



The South Carolina Challenge: Regional Economic Analysis

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Summary and Strategic Implications

I.1. Structure of This Report

The purpose of this study is to provide a fresh integrated review of where South Carolina is today, the characteristics of its “portfolio” of industry clusters, and the current condition of the state’s economic foundations – its workforce, regulatory environment, infrastructure, and technology assets.

A study like this is not meant to be an end in itself. It is meant to simply serve as a base of shared information to stimulate positive, collaborative action-oriented discussions among the people, businesses, and political leaders of South Carolina. Each action or step taken as a result of these discussions may seem individually modest, but taken together they will move the state more rapidly along a path to a higher standard of living.

The study is organized into four core chapters:

- ◆ **Chapter II** provides an introduction to the basic framework of the study with a focus on cluster-based economic development thinking and the role of innovation.
- ◆ **Chapter III** provides an objective review of South Carolina’s position in the country based on an analysis of economic data and DRI•WEFA’s forecasts over the next few years.
- ◆ **Chapter IV** identifies and characterizes South Carolina’s industry clusters.
- ◆ **Chapter V** provides an assessment of the state’s economic foundations.

This section is designed to emphasize the purpose of the study which is to provide information and analysis to stimulate collaborative action among all the relevant players in South Carolina. The most important findings of the study in each area are discussed along with the consequent implications and some recommended strategic directions.

I.2. Industry Clusters

This study has identified a portfolio of industry clusters in South Carolina that collectively make up 30% of the state’s economy. These are comprised of a group of established industry clusters as well as a group of emerging or potential “seed clusters.” The seed clusters are further segmented into two categories. Commercially-based seed clusters are those that have a measurable level of private sector commercial activity within South Carolina. Technology-based seed clusters are those that are based on the existence of associated technology assets with the state. These technology assets generally consist of public and private R&D establishments.

Table 1
South Carolina's Clusters

Established Clusters	Commercially-based Seed Clusters	Technology-based Seed Clusters
Apparel	Advanced Materials	Nanotechnology (materials & electronic)
Components & Sub-Assemblies	Software, Hardware, & Internet	Environmental Science
Food & Agriculture		Horticulture & Related
Forestry, Wood, and Paper		Defense & Related
Machinery & Fab. Metals		Pharmaceuticals
Materials		
Professional Services		
Textiles		
Tourism		
Transportation Equipment		
Transportation Services		

There is some evidence of naturally formed clusters in South Carolina. However, these clusters are overwhelming concentrated in slow-growing industries. With a few exceptions, there is little evidence that the companies and economic foundation providers within these clusters have established a vision of themselves as being part of a cluster community dedicated to fostering growth and overcoming barriers within their industry cluster. In addition, of the seed clusters identified in this study, only two of them have strong commercial operations, while the remaining five are currently only based on existing technology assets identified in the state.

As it now stands, South Carolina **cannot compete vigorously** in the new, knowledge-based economy with this mix of industries and this quality of economic foundations. A two-pronged approach, designed to improve foundations, especially education, and to diversify South Carolina's industries, needs to be fostered. One of the best ways to do this is to establish cluster initiatives that will drive their industry forward.

Recommendation: Establish Cluster Working Groups

- ◆ South Carolina needs to take a deliberate approach to clustering. Clustering is the act of pro-actively accelerating the process of creating institutions that provide needed economic infrastructure and strengthening linkages between networks of firms and these institutions. The first step is to establish collaborative cluster group that includes both significant public and private collaboration and academic representation. These working groups can identify common problems and barriers to industry growth, cooperate on initiatives of mutual interest, identify expansion, attraction and retention goals, and establish linkages within and among clusters.

Recommendation: Develop Cluster Strategies

- ◆ After each cluster working group is formed, they need to begin a process of strategic discussions. These sessions should identify cluster components, evaluate the market and technology trends for the cluster, define the target or niche markets (agree on a vision), benchmark best practices, and put these together to develop a cluster

strategy; initiatives, select champions, and write “business plans” that outline concrete action initiatives they will champion.

Recommendation: Capitalize on State R&D

- ◆ South Carolina needs to capitalize on the intellectual research being performed in the state. One seed cluster (advanced materials) already exhibits strong and growing linkages between corporate research and development and commercialization. The challenge remains for South Carolina to further develop linkages between its technology assets and both the existing and seed clusters within South Carolina. Areas to encourage are material science, biochemistry, and environmental science/engineering. These R&D specialties are related to most of the existing clusters within South Carolina. Focusing on three R&D areas provides diversification in research, while allowing a focussed path for resources.

Recommendation: Foster Connectivity

- ◆ South Carolina needs to foster connectivity between clusters to drive economic performance. Old economy linkages may foster new economy links. For example, industrial manufacturing may help support the development of an environmental technologies cluster, together with the technology assets in the state, which can link back to other manufacturing industries such as wood and paper products as well as the specialized services cluster.

I.3. Economic Structure Implications

The economic overview chapter of this study points to a state that, while it is growing, has been unable to close the gap with many of its neighbors or other leading growth states. South Carolina’s current position is based on a set of mature or declining industry clusters like basic materials, textiles, and automotive assembly and a relative advantage in labor costs and taxation.

Key indicators such as gross state product and average hourly earnings highlight the state's relatively weak performance. In addition, it is clear that the state is **already a low tax haven** – ranked 45th of all the states in terms of per capita state tax revenue and 33rd in terms of state taxes as a share of personal income.

South Carolina’s **low labor force participation rate** is of particular concern and is a key factor behind the state’s low rankings in terms of per capita gross domestic product. This is a problem in its own right in that getting more people to work will mean higher incomes. In addition, it is an indicator of the relatively underdeveloped nature of the state’s work force. Compounding this dynamic is a **reduced supply of 25 to 34 year olds**, both in absolute terms and in relation to growth of this demographic cohort in the rest of the country. Competition for investment dollars is increasingly being based on access to a high-quality skilled and flexible labor force. The development of more vibrant industry clusters will be built on a foundation of improvements in the quantity and quality of the available work force.

Recommendation: Increase Skilled Labor Pool

- ◆ A low labor force participation rate and shrinking young demographic cohort are pressuring the skilled labor availability. Focus on initiatives to increase the labor force participation rate, mainly via improvements in education with a focus on

remedial and continuing education. Take advantage of general migration trends to market South Carolina as a destination for young professionals, emphasizing the good quality of life and relatively low taxes.

I.4. Economic Foundations

The following points summarize the assessment of South Carolina’s economic foundations:

Labor Force Skills—South Carolina’s educational system lags behind its benchmark states in terms of quality, availability of high-quality research-centered institutions, and access to financial support. There is evidence that South Carolina is already taking steps to improve the inputs in its educational system, however, the results of these changes will take many years to materialize.

Access to Capital—Investment capital is caught in a negative cycle in South Carolina. A dearth of good investment opportunities in the state has stunted the growth of venture capital businesses. In turn, as a result of limited investment funding, businesses with good opportunities for investment have difficulty accessing the necessary capital. Business formation in South Carolina appears stagnant.

Technology—R&D funding and activity is low in the state, in terms of both government sponsored and corporate initiatives.

Infrastructure—Several of South Carolina’s infrastructure indicators provide positive support to its overall development. For example, in terms of geographical proximity, South Carolina is well positioned for the market place. The state, however, is at a disadvantage as its information technology infrastructure is less adequate than the benchmark states.

General Business Climate—The cost of doing business in South Carolina is favorable—operating costs are relatively low.

Quality of Life—On average, South Carolina rates well in terms of “quality of life”. The low cost of living relative to average earnings is a key positive contributor to the state’s quality of life.

The most important finding of the study is that South Carolina’s **educational system** lags behind its benchmark states in terms of quality and access to financial support. While South Carolina has already begun to improve some long-term issues, it will also need to address a skilled labor shortage in the short-term.

Recommendation: Pursue Excellence in Education

Long-Term Goals

- ◆ Mandatory course work at primary/elementary level -- strive to improve verbal, math, and science skills foundation.
- ◆ Set up remedial sessions whereby top-scoring students help others for extracurricular credits.
- ◆ Consolidate institutions of higher learning and improve quality and standards of colleges and universities.

- ◆ Transform some colleges or universities to focus on vocational or technical training that specifically correlate to the industry clusters and workforce requirements needed within the state.
- ◆ Coordinate higher education priorities at a state level. Establish industry partnerships between colleges and universities. Target key R&D areas that link to industry clusters in the state.

Short-Term Goals

- ◆ Encourage labor-force training.
- ◆ Develop a more comprehensive endowed-chair program to attract top academics to teach at colleges and universities.

Growing pains are a fact of life in the New Economy. At some point, every entrepreneur needs **flexible financial support**. Business formation has been limited in South Carolina, and investment capital disbursements are low. Low total lending, however, may just be a reflection of the dearth of company start-ups.

Recommendation: Market the Availability of Financing

- ◆ Ensure that entrepreneurs are aware of the financing and venture capital options available in South Carolina.
- ◆ Establish a Small Business Investment Corporation (SBIC) within South Carolina.
- ◆ Offer one year tax holidays or discounts to new small businesses in their first year of establishment.
- ◆ Consider outreach to retiree population as a source of financing.

Incorporating **technological innovation** into the local economy is not done in a vacuum. A state’s technological base is what the New Economy is built on. R&D funding and activity is low in South Carolina, in terms of both government sponsored and corporate initiatives.

Recommendation: Encourage Corporate R&D

- ◆ Offer tax incentives to companies for R&D conducted in the state, and raise the reward if R&D is conducted in the state in conjunction with a local university.

Well-maintained **infrastructure** is key for economic development. Several of South Carolina’s infrastructure indicators provide positive support to its overall development. For example, in terms of geographical proximity, South Carolina is well positioned for the market place. The state, however, is at a disadvantage as its IT infrastructure is less adequate than the benchmark states.

Recommendation: Focus on Key Infrastructure Needs

- ◆ Improve public transportation from rural areas to major urban centers.
- ◆ Invest in IT/communication infrastructure.

The New Economy is built on human capital, raising the importance of a region’s **quality of place**. Human resource departments must recognize, and deal with, the role quality of life plays in all career decisions. On average, South Carolina rates well in terms of “quality of life”. The low cost of living relative to average earnings and climate are key positive contributors to the state’s quality of life.

Recommendation: Diversify and Market South Carolina’s Quality of Life

- ◆ South Carolina can market its quality of life as a major incentive for recruiting businesses and encouraging expansions. The work force of a company stands to benefit from South Carolina’s amenities.
- ◆ In tandem with possible tourism cluster initiatives, focus on broadening the array of cultural and recreational opportunities in the state. Such opportunities are an important quality of life dimension, especially for knowledge workers.

II. The Palmetto State Challenge

II.1. Overview

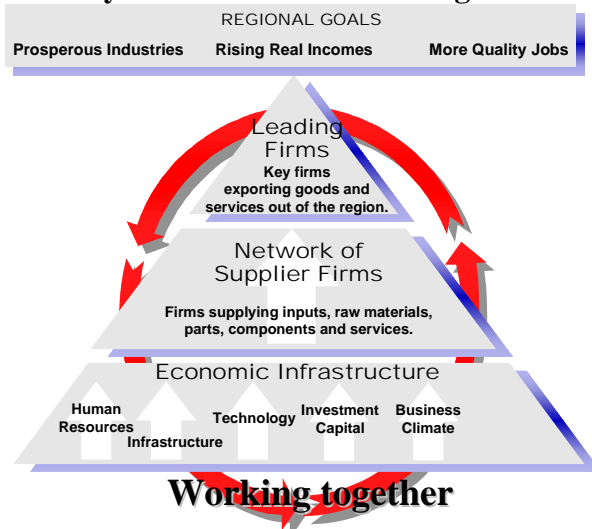
South Carolina’s current position in the global and national economy is based on a set of mature or declining industry clusters like basic materials, textiles, and automotive assembly and a relative advantage in labor costs and taxation. It is time for the state to move to the next level of development. The positive force behind this message is that the people of the state are ready and the benefits will be a higher quality of life. The negative impetus is that a wide range of regions around the world are ready to start competing even more vigorously for South Carolina’s market position. This could ultimately mean a decline in South Carolina’s relative quality of life.

