals | 466 | $40,454 |
| 62149 | Other Outpatient Care Centers | 443 | $37,161 |
| 62412 | Services for the Elderly & Persons with Disabilities | 408 | $15,159 |
| 72211 | Full-Service Restaurants | 350 | $14,432 |
| 56132 | Temporary Help Services | 349 | $18,964 |
| 52211 | Commercial Banking | 340 | $41,375 |
| 23611 | Residential Building Construction | 310 | $39,440 |
| 48841 | Motor Vehicle Towing | 291 | $18,561 |
| 62121 | Offices of Dentists | 283 | $45,982 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 274 | $33,454 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Growing Industries in NC's Eastern Region Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 56132 | Temporary Help Services | 4,168 | $19,193 |
| 62111 | Offices of Physicians | 3,351 | $63,643 |
| 45291 | Warehouse Clubs & Supercenters | 3,067 | $24,523 |
| 72221 | Limited-Service Eating Places | 2,534 | $11,359 |
| 91100 | Federal government, civilian, except postal service | 2,390 | $51,806 |
| 93000 | Local government | 2,354 | $38,583 |
| 62161 | Home Health Care Services | 2,229 | $17,691 |
| 72211 | Full-Service Restaurants | 2,049 | $12,303 |
| 92000 | State government | 1,920 | $39,191 |
| 54161 | Management Consulting Services | 1,652 | $40,061 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 1,440 | $35,089 |
| 51821 | Data Processing, Hosting, & Related Services | 1,347 | $47,851 |
| 33639 | Other Motor Vehicle Parts MFG | 1,242 | $42,672 |
| 62419 | Other Individual & Family Services | 1,215 | $24,717 |
| 62431 | Vocational Rehabilitation Services | 1,068 | $16,629 |
| 33522 | Major Appliance MFG | 1,018 | $43,809 |
| 54151 | Computer Systems Design & Related Services | 984 | $56,224 |
| 62412 | Services for the Elderly & Persons with Disabilities | 890 | $16,556 |
| 52211 | Commercial Banking | 846 | $42,275 |
| 44511 | Supermarkets & Other Grocery (except Convenience) Stores | 820 | $17,278 |

*Source: EMSI*

**Fastest Growing Industries in NC's Southeast Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 93000 | Local government | 5,377 | $38,604 |
| 62161 | Home Health Care Services | 4,293 | $18,202 |
| 62111 | Offices of Physicians | 4,013 | $63,319 |
| 45291 | Warehouse Clubs & Supercenters | 3,124 | $24,089 |
| 62412 | Services for the Elderly & Persons with Disabilities | 2,499 | $19,078 |
| 31161 | Animal Slaughtering & Processing | 2,434 | $27,192 |
| 72221 | Limited-Service Eating Places | 2,198 | $11,204 |
| 92000 | State government | 2,118 | $36,906 |
| 72211 | Full-Service Restaurants | 1,966 | $13,215 |
| 54161 | Management Consulting Services | 1,845 | $49,838 |
| 56132 | Temporary Help Services | 1,801 | $17,902 |
| 54171 | Research & Development in the Physical, Engineering, & Life Sciences | 1,584 | $77,593 |
| 56172 | Janitorial Services | 1,517 | $17,067 |
| 23832 | Painting & Wall Covering Contractors | 1,447 | $63,856 |
| 52211 | Commercial Banking | 1,382 | $42,428 |
| 62311 | Nursing Care Facilities | 1,370 | $24,415 |
| 62121 | Offices of Dentists | 1,330 | $50,742 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | 1,231 | $33,011 |
| 62441 | Child Day Care Services | 1,201 | $15,397 |
| 54151 | Computer Systems Design & Related Services | 1,137 | $62,715 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in North Carolina, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 33712 | Household & Institutional Furniture Manufacturing | (20,088) | $29,072 |
| 23611 | Residential Building Construction | (11,974) | $40,352 |
| 56132 | Temporary Help Services | (9,844) | $24,355 |
| 31321 | Broadwoven Fabric Mills | (7,762) | $34,142 |
| 31311 | Fiber, Yarn, & Thread Mills | (7,368) | $28,150 |
| 31331 | Textile & Fabric Finishing Mills | (6,691) | $32,184 |
| 31511 | Hosiery & Sock Mills | (6,182) | $40,298 |
| 44111 | New Car Dealers | (5,512) | $41,435 |
| 45211 | Department Stores | (5,007) | $18,632 |
| 52229 | Other Nondepository Credit Intermediation | (4,958) | $64,855 |
| 48412 | General Freight Trucking, Long-Distance | (4,637) | $42,241 |
| 51821 | Data Processing, Hosting, & Related Services | (4,459) | $75,377 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | (4,339) | $38,758 |
| 56131 | Employment Placement Agencies & Executive Search Services | (3,913) | $36,495 |
| 31222 | Tobacco Product Manufacturing | (3,859) | $82,367 |
| 32121 | Veneer, Plywood, & Engineered Wood Product Manufacturing | (3,847) | $36,753 |
| 23814 | Masonry Contractors | (3,646) | $28,605 |
| 23731 | Highway, Street, & Bridge Construction | (3,583) | $42,057 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | (3,548) | $39,357 |
| 31324 | Knit Fabric Mills | (3,541) | $33,182 |

*Source: EMSI*

**Fastest Declining Industries in NC's Metropolitan Areas, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 33712 | Household & Institutional Furniture Manufacturing | (13,134) | $29,640 |
| 23611 | Residential Building Construction | (8,815) | $43,905 |
| 56132 | Temporary Help Services | (8,490) | $25,488 |
| 52229 | Other Nondepository Credit Intermediation | (5,091) | $70,197 |
| 51821 | Data Processing, Hosting, & Related Services | (4,529) | $76,002 |
| 31511 | Hosiery & Sock Mills | (4,257) | $42,524 |
| 31311 | Fiber, Yarn, & Thread Mills | (4,251) | $28,070 |
| 31321 | Broadwoven Fabric Mills | (4,149) | $36,056 |
| 44111 | New Car Dealers | (3,975) | $42,999 |
| 31222 | Tobacco Product Manufacturing | (3,934) | $83,611 |
| 48412 | General Freight Trucking, Long-Distance | (3,634) | $44,173 |
| 31331 | Textile & Fabric Finishing Mills | (3,633) | $32,658 |
| 45211 | Department Stores | (3,611) | $18,808 |
| 56131 | Employment Placement Agencies & Executive Search Services | (3,341) | $37,376 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | (3,256) | $40,227 |
| 23814 | Masonry Contractors | (2,979) | $30,362 |
| 81341 | Civic & Social Organizations | (2,921) | $13,542 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | (2,915) | $41,042 |
| 23731 | Highway, Street, & Bridge Construction | (2,765) | $42,178 |
| 31324 | Knit Fabric Mills | (2,444) | $35,497 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in NC's Micropolitan Areas, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 33712 | Household & Institutional Furniture Manufacturing | (5,037) | $28,112 |
| 31321 | Broadwoven Fabric Mills | (3,425) | $30,366 |
| 23611 | Residential Building Construction | (2,293) | $32,329 |
| 33612 | Heavy Duty Truck Manufacturing | (2,022) | $67,595 |
| 31331 | Textile & Fabric Finishing Mills | (1,895) | $30,850 |
| 32199 | All Other Wood Product Manufacturing | (1,880) | $30,693 |
| 31311 | Fiber, Yarn, & Thread Mills | (1,839) | $27,172 |
| 33299 | All Other Fabricated Metal Product Manufacturing | (1,792) | $45,648 |
| 56132 | Temporary Help Services | (1,605) | $18,167 |
| 31511 | Hosiery & Sock Mills | (1,366) | $34,497 |
| 32121 | Veneer, Plywood, & Engineered Wood Product Manufacturing | (1,294) | $32,487 |
| 44111 | New Car Dealers | (1,251) | $36,504 |
| 32522 | Artificial & Synthetic Fibers & Filaments Manufacturing | (1,085) | $40,150 |
| 31499 | All Other Textile Product Mills | (1,080) | $29,668 |
| 45211 | Department Stores | (1,057) | $16,500 |
| 33661 | Ship & Boat Building | (959) | $36,482 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | (895) | $34,468 |
| 23731 | Highway, Street, & Bridge Construction | (876) | $40,986 |
| 48412 | General Freight Trucking, Long-Distance | (780) | $36,965 |
| 33232 | Ornamental & Architectural Metal Products Manufacturing | (768) | $31,768 |

*Source: EMSI*

**Fastest Declining Industries in NC's Rural Areas, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 33712 | Household & Institutional Furniture Manufacturing | (1,917) | $21,810 |
| 31311 | Fiber, Yarn, & Thread Mills | (1,278) | $30,293 |
| 31331 | Textile & Fabric Finishing Mills | (1,164) | $28,170 |
| 23611 | Residential Building Construction | (865) | $31,294 |
| 32121 | Veneer, Plywood, & Engineered Wood Product Manufacturing | (689) | $35,596 |
| 31511 | Hosiery & Sock Mills | (559) | $27,869 |
| 23622 | Commercial & Institutional Building Construction | (506) | $40,081 |
| 62311 | Nursing Care Facilities | (504) | $24,281 |
| 44711 | Gasoline Stations with Convenience Stores | (499) | $15,249 |
| 32111 | Sawmills & Wood Preservation | (491) | $36,380 |
| 33221 | Cutlery & Handtool Manufacturing | (486) | $29,617 |
| 33422 | Radio & Television Broadcasting & Wireless Communications Equipment Manufacturing | (486) | $0 |
| 32191 | Millwork | (473) | $27,800 |
| 56133 | Professional Employer Organizations | (433) | $25,968 |
| 33721 | Office Furniture (including Fixtures) Manufacturing | (417) | $28,766 |
| 31324 | Knit Fabric Mills | (412) | $31,757 |
| 32213 | Paperboard Mills | (401) | $69,565 |
| 48411 | General Freight Trucking, Local | (399) | $31,076 |
| 32621 | Tire Manufacturing | (386) | $44,541 |
| 11A00 | Crop & animal production | (384) | $24,665 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in Charlotte Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 33712 | Household & Institutional Furniture Manufacturing | (5,806) | $30,108 |
| 51821 | Data Processing, Hosting, & Related Services | (5,396) | $83,355 |
| 23611 | Residential Building Construction | (3,525) | $52,385 |
| 56132 | Temporary Help Services | (3,419) | $27,528 |
| 33612 | Heavy Duty Truck Manufacturing | (3,274) | $67,385 |
| 52229 | Other Nondepository Credit Intermediation | (3,204) | $82,976 |
| 31311 | Fiber, Yarn, & Thread Mills | (3,013) | $27,823 |
| 31331 | Textile & Fabric Finishing Mills | (1,989) | $28,971 |
| 81341 | Civic & Social Organizations | (1,802) | $11,183 |
| 31511 | Hosiery & Sock Mills | (1,669) | $38,390 |
| 48412 | General Freight Trucking, Long-Distance | (1,597) | $43,320 |
| 32621 | Tire Manufacturing | (1,399) | $42,817 |
| 23731 | Highway, Street, & Bridge Construction | (1,329) | $43,072 |
| 33441 | Semiconductor & Other Electronic Component Manufacturing | (1,282) | -- |
| 31321 | Broadwoven Fabric Mills | (1,154) | $30,636 |
| 23814 | Masonry Contractors | (1,126) | $32,956 |
| 52411 | Direct Life, Health, & Medical Insurance Carriers | (1,118) | $81,581 |
| 48411 | General Freight Trucking, Local | (1,101) | $39,168 |
| 32629 | Other Rubber Product Manufacturing | (1,092) | $33,856 |
| 44111 | New Car Dealers | (1,074) | $43,594 |

*Source: EMSI*

**Fastest Declining Industries in Advantage West Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 33712 | Household & Institutional Furniture Manufacturing | (7,255) | $28,509 |
| 55111 | Management of Companies & Enterprises | (1,949) | $54,331 |
| 23611 | Residential Building Construction | (1,678) | $32,309 |
| 56132 | Temporary Help Services | (1,430) | $21,472 |
| 31511 | Hosiery & Sock Mills | (1,208) | $26,482 |
| 31331 | Textile & Fabric Finishing Mills | (1,006) | $32,894 |
| 32121 | Veneer, Plywood, & Engineered Wood Product Manufacturing | (957) | $27,301 |
| 31311 | Fiber, Yarn, & Thread Mills | (898) | $32,975 |
| 31324 | Knit Fabric Mills | (859) | $32,794 |
| 32619 | Other Plastics Product Manufacturing | (737) | $33,239 |
| 44111 | New Car Dealers | (730) | $38,503 |
| 31491 | Textile Bag & Canvas Mills | (626) | $27,325 |
| 32191 | Millwork | (608) | $27,230 |
| 23622 | Commercial & Institutional Building Construction | (598) | $40,736 |
| 31321 | Broadwoven Fabric Mills | (587) | $32,419 |
| 33221 | Cutlery & Handtool Manufacturing | (556) | $28,061 |
| 33635 | Motor Vehicle Transmission & Power Train Parts Manufacturing | (552) | $47,329 |
| 44711 | Gasoline Stations with Convenience Stores | (509) | $15,979 |
| 33593 | Wiring Device Manufacturing | (505) | $33,342 |
| 48411 | General Freight Trucking, Local | (475) | $34,458 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in Piedmont Triad Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 33712 | Household & Institutional Furniture Manufacturing | (6,101) | $27,885 |
| 31222 | Tobacco Product Manufacturing | (2,986) | $87,762 |
| 31331 | Textile & Fabric Finishing Mills | (2,680) | $35,018 |
| 31311 | Fiber, Yarn, & Thread Mills | (2,572) | $28,059 |
| 31321 | Broadwoven Fabric Mills | (2,547) | $38,794 |
| 31511 | Hosiery & Sock Mills | (2,481) | $42,511 |
| 56132 | Temporary Help Services | (2,393) | $20,102 |
| 48412 | General Freight Trucking, Long-Distance | (1,926) | $43,222 |
| 56131 | Employment Placement Agencies & Executive Search Services | (1,858) | $21,963 |
| 23611 | Residential Building Construction | (1,781) | $37,241 |
| 33232 | Ornamental & Architectural Metal Products Manufacturing | (1,376) | $35,142 |
| 44511 | Supermarkets & Other Grocery (except Convenience) Stores | (1,356) | $18,103 |
| 44111 | New Car Dealers | (1,321) | $40,608 |
| 33721 | Office Furniture (including Fixtures) Manufacturing | (1,283) | $31,429 |
| 45211 | Department Stores | (1,170) | $17,047 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | (1,138) | $37,601 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | (1,077) | $39,065 |
| 32121 | Veneer, Plywood, & Engineered Wood Product Manufacturing | (1,040) | $39,021 |
| 33591 | Battery Manufacturing | (1,011) | $40,796 |
| 44814 | Family Clothing Stores | (958) | $12,087 |

*Source: EMSI*

**Fastest Declining Industries in Research Triangle Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 56133 | Professional Employer Organizations | (2,330) | $41,111 |
| 56132 | Temporary Help Services | (2,175) | $31,744 |
| 42343 | Computer & Computer Peripheral Equipment & Software Merchant Wholesalers | (2,129) | $98,533 |
| 23611 | Residential Building Construction | (1,953) | $41,648 |
| 45211 | Department Stores | (1,629) | $18,931 |
| 31161 | Animal Slaughtering & Processing | (1,551) | $26,397 |
| 81341 | Civic & Social Organizations | (1,236) | $20,964 |
| 44111 | New Car Dealers | (1,224) | $43,963 |
| 31321 | Broadwoven Fabric Mills | (1,143) | $35,822 |
| 23814 | Masonry Contractors | (1,070) | $30,156 |
| 33299 | All Other Fabricated Metal Product Manufacturing | (1,052) | $48,805 |
| 33411 | Computer & Peripheral Equipment Manufacturing | (1,013) | $118,574 |
| 52229 | Other Nondepository Credit Intermediation | (818) | $52,940 |
| 51111 | Newspaper Publishers | (780) | $42,772 |
| 51721 | Wireless Telecommunications Carriers (except Satellite) | (749) | $67,397 |
| 23891 | Site Preparation Contractors | (718) | $34,897 |
| 31412 | Curtain & Linen Mills | (687) | $26,144 |
| 32712 | Clay Building Material & Refractories Manufacturing | (668) | $50,934 |
| 23711 | Water & Sewer Line & Related Structures Construction | (640) | $38,893 |
| 32613 | Laminated Plastics Plate, Sheet (except Packaging), & Shape Manufacturing | (615) | $41,439 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in NC's Northeast Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 23611 | Residential Building Construction | (734) | $39,440 |
| 33661 | Ship & Boat Building | (712) | $40,148 |
| 32111 | Sawmills & Wood Preservation | (493) | $31,766 |
| 11A00 | Crop & animal production | (413) | $30,334 |
| 44711 | Gasoline Stations with Convenience Stores | (410) | $15,917 |
| 31324 | Knit Fabric Mills | (378) | N/A |
| 62311 | Nursing Care Facilities | (368) | $23,761 |
| 56132 | Temporary Help Services | (356) | $18,964 |
| 72211 | Full-Service Restaurants | (355) | $14,432 |
| 45211 | Department Stores | (352) | $18,319 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | (325) | $33,454 |
| 44411 | Home Centers | (243) | $28,307 |
| 62161 | Home Health Care Services | (218) | $12,123 |
| 44419 | Other Building Material Dealers | (211) | $31,872 |
| 33631 | Motor Vehicle Gasoline Engine & Engine Parts Manufacturing | (211) | $41,815 |
| 48411 | General Freight Trucking, Local | (203) | $30,031 |
| 72231 | Food Service Contractors | (165) | $18,105 |
| 31331 | Textile & Fabric Finishing Mills | (161) | $25,601 |
| 42499 | Other Miscellaneous Nondurable Goods Merchant Wholesalers | (155) | N/A |
| 31171 | Seafood Product Preparation & Packaging | (148) | $16,554 |

*Source: EMSI*

**Fastest Declining Industries in NC's Eastern Region Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 32541 | Pharmaceutical & Medicine Manufacturing | (2,190) | $70,268 |
| 33661 | Ship & Boat Building | (1,428) | $35,776 |
| 23731 | Highway, Street, & Bridge Construction | (1,209) | $45,629 |
| 42499 | Other Miscellaneous Nondurable Goods Merchant Wholesalers | (1,061) | $34,296 |
| 23611 | Residential Building Construction | (1,004) | $33,659 |
| 31324 | Knit Fabric Mills | (783) | $33,327 |
| 44111 | New Car Dealers | (722) | $38,935 |
| 11A00 | Crop & animal production | (677) | $28,544 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | (670) | $34,275 |
| 32522 | Artificial & Synthetic Fibers & Filaments Manufacturing | (541) | $34,492 |
| 54186 | Direct Mail Advertising | (508) | $37,922 |
| 52211 | Commercial Banking | (489) | $42,275 |
| 56133 | Professional Employer Organizations | (451) | $24,266 |
| 32121 | Veneer, Plywood, & Engineered Wood Product Manufacturing | (426) | $35,437 |
| 33711 | Wood Kitchen Cabinet & Countertop Manufacturing | (414) | $27,443 |
| 62311 | Nursing Care Facilities | (400) | $24,377 |
| 44211 | Furniture Stores | (389) | $24,563 |
| 32629 | Other Rubber Product Manufacturing | (386) | $32,371 |
| 32711 | Pottery, Ceramics, & Plumbing Fixture Manufacturing | (383) | N/A |
| 81111 | Automotive Mechanical & Electrical Repair & Maintenance | (365) | $27,187 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in NC's Southeast Regional Partnership, 2005-10**

| NAICS | Industry Name | ΔEmp 05-10 | Avg Wages 2010 |
|---|---|---|---|
| 31321 | Broadwoven Fabric Mills | (2,323) | $29,689 |
| 23611 | Residential Building Construction | (1,300) | $34,563 |
| 56131 | Employment Placement Agencies & Executive Search Services | (1,216) | $34,278 |
| 45211 | Department Stores | (1,058) | $16,126 |
| 31522 | Men's & Boys' Cut & Sew Apparel Manufacturing | (886) | N/A |
| 33399 | All Other General Purpose Machinery Manufacturing | (881) | $58,764 |
| 23621 | Industrial Building Construction | (851) | $40,923 |
| 51711 | Wired Telecommunications Carriers | (678) | $52,405 |
| 33639 | Other Motor Vehicle Parts Manufacturing | (660) | $38,874 |
| 32121 | Veneer, Plywood, & Engineered Wood Product Manufacturing | (531) | $38,624 |
| 31511 | Hosiery & Sock Mills | (516) | $37,631 |
| 23821 | Electrical Contractors & Other Wiring Installation Contractors | (515) | $34,352 |
| 23622 | Commercial & Institutional Building Construction | (511) | $44,288 |
| 32199 | All Other Wood Product Manufacturing | (505) | $32,678 |
| 49311 | General Warehousing & Storage | (502) | $41,721 |
| 23822 | Plumbing, Heating, & Air-Conditioning Contractors | (468) | $33,011 |
| 62211 | General Medical & Surgical Hospitals | (465) | $48,566 |
| 31499 | All Other Textile Product Mills | (451) | $34,286 |
| 44419 | Other Building Material Dealers | (434) | $34,896 |
| 31331 | Textile & Fabric Finishing Mills | (393) | $33,183 |

*Source: EMSI*

**Fastest Declining Industries in North Carolina, 2010-20**

| NAICS | Industry Name | Change Emp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 45211 | Department Stores | (5,763) | $18,632 |
| 31331 | Textile & Fabric Finishing Mills | (5,298) | $32,184 |
| 33712 | Household & Institutional Furniture MFG | (5,216) | $29,072 |
| 11A00 | Crop & animal production | (5,185) | $25,622 |
| 31311 | Fiber, Yarn, & Thread Mills | (5,021) | $28,150 |
| 31321 | Broadwoven Fabric Mills | (4,573) | $34,142 |
| 33411 | Computer & Peripheral eqpt MFG | (3,697) | $110,833 |
| 51711 | Wired Telecommunications Carriers | (3,437) | $61,838 |
| 33721 | Office Furniture (including Fixtures) MFG | (3,235) | $31,511 |
| 91200 | Federal government, military | (2,935) | $51,061 |
| 33441 | Semiconductor & Other Electronic Component MFG | (2,864) | $70,959 |
| 31222 | Tobacco Product MFG | (2,861) | $82,367 |
| 52229 | Other Nondepository Credit Intermediation | (2,837) | $64,855 |
| 44111 | New Car Dealers | (2,612) | $41,435 |
| 31324 | Knit Fabric Mills | (2,423) | $33,182 |
| 31511 | Hosiery & Sock Mills | (2,381) | $40,298 |
| 33341 | HVAC, & Commercial Refrigeration eqpt MFG | (2,317) | $39,898 |
| 51111 | Newspaper Publishers | (2,244) | $34,608 |
| 22111 | Electric Power Generation | (2,201) | $85,611 |
| 51721 | Wireless Telecommunications Carriers (except Satellite) | (1,966) | $51,805 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in NC's Metropolitan Areas, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 45211 | Department Stores | (4,902) | $18,808 |
| 31331 | Textile & Fabric Finishing Mills | (4,315) | $32,658 |
| 33411 | Computer & Peripheral eqpt MFG | (3,687) | $111,185 |
| 33712 | Household & Institutional Furniture MFG | (3,544) | $29,640 |
| 51711 | Wired Telecommunications Carriers | (3,114) | $63,809 |
| 31222 | Tobacco Product MFG | (3,102) | $83,611 |
| 52229 | Other Nondepository Credit Intermediation | (3,005) | $70,197 |
| 31311 | Fiber, Yarn, & Thread Mills | (2,997) | $28,070 |
| 31321 | Broadwoven Fabric Mills | (2,651) | $36,056 |
| 91200 | Federal government, military | (2,577) | $52,602 |
| 33721 | Office Furniture (including Fixtures) MFG | (2,375) | $31,950 |
| 44111 | New Car Dealers | (2,220) | $42,999 |
| 55111 | Management of Companies & Enterprises | (2,057) | $81,537 |
| 11A00 | Crop & animal production | (1,966) | $25,937 |
| 33441 | Semiconductor & Other Electronic Component MFG | (1,955) | $75,788 |
| 51721 | Wireless Telecommunications Carriers (except Satellite) | (1,907) | $52,585 |
| 51111 | Newspaper Publishers | (1,682) | $37,171 |
| 22111 | Electric Power Generation | (1,675) | $88,439 |
| 33341 | Ventilation, Heating, Air-Conditioning, & Commercial Refrigeration eqpt MFG | (1,588) | $42,244 |
| 52412 | Direct Insurance (except Life, Health, & Medical) Carriers | (1,579) | $64,830 |