South Carolina needs to start emulating the performance of other successful states and regions around the country rather than adopting a backward looking defense of the state’s current competitive position. While it is up to the people and businesses of the state to figure out exactly how to do this, there is an evolving economic development framework that can provide some guidance. Part of this framework involves the development of stronger **industry clusters** and the associated networks that connect businesses with one another as well as sources of technology, governments, and social, cultural, and educational institutions. Another key element of the framework is the development of a more vigorous **system of innovation** in the state.

II.2. Industry Clusters

A cluster is a grouping of leading firms, suppliers and the economic infrastructure that supports them. These three elements can work together which, in turn, makes each individually stronger. These groups of similar businesses are important to a regional economy because, unlike single companies or plants, together they create more jobs and are better able to adapt to market changes over time. The “clustering effect” happens when many similar firms and their suppliers locate near each other in and around a region. This clustering results in the growth of a specialized set of capabilities—skills, technologies, business services—that is more than the sum of its parts.

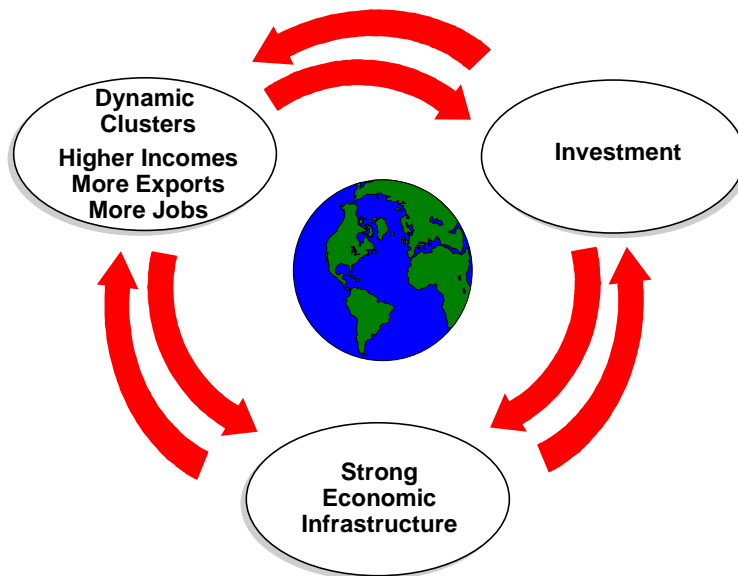
Figure 1
Cluster Dynamics Contribute to Regional Goals



Industry clusters are more about day-to-day relationships among companies that attract them to an area, than they are about any one firm. Cluster companies often compete against each other, at the same time they share many similar inputs, such as workforce skills, the region’s technology infrastructure, marketing services, or transportation.

Clusters play a key role in making a regional economy more dynamic and adaptable. A strong economic infrastructure creates a more dynamic economy and attracts investment. Each element of the virtuous cycle supports the other elements. Further strengthening South Carolina’s economic infrastructure and clusters will lead to a stronger virtuous cycle in South Carolina.

Figure 2
Virtuous Cycle of Cluster Development



An adaptive economic region has many clusters. Like an investment portfolio, a range of clusters provides economic diversity for people who live in the region. A targeted development

strategy aimed at building on what currently exists in the region could help develop greater diversity and stronger linkages of companies to their cluster and the region.

II.3. Cluster Analysis in Economic Development

Cluster analysis is considered a “best practice” tool in formulating economic development strategies. The approach was first developed in the early 1990s, and was popularized by Michael Porter in the book The Competitive Advantage of Nations. Research and experience has taught economic development academics and institutions that companies located within a cluster are more competitive than if they exist independently. Moreover, the existence of a cluster in an area is rapidly becoming one of the key factors in company location decisions. Short term incentives such as tax rebates or low-cost facilities are no longer the only criteria a company will consider. Instead, the existence of a cluster – which means that a company will have access to the capital, appropriate education institutions, existence of a talent pool, infrastructure, and proximity to buyers and sellers – are much more important to a company’s success in the long term. Thus, a region becomes the most competitive if it has the clusters that produce and attract more competitive companies. Competitiveness thus become one key measure of a region’s ability to generate higher output – for example, growth, income, revenues – from a given increase in investment.

But how does a region obtain a cluster? While clusters can develop naturally, they can also be aided by specific development strategies. Natural clusters include the automotive cluster in Detroit, the entertainment industry in Hollywood, and the information technology industry in Silicon Valley. Understanding the benefits of a concentration of similar industries has prompted other regions to encourage cluster development. The development of the Research Triangle cluster in North Carolina is credited as being a direct result of an economic development program. The laser optics cluster in Arizona is an example of a cluster that began naturally, but was enhanced through strategic planning. An agglomeration of professionals and research programs had already begun in Arizona, but there were limited linkages when the cluster was first identified. The Arizona Strategic Plan for Economic Development helped identify weaknesses in the cluster and develop specific strategies to improve the cluster¹. Intervention can foster cluster growth by eliminating restricting barriers and providing a strategy for successful growth.

On the other side, clusters can also disappear over time if they do not maintain their competitive advantage. For example, an outflow of entertainment and media companies from Hollywood in recent years, due to crime, poor neighborhood quality, and deteriorating physical infrastructure, is concerning many within the cluster. A cluster working group has now been formed to include both government and businesses in efforts to address these problems and retain the cluster’s competitiveness.

The beneficial effects of industry clusters in regional economic development has attracted national attention. In December 2001, the National Clusters of Innovation Conference was held in Washington D.C., to present the findings of a two year study on the ability of regional clusters to act as catalysts for mobilizing competitiveness and innovation. The conference was co-sponsored by the Council on Competitiveness and the National Governors Association. The Council of Competitiveness is chaired by executives from leading companies and academic institutions, including MIT, Harvard University, BellSouth, and Merck & Company. The National Governors Association is dedicated to developing and disseminating information about

¹ “The Lustre of Clusters”, *Plants Sites and Parks*, February /March 1998.

best practices in governance and state policy challenges. The report published by the Council on Competitiveness, *U.S. Competitiveness 2001*, examines economic growth in the U.S. over the past decade and assesses the factors behind it, evaluates the strengths and weaknesses of key components of the economy (similar to this study’s “economic foundations”), and details several innovation policy priorities. One of these priorities is that the U.S. needs to strengthen regional clusters of innovation to remain competitive in a global setting.

Cluster policies have been used in European industrial policy for many years. The approach is also gaining momentum in the United States. States that have used cluster analysis as a key component of formulating economic development strategy include:

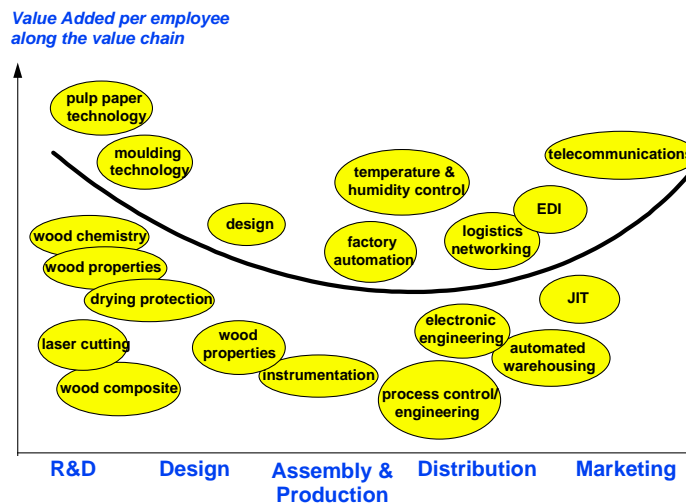
Arizona	California	Colorado	Connecticut
Florida	Georgia	Iowa	Louisiana
Massachusetts	Minnesota	Mississippi	Missouri
New Mexico	New York	North Dakota	North Carolina
Oregon	Pennsylvania	Tennessee	Virginia
Utah			

Beyond the U.S., cluster analysis is driving the formation of cluster groups in countries across the globe, from Sri Lanka to Mexico, from Australia to Canada, from Singapore to Germany.

II.4. System of Innovation

Technology is important in any industry. This role is clear in traditional “high technology” sectors such as electronics, but in agricultural, natural resource and other manufacturing industries, technology is also a critical success factor. Technology can be brought to bear at all points along the “economic value chain”. Figure 3 illustrates this point for the wood products sector. The introduction of new processes into existing productive activities is a primary form of innovation.

Figure 3
Wood Products Economic Value Chain



For a long time, the prevailing perception of the innovation process was that of a linear progression from the research and development (R&D) lab to commercialization. Also, it was regarded primarily as an intra-organizational, rather than an inter-institutional phenomenon.

Research now leaves no doubt that successful innovation arises from interactions among a variety of actors such as competing firms, research institutes, and above all, suppliers and customers.

The linear model of innovation has been used to explain the links between R&D and economic performance. The linear model has three principal variants referred to as science-push, technology-pull and market-pull. It is so highly abstract that it does not really explain the complexities of innovation in a real world. Yet it still informs many policy discussions.

There are numerous flaws with all variants of the linear model. They are all highly stylised and thus do not accurately reflect the way real labs or businesses operate. They focus almost exclusively on the R&D process, thus excluding most of the social, organizational, and financial factors upon which most innovation and economic growth are based. They artificially separate the process of knowledge creation into a series of hermetically sealed activities — basic and applied research, experimental development, design, etc. — that few in research or business would recognize. They have also, at least implicitly, separated scientists, engineers, accountants and marketers and, in so doing, have assumed that each possesses a clear set of discrete, non-transferable and inflexible skills.

Innovation is increasingly seen as the output of inter-organizational networks. For economic policy makers, the main level of analysis for understanding the innovative process is the national level, in which all actors can be seen as part of an economy-wide network.

The system of innovation model emphasizes the interdependence of the different actors in the innovation process and the feedback mechanisms involved. The model is useful as a guide for policy makers in calculating the total impact of decisions on the growth potential of the economy.

For a long time, the principal emphasis in technology policy has been on fostering the generation of knowledge, rather than on its distribution, accessibility, and application. The distinction between these models is of paramount importance for a state like South Carolina that has a path to raise standards of living through technology.

A number of broad characteristics become prominent with the adoption of this approach:

- ◆ Firms are the principal sites for the creation of wealth and cannot be viewed in isolation, but as part of a network of public and private sector institutions whose activities and interactions initiate, import, modify and diffuse new technologies.
- ◆ Linkages (both formal and informal) and the flow of intellectual resources among institutions are important.
- ◆ Learning is a key economic activity.
- ◆ The management and organization of a region's technology infrastructure is a key determinant of its successful contribution to economic growth.

This model asserts that a region's economy is more than the simple sum of its firms' activities, but is rather the result of synergies that arise from the interactions among economic actors in a region. A system of innovation can be considered important because of its distributive power; that is, the system's ability to distribute existing knowledge for recombination.