*Source: EMSI*

**Fastest Declining Industries in NC's Micropolitan Areas, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 11A00 | Crop & animal production | (1,535) | $26,238 |
| 31321 | Broadwoven Fabric Mills | (1,455) | $30,366 |
| 31311 | Fiber, Yarn, & Thread Mills | (1,381) | $27,172 |
| 33712 | Household & Institutional Furniture MFG | (1,248) | $28,112 |
| 33661 | Ship & Boat Building | (1,235) | $36,482 |
| 33612 | Heavy Duty Truck MFG | (1,119) | $67,595 |
| 33291 | Metal Valve MFG | (1,042) | $41,032 |
| 45211 | Department Stores | (970) | $16,500 |
| 32199 | All Other Wood Product MFG | (796) | $30,693 |
| 32522 | Artificial & Synthetic Fibers & Filaments MFG | (790) | $40,150 |
| 31331 | Textile & Fabric Finishing Mills | (758) | $30,850 |
| 31511 | Hosiery & Sock Mills | (713) | $34,497 |
| 33299 | All Other Fabricated Metal Product MFG | (704) | $45,648 |
| 33341 | Ventilation, Heating, Air-Conditioning, & Commercial Refrigeration eqpt MFG | (704) | $35,773 |
| 33721 | Office Furniture (including Fixtures) MFG | (701) | $30,631 |
| 32721 | Glass & Glass Product MFG | (695) | $47,317 |
| 31324 | Knit Fabric Mills | (691) | $28,573 |
| 33531 | Electrical eqpt MFG | (648) | $44,099 |
| 45299 | All Other General Merchandise Stores | (643) | $13,598 |
| 22111 | Electric Power Generation | (472) | $72,166 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in NC's Rural Areas, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 11A00 | Crop & animal production | (1,684) | $24,665 |
| 31161 | Animal Slaughtering & Processing | (740) | $28,437 |
| 31311 | Fiber, Yarn, & Thread Mills | (643) | $30,293 |
| 33441 | Semiconductor & Other Electronic Component MFG | (639) | $45,460 |
| 32213 | Paperboard Mills | (490) | $69,565 |
| 31321 | Broadwoven Fabric Mills | (467) | $34,512 |
| 31324 | Knit Fabric Mills | (446) | $31,757 |
| 33712 | Household & Institutional Furniture MFG | (424) | $21,810 |
| 32541 | Pharmaceutical & Medicine MFG | (394) | $41,888 |
| 31522 | Men's & Boys' Cut & Sew Apparel MFG | (327) | $20,266 |
| 32111 | Sawmills & Wood Preservation | (262) | $36,380 |
| 31411 | Carpet & Rug Mills | (235) | $19,775 |
| 31331 | Textile & Fabric Finishing Mills | (225) | $28,170 |
| 44111 | New Car Dealers | (218) | $34,103 |
| 45431 | Fuel Dealers | (187) | $31,231 |
| 33399 | All Other General Purpose Machinery MFG | (172) | $44,085 |
| 32121 | Veneer, Plywood, & Engineered Wood Product MFG | (171) | $35,596 |
| 33721 | Office Furniture (including Fixtures) MFG | (159) | $28,766 |
| 33531 | Electrical eqpt MFG | (151) | $41,161 |
| 31511 | Hosiery & Sock Mills | (147) | $27,869 |

*Source: EMSI*

**Fastest Declining Industries in Charlotte Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 31311 | Fiber, Yarn, & Thread Mills | (1,648) | $27,823 |
| 52229 | Other Nondepository Credit Intermediation | (1,641) | $82,976 |
| 33612 | Heavy Duty Truck MFG | (1,335) | $67,385 |
| 31331 | Textile & Fabric Finishing Mills | (1,323) | $28,971 |
| 51711 | Wired Telecommunications Carriers | (1,299) | $64,074 |
| 33712 | Household & Institutional Furniture MFG | (1,204) | $30,108 |
| 45211 | Department Stores | (1,078) | $21,317 |
| 44511 | Supermarkets & Other Grocery (except Convenience) Stores | (1,075) | $20,669 |
| 22111 | Electric Power Generation | (1,059) | $95,540 |
| 33721 | Office Furniture (including Fixtures) MFG | (1,049) | $30,678 |
| 31222 | Tobacco Product MFG | (1,037) | $73,740 |
| 32221 | Paperboard Container MFG | (904) | $44,032 |
| 33531 | Electrical eqpt MFG | (876) | $46,613 |
| 42383 | Industrial Machinery & eqpt Merchant Wholesalers | (868) | $66,455 |
| 52411 | Direct Life, Health, & Medical Insurance Carriers | (839) | $81,581 |
| 33329 | Other Industrial Machinery MFG | (811) | $48,512 |
| 48411 | General Freight Trucking, Local | (774) | $39,168 |
| 32522 | Artificial & Synthetic Fibers & Filaments MFG | (769) | $50,143 |
| 44111 | New Car Dealers | (742) | $43,594 |
| 33441 | Semiconductor & Other Electronic Component MFG | (714) | N/A |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in Advantage West Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 33712 | Household & Institutional Furniture MFG | (2,812) | $28,509 |
| 31321 | Broadwoven Fabric Mills | (1,370) | $32,419 |
| 55111 | Management of Companies & Enterprises | (980) | $54,331 |
| 31331 | Textile & Fabric Finishing Mills | (711) | $32,894 |
| 33721 | Office Furniture (including Fixtures) MFG | (578) | $30,263 |
| 33441 | Semiconductor & Other Electronic Component MFG | (544) | $42,205 |
| 32212 | Paper Mills | (504) | $59,707 |
| 33341 | Ventilation, Heating, Air-Conditioning, & Commercial Refrigeration eqpt MFG | (455) | $44,715 |
| 33593 | Wiring Device MFG | (397) | $33,342 |
| 11A00 | Crop & animal production | (355) | $18,960 |
| 33512 | Lighting Fixture MFG | (349) | $44,581 |
| 51111 | Newspaper Publishers | (330) | $29,714 |
| 33461 | MFG & Reproducing Magnetic & Optical Media | (299) | $48,678 |
| 31324 | Knit Fabric Mills | (285) | $32,794 |
| 31511 | Hosiery & Sock Mills | (281) | $26,482 |
| 32541 | Pharmaceutical & Medicine MFG | (281) | $39,439 |
| 31499 | All Other Textile Product Mills | (249) | $23,338 |
| 32613 | Laminated Plastics Plate, Sheet (except Packaging), & Shape MFG | (238) | $37,656 |
| 44111 | New Car Dealers | (237) | $38,503 |
| 32121 | Veneer, Plywood, & Engineered Wood Product MFG | (219) | $27,301 |

*Source: EMSI*

**Fastest Declining Industries in Piedmont Triad Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 31331 | Textile & Fabric Finishing Mills | (2,510) | $35,018 |
| 31222 | Tobacco Product MFG | (2,052) | $87,762 |
| 31311 | Fiber, Yarn, & Thread Mills | (1,693) | $28,059 |
| 31321 | Broadwoven Fabric Mills | (1,685) | $38,794 |
| 31511 | Hosiery & Sock Mills | (1,590) | $42,511 |
| 45211 | Department Stores | (1,384) | $17,047 |
| 55111 | Management of Companies & Enterprises | (1,316) | $65,582 |
| 33721 | Office Furniture (including Fixtures) MFG | (1,277) | $31,429 |
| 44511 | Supermarkets & Other Grocery (except Convenience) Stores | (1,187) | $18,103 |
| 32311 | Printing | (980) | $40,398 |
| 31324 | Knit Fabric Mills | (959) | $34,888 |
| 33621 | Motor Vehicle Body & Trailer MFG | (928) | $48,621 |
| 33712 | Household & Institutional Furniture MFG | (877) | $27,885 |
| 52412 | Direct Insurance (except Life, Health, & Medical) Carriers | (877) | $67,692 |
| 33591 | Battery MFG | (775) | $40,796 |
| 33593 | Wiring Device MFG | (701) | $46,127 |
| 33441 | Semiconductor & Other Electronic Component MFG | (689) | $76,422 |
| 51721 | Wireless Telecommunications Carriers (except Satellite) | (629) | $39,030 |
| 56172 | Janitorial Services | (610) | $15,236 |
| 42511 | Business to Business Electronic Markets | (536) | $48,824 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in Research Triangle Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 33411 | Computer & Peripheral eqpt MFG | (3,002) | $118,574 |
| 56133 | Professional Employer Organizations | (1,226) | $41,111 |
| 45211 | Department Stores | (1,153) | $18,931 |
| 51711 | Wired Telecommunications Carriers | (1,113) | $78,258 |
| 11A00 | Crop & animal production | (864) | $24,181 |
| 33441 | Semiconductor & Other Electronic Component MFG | (824) | $77,275 |
| 51111 | Newspaper Publishers | (752) | $42,772 |
| 44111 | New Car Dealers | (735) | $43,963 |
| 52229 | Other Nondepository Credit Intermediation | (717) | $52,940 |
| 33341 | Ventilation, Heating, Air-Conditioning, & Commercial Refrigeration eqpt MFG | (657) | $33,922 |
| 31161 | Animal Slaughtering & Processing | (565) | $26,397 |
| 31311 | Fiber, Yarn, & Thread Mills | (559) | $26,123 |
| 44312 | Computer & Software Stores | (551) | $70,767 |
| 52412 | Direct Insurance (except Life, Health, & Medical) Carriers | (514) | $74,425 |
| 45399 | All Other Miscellaneous Store Retailers | (467) | $32,528 |
| 31331 | Textile & Fabric Finishing Mills | (454) | $25,979 |
| 42343 | Computer & Computer Peripheral eqpt & Software Merchant Wholesalers | (453) | $98,533 |
| 81341 | Civic & Social Organizations | (433) | $20,964 |
| 33421 | Telephone Apparatus MFG | (423) | $102,278 |
| 22112 | Electric Power Transmission, Control, & Distribution | (420) | $91,718 |

*Source: EMSI*

**Fastest Declining Industries in NC's Northeast Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 11A00 | Crop & animal production | (1,063) | $30,334 |
| 31161 | Animal Slaughtering & Processing | (586) | $20,256 |
| 33661 | Ship & Boat Building | (523) | $40,148 |
| 31311 | Fiber, Yarn, & Thread Mills | (390) | $32,821 |
| 32111 | Sawmills & Wood Preservation | (279) | $31,766 |
| 32721 | Glass & Glass Product MFG | (255) | $35,298 |
| 32629 | Other Rubber Product MFG | (187) | $47,012 |
| 32213 | Paperboard Mills | (173) | $70,753 |
| 45211 | Department Stores | (165) | $18,319 |
| 32212 | Paper Mills | (155) | N/A |
| 33621 | Motor Vehicle Body & Trailer MFG | (151) | $28,176 |
| 42491 | Farm Supplies Merchant Wholesalers | (148) | $39,624 |
| 33721 | Office Furniture (including Fixtures) MFG | (138) | $32,531 |
| 45431 | Fuel Dealers | (127) | $35,258 |
| 48411 | General Freight Trucking, Local | (125) | $30,031 |
| 31522 | Men's & Boys' Cut & Sew Apparel MFG | (112) | N/A |
| 42459 | Other Farm Product Raw Material Merchant Wholesalers | (112) | $29,931 |
| 33631 | Motor Vehicle Gasoline Engine & Engine Parts MFG | (111) | $41,815 |
| 44419 | Other Building Material Dealers | (108) | $31,872 |
| 22111 | Electric Power Generation | (101) | $86,660 |

*Source: EMSI*

## Appendix B: Fastest Growing and Declining Industries

**Fastest Declining Industries in NC's Eastern Region Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 11A00 | Crop & animal production | (1,612) | $28,544 |
| 91200 | Federal government, military | (1,347) | $49,318 |
| 45211 | Department Stores | (914) | $15,833 |
| 33661 | Ship & Boat Building | (854) | $35,776 |
| 55111 | Management of Companies & Enterprises | (596) | $57,713 |
| 31311 | Fiber, Yarn, & Thread Mills | (530) | $27,006 |
| 33291 | Metal Valve MFG | (476) | $44,619 |
| 31221 | Tobacco Stemming & Redrying | (449) | $24,826 |
| 33531 | Electrical eqpt MFG | (438) | $48,378 |
| 56133 | Professional Employer Organizations | (399) | $24,266 |
| 44111 | New Car Dealers | (315) | $38,935 |
| 33361 | Engine, Turbine, & Power Transmission eqpt MFG | (297) | $46,495 |
| 33341 | Ventilation, Heating, Air-Conditioning, & Commercial Refrigeration eqpt MFG | (295) | $30,097 |
| 33251 | Hardware MFG | (279) | $34,199 |
| 31499 | All Other Textile Product Mills | (271) | $24,424 |
| 22111 | Electric Power Generation | (267) | $62,639 |
| 51711 | Wired Telecommunications Carriers | (267) | $48,922 |
| 31211 | Soft Drink & Ice MFG | (262) | $38,322 |
| 45299 | All Other General Merchandise Stores | (260) | $12,429 |
| 32629 | Other Rubber Product MFG | (253) | $32,371 |

*Source: EMSI*

**Fastest Declining Industries in NC's Southeast Regional Partnership, 2010-20**

| NAICS | Industry Name | ΔEmp 10-20 | Avg Wages 2010 |
|---|---|---|---|
| 91200 | Federal government, military | (1,159) | $61,709 |
| 45211 | Department Stores | (954) | $16,126 |
| 11A00 | Crop & animal production | (843) | $25,476 |
| 31522 | Men's & Boys' Cut & Sew Apparel MFG | (706) | N/A |
| 32721 | Glass & Glass Product MFG | (645) | $66,926 |
| 31321 | Broadwoven Fabric Mills | (614) | $29,689 |
| 51721 | Wireless Telecommunications Carriers (except Satellite) | (359) | $50,767 |
| 49111 | Postal Service | (346) | $51,000 |
| 23621 | Industrial Building Construction | (334) | $40,923 |
| 32213 | Paperboard Mills | (327) | $67,594 |
| 49311 | General Warehousing & Storage | (277) | $41,721 |
| 31324 | Knit Fabric Mills | (251) | $29,164 |
| 32621 | Tire MFG | (250) | $60,198 |
| 44419 | Other Building Material Dealers | (248) | $34,896 |
| 51711 | Wired Telecommunications Carriers | (247) | $52,405 |
| 81232 | Drycleaning & Laundry Services (except Coin-Operated) | (225) | $14,110 |
| 22111 | Electric Power Generation | (209) | $82,452 |
| 33639 | Other Motor Vehicle Parts MFG | (171) | $38,874 |
| 51111 | Newspaper Publishers | (161) | $31,614 |
| 32511 | Petrochemical MFG | (158) | $76,194 |

*Source: EMSI*

## Appendix C: NC Occupations by Educational Band (2010-2020)

| Educ Band | Occupation Description | Estimated NC Emp 2010 | Est. NC Median Hourly Wages 2010 | % of Est. US Median Hourly Wages 2010 | ΔEmp 2010-2020 | Annual Growth Rate 2010-2020 |
|---|---|---|---|---|---|---|
| Advanced Degree | Postsecondary teachers | 44,430 | $37.54 | 94.1% | 7,913 | 1.7% |
| | Physicians & surgeons | 16,570 | $119.75 | 138.3% | 5,862 | 3.1% |
| | Medical scientists, except epidemiologists | 5,137 | $37.32 | 104.1% | 2,534 | 4.1% |
| | Lawyers | 9,735 | $49.00 | 90.0% | 1,933 | 1.8% |
| | Pharmacists | 8,218 | $54.28 | 103.4% | 1,933 | 2.1% |
| | Physical therapists | 4,396 | $35.92 | 100.3% | 1,679 | 3.3% |
| | Mental health counselors | 3,676 | $18.61 | 101.9% | 1,592 | 3.7% |
| | Mental health & substance abuse social workers | 4,205 | $19.23 | 104.7% | 1,580 | 3.2% |
| | Rehabilitation counselors | 4,000 | $14.43 | 96.2% | 1,140 | 2.5% |
| | Environmental scientists & specialists, including health | 3,433 | $25.72 | 87.7% | 1,135 | 2.9% |
| | Instructional coordinators | 4,306 | $25.71 | 91.0% | 1,119 | 2.3% |
| | Educational, vocational, & school counselors | 6,201 | $22.11 | 87.5% | 1,107 | 1.7% |
| | Speech-language pathologists | 3,934 | $29.83 | 95.3% | 899 | 2.1% |
| | Occupational therapists | 2,778 | $32.79 | 97.9% | 875 | 2.8% |
| | Dentists, general | 2,566 | $90.84 | 133.0% | 870 | 3.0% |
| | Clinical, counseling, & school psychologists | 2,674 | $28.37 | 89.4% | 590 | 2.0% |
| | Substance abuse & behavioral disorder counselors | 1,314 | $19.25 | 106.2% | 547 | 3.5% |
| | Operations research analysts | 1,993 | $30.48 | 90.5% | 527 | 2.4% |
| | ***Total of fastest growing occupations in "educational band"*** | **129,566** | | | **33,835** | |
| | ***Total all occupations in "educational band"*** | **150,103** | | | **38,484** | |
| 4-year College Degree | Elementary school teachers, except special education | 40,497 | $26.75 | 82.6% | 7,062 | 1.6% |
| | Accountants & auditors | 25,808 | $27.76 | 95.7% | 5,806 | 2.0% |
| | Business operation specialists, all other | 27,788 | $26.88 | 92.2% | 4,652 | 1.6% |
| | Computer software engineers, applications | 13,018 | $41.35 | 98.3% | 4,414 | 3.0% |
| | Computer systems analysts | 17,364 | $36.58 | 98.7% | 3,565 | 1.9% |
| | Teachers & instructors, all other | 18,808 | $14.12 | 69.9% | 3,543 | 1.7% |
| | Network systems & data communications analysts | 6,231 | $34.20 | 97.1% | 3,351 | 4.4% |
| | Middle school teachers, except special & vocational education | 20,385 | $26.69 | 82.0% | 3,346 | 1.5% |
| | Management analysts | 8,015 | $34.13 | 94.3% | 3,344 | 3.5% |
| | Construction managers | 7,496 | $37.77 | 95.4% | 3,113 | 3.5% |
| | Computer software engineers, systems software | 11,380 | $44.94 | 100.0% | 3,027 | 2.4% |

## Appendix C: NC Occupations by Educational Band (2010-2020)

| Educ Band | Occupation Description | Estimated NC Emp 2010 | Est. NC Median Hourly Wages 2010 | % of Est. US Median Hourly Wages 2010 | ΔEmp 2010-2020 | Annual Growth Rate 2010-2020 |
|---|---|---|---|---|---|---|
| | Secondary school teachers, except special & vocational education | 25,908 | $27.86 | 83.3% | 2,739 | 1.0% |
| | Employment, recruitment, & placement specialists | 7,264 | $21.08 | 94.9% | 2,640 | 3.1% |
| | Financial managers | 18,250 | $48.74 | 100.2% | 2,412 | 1.2% |
| | Personal financial advisors | 4,204 | $29.11 | 88.8% | 2,040 | 4.0% |
| | Network & computer systems administrators | 7,914 | $32.14 | 98.7% | 2,029 | 2.3% |
| | General & operations managers | 50,217 | $48.06 | 107.9% | 2,012 | 0.4% |
| | Sales managers | 10,559 | $41.27 | 88.7% | 1,959 | 1.7% |
| | Computer & information systems managers | 10,867 | $54.15 | 99.0% | 1,958 | 1.7% |
| | Special education teachers, preschool, kindergarten, & elementary school | 9,258 | $28.34 | 86.8% | 1,950 | 1.9% |
| | Child, family, & school social workers | 10,028 | $20.27 | 105.5% | 1,948 | 1.8% |
| | Financial analysts | 6,862 | $34.12 | 96.3% | 1,933 | 2.5% |
| | Market research analysts | 5,513 | $28.01 | 94.6% | 1,923 | 3.0% |
| | Training & development specialists | 6,632 | $25.23 | 100.7% | 1,915 | 2.6% |
| | Physician assistants | 3,584 | $39.40 | 97.1% | 1,786 | 4.1% |
| | Medical & health services managers | 7,522 | $38.04 | 96.7% | 1,741 | 2.1% |
| | Loan officers | 10,493 | $23.40 | 88.7% | 1,706 | 1.5% |
| | Insurance sales agents | 8,427 | $20.66 | 94.4% | 1,471 | 1.6% |
| | Financial specialists, all other | 7,582 | $29.20 | 104.1% | 1,470 | 1.8% |
| | Securities, commodities, & financial services sales agents | 5,059 | $38.67 | 120.2% | 1,433 | 2.5% |
| | Public relations specialists | 4,590 | $22.15 | 88.7% | 1,395 | 2.7% |
| | Civil engineers | 5,267 | $34.91 | 94.8% | 1,385 | 2.4% |
| | Compensation, benefits, & job analysis specialists | 3,964 | $25.63 | 95.8% | 1,167 | 2.6% |
| | Medical & clinical laboratory technologists | 4,452 | $23.43 | 88.4% | 1,036 | 2.1% |
| | Human resources, training, & labor relations specialists, all other | 3,755 | $26.30 | 96.9% | 985 | 2.4% |
| | Industrial engineers | 5,388 | $34.40 | 95.3% | 978 | 1.7% |
| | Medical & public health social workers | 3,515 | $20.71 | 93.0% | 946 | 2.4% |
| | Adult literacy, remedial education, & GED teachers & instructors | 4,322 | $19.89 | 90.1% | 849 | 1.8% |