III. Regional Economic Overview

III.1. Summary

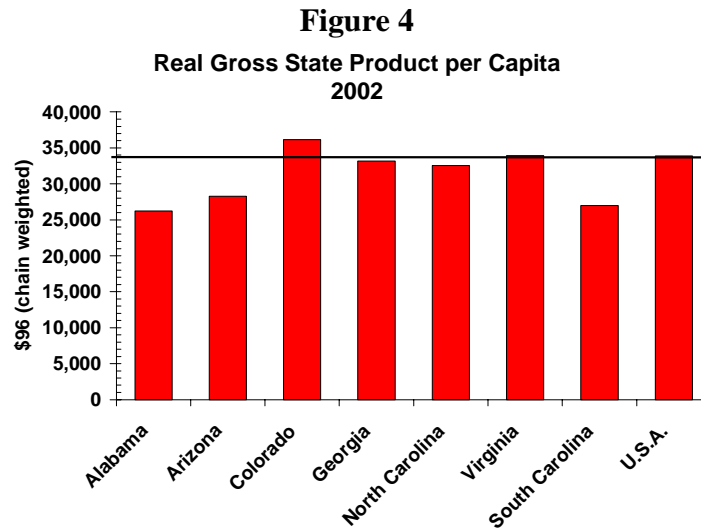
The businesses and people of South Carolina are challenged to map a more defined path through a period of difficult transition to a more prosperous future. An objective review of key economic indicators, such as output per capita, employment, industrial composition, demographics, and annual average wages reveals this challenge.

The data point to a state that continues to move forward but has been unable to close the gap with many of its neighbors or other leading growth states. South Carolina has an urgent need to chart a more defined course. Key indicators such as gross state product and average hourly earnings highlight the state's relatively weak performance.

The data also show the signs of strength that make this challenge less of a pure leap of faith and more a matter of just starting a more deliberate set of incremental steps. Some trends are already working in South Carolina's favor. The main challenges facing South Carolina are how to capitalize on existing strengths to break away from its industrial legacy and re-deploy its resources.

III.2. Gross State Output

A key measure of a state's standard of living is real gross state product (GSP) per capita. This indicator measures the total amount of value-added produced in the state per state resident. South Carolina's real GSP per capita is 20% below the U.S. average and also trails many of its neighbors. Of the states that have been selected as relevant benchmarks, Alabama is the only one whose real GSP per capita lagged the U.S. average by more than South Carolina². (See Figure 4)



Source: DRI•WEFA Inc.

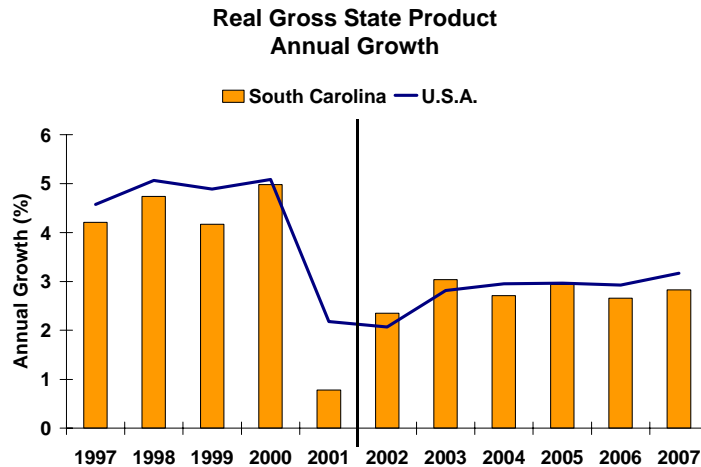
² The concepts discussed throughout this document are all analyzed at the state level. Within South Carolina, as in many states, there is great variability around the average state levels and growth rates. This is especially evident when comparing rural regions with urban regions. Many other studies, including *Strategic Plan for Economic Development in South Carolina*, have examined these differences in detail. Therefore, this report focuses on state-level data to develop a clear picture of the trends of the whole state vis-à-vis other states and the US average.

Furthermore, real GSP growth in South Carolina lagged the U.S. average for all but one year between 1997 and 2002. Consequently, the gap between South Carolina and the rest of the country, in terms of growth in the value of state production, has widened in recent years.

Over the next few years, the gap in growth rates will stabilize. To a large degree, DRI•WEFA’s forecast of real GSP growth is a reflection of the sectoral composition of South Carolina compared to the rest of the U.S. (discussed in more detail below). Manufacturing industries, after years of crushing losses, will enjoy a recovery in growth in the next few years. Meanwhile, sectors such as high-technology industries, who were among the growth leaders at the end of the last decade, will experience a pause in growth and then a gradual recovery over the next five years. The first factor will provide a boost to South Carolina’s economic growth, due to the manufacturing sector’s large share in South Carolina relative to the national average. The second factor will tend to depress U.S. average growth rates more than South Carolina’s, since the state has a lower concentration of high-technology industries than the national average. (See Figure 5) Combined, these two factors lead to the narrowing of the gap in growth rates over the next five years.

While this is a positive development, it does not translate into an improvement in the relative levels of GSP per capita. In 2007, DRI•WEFA forecasts that South Carolina will remain in nearly the same relative position, with a GSP per capita that is 21% below the U.S. average. In addition, the conditions that have led to the improvement in the GSP growth gap are not sustainable. A recovery in many of the high growth industries, particularly high-tech industries, is expected by the end of the forecast period, while long term growth in manufacturing is uncertain. Indeed, as seen in Figure 5, even by 2006 and 2007, the gap between South Carolina’s real GSP growth and the U.S. rate begins to widen again.

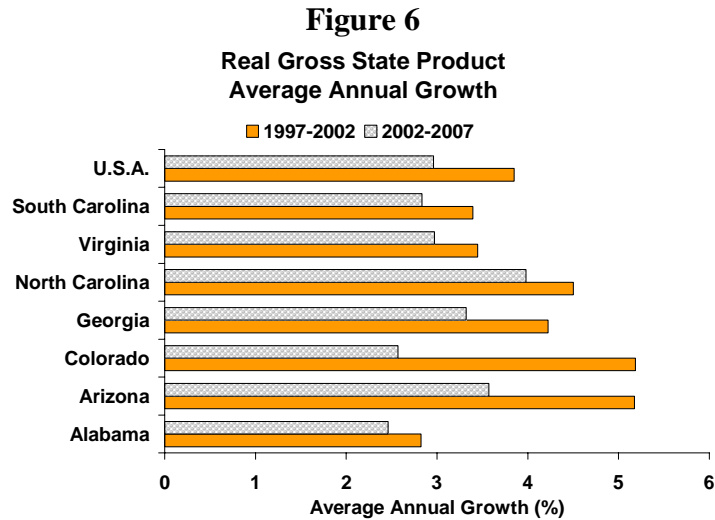
Figure 5



Source: DRI•WEFA Inc.

Similar trends are observed when comparing South Carolina with its benchmark states. Between 1997 and 2002, South Carolina's real GSP grew by 3.4% annually. This was considerably slower than the U.S. average of 3.9% per year and all but one of the comparison states: Alabama. Looking ahead, DRI•WEFA forecasts that growth will moderate in the U.S. to an average of 3.0% growth per year. The range of growth rates across benchmark states will narrow, in large part due to the national trends discussed earlier. DRI•WEFA believes that some states, such as Colorado, will experience a much slower recovery in growth compared to their exceptional

growth of the 1990s. South Carolina's forecast growth rate will continue to lag that of the U.S. average and most of the benchmark states. (See Figure 6)



Source: DRI•WEFA Inc.

III.3. Industrial Composition

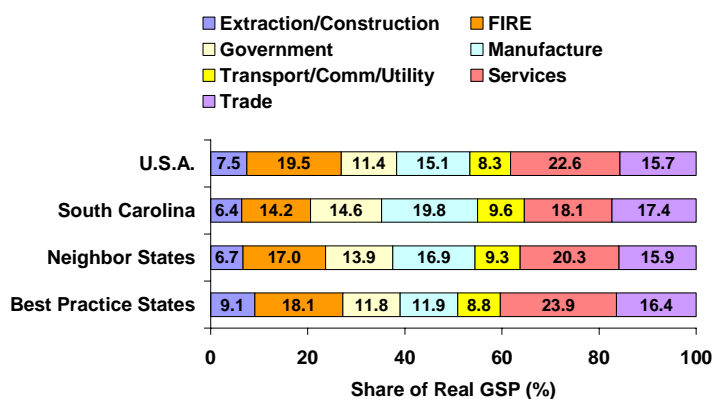
Gross state product data draws the picture of the aggregate output of the state. More detailed statistics can shed light on what the main determinants are behind these aggregate output figures. One perspective that can do this is the industrial composition in an economy. Industrial composition examines gross state product from the point of view of the channels of production within a region, through which the combined factors of production (land, labor, capital and technology) operate.

Understanding South Carolina's economic composition goes a long way towards understanding its historical performance, not to mention its growth potential. Naturally, every state should strive to expand its activities in the fast growing industries while phasing out activities in the stagnant industrial segments. Transferring resources from low growth industries to high growth industries is the best way to guarantee future prosperity. With this end in mind, the first step is to see how the composition of South Carolina's economy differs from the U.S. average.

The biggest differences in economic composition between South Carolina and the U.S. economy are found in four segments: manufacturing, government, services and FIRE (finance, insurance and real estate). The manufacturing and government sectors are "over-represented" in South Carolina relative to the nation as a whole. Conversely, the services and FIRE sectors are "under-represented" in South Carolina. Whether this turns out to be a good thing for South Carolina or a bad thing depends on the future growth of these sectors. (See Figure 7)

Figure 7

**Economic Composition
Share of Real GSP in 2002**



Source: DRI•WEFA Inc.

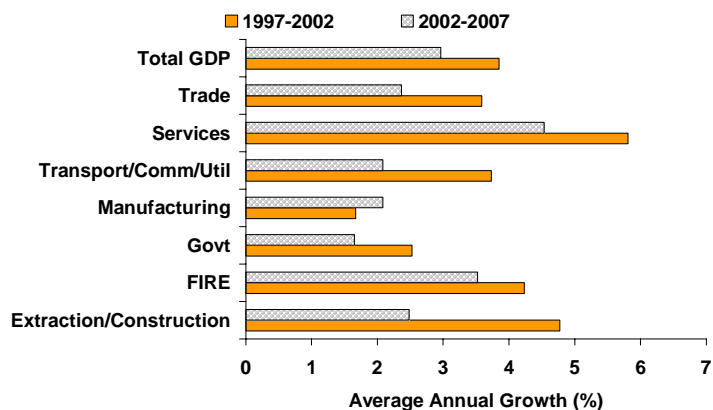
Neighbor States: Virginia, North Carolina, Georgia & Alabama

Best Practice States: Arizona & Colorado

Unfortunately for South Carolina, the two sectors with the slowest growth between 1997 and 2002, manufacturing and government, are over-represented in the state's economy. To make matters worse, the two sectors with the widest under-representation in South Carolina, services and FIRE, grew at a much faster rate than the national average. This type of industry analysis is a first step towards understanding why South Carolina trails the U.S. in real GDP per capita growth. (See Figure 8) Over the forecast period, DRI•WEFA believes that the nation will experience a short-term cyclical rebound in manufacturing. While this will indeed benefit South Carolina as long as this cycle lasts, growth in manufacturing is expected to still lag far behind growth in the services industry.

Figure 8

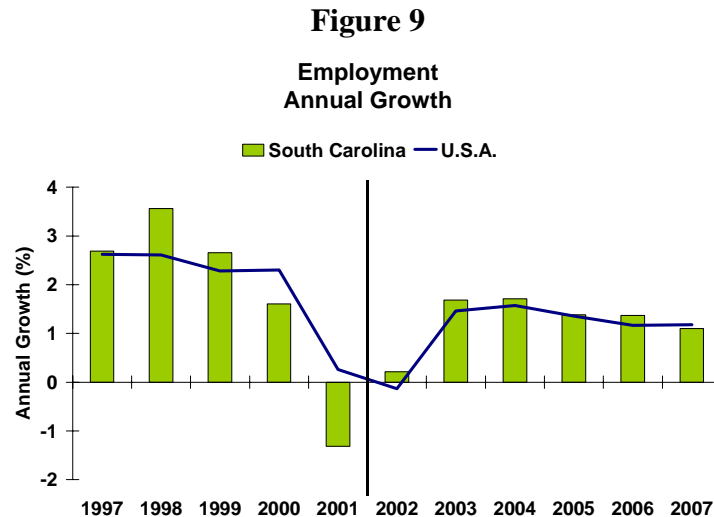
**U.S.A. Real Gross Domestic Product by Industry
Average Annual Growth**



Source: DRI•WEFA Inc.