## Appendix C: NC Occupations by Educational Band (2010-2020)

| Educ Band | Occupation Description | Estimated NC Emp 2010 | Est. NC Median Hourly Wages 2010 | % of Est. US Median Hourly Wages 2010 | ΔEmp 2010-2020 | Annual Growth Rate 2010-2020 |
|---|---|---|---|---|---|---|
| | Education, training, & library workers, all other | 4,381 | $21.44 | 122.9% | 836 | 1.8% |
| | Kindergarten teachers, except special education | 4,884 | $25.70 | 83.8% | 819 | 1.6% |
| | Logisticians | 3,008 | $29.57 | 90.5% | 793 | 2.4% |
| | Education administrators, elementary & secondary school | 7,783 | $42.30 | 77.5% | 764 | 0.9% |
| | Marketing managers | 4,667 | $52.98 | 100.2% | 756 | 1.5% |
| | Graphic designers | 5,169 | $18.83 | 90.7% | 652 | 1.2% |
| | Engineering managers | 5,424 | $56.76 | 100.9% | 644 | 1.1% |
| | Special education teachers, middle school | 3,337 | $27.12 | 81.4% | 639 | 1.8% |
| | Database administrators | 3,037 | $36.08 | 104.9% | 627 | 1.9% |
| | Vocational education teachers, secondary school | 5,568 | $29.86 | 88.7% | 617 | 1.1% |
| | Probation officers & correctional treatment specialists | 2,700 | $17.98 | 80.4% | 598 | 2.0% |
| | Administrative services managers | 3,450 | $34.94 | 96.2% | 580 | 1.6% |
| | Social & community service managers | 2,491 | $27.07 | 99.5% | 570 | 2.1% |
| | Special education teachers, secondary school | 3,873 | $28.25 | 83.3% | 567 | 1.4% |
| | Architects, except landscape & naval | 2,119 | $32.07 | 91.8% | 531 | 2.3% |
| | Property, real estate, & community association managers | 2,655 | $27.22 | 116.8% | 523 | 1.8% |
| | Natural sciences managers | 2,265 | $61.20 | 111.1% | 507 | 2.0% |
| | Community & social service specialists, all other | 2,189 | $19.50 | 107.9% | 507 | 2.1% |
| | ***Total of fastest growing occupations in "educational band"*** | **517,186** | | | **102,559** | |
| | ***Total all occupations in "educational band"*** | **615,400** | | | **111,523** | |
| **Tech Degree-Some Post** | Registered nurses | 88,723 | $27.38 | 89.3% | 25,557 | 2.6% |
| | Nursing aides, orderlies, & attendants | 25,866 | $10.93 | 94.6% | 4,770 | 1.7% |
| | Licensed practical & licensed vocational nurses | 17,193 | $19.05 | 99.5% | 4,160 | 2.2% |
| | Preschool teachers, except special education | 17,798 | $10.10 | 85.6% | 3,902 | 2.0% |
| | Medical secretaries | 9,513 | $13.46 | 92.8% | 3,709 | 3.3% |
| | Hairdressers, hairstylists, & cosmetologists | 7,369 | $10.38 | 92.5% | 3,376 | 3.8% |

## Appendix C: NC Occupations by Educational Band (2010-2020)

| Educ Band | Occupation Description | Estimated NC Emp 2010 | Est. NC Median Hourly Wages 2010 | % of Est. US Median Hourly Wages 2010 | ΔEmp 2010-2020 | Annual Growth Rate 2010-2020 |
|---|---|---|---|---|---|---|
| | Dental hygienists | 5,395 | $30.00 | 92.7% | 2,872 | 4.4% |
| | Paralegals & legal assistants | 8,820 | $18.44 | 81.6% | 2,694 | 2.7% |
| | Fitness trainers & aerobics instructors | 7,168 | $13.49 | 91.5% | 2,671 | 3.2% |
| | Computer support specialists | 16,628 | $20.98 | 98.5% | 2,539 | 1.4% |
| | Radiologic technologists & technicians | 7,535 | $25.16 | 98.3% | 2,118 | 2.5% |
| | Real estate sales agents | 4,677 | $24.81 | 128.7% | 1,602 | 3.0% |
| | Medical records & health information technicians | 5,162 | $13.98 | 93.0% | 1,466 | 2.5% |
| | Automotive service technicians & mechanics | 18,745 | $17.70 | 103.9% | 1,343 | 0.7% |
| | Medical & clinical laboratory technicians | 4,506 | $17.09 | 98.7% | 1,270 | 2.5% |
| | Surgical technologists | 3,084 | $17.44 | 92.1% | 1,057 | 3.0% |
| | Emergency medical technicians & paramedics | 9,017 | $14.22 | 98.6% | 976 | 1.0% |
| | Physical therapist assistants | 2,203 | $24.81 | 106.8% | 888 | 3.4% |
| | Security & fire alarm systems installers | 1,774 | $16.25 | 89.6% | 875 | 4.1% |
| | Respiratory therapists | 3,171 | $23.52 | 91.7% | 810 | 2.3% |
| | Massage therapists | 1,531 | $21.14 | 124.8% | 791 | 4.3% |
| | Veterinary technologists & technicians | 2,615 | $12.15 | 86.3% | 715 | 2.4% |
| | Healthcare technologists & technicians, all other | 2,488 | $17.34 | 93.7% | 649 | 2.3% |
| | Computer specialists, all other | 3,554 | $34.75 | 93.9% | 606 | 1.6% |
| | Legal secretaries | 2,959 | $18.90 | 95.7% | 595 | 1.8% |
| | Medical transcriptionists | 2,678 | $15.19 | 96.9% | 588 | 2.0% |
| | Civil engineering technicians | 3,537 | $21.02 | 95.1% | 571 | 1.5% |
| | Aircraft mechanics & service technicians | 3,686 | $24.17 | 95.2% | 560 | 1.4% |
| | Healthcare practitioners & technical workers, all other | 2,225 | $19.59 | 91.2% | 513 | 2.1% |
| | ***Total of fastest growing occupations in "educational band"*** | **289,620** | | | **74,243** | |
| | ***Total all occupations in "educational band"*** | **353,273** | | | **81,105** | |

## Appendix C: NC Occupations by Educational Band (2010-2020)

| Educ Band | Occupation Description | Estimated NC Emp 2010 | Est. NC Median Hourly Wages 2010 | % of Est. US Median Hourly Wages 2010 | ΔEmp 2010-2020 | Annual Growth Rate 2010-2020 |
|---|---|---|---|---|---|---|
| High School with Some Experience | First-line supervisors/managers of construction trades & extraction workers | 22,006 | $23.65 | 84.3% | 7,476 | 3.0% |
| | First-line supervisors/managers of office & administrative support workers | 38,139 | $20.92 | 92.8% | 6,691 | 1.6% |
| | Carpenters | 17,129 | $15.35 | 80.9% | 5,190 | 2.7% |
| | First-line supervisors/managers of retail sales workers | 47,400 | $15.48 | 92.3% | 3,966 | 0.8% |
| | Electricians | 14,500 | $17.46 | 77.0% | 3,500 | 2.2% |
| | Heating, air conditioning, & refrigeration mechanics & installers | 7,217 | $18.63 | 94.3% | 3,083 | 3.6% |
| | First-line supervisors/managers of food preparation & serving workers | 28,065 | $14.26 | 100.6% | 2,973 | 1.0% |
| | Plumbers, pipefitters, & steamfitters | 8,755 | $17.40 | 78.1% | 2,751 | 2.8% |
| | Cooks, restaurant | 31,549 | $9.89 | 92.8% | 2,510 | 0.8% |
| | Fire fighters | 11,104 | $14.95 | 69.0% | 2,216 | 1.8% |
| | Self-enrichment education teachers | 4,900 | $18.68 | 106.6% | 2,158 | 3.7% |
| | Police & sheriff's patrol officers | 19,320 | $18.77 | 73.4% | 1,968 | 1.0% |
| | Cost estimators | 4,767 | $25.15 | 91.3% | 1,862 | 3.4% |
| | Compliance officers, except agriculture, construction, health & safety, & transportation | 4,840 | $22.65 | 94.7% | 1,788 | 3.2% |
| | Coaches & scouts | 5,039 | $19.04 | 104.7% | 1,502 | 2.6% |
| | Managers, all other | 9,123 | $44.69 | 100.4% | 1,321 | 1.4% |
| | First-line supervisors/managers of landscaping, lawn service, & groundskeeping workers | 4,117 | $18.97 | 96.3% | 1,171 | 2.5% |
| | Real estate brokers | 5,092 | $17.20 | 64.2% | 1,160 | 2.1% |
| | Purchasing agents, except wholesale, retail, & farm products | 6,848 | $24.66 | 93.6% | 1,150 | 1.6% |
| | First-line supervisors/managers of mechanics, installers, & repairers | 16,522 | $26.09 | 92.6% | 1,145 | 0.7% |
| | Sheet metal workers | 6,126 | $15.30 | 78.3% | 997 | 1.5% |
| | First-line supervisors/managers of personal service workers | 3,579 | $16.44 | 96.8% | 922 | 2.3% |
| | Electrical power-line installers & repairers | 4,185 | $22.86 | 83.9% | 805 | 1.8% |
| | First-line supervisors/managers of non-retail sales workers | 8,468 | $30.25 | 93.2% | 782 | 0.9% |

## Appendix C: NC Occupations by Educational Band (2010-2020)

| Educ Band | Occupation Description | Estimated NC Emp 2010 | Est. NC Median Hourly Wages 2010 | % of Est. US Median Hourly Wages 2010 | ΔEmp 2010-2020 | Annual Growth Rate 2010-2020 |
|---|---|---|---|---|---|---|
| | Water & liquid waste treatment plant & system operators | 3,093 | $16.96 | 88.5% | 688 | 2.0% |
| | First-line supervisors/managers of housekeeping & janitorial workers | 6,409 | $14.64 | 87.5% | 654 | 1.0% |
| | Detectives & criminal investigators | 3,781 | $21.39 | 71.6% | 633 | 1.6% |
| | Food service managers | 6,168 | $24.01 | 105.8% | 597 | 0.9% |
| | ***Total of fastest growing occupations in "educational band"*** | **348,241** | | | **61,659** | |
| | ***Total all occupations in "educational band"*** | **667,049** | | | **59,980** | |
| **High School Degree** | Customer service representatives | 71,471 | $14.41 | 99.0% | 16,064 | 2.0% |
| | Construction laborers | 21,340 | $11.78 | 84.1% | 9,036 | 3.6% |
| | Executive secretaries & administrative assistants | 47,863 | $18.00 | 89.9% | 8,804 | 1.7% |
| | Truck drivers, heavy & tractor-trailer | 45,272 | $18.21 | 100.4% | 7,087 | 1.5% |
| | Bookkeeping, accounting, & auditing clerks | 47,235 | $15.36 | 95.5% | 6,865 | 1.4% |
| | Secretaries, except legal, medical, & executive | 55,539 | $14.02 | 97.3% | 5,701 | 1.0% |
| | Maintenance & repair workers, general | 42,106 | $16.57 | 99.6% | 5,483 | 1.2% |
| | Medical assistants | 11,202 | $13.51 | 98.1% | 5,043 | 3.8% |
| | Social & human service assistants | 14,750 | $12.70 | 94.6% | 4,890 | 2.9% |
| | Dental assistants | 8,499 | $17.01 | 106.4% | 4,489 | 4.3% |
| | Sales representatives, wholesale & manufacturing, except technical & scientific products | 41,754 | $20.85 | 85.2% | 4,453 | 1.0% |
| | Pharmacy technicians | 10,969 | $12.37 | 91.6% | 3,669 | 2.9% |
| | Billing & posting clerks & machine operators | 13,429 | $14.94 | 98.0% | 2,778 | 1.9% |
| | Sales representatives, services, all other | 11,813 | $23.41 | 98.6% | 2,430 | 1.9% |
| | Sales representatives, wholesale & manufacturing, technical & scientific products | 13,140 | $27.64 | 80.6% | 2,414 | 1.7% |
| | Operating engineers & other construction equipment operators | 9,332 | $15.24 | 79.7% | 2,287 | 2.2% |
| | Correctional officers & jailers | 16,700 | $14.50 | 77.3% | 2,044 | 1.2% |

## Appendix C: NC Occupations by Educational Band (2010-2020)

| Educ Band | Occupation Description | Estimated NC Emp 2010 | Est. NC Median Hourly Wages 2010 | % of Est. US Median Hourly Wages 2010 | ΔEmp 2010-2020 | Annual Growth Rate 2010-2020 |
|---|---|---|---|---|---|---|
| | Painters, construction & maintenance | 5,975 | $13.93 | 85.9% | 1,912 | 2.8% |
| | Cement masons & concrete finishers | 4,056 | $14.50 | 85.1% | 1,647 | 3.5% |
| | Drywall & ceiling tile installers | 2,412 | $13.39 | 74.9% | 923 | 3.3% |
| | Pest control workers | 2,576 | $13.15 | 89.9% | 832 | 2.8% |
| | Cooks, institution & cafeteria | 7,873 | $10.31 | 94.8% | 823 | 1.0% |
| | Mixing & blending machine setters, operators, & tenders | 5,453 | $15.04 | 97.5% | 756 | 1.3% |
| | Pipelayers | 2,700 | $14.17 | 87.9% | 689 | 2.3% |
| | Police, fire, & ambulance dispatchers | 3,478 | $14.61 | 87.3% | 670 | 1.8% |
| | Eligibility interviewers, government programs | 5,430 | $15.94 | 82.5% | 633 | 1.1% |
| | Computer-controlled machine tool operators, metal & plastic | 4,236 | $16.34 | 98.6% | 618 | 1.4% |
| | Surveying & mapping technicians | 3,083 | $16.03 | 89.7% | 554 | 1.7% |
| | ***Total of fastest growing occupations in "educational band"*** | **529,686** | | | **103,594** | |
| | ***Total all occupations in "educational band"*** | **793,398** | | | **94,962** | |
| **Below High School** | Home health aides | 78,023 | $9.53 | 96.8% | 34,951 | 3.8% |
| | Combined food preparation & serving workers, including fast food | 105,976 | $7.86 | 94.9% | 21,607 | 1.9% |
| | Retail salespersons | 128,368 | $9.35 | 96.0% | 13,862 | 1.0% |
| | Office clerks, general | 59,443 | $12.16 | 96.7% | 9,862 | 1.5% |
| | Personal & home care aides | 14,439 | $9.01 | 95.2% | 8,173 | 4.6% |
| | Landscaping & groundskeeping workers | 27,414 | $10.59 | 93.8% | 7,606 | 2.5% |
| | Receptionists & information clerks | 31,962 | $11.64 | 96.6% | 7,136 | 2.0% |
| | Cashiers, except gaming | 100,697 | $8.07 | 94.2% | 6,212 | 0.6% |
| | Security guards | 25,490 | $10.95 | 95.6% | 6,115 | 2.2% |
| | Waiters & waitresses | 75,277 | $7.94 | 93.4% | 5,264 | 0.7% |
| | Janitors & cleaners, except maids & housekeeping cleaners | 53,644 | $9.67 | 91.6% | 5,115 | 0.9% |
| | Stock clerks & order fillers | 49,169 | $10.26 | 101.8% | 4,927 | 1.0% |
| | Teacher assistants | 40,260 | $13.12 | 89.7% | 4,659 | 1.1% |
| | Tellers | 13,845 | $11.66 | 101.1% | 3,068 | 2.0% |
| | Healthcare support workers, all other | 10,247 | $12.38 | 86.0% | 3,059 | 2.6% |
| | Bill & account collectors | 12,057 | $14.67 | 98.6% | 2,851 | 2.1% |
| | Helpers, electricians | 5,763 | $12.47 | 96.9% | 2,385 | 3.5% |

## Appendix C: NC Occupations by Educational Band (2010-2020)

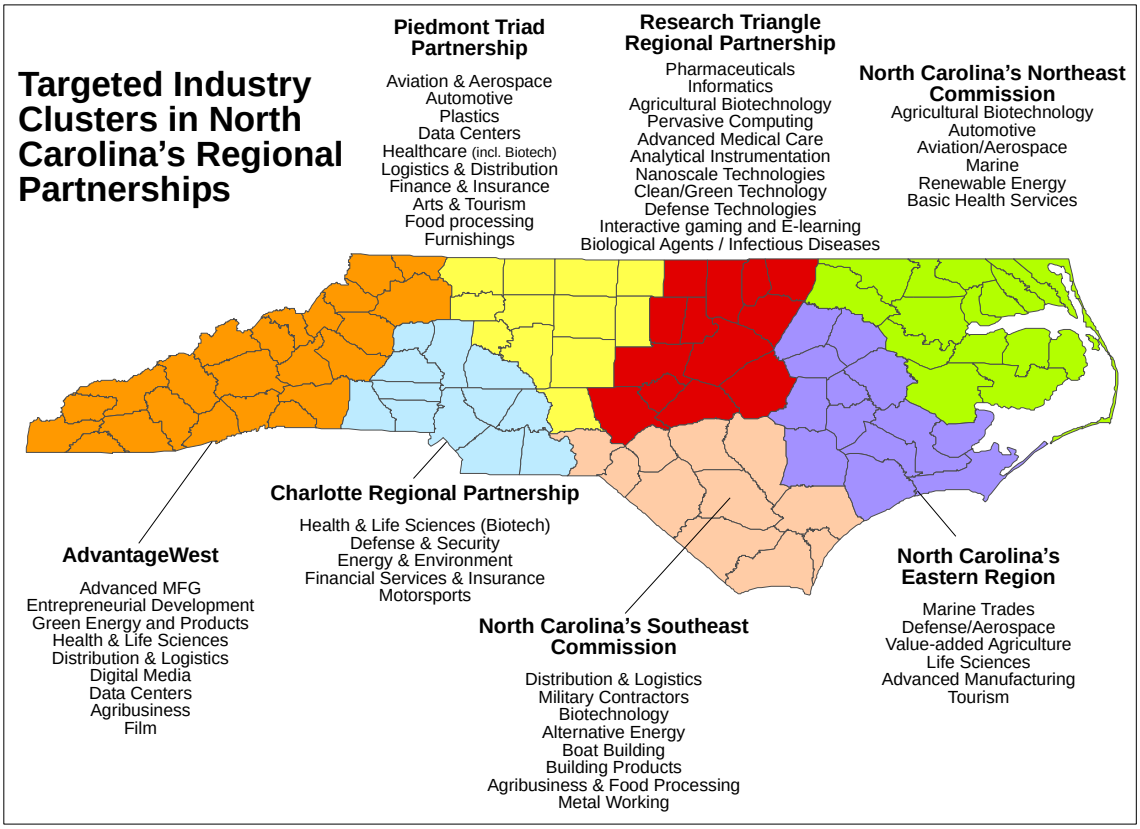
| Educ Band | Occupation Description | Estimated NC Emp 2010 | Est. NC Median Hourly Wages 2010 | % of Est. US Median Hourly Wages 2010 | ΔEmp 2010-2020 | Annual Growth Rate 2010-2020 |
|---|---|---|---|---|---|---|
| | Child care workers | 15,400 | $8.71 | 94.2% | 2,130 | 1.3% |
| | Amusement & recreation attendants | 11,368 | $8.44 | 96.9% | 1,868 | 1.5% |
| | Dishwashers | 15,490 | $8.30 | 97.2% | 1,853 | 1.1% |
| | Helpers, pipelayers, plumbers, pipefitters, & steamfitters | 4,382 | $12.66 | 98.1% | 1,853 | 3.6% |
| | Truck drivers, light or delivery services | 26,578 | $13.59 | 99.8% | 1,721 | 0.6% |
| | Food preparation workers | 29,860 | $8.34 | 91.2% | 1,651 | 0.5% |
| | Bartenders | 9,802 | $8.39 | 95.1% | 1,589 | 1.5% |
| | Hotel, motel, & resort desk clerks | 7,716 | $9.75 | 102.3% | 1,258 | 1.5% |
| | Counter attendants, cafeteria, food concession, & coffee shop | 8,738 | $8.26 | 94.5% | 1,238 | 1.3% |
| | Laborers & freight, stock, & material movers, hand | 72,352 | $10.83 | 97.5% | 1,209 | 0.2% |
| | Helpers, carpenters | 2,547 | $11.42 | 91.9% | 1,152 | 3.8% |
| | Recreation workers | 6,454 | $10.66 | 99.5% | 1,111 | 1.6% |
| | Interviewers, except eligibility & loan | 4,919 | $12.89 | 93.5% | 1,077 | 2.0% |
| | Maids & housekeeping cleaners | 29,275 | $8.59 | 92.9% | 901 | 0.3% |
| | Driver/sales workers | 13,983 | $10.34 | 94.6% | 892 | 0.6% |
| | Nonfarm animal caretakers | 3,843 | $9.30 | 98.9% | 847 | 2.0% |
| | Refuse & recyclable material collectors | 4,020 | $11.67 | 75.7% | 808 | 1.8% |
| | Hosts & hostesses, restaurant, lounge, & coffee shop | 10,590 | $8.06 | 92.5% | 801 | 0.7% |
| | Tree trimmers & pruners | 1,919 | $13.70 | 94.0% | 771 | 3.4% |
| | Helpers--Installation, maintenance, & repair workers | 5,883 | $11.26 | 97.0% | 769 | 1.2% |
| | Motor vehicle operators, all other | 5,319 | $12.99 | 103.4% | 692 | 1.2% |
| | Taxi drivers & chauffeurs | 3,503 | $9.78 | 92.6% | 610 | 1.6% |
| | Industrial truck & tractor operators | 19,255 | $13.42 | 94.4% | 580 | 0.3% |
| | Veterinary assistants & laboratory animal caretakers | 2,992 | $10.46 | 100.3% | 542 | 1.7% |
| | Counter & rental clerks | 11,822 | $9.88 | 96.5% | 501 | 0.4% |
| | ***Total of fastest growing occupations in "educational band"*** | **1,160,084** | | | **175,276** | |
| | ***Total all occupations in "educational band"*** | **1,442,115** | | | **169,167** | |

*Source: EMSI*

## Appendix Ci: Workforce issues in select targeted clusters

In addition to the industries described in the report, the state's seven economic development partnerships have all identified targeted industry clusters around which to focus their business development activities. The economic development targets are intended tend to create relatively high-skill and good paying jobs and are intended to strengthen each region's economic base. These targeted clusters are identified in Figure C.

**Figure C**




**Center for Regional Economic Competitiveness**

This Appendix discusses several of the key economic and workforce development issues related to several strategic clusters of particular importance not only to individual regions but to the state as a whole. Those clusters include aviation and aerospace, logistics and distribution, food manufacturing, life sciences, and energy. In each instance, more than one economic development partnership region identified the cluster as important sources of growth and development.

### *Aviation and aerospace*

Numerous partnership regions are seeking to grow and expand aviation and aerospace activities, including the Piedmont Triad, Eastern and Northeast regions. Within the Northeast and Eastern regions, these activities are driven primarily by large military installations—Fleet Readiness Center (FRC) East in Havelock and U.S. Coast Guard (USCG) Support Center in Elizabeth City—that focus on aircraft maintenance, repair and overhaul. FRC East employs approximately 3,500 people, of which about 90

percent are government civilians assigned to maintain Naval and Marine aircraft that have vertical lift capacity. The work is largely industrial in nature involving sheet metal fabrication, mechanics, part repairs, and other trade skills.

Many of the workers at FRC East are people with prior military or professional experience with aircraft, and many of them have worked as contractors in the past. There has also been an effort to grow a local workforce by working closely with Craven Community College, one of the state's three community colleges (along with Guilford Technical Community College and Wayne Community College) that provide coursework to prepare students for the Federal Aviation Administration's (FAA) Airframe and Power plant (A&P) certification.[1] FRC East has also worked with Craven Community College on customized training as needed and continues to develop courses in real time to respond to workplace needs. Moving forward, area leaders expect that employers will require people with unique skills related to advanced composites and logistics.