III.4. Employment/Unemployment

Another way to disaggregate the total output of a state is to examine its factors of production. The labor force is one of the most important contributors to South Carolina's economic growth. South Carolina's employment growth has been positive over the past five years, but a little inconsistent. This is due in part to the relatively small size of South Carolina's employed workforce. South Carolina accounts for 1.4% of total employment in the US; the smallest share among all of the benchmark states. The relatively small size of South Carolina's labor force amplifies the impact of the normal flow of business expansions or closures in any state. Figure 9 illustrates the greater volatility of employment growth in South Carolina as compared to the US.



Source: DRI•WEFA Inc.

Employment grew by 1.3% annually in South Carolina, compared to 1.5% across the entire US, between 1997 and 2002. This employment growth gap widens dramatically when South Carolina is compared to the two fastest growing states in the group: Arizona and Colorado. Here the historical employment growth gap widens to over 1 percentage point. Alabama is the weakest state in the group, with historical employment growth well below that of South Carolina.

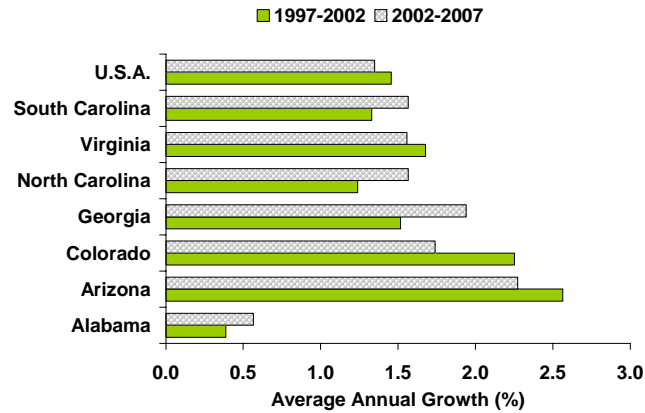
Recent employment growth in South Carolina has been disappointing compared to the 1990s. The Strategic Plan for Economic Development found that South Carolina actually outpaced the U.S. in terms of employment growth between 1990 and 1998: 1.8% for South Carolina vs. 1.2% for the nation. However, the situation was reversed over the 1997-2002 period with employment growth in the state lagging the national average: 0.7% for South Carolina vs. 1.0% for the nation.

South Carolina's employment growth relative to the benchmark states has also slipped a little since the 1990s. The Strategic Plan found that employment growth was approximately 1.8% per year for both South Carolina and the average of the eight comparison states (Georgia, Florida, North Carolina, Tennessee, Virginia, Alabama, Mississippi and Kentucky) between 1990 and 1998. In contrast, employment growth in South Carolina lagged the average of the six comparison states used in this report during the 1997-2002 period: 0.7% for South Carolina vs. 1.3% for the benchmark states (Georgia, North Carolina, Virginia, Alabama, Colorado and Arizona).

Looking ahead, DRI•WEFA forecasts that employment growth in South Carolina will slightly outpace the U.S. average, with growth of 1.6% per year between 2002 and 2007, compared to U.S. growth of 1.3% per year. The service sector in South Carolina has been the most

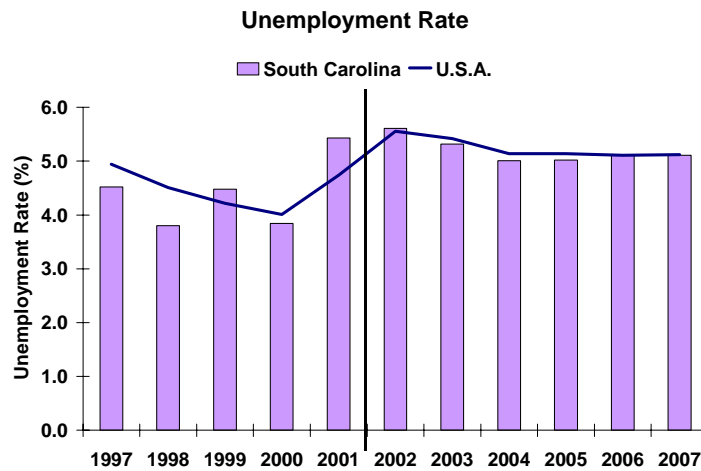
consistent source of employment gains in over the past five years, taking a breather only in 2001; this will continue to be the source of nearly two-thirds of employment gains in the state. DRI•WEFA expects a slight boost above normal in service sector employment gains in 2003 and 2004 in South Carolina, which will give the state a slight advantage compared to the U.S. growth rate over the forecast period. Benchmark states will experience employment gains much more in line with the national average, with Arizona, Georgia, and Colorado leading in employment growth. (See Figure 10)

Figure 10
Employment
Average Annual Growth



Source: DRI•WEFA Inc.

Figure 11

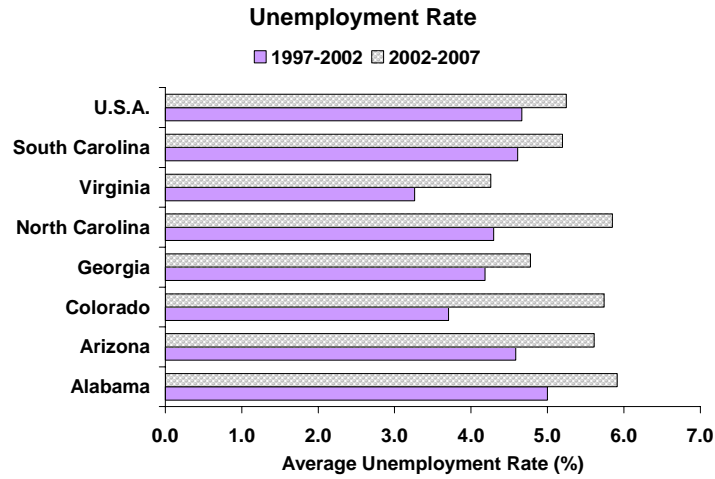


Source: DRI•WEFA Inc.

In terms of joblessness, South Carolina's unemployment rate equaled the national average over the past five years. Few people would point to an unemployment rate of 4.6% as sign of weakness. However, the unemployment rate was lower than the national average in all of the benchmark states, except for Alabama, over the same period. In other words, South Carolina might not be living up to its full potential. Turning our attention to the future, DRI•WEFA believes that South Carolina's unemployment rate will creep up to 5.2%, marginally below the

national average, between 2002 and 2007. Given the recent history of the comparison states, a lower unemployment rate is possible. (See Figure 12)

Figure 12

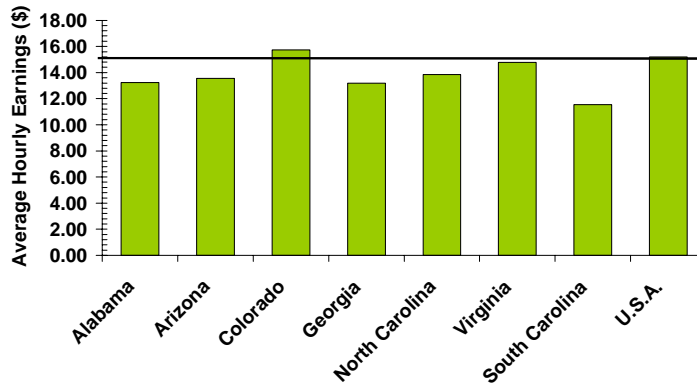


Source: DRI•WEFA Inc.

III.5. Wages

Manufacturing wages are used as a key indicator of the value of labor production in a region. When it comes to average hourly earnings in manufacturing, South Carolina's industrial composition is clearly a liability. South Carolina's large manufacturing sector has traditionally been dominated by textiles and textile-related industries. This heavy concentration still exists, although the number of textiles jobs has plummeted from more than 150,000 a quarter-century ago to less than half that figure today, a victim of more efficient machines and low-cost foreign competition, particularly after the start of NAFTA in 1994. The cutbacks undermined overall job growth and put downward pressure on wages. A key competitive advantage has been low wages. Today, average hourly manufacturing earnings in South Carolina are 24.0% below the national average. Manufacturing wages in South Carolina are also well below those found in the comparison states. (See Figure 13) Fostering a low wage environment is one economic development path, but it is not one that leads to rising standards of living for the population.

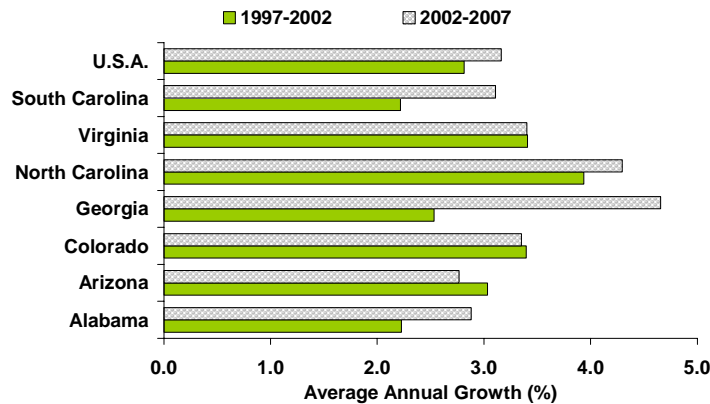
Figure 13
Average Hourly Earnings in Manufacturing
2002



Source: DRI•WEFA Inc.

Unfortunately manufacturing earnings in South Carolina are also growing slower than the rest of the nation. Between 1997 and 2002, average hourly earnings grew by 2.8% annually at the national level, compared to 2.2% for South Carolina. The growth gap was even wider relative to the benchmark states. Even Alabama recorded stronger earnings growth than South Carolina (albeit marginally). According to DRI•WEFA’s forecasts, there will be a moderately higher growth rate in manufacturing earnings in South Carolina over the next five years, as the state has attracted some higher-paying manufacturing sectors such as auto plants. However, with similar strategies being pursued in neighboring states, South Carolina will be in much the same relative position five years from now. (See Figure 14)

Figure 14
Average Hourly Earnings in Manufacturing
Average Annual Growth



Source: DRI•WEFA Inc.

The Strategic Plan for Economic Development in South Carolina (SPED) pointed out that South Carolina's manufacturing sector is undergoing a significant transformation. Lower wage jobs in the textiles, apparel, food processing, wood and furniture industries are being lost. Higher wage jobs are being created in the chemicals, industrial machinery, transportation equipment, paper and primary metals industries. This is a promising sign, but we are still waiting for hard

evidence of faster wage growth - the associated disruption in the labor market has kept aggregate wage gains in check.

III.6. Labor Force Participation

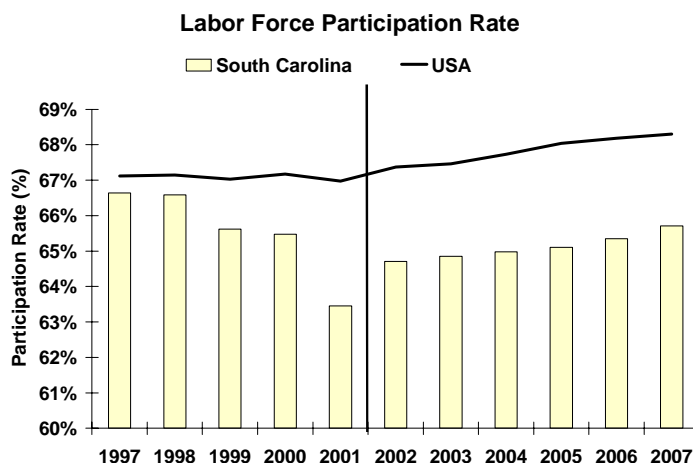
A labor force participation rate is the measure of the utilization rate of the potential pool of labor in a region. Using the Bureau of Labor Statistics definition, it is measured as the percentage of the civilian non-institutionalized population aged 16 and over that are employed or actively seeking employment. A low participation rate can indicate a limitation on the rate at which GSP can grow, since there is a small utilization of labor. A low participation rate will also tend to reduce GSP per capita, since the output of a fewer amount of workers must be used to support a higher amount of non-workers.

Changes in the labor force participation rate are also important. A falling participation rate means that people who could be working are leaving the workforce. This will cause the unemployment rate to fall, not through the creation of new jobs but rather through a reduction of the workforce. The question becomes, why are people dropping out of the workforce? A declining participation rate is a good sign if people are choosing to go into early retirement because they can afford to do so. But a declining participation rate can also mean that people are being forced into early retirement unwillingly. Or worse, it could also mean that people with perhaps marginal or redundant skills are too discouraged to look for work and are simply abandoning the workforce.

South Carolina's labor force participation rate has remained relatively steady since the early 1990s — that is, until recently. The participation rate stayed in an average range of 66 - 67%, dipping below during troughs in the business cycle in 1994 and 1996. Since 1999, however, the participation rate has fallen sharply, reaching a low of 63.5% in 2001 that has not been seen in over a decade. (See Figure 15)

The recent decline is worth closer examination. The gradual erosion of the state's traditional manufacturing base has undoubtedly forced many workers into retirement or otherwise out of the labor force against their will. Moreover, weak educational attainment across the state might reflect a certain nervousness about future employment opportunities. Only those who see a long-term payoff to education are willing to commit to years of study. Indeed, low basic education attainment may also contribute to the low labor force participation rate. According to the National Center for Education Statistics, South Carolina's high school graduation rate dropped from 61% in 1990 to 51% in 2000. Without basic skills needed for employment, many younger adults may simply be dropping out of the labor force. While the drop in these graduation rates does not prove that the discouraged worker problem exists, it does raise a red flag.

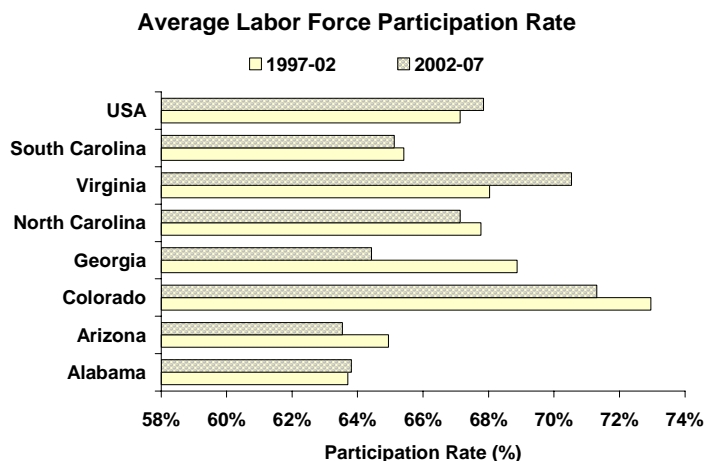
Figure 15



Source: DRI•WEFA Inc.; Bureau of Labor Statistics

Indeed, South Carolina’s participation rate has lagged the national average and several of the benchmark states over the last five years. In particular, the growing gap between South Carolina’s participation rate and the national average over the last three years is a cause for concern. South Carolina will be hard pressed to close the GDP per capita gap mentioned earlier if its labor force participation rate continues to lag the national average. Unfortunately, DRI•WEFA expects the gap between South Carolina's participation rate and the rest of the country to widen over the next five years. (See Figure 15 and Figure 16)

Figure 16



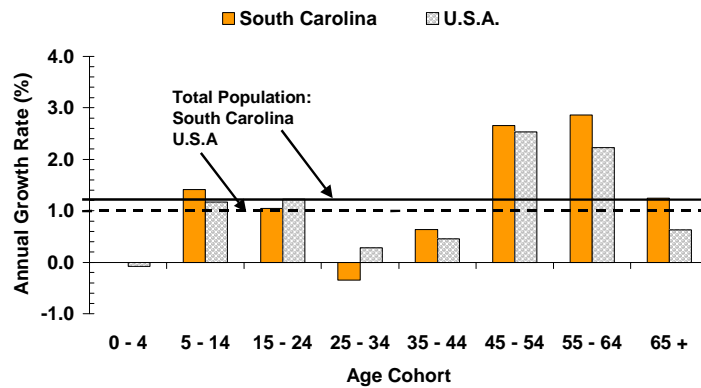
III.7. Demographics

The labor force in a state is determined by the interaction between its population and its labor force participation rate. Having examined the participation rate, the next link is to examine population growth. Population grows both through natural means as well as through migration. At its most fundamental level, employment growth is constrained by the amount of population growth in a region. At the same time, a labor force must also support those segments of the population that are (in aggregate) not part of the labor force – those under 15 or those over 65.

A key issue for South Carolina is the interaction between demographic trends and human resource requirements. The baby boom generation is disproportionately large relative to the entire population. Right now they are fully engaged in the workforce and in the most economically productive years of their lives. But the baby boom generation is also closing in on retirement. People have been surging into the 45-54 age cohort and, more recently, the 55-64 age cohort. It is this latter cohort that will see increasing rates of retirement. This potential impending exodus from the workplace will make labor productivity gains all the more important for states looking to improve their standards of living over the next 10 years. Fewer workers will have to produce more in order to improve the overall standard of living. Real GDP growth will depend more than ever on labor productivity gains. (See Figure 17)

Figure 17

**Population Growth by Age Cohort
Average Annual Rate 1997-2002**

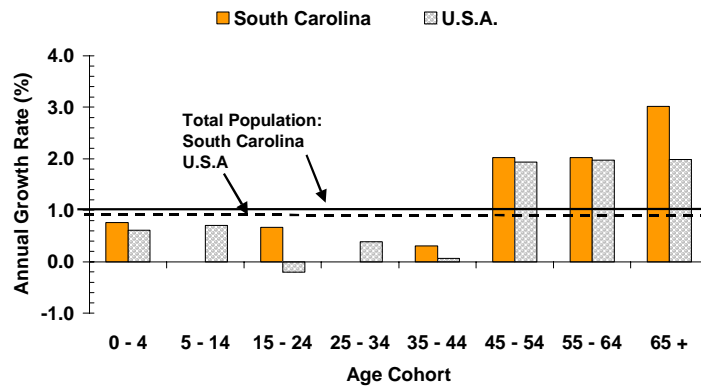


Source: DRI•WEFA Inc.

Having a motivated, highly skilled local workforce has always been a competitive advantage. This makes the 25-to-44 years of age cohort particularly important. At the lower end of this range are the recent graduates from college and university, while at the upper end are the young entrepreneurs. South Carolina will need a steady supply of both if it hopes to transform its economy. Unfortunately, DRI•WEFA expects that the 25-to-44 years of age cohort will be growing slower than the total population, both in South Carolina and across the nation. This will heighten the competition for exactly the type of human resources that South Carolina needs: young, well-educated professionals and entrepreneurs. Recruiting from out of state to fill any local human resource gaps will be an uphill battle. (See Figure 18)

Figure 18

**Population Growth by Age Cohort
Average Annual Rate 2002-2007**



Source: DRI•WEFA Inc.

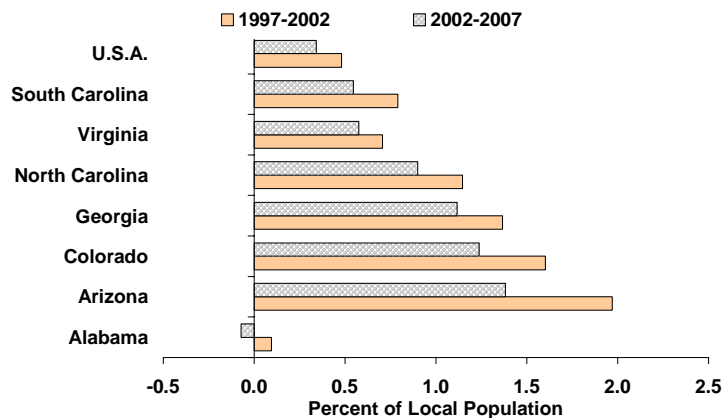
But there is one demographic trend that South Carolina can use to its advantage. The postwar flow of domestic migration from the Northeast and Midwest to the Sun Belt was the dominant regional trend of the last half of the 20th century. U.S. Census results for 2001 show that the Sun Belt states of Florida, Arizona, Georgia, Texas and Nevada led domestic in-migration. When it comes to domestic recruiting, this trend is working in South Carolina's favor. Attracting more of these skilled southbound migrants to South Carolina would definitely help ease the state's human resource challenge. (See Figure 19)

The importance of migration to the state was pointed out in The Strategic Plan for Economic Development in South Carolina. According to the report, domestic and international in-migration produced 44% of South Carolina's population gains in the 1990s. Moreover, a disproportionate share of the state's in-migrants were of working age. This supports the position that South Carolina could ease any human resource challenges by tapping into the ongoing migration to the Sun Belt.

The relative importance of in-migration is shown below (See Figure 19). Examining the ratio of new arrivals to existing residents in a given year gives a sense of how large an impact in-migration is having on a particular region. On average, in-migrants accounted for 0.5% of the total U.S. population between 1997 and 2002. In South Carolina, in-migrants had a slightly bigger impact over the same period, accounting for 0.8% of the state's population in any given year. Nevertheless, this impact is small compared to many of the other Sun Belt states. Clearly, South Carolina has a great deal of scope to increase its gains from people moving to the Sun Belt.

Figure 19

Net Annual Migration as Percent of Current Local Population



Source: DRI•WEFA Inc.

III.8. Tax Revenues

Tax revenues are in a sense both an input and an output of the economy. As most taxes rise with increasing prosperity (through higher personal and corporate income taxes, sales taxes, property taxes), tax revenues are partly determined by the economic health of a region. On the other side of the equation, government spending from these tax revenues should spur economic growth.

South Carolina's tax revenues are relatively low. In 2001, state taxes in South Carolina averaged \$1,513 per person, which ranked 45th in the nation. (See Table 2) Of course, this is partly due to the fact that personal income is lower in South Carolina. When tax revenues are taken as a share of personal income in the state, South Carolina ranked 33rd. Taken another way, while South Carolina's personal income was 18% below the national average, per capita taxes were 30% below the national average.

South Carolina's tax burden changes slightly when both state and local taxes are considered. In this case, South Carolina's ranking of taxes as a share of personal income rises slightly to 29th, indicating that it is slightly less competitive when both state and local taxes are considered. This is especially true when compared to North Carolina, whose rank of tax burden as a share of personal income falls from 23rd for state taxes to 32nd for state and local taxes.

**Table 2
State Tax Revenues, 2001**

	Per Capita State Tax Revenue (\$)	Rank	State Taxes as Share (%) of Personal Income	Rank	State & Local Taxes as Share (%) of Personal Income	Rank
North Carolina	1,909	22	7.2	23	9.8	32
Arizona	1,593	42	6.5	30	10.0	28
South Carolina	1,513	45	6.4	33	9.9	29
Georgia	1,714	35	6.3	34	10.1	25
Alabama	1,426	46	6.1	40	8.9	47
Virginia	1,745	33	5.7	44	9.3	41
Colorado	1,713	36	5.4	46	9.1	44
U.S. Total	1,968		6.7		10.1	

Source: U.S. Census Bureau, through Federation of Tax Administrators and Tax Foundation

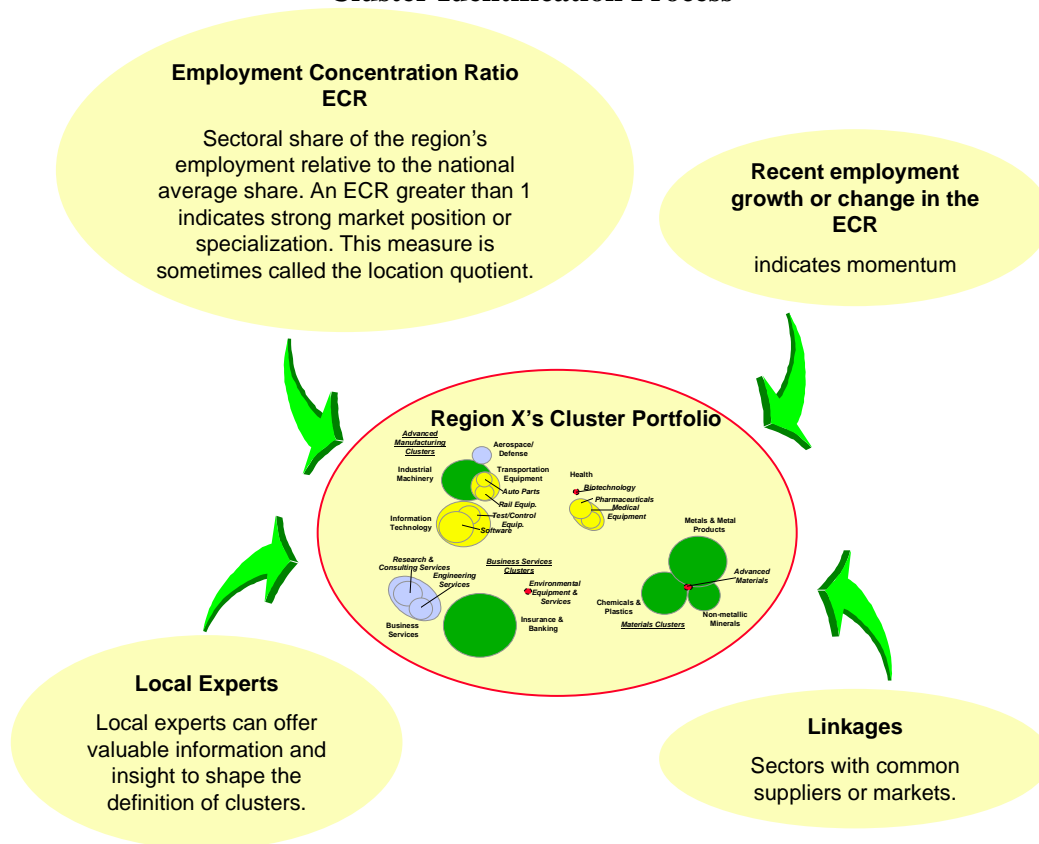
IV. South Carolina's Industry Clusters

This chapter presents DRI•WEFA's analysis of South Carolina's portfolio of industry clusters. The analysis presented assumes an understanding of the analytical framework presented in Chapter II. The chapter starts with a description of the methodology used to identify the state's clusters, proceeds to a description of the clusters identified, and then presents a way of segmenting the state's cluster portfolio to guide the development of appropriate development strategies.

IV.1. Cluster Methodology

The process of identifying South Carolina's clusters involves the iterative analysis of detailed sectoral employment data. Government statistics form the key data source, but specialized company databases are also used, especially for companies with a high-technology focus. Key indicators are evaluated to select and group industries that are defined by industry classifications. The process is illustrated in Figure 20.

Figure 20
Cluster Identification Process

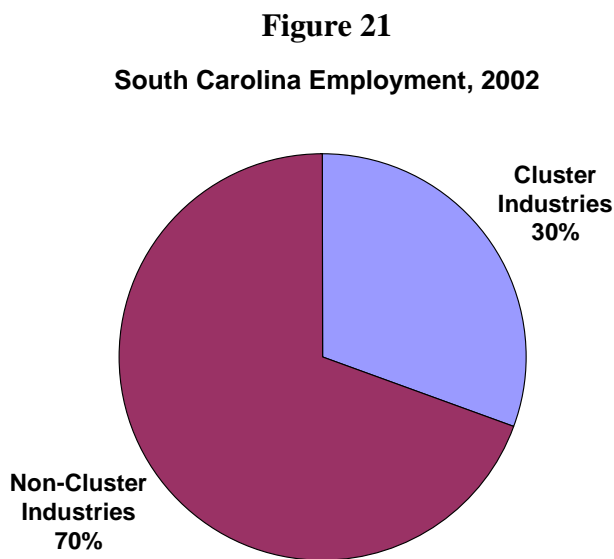


Source: DRI•WEFA Inc.

It is important to note that not all industries will be part of a cluster—nor should they be. Clusters are important for their ability to drive economic growth in a region. To that end, they all have the characteristic that they can or do export goods and services outside of the region in which they exist. In all regions, several large industries are primarily local-serving. Education, medical services, government services, and local business and personal services are important

industries, and are often some of the largest employers in a region. However, their focus is usually centered around serving the local population and economy. These industries are therefore more a product of the local economic growth than a cause of it. This is not to say that local-serving industries are not important — indeed, they incorporate some of the most vital services in an area. Nevertheless, the strategies for their development are not the same as cluster strategies. Some of these industries are important in their role as economic foundations, underpinning the basic regional infrastructures that clusters must have in order to develop vibrantly. These foundational industries are discussed in Chapter V.

As can be seen in Figure 21, South Carolina’s cluster portfolio represents about 30% of employment in the state. While this may seem a low share, it actually falls within the normal range of other regions that DRI•WEFA has analyzed.



Source: DRI•WEFA Inc.

It is important to note that industry clusters may not fit neatly into political jurisdictions. While some of South Carolina’s clusters may range across the state, others may be concentrated in certain regions of the state. Some clusters may even cross state lines, drawing on resources and markets from neighboring regions outside the state. As stakeholders in a cluster draw together to determine strategic directions for each cluster in the context of South Carolina’s environment, they must take into account the effect of regional issues.

IV.2. South Carolina’s Clusters and Segmentation Analysis

Using the methodology described above, analysis reveals that there are 11 established clusters within South Carolina. The size, employment concentration ratio (ECR), and relative growth rates of these clusters are summarized in Table 3. The employment concentration ratio is the share of regional employment due to one sector relative to that sector’s share of national employment; it measures if an industry is more concentrated in a region than it is on a national average. Additional detail on the composition of South Carolina’s clusters is provided in Appendix 1.

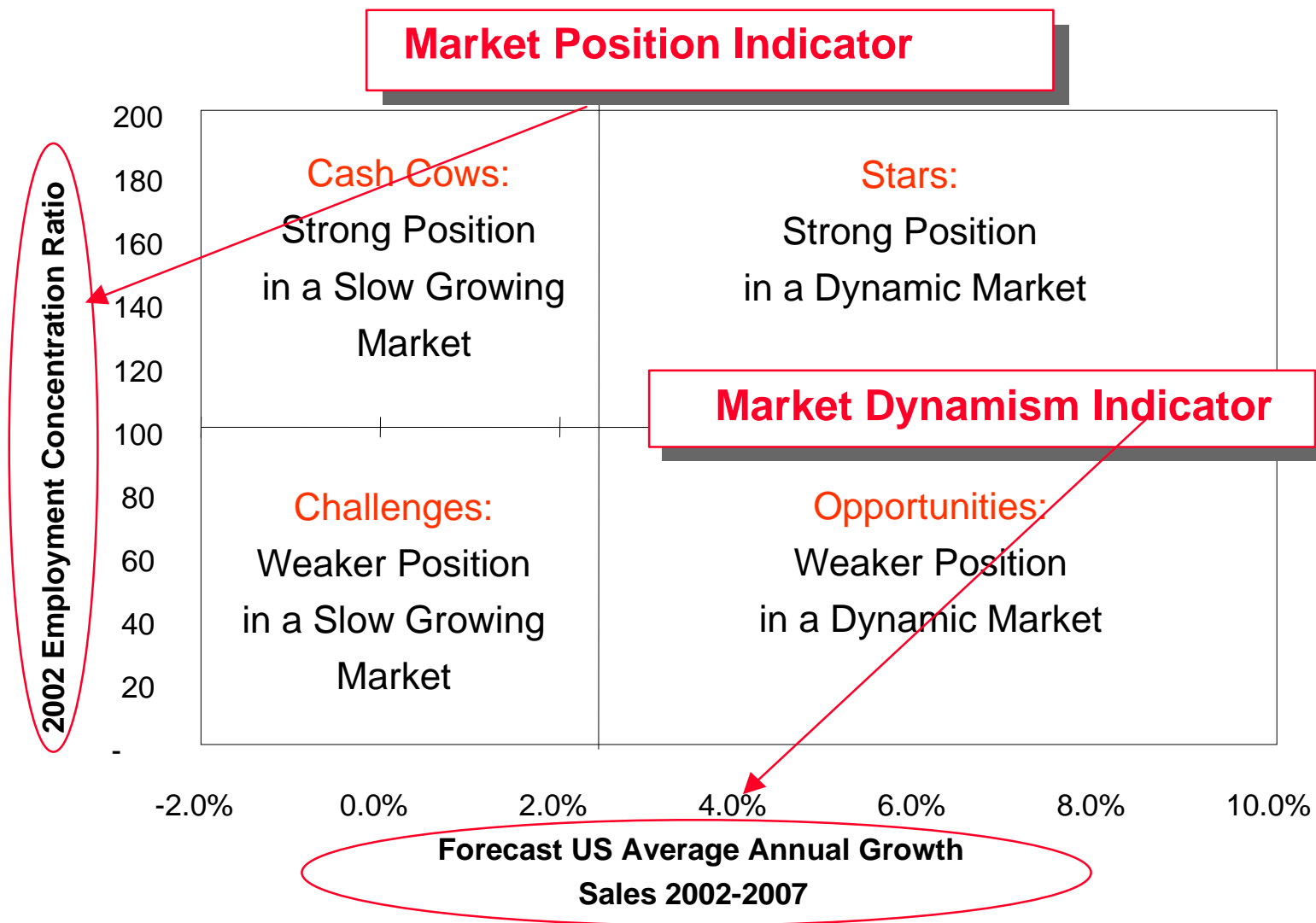
Table 3
South Carolina's Portfolio of Established Clusters

Cluster Names	SC Emp. 2002	Employment Concentration Ratio 2002	SC Emp. Growth 2002-07	U.S. Emp. Growth 2002-07	SC Sales 2002 (\$Millions)	SC Sales Growth 2002-07	U.S. Sales Growth 2002-07
Apparel	13,925	195.5	- 7.9	- 1.1	1,889.8	- 5.0	0.5
Components & Sub-Assemblies	21,736	119.3	0.5	0.3	6,586.5	13.1	7.5
Food & Agriculture	61,047	75.1	- 0.1	0.2	6,296.4	3.1	3.6
Forestry, Wood, and Paper	34,096	151.3	0.1	- 0.2	8,839.0	4.5	4.0
Machinery & Fab. Metals	47,868	116.5	1.5	0.0	8,546.6	6.9	3.7
Materials	52,414	202.7	0.0	- 0.3	15,645.7	3.8	3.6
Professional Services	40,866	70.6	3.0	2.6	5,134.3	7.1	7.2
Textiles	62,198	1,011.6	- 2.4	- 1.9	9,867.4	- 0.2	0.8
Tourism	218,530	119.6	2.9	1.6	10,070.1	7.0	6.7
Transportation Equipment	24,783	171.6	1.5	- 0.2	9,357.7	6.4	3.3
Transportation Services	48,038	127.0	2.8	1.9	7,475.7	7.1	5.7
Total Cluster	625,566	126.3	1.3	1.1	89,720.8	5.5	4.9
Total All Industries	2,055,083	100.0	1.3	1.1	312,955.1	5.4	5.7

Source: DRI•WEFA Inc.

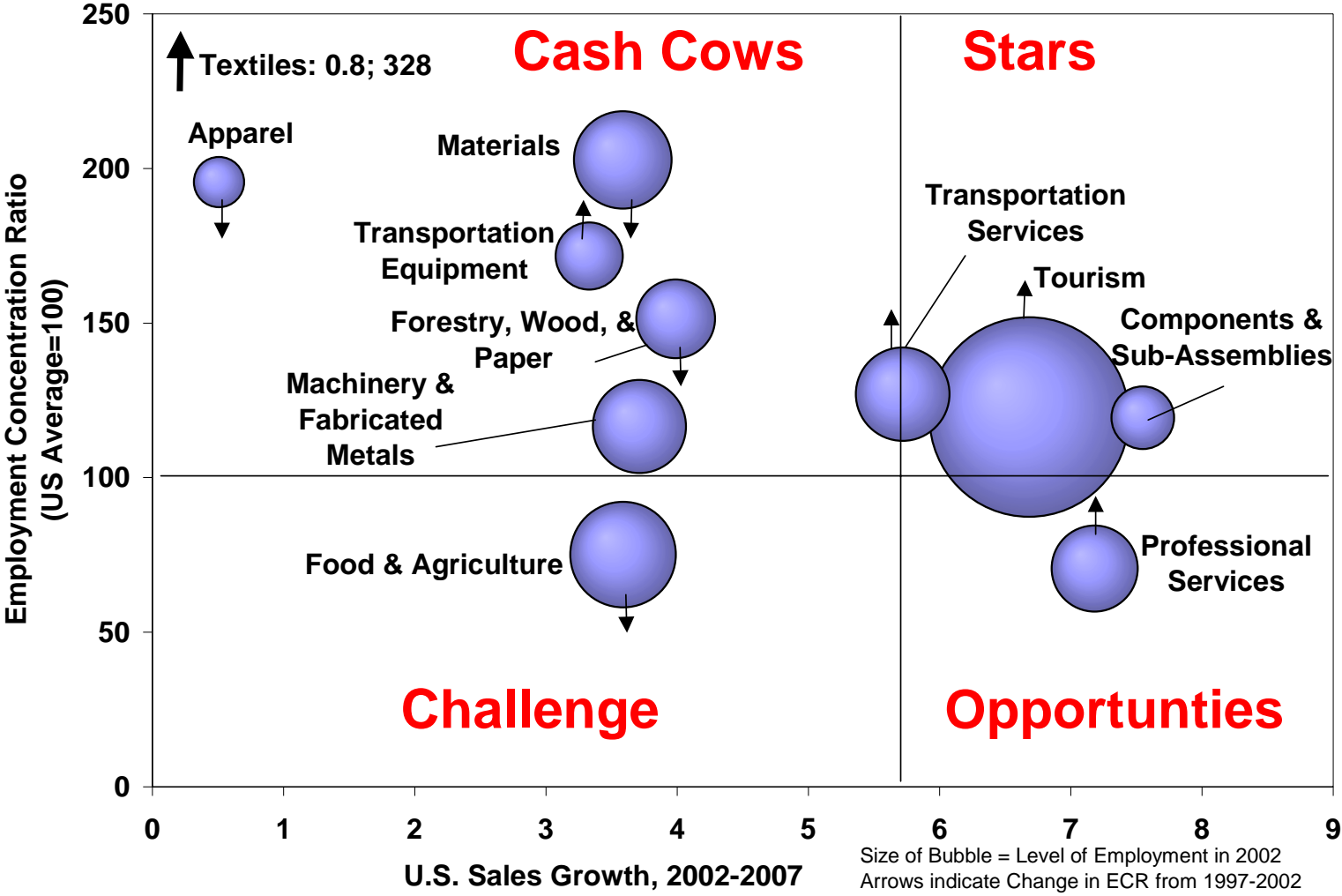
Economic development strategy formulation can be strengthened by an understanding of the market position of South Carolina's clusters. One useful means of differentiation is to segment clusters and sectors according to the South Carolina's competitive market position and the dynamism of their markets. (See Figure 22) This analysis identifies South Carolina's "Star", "Cash Cow", "Opportunity", and "Challenge" clusters. Understanding the region's strengths relative to the growth prospects for specific clusters can foster constructive discussion and debate. Figure 23 then uses the framework illustrated in Figure 22 to segment South Carolina's portfolio of established clusters. Figure 24 provides some additional context for the reader by listing the major companies that are in each cluster.

Figure 22: Cluster Segmentation Analytic Framework



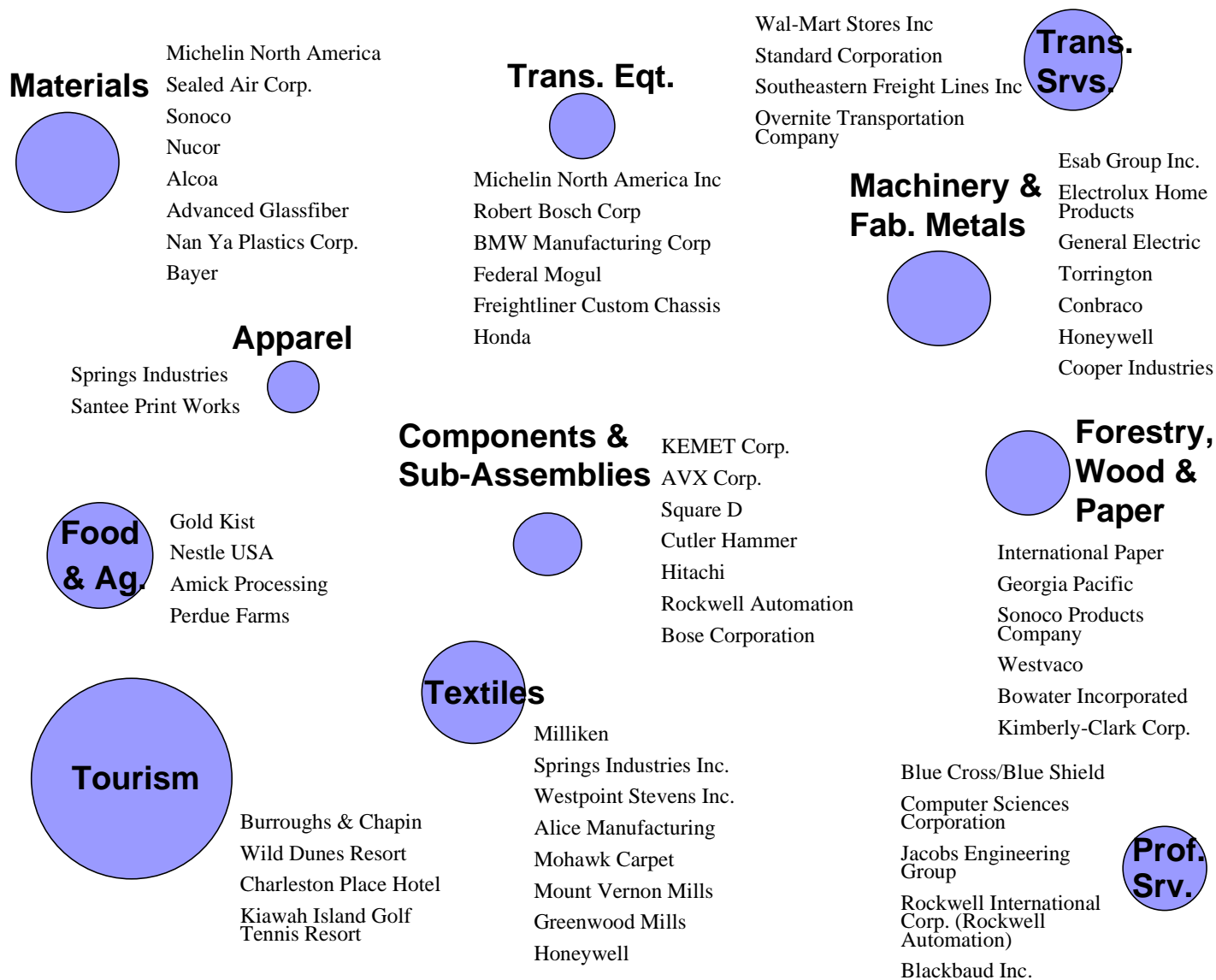
Source: DRI•WEFA Inc.

Figure 23: South Carolina's Established Cluster Portfolio



Source: DRI•WEFA Inc.

Figure 24: Major Companies within Clusters



Source: OneSource Inc, South Carolina Department of Commerce

IV.3. Cluster Strategies

Developing economic development strategies depends on understanding the market position of South Carolina's clusters and carefully differentiating the strategies according to the characteristics of the cluster. Segmentation analysis is a procedure pioneered by DRI•WEFA. This section describes and develops implications from the segmentation chart presented in Figure 23.

IV.3.1. *Star Clusters*

Clusters located in the upper right-hand quadrant, "**Stars**", represent the most important area of focus for South Carolina. These clusters represent businesses in which South Carolina has some capability, but also ones that will experience above-average growth over the next decade. Clusters in this quadrant have been competitive in markets that continue to hold good future prospects. The state should continue to emphasize these clusters as key sectors for development.

The clusters in this quadrant require strategies that focus on adding new companies and industries that expand the economic value chain in the state (see Figure 3). Building the economic value chain means expanding, attracting and forming new enterprises that provide services from a base in the region that would otherwise be provided by businesses elsewhere. Because of the growth in these clusters, group-recruitment and enterprise formation should be easier than in the other parts of the portfolio. The key for this strategy is understanding markets and using information strategically to help businesses take advantage of opportunities. While strategic investments in physical infrastructure may enhance the performance of these clusters, the true function of investment is to enable other clusters to exploit the advantages that these clusters provide.

Although it is one of the smaller clusters, **Components & Sub-Assemblies** is highly productive. While employment levels are expected to remain quite even over the next five, years, sales growth will be among the fastest in the clusters. While this cluster has the most obvious potential, it may be weak in terms of the cohesiveness and linkages that are necessary to foster long-term growth in a cluster. Indications are that there are limited linkages between the two main companies in the cluster (AVX and Kemet), mainly due to being located at almost opposite ends of the state and serving different markets. Of the two, Kemet appears to be more anchored in the region with evidence of developing linkages to suppliers and economic foundation partners. Many of the principal companies within this cluster, and indeed within most of South Carolina's clusters, are branch locations of large national and international firms. Cluster development strategies that seek to connect these company establishments within the framework of South Carolina's clusters must recognize this and target the local management, to deepen their interest in locating within South Carolina.

Centered on the high-quality services of the port of Charleston, the **Transportation Services** cluster is expanding to serve as a warehousing and distribution center for the region. Wal-Mart's significant warehousing and logistics operations are considered an important player in the cluster. While the national market for this cluster is growing at an average rate, South Carolinian companies are expanding at a more rapid pace.

The largest cluster in the state is **Tourism**. There is no doubt that tourism plays a large role in the economy, but government data may exaggerate employment, since many industries do not distinguish between whether they are local-serving and tourist serving. A recent study estimates that direct employment in Tourism industries was 121,700 in 2001, or 6.1% of total state

employment.³ Despite recent setbacks, the cluster continues to exhibit strong growth trends over the next five years.

As can be seen in the detailed compositional data for the cluster provided in Appendix 1, there is evidence that the strength of the tourism cluster is heavily based on resort related tourism. Low employment concentration ratios in museums, art galleries, theaters, zoos, and botanical gardens indicate opportunities to further develop the more culturally-oriented tourism segment. Such development would also support initiatives to improve the cultural aspects of quality of life which are especially important to knowledge workers.

IV.3.2. Opportunity Clusters

“**Opportunities**” clusters are those in the lower right-hand quadrant of Figure 23. These clusters are facing above-average national demand growth, but have not yet achieved significant mass in the region. For clusters in this quadrant, the objective is to strengthen the relevant economic foundations in South Carolina.

Clusters in this quadrant would benefit from a recruitment and enterprise formation process that would harness existing demand, leading to the creation of new jobs in the region. South Carolina must find ways to create advantages that will enable it to attract new enterprises in these clusters. These advantages take the form of a prepared workforce in growing skills categories, attractive locations, and technically competent suppliers. Further efforts to support start-ups of these industries should be undertaken emphasizing business plans, marketing, and partnerships with established providers in the region. Incubators can provide valuable support to these new enterprises. This part of South Carolina’s portfolio is where it should work to understand market opportunities and to promote itself aggressively.

Only one cluster, the **Professional Services** cluster, falls within this category. It is comprised of firms specializing in providing professional services—engineering, research, accounting, or management functions. The cluster may be able to draw upon the skills and resources of professional service staff who are located in other industry clusters or educational institutions in the state. This is a key area in which to build development as it can spur growth in other clusters in the state, because firms in this cluster also have a potentially important role as value-added suppliers in addition to being exporters of their services outside the state.

IV.3.3. Cash Cow Clusters

The clusters in the upper left-hand quadrant of Figure 23 are the state’s “**Cash Cows**”. These clusters are the basis of South Carolina’s historical strengths but they are facing slow growing markets. Although these clusters have strong capabilities in the state, the low market attractiveness means that they can either maintain the status-quo, downsize, or transform their focus into new markets. This transformation to new markets will be a successful strategy only if it is based on collaborative action by participants in the cluster, enabling them to collectively refocus their attention on growing markets.

These clusters are assets in a region’s portfolio and require a great deal of investment to achieve a desired level of growth. There has long been extensive employment and specialization in these clusters, but they have had difficulties in competing with other regions and face uncertain global markets. These clusters, of all those in South Carolina’s portfolio, are in the greatest need of undertaking collaborative cluster initiatives that will help them understand market requirements,

³ World Travel & Tourism Council, “South Carolina: The Impact of Travel and Tourism on Jobs and the Economy”, 2001.

improve production capabilities, enhance worker productivity, and innovate in marketing and distribution.

Two of the most traditional clusters in South Carolina are the **Apparel** cluster and the **Textile** cluster. These fulfill all the classic descriptions of a “cash cow” industry cluster. They are highly concentrated in South Carolina compared to the rest of the nation – Textiles has an employment concentration ratio of more than 1000, and consequently off the scale in the chart in Figure 23. Both have also faced significant declines in sales and employment in recent years. Across the U.S., textiles and apparel companies are shutting their doors and moving to lower-wage countries. This trend is expected to continue over the next five years. Yet, while these clusters are expected to continue their rationalization trends, they represent some of the most cohesive cluster communities, in terms of shared resources, skills, methods of productions, markets, and problems. Strategic collaboration within these clusters may offer the most scope for transforming their identities and characteristics.

One of the most diverse and promising clusters in South Carolina is the **Materials** cluster. With an employment concentration ratio of 203, it has the second highest concentration ratio of the state’s clusters, and certain industries within the cluster are even more strongly concentrated. The chemicals, plastics, glass, and rubber industries within the cluster already display tight linkages to other clusters in South Carolina and are creating a froth of seed companies.

South Carolina has also benefited from the “New Southern Motown” trend with its **Transportation Equipment** cluster. The strength of this cluster is not just limited to motor vehicles, but is exhibited in its strong linkages to upstream industries, such as engines and rubber tires. While cluster sales in South Carolina will grow rapidly, the national market is growing more slowly than average.

Another industrial cluster, **Machinery & Fabricated Metal Products**, exhibits a moderate employment concentration ratio within South Carolina, but is especially strong in industrial machinery. South Carolinian firms are positioned to reap growth at faster rates than the U.S. average. Formulating cluster strategies, especially to promote linkages to other clusters within the state, could accelerate this growth process. In particular, strategies that incorporate linking companies to more advanced manufacturing technologies could help foster niches with “star” potential.

Meanwhile, another primary product cluster, **Forestry, Wood, and Paper**, is a well integrated cluster, with strong linkages existing along the economic value chain--from forestry to wood products to paper and paperboard. The cluster has a respectable employment concentration ratio of 150, but the national market for these products is growing slowly. Again the question is how to identify and foster faster growing niche development opportunities to help the cluster transform into a more dynamic part of South Carolina’s cluster portfolio.

IV.3.4. Challenge Clusters

In the lower left-hand quadrant are the “**Challenge**” clusters. While these clusters have some strength within South Carolina, they are not a dominant capability compared to other regions. In addition, the traditional markets for these clusters are growing much more slowly than average. Here, the strategic focus should be on catching opportunities that might emerge in the state, such as “spin-offs” from existing companies, or a special case where a firm has “discovered” the region and wants to locate here. Within these clusters, expensive marketing and recruitment programs will not pay off.

One of the larger clusters in terms of size, **Food and Agriculture** faces slow market growth across the nation. Moreover, the cluster does not exhibit a strong employment concentration ratio in South Carolina compared to the rest of the nation, except for some specialties such as meat products.

IV.4. Seed Clusters

The above analysis has focused on “established” clusters within South Carolina. In addition, DRI•WEFA has also identified seven “seed” clusters in South Carolina. Two of these are seed clusters with commercial activities, and five of these clusters are defined primarily on the basis of the existence of “technology assets” within the state. The commercialized seed clusters (see Table 4) are high technology clusters that exhibit company strength and may have strong foundations in South Carolina’s corporate research units. Although they are very small in terms of employment, relative to traditional clusters, they are firmly focused on using advanced technology to develop their products and services. While the tendency may be to equate computers or biotechnology with “high-technology”, in reality, the “New Economy” is driven not so much by new industries as by industries functioning in fundamentally different ways. Not only does this change the dynamics of growth for industries, but it can tap into completely new markets.

The other major category of seed clusters are those that are based on technology assets that exist within the state. Both government and corporate R&D facilities show a concentration in certain research and development areas, some of which are cross-cutting across many industries. The technology asset seed clusters are presented in Table 5.

As with existing clusters, there are other high-technology industries present in South Carolina that are not part of a seed cluster. These industries have not yet demonstrated sufficient critical mass, in terms of employment, number of firms, or linkages to other industries, to be accurately defined as a cluster.

Table 4
Commercial Seed Cluster Employment, 2002

Advanced Materials	10,510
Software, Hardware, & Internet	4,479

Source: CorpTech Inc.

Table 5
Technology Asset-Based Seed Clusters
(Number of R&D Facilities, 2002)

Defense & Related R&D	1
Nanotechnology/Electronics	2
Environmental Science	7
Horticulture & Related R&D	4
Nanotechnology/Material Science*	10
Pharmaceuticals	1

*part of the Advanced Materials seed cluster

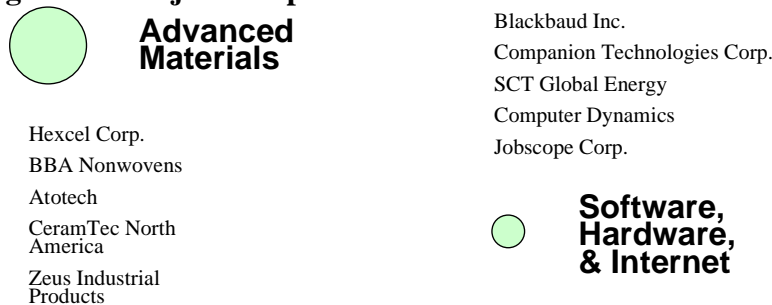
Source: Rand; Company websites; Nexis.com

The **Advanced Materials** seed cluster contains nearly 50 companies. Like the established Materials cluster, it is very diverse. Companies in the seed cluster produce everything from

advanced textile composites to polyolefin products, specialized chemical compounds & products, and ceramic composite products. The companies show strong linkages to other clusters in the state, both in supplying traditional industries with their advanced technology, and drawing on the skills and resources of the existing clusters to blaze new markets. While total employment in this seed cluster may still be small, the seed cluster is well positioned for growth. There are at least 10 major corporate R&D facilities focusing on various aspects of advanced materials, including the application of these techniques at a nanoscopic level.

Compared to most clusters in South Carolina, the **Software, Hardware, & Internet** cluster is rather small and somewhat underdeveloped. Most of the firms within this cluster are providing basic Internet or other computer services. There is a very small amount of hardware manufacturing; and some firms that have found niche markets with more targeted software and Internet services. As is typical of this type of cluster, it has a large number of very small firms. There are over 100 firms in this seed cluster in South Carolina, but 80% of these have under 30 employees.

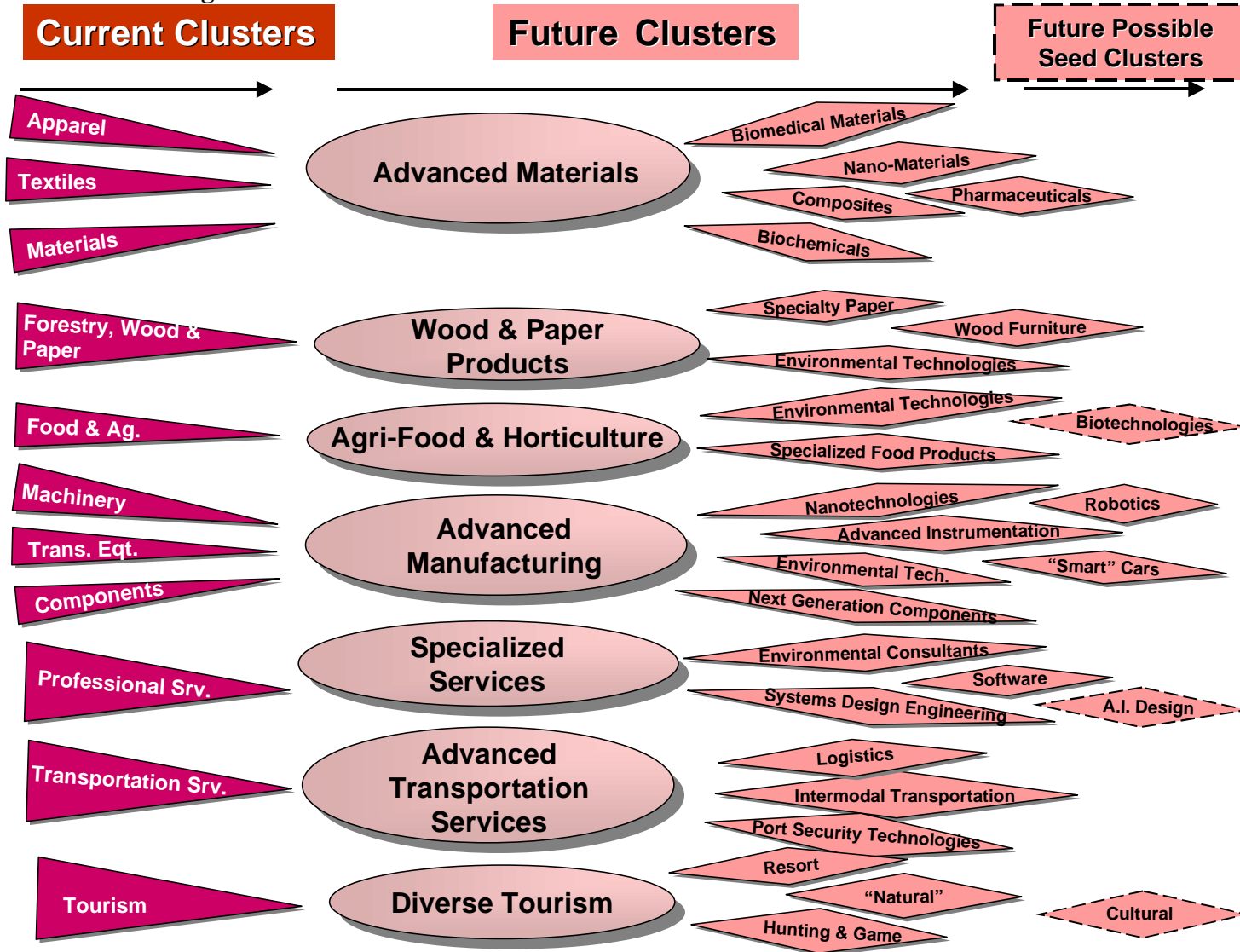