The aviation activity around Elizabeth City is driven by the U.S. Coast Guard. Support Center Elizabeth City is home to the Aviation Technology Training Center, Aviation Logistics Center, and Air Station Elizabeth City. Much like FRC East, the work around Elizabeth City focuses around maintaining Coast Guard and government aircraft. The station is supported by a number of contractors from firms such as DLS Engineering Associates, DRS Technologies, and Telephonics. One of the challenges these firms face is finding and keeping people in northeastern North Carolina. Due to a number of factors, such as the perceived weakness of the schools in and around Elizabeth City, many of these workers actually live in Virginia. As a result, maintaining and growing this workforce can be a challenge because if workers can find better paying jobs in Hampton Roads, they will take those jobs to be closer to home.

Much like in Havelock, there is an effort to grow a local aviation workforce. This will require the establishment of a pipeline for producing aviation talent. For school-age students, this will necessitate not only strengthening STEM skills, but also helping young people become more aware of career opportunities available in aviation. The region's post-secondary institutions are also working to develop future aviation workers. The College of the Albemarle currently offers aviation-related courses, and related support to help more workers gain access to the FAA's A&P certification. Moreover, Elizabeth City State University has the state's only Aviation Science program, and offers curriculum related to avionics, computer science, flight education and management.

In addition to aircraft maintenance, aviation and aerospace-related manufacturing is another area gaining traction throughout the state. There are a number of significant aircraft parts manufacturers including Curtiss-Wright in Cleveland County, Firstmark Aerospace in Granville County, Kidde Aerospace and Defense in Wilson County, and AAR Cargo/Defense Systems in Wayne County. This is important to note due not only to the existing base of activity, but also to expected supply chain opportunities resulting from the Boeing Dreamliner's fuselage assembly facilities in Charleston, SC.

Two more recent investments have further raised the North Carolina's profile for aviation and aerospace. Spirit Aerosystems, which recently constructed a new facility at Kinston's Global Transpark,

[1] The College of the Albemarle is in the process of developing this coursework.

will make park of the fuselage and wings of Airbus' A350 aircraft. Spirit currently employs 150 workers, but is expected to grow to at least 800. To ensure that it has an appropriately trained workforce, Spirit is working in conjunction with Lenoir Community College for customized training programs related to composites and metalworking. This customized training will help Spirit meet the needs for many of its line workers, but for Spirit and many of the other manufacturing companies in the Eastern part of the state finding engineers can on occasion be difficult as there is not a high density of opportunities.

Another high profile investment in recent years has been HondaJet at the Piedmont Triad International Airport. In addition to a production facility for small aircraft, HondaJet also located its corporate headquarters in Greensboro. Combined, it is expected to employ approximately 300 people at the Piedmont Triad airport. Much like Spirit Aerospace, HondaJet is working with its local community college to design customized training to prepare its workforce. For instance, it is working with Guilford Technical Community College on a program to help train workers to install the interiors of HondaJet planes.

### *Distribution and logistics*

Aviation also plays a key role in the Piedmont Triad region's desire to establish itself as a logistics hub. It is currently the location of FedEx's Mid-Atlantic Hub—one of only five FedEx hubs throughout the country. Although it has not yet achieved its expected employment, it is nevertheless an important component of the region's vision to create an "Aerotropolis", or basically establishing the Piedmont Triad as the premier distribution hub on the East Coast by leveraging the Piedmont Triad International Airport. FedEx also has a freight distribution center near the airport, but FedEx is not the only major distribution company in the region. The region is also home to distribution centers for recognizable companies such as Kmart, Polo Ralph Lauren and Harris Teeter, all of which have distribution and warehouse centers that are over 900,000 square feet. The region is also served by trucking companies such as Old Dominion Freight Line, Epes Transport Systems and MGM Transport.

As an industry, technology is rapidly changing the way stock moves from warehouses to their end destinations. As a result, warehouse workers must continue to adapt and upgrade their skills and their comfort level with these kinds of technologies. However, one company indicated that people are more flexible than machines so warehouses cannot be fully automated. Instead people need to be able to adapt and learn new technologies and processes as they are implemented.

In order to better prepare the Piedmont Triad region's workforce for warehouse-related careers in this way, the region is developing the North Carolina Center for Global Logistics. This facility will be housed at Guilford Technical Community College's Northwest Campus. In addition to providing training, education and support services to students, the facility will include a teaching warehouse to provide students with hands-on, practical experience. Within the Piedmont Triad and other regions, such as the Northeast, there has also been an identified need for not only trained, but experienced truck drivers.

The Piedmont Triad is not the only region seeking to generate employment around distribution and logistics. Many efforts in North Carolina's Southeast region focus around the Port of Wilmington. This port is an important site for shipping many of the goods produced in North Carolina (e.g., wood pulp, animal feed, furniture, tires, etc.) to world markets. It is also a site through which many raw materials

and food products come into the state. North Carolina's ports have also served the state's military installations. The Port of Morehead City has been an important port serving the Marine Corps, and the Port of Wilmington has played a key for deployments and redeployments of troops going in and out of Fort Bragg.

North Carolina's Northeast Region is another area seeking to develop opportunities related to distribution and logistics. Interstate 95 runs through the western part of the region, and the eastern part of the region is close to the Hampton Roads area in Virginia which is one of the largest ports on the East Coast. The region however will need to upgrade area roads into the greater Norfolk area in order to better take advantage of opportunities emerging from Southeast Virginia.

### *Food manufacturing*

Agriculture and food manufacturing are important throughout the state, but especially so in the more rural partnership regions. In the east, large pork and poultry producers employ a large number of area residents, and they are supplemented with crop producers growing sweet potatoes, peanuts and cucumbers. In spite of increasing output and productivity, agricultural employment continually declines due to improved crop yields and increase use of technology. As a result, much of the job growth has occurred in food processing, rather than the actual planting, growing, and harvesting of crops. Large food processors often make use of many relatively low-wage, low-skill workers. Hispanic laborers are often the backbone of the area workforce, and food manufacturers often post job openings in both English and Spanish.

Innovation plays an important role in the future of the state's food manufacturing industries. North Carolina's Northeast is a region that is land rich. They are trying to position this asset to "field-test" innovative agriculture and food production processes and techniques For instance, Empire Foods recently opened a 200-person facility in Halifax that rapidly heats and cools produce, neutralizing food-spoiling enzymes while keeping its flavor and nutrients intact. This technology and process was developed by researchers at Duke University and North Carolina State University.

In the Advantage West region, many of the food-related activities have focused around supporting small entrepreneurial food ventures. Through programs like Farmer's Fresh Market[2] in Rutherford County, local growers are able to use an online farmers market that connects them with chefs and restaurants in nearby Charlotte and Asheville. This program, run through the Foothills Connect Business and Technology Center, is being replicated in several other locations throughout the state including Rowan and Rockingham counties. Blue Ridge Food Ventures is another resource designed to support small food-related entrepreneurs. Housed at Asheville-Buncombe Technical Community College, Blue Ridge Food Ventures provides a kitchen incubator that has provided facilities for specialty food producers. Companies emerging from this incubator are making products such as ginseng, tea, mustards, jams, chips and hot sauces. While many of these ventures may never create massive amounts of employment, increasing the number of firms in the region will increase the odds that one or two of them will grow to the point where they become significant job generators.

[2] http://www.farmersfreshmarket.org/rutherford/

### *Life sciences and biotechnology*

Biotechnology and the life sciences has been a significant driver of economic activity, as well as a focal point for economic and workforce development throughout the state. These activities, are concentrated around the Research Triangle region, but are expected to spur biotechnology investments in surrounding regions as well. For instance, contract pharmaceutical manufacturing organizations are located in nearby regions while numerous companies have sought to locate their R&D activities in or near the Park.

Locating near Research Triangle Park allows R&D and prototype product manufacturers to take advantage of the research assets available in the region's core, while at the same taking advantage of the cost benefits from less expensive space and available talent when they locate in the surrounding area. Among the biotech firms with R&D facilities in the Triangle core and manufacturing operations an easy drive away include Becton Dickinson which has R&D facilities in Research Triangle Park, manufacturing facilities in Alamance and Wilson counties, and a distribution center in Johnston County. Several counties along the US 264 corridor from Rocky Mount to Greenville have sought to leverage these opportunities by forming the BioEast Alliance, in partnership with North Carolina's Eastern Region and the NC Biotechnology Center. This area not only is seeking to take advantage of its proximity to the Research Triangle, but also hopes to leverage the assets found around Greenville like East Carolina University's (ECU) Brody School of Medicine, and companies like Metrics, Inc, Merck, Hospira and DSM Pharmaceuticals.

It has long been well understood that the biosciences industry's growth depends on North Carolina's investment in creating a workforce capable of supporting a variety of life science R&D and related manufacturing activities. The BioWorks program, which is run through the North Carolina Community College System, is intended to prepare high school graduates and displaced workers for entry-level positions in bioprocessing as well as pharmaceutical and chemical manufacturing. The program is intended to provide people with the training they need to enter these fields in a matter of weeks and month, not years.

Biotechnology will continue to grow in North Carolina if there is a strong pipeline of highly skilled workers. While the state's post-secondary institutions will provide many of these people, the state will nevertheless need to continue attracting world-class talent from across the globe. This will be important, not just for growing biotechnology research and industry around the Research Triangle, but also for growing it in other key centers like around East Carolina in Greenville, Wake Forest in Winston-Salem, UNC-Charlotte, and the North Carolina Research Campus in Kannapolis.

Several companies noted that finding people with unique or specialized skills can prove difficult. Consequently, North Carolina must remain an attractive place for people to live. There is a continued need for businesses to access capital and entrepreneurial talent to help researchers remain committed to fully exploring and commercializing good ideas to the point where they can become significant job generators. Lack of equity capital was frequently cited as an inhibitor of innovation during the recession as many of the country's largest venture capital funds have reduced their investments and focused them in their core markets (e.g., Boston, Silicon Valley).

### *Energy and the green economy*

Energy is another targeted cluster of activities that reaches many areas of the state. One of the biggest challenges the state's energy firms face is a rapidly aging workforce. For instance, Duke Energy indicates that more than half of its 17,000 employees in the greater Charlotte area are eligible to retire in the next decade. In some instances, this is affecting specific occupations such as line workers where there is a recognized need to prepare the next generation of power line workers. More broadly, however, the power stations will be most affected by the pending retirements, and in terms of sheer numbers will need to find sufficient numbers of people to fill positions related to engineering, operations, radiation protection, and maintenance. At the managerial level, there is an ongoing need for people with the Certified Energy Manager certification.

In order to meet these needs, energy companies are recruiting graduates from many nearby universities such as NC State and the University of South Carolina for nuclear engineers, as well as getting graduates from Clemson, UNC-Chapel Hill, and UNC-Charlotte. It should be noted that these jobs also require a substantial amount of on-the-job training. For those jobs not requiring a 4-year or advanced degree, the utility companies are working with area community colleges. Around the Charlotte area, the utility companies are working with Gaston College to train operators, and Spartanburg Community College to provide training in radiation protection technologies.

Opportunities will also emerge for the state in areas relating to renewable energy generation and "green" products and services. The North Carolina Sustainable Energy Association estimates that within North Carolina, there are 12,500 full-time equivalent jobs in over 1,000 firms in industries related to renewable energy and energy efficiency.[3] This represents a 22 percent increase from the employment estimates found in the previous year. The majority of the firms are involved in activities related to energy efficiency and building sciences, but other significant activity can be found in areas such as solar, biomass, wind, and smart grid technology. The future of these activities is much harder to predict as demand for these renewable energy is driven primarily by state regulations[4], as well as the cost and efficiency of the technology used.

The construction trades are one area that will most likely be affected by the increase demand for more energy efficient technologies, as trades people will be the ones installing technologies or retrofitting homes. The interest among workers to enter these fields is great, although in most instances the demand will be met by existing workers enhancing and upgrading their existing skill sets (e.g., plumbers learning to install solar hot water heaters). While the cost of technologies like solar panels and water heaters has diminished, other barriers continue to exist. For instance, certifications to do much of this work is very important (e.g., North American Board of Certified Energy Professionals-NABCEP for those

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[3] *2010 North Carolina Renewable Energy and Energy Efficiency Industries Census.* NC Sustainable Energy Association, October 2010.

[4] The state's renewable portfolio standard (RPS) dictates that investor owned utilities must produce 12.5 percent of its energy from renewable sources (e.g., wind, solar, biomass), and electric cooperatives and municipality utilities must produce 10 percent. If these standards were to be increased, it would increase the demand for renewable energy and its associated technologies and standards.

involved in PV and solar thermal installation), but they are not required for contractors. At the same time, many emerging fields have seen no single certification emerge as the industry standard.

Other job opportunities are available through the operation and maintenance of renewable energy equipment such as windmills. This is of particular interest along coastal areas of the state, where the potential for offshore wind power generation is greatest. The production of green-related products is another way that the state can take advantage of the growing demand for renewable energy. In some instances, this involves making new products or developing new technologies. For instance, North Carolina State University has established the FREEDM Systems Center to develop smart-grid technologies. Other North Carolina companies are looking to modify their existing products and processes to take advantage of emerging market opportunities. For instance, the Energy Center at Appalachian State University worked with a Rutherford County metalworking company to help them identify ways they could make products related to solar and wind. In Wilkes County, a company that manufactures mirrors is looking to find ways to produce components for solar panels.

### Common targeted cluster issues across all regions

It is important to reiterate that the five targeted clusters mentioned above are not the only clusters that economic development organizations around the state are focusing on. There are many others like interactive gaming and e-learning in the Research Triangle region, or automotive technologies being developed at the North Carolina Center for Automotive Research (NCCAR) in the Northeast. However, these targeted clusters all have several commonalities that can inform the way we think about the development of these and other clusters.

First, many of these clusters have emerged by leveraging key regional assets. For instance, the maintenance, repair and overhaul activities associated with the aviation and aerospace clusters within the Eastern part of the state take advantage of key military and civilian government facilities. These regional assets not only create direct demand for skilled labor, but also create opportunities in many supporting and ancillary services. Moreover, they have shown that doing this kind of work in more rural locations is possible. The success of FRC East in Havelock, for instance, was one of the influences on Spirit Aerospace's decision to locate in Kinston.

Second, all of these targeted clusters require medium- and long-term thinking to develop a sustainable pipeline of talent. They all require current and future workers to become aware of the opportunities within their industries, and this career awareness can start as early as middle school. They need education and training resources at all levels of skill. In some instances, this requires training for a small number of people for 'mission critical' occupations, and in other instances they simply need a larger and deeper pool of more general talent. To this point, interviewees across the state highlighted the vital role of the state's the community college system as well as the research and talent development provided by the state's university system as vital to these targeted clusters.

Finally, in several instances stakeholders noted that economic and workforce development opportunities—or challenges—do not stop at the state line. For instance, within the energy sector, the construction of a nuclear power plant in South Carolina will create many high-paying jobs for North

Carolinians. Similarly, the proximity of the northeastern communities to Hampton Roads could provide many employment opportunities, especially in that region's port and logistics sector. In addition, North Carolina's entire workforce does not live in North Carolina. The aviation and aerospace cluster around Elizabeth City depends heavily on skilled workers driving in from Southeast Virginia. Similarly, events in other states can negatively impact North Carolina. For instance, when International Paper closed its plant in Franklin, VA and let go of 1,000 workers, approximately 300 of those workers were North Carolinians.

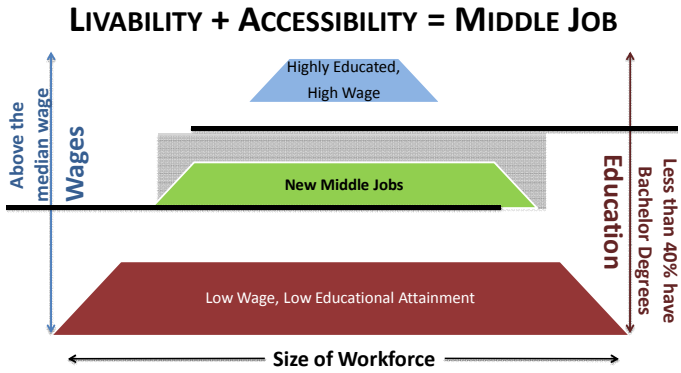
In spite of the economy, the industry activities described above show that opportunities exist throughout the economy. Even within declining sectors like manufacturing or construction, new job opportunities are emerging. In many instances, however, workers entering those industries will be asked to perform different tasks and possess different skills than the workers who are leaving those industries.

## Appendix D: Defining Middle Jobs in Sub-state Geographies—Metro, Micro, and Rural Areas in 2010

### *Defining Middle Jobs*

Research conducted by the North Carolina Department of Commerce's Policy, Research and Strategic Planning Division defines middle jobs by both livability and accessibility (Figure D1). Middle jobs should pay a family sustaining wage and should also be obtainable to a large subset of the population. This research uses a quantitative definition, to determine today's middle jobs and examines occupational growth and decline within that group of occupations. For this analysis, wages have been identified as an important criterion for defining middle jobs because a key purpose of this research is to identify a list of target occupations providing livable wages for workers. The median wage was selected as the wage floor because it is an easily understandable concept and can be regularly updated. As a result, middle jobs were defined for this analysis as paying wages above the state median.

**Figure D1**




In addition to providing a living wage, a middle job must also be accessible—based on educational attainment—to a significant portion of the workforce. This analysis used educational attainment distribution data for occupations to determine the accessibility of the jobs. The standard developed is 40 percent or more of the workers in a certain occupation must have an Associate's Degree or less.[1] Throughout the research, we define accessibility by placing a ceiling on educational attainment levels. This means that the sizable portion (74 percent) of the North Carolina's population (age 25+) that does not have a Bachelor's Degree could potentially obtain jobs in these occupations with relatively limited resources to pay for education or training beyond high school.

[1] The Middle Jobs Analysis utilized educational attainment distribution data that are from the U.S. Census' American Community Survey public use microdata files. These data, on North Carolina's workers who are 25 years and older, present the percent distribution of workers currently employed in an occupation, broken down by their by highest level of education attained. One major difference between the BLS training category system and these educational attainment distribution data is that the BLS category system allows assignments of training categories, whereas attainment data report strictly on educational attainment.

## *Regional Overview*

Even though metropolitan counties dominate the State's population relative to micropolitan and rural counties, all three regions align with North Carolina statewide regarding the portion of their workforce that are middle jobs. Additionally, the metropolitan region's breakdown of job groups is most similar to the State's, followed by the micropolitan and finally the rural. Even so, none of the regions deviate greatly from the state proportion.

**Figure D2: Middle Jobs as a Percent of the Total Workforce (2010)**

| Job Type | North Carolina | Metropolitan | Micropolitan | Rural |
|---|---|---|---|---|
| Low Wage, Low Educational Attainment | 65.8% | 65.3% | 66.7% | 65.1% |
| Middle Jobs | 20.5% | 20.2% | 23.0% | 24.1% |
| High Wage, High Educational Attainment | 13.3% | 14.3% | 10.2% | 10.7% |

*Source: Economic Modeling Specialists, Inc.*

An additional distinction between the regions is in the wage breakdown of employees in middle occupations. Median wages in the regions all differ from the statewide median wage with metropolitan counties exceeding the state rate and micropolitan and rural counties fall below it.

**Figure D3: Middle Jobs' Median Wage Level (2010)**

| Job Type | North Carolina | Metropolitan | Micropolitan | Rural |
|---|---|---|---|---|
| Median Wage | $18.43 | $19.25 | $16.12 | $15.01 |
| Median Annual Wage | $38,334 | $40,040 | $33,530 | $31,221 |
| % of State Median Wage | 100.0% | 104.4% | 87.5% | 81.4% |

*Source: Economic Modeling Specialists, Inc.*

As with the overall median wage by region, median wages paid to employees in middle job occupations vary substantially. Wages in metropolitan counties exceed median wages of middle job occupations in other regions of the State. The largest discrepancy is between metropolitan counties and rural counties. For example, the median wage for the occupations that employ 79 percent of the middle job workers in rural counties is less than $50,000 a year. In metropolitan counties, 58 percent work in occupations that earn median wages in excess of $50,000.

A commonality between the regions is found at the occupation group level, as each of them have and will continue to experience growth in healthcare and technical occupations, specifically with respect to registered nurses. Aside from nursing, the occupations within the middle job category differ by region. Micropolitan and rural counties have a larger concentration of installation, maintenance, and repair or production occupations, while the metropolitan areas are more heavily represented by management, business operations, and sales-related occupations. To a large degree this trend is expected to continue into the next decade.

### Metropolitan Areas

- Metropolitan counties constitute roughly 70 percent of the people and workers in North Carolina.

- The wage and educational attainment trends in Metropolitan counties is similar to that in the State as a whole.
- Middle jobs experience a growth rate in metropolitan areas below that of the State as a whole.
- High wage, high educational attainment jobs in the metropolitan region experience the greatest growth since 2002. This is expected to continue over the next decade.
- Metropolitan counties have a higher percentage of high wage, high educational attainment workers than the state as a whole.
- Metropolitan counties have a lower percentage of middle jobs and low wage, low educational attainment workers than the State overall.
- Since 2002, registered nurses have accounted for the same growth in middle jobs as the next eleven occupations combined.
- Since 2002, the four occupations with the largest job losses are supervisors or managers. These four occupations account for more than the next 37 job-loss occupations combined.
- By 2020, 47 percent of the middle jobs will be found in the business and financial operations, or healthcare practitioners and technicians, occupation groups.

### Micropolitan Areas

- Micropolitan counties constitute 21 percent of the labor force in North Carolina and 24 percent of the unemployed workers.
- Middle jobs have remained 23 percent of the total jobs in the workforce since 2002. This trend is expected to continue over the next decade.
- High wage, high educational attainment jobs are expected to grow to 10.4 percent of total jobs, but will remain below the statewide level (14.2 percent).
- Since 2002, supervisory and management occupations have seen significant losses from the middle; however, losses in skilled trades such as welders, electricians, brick masons and machinists are all among twenty middle job occupations with the largest job loss.
- Over the next decade only the production occupations group is expected to lose middle jobs.
- The difference between middle jobs in micropolitan areas and the middle jobs statewide is in the skilled occupations. Occupations such as mechanics and installers, plumbers, electricians and electrical repair workers are expected to be among the top twelve occupation gainers over the next decade.

### Rural Areas

- There are more middle jobs in rural North Carolina than in the State overall as a proportion of the total workforce.
- The range of wages and educational attainment levels of rural middle jobs are concentrated at the low end.
- The types of rural middle occupations and corresponding trends are similar to North Carolina statewide.
- Over half (53 percent) of the 193 types of middle jobs found in rural areas earn median wages that are less than $20 per hour and ninety percent are those where the majority of people have an associate's degree or less education.
- There are also significantly less high-wage, high-educational attainment jobs than in the more urban areas of the State.
- Like the State as a whole, the occupation groups that have lost the most middle jobs since 2002 are production occupations, management occupations, and installation, maintenance, and repair occupations.

- The occupation groups that gained middle jobs over the same time period include healthcare practitioners and technical occupations, and business and financial operations occupations.
- Although rural areas were impacted by the Great Recession, the impacts were not as extreme as those in urban areas. This could be due to the huge job losses rural areas already experienced over the past fifteen years due to North Carolina's declining traditional industries.
- Rural middle occupations declined by over 4,000 jobs from 2007 to 2010. Sixty-three percent of these losses were concentrated in ten occupations, including heavy and tractor-trailer truck drivers, first-line supervisors/managers of construction trades and extraction workers, and first-line supervisors/managers of production and operating workers.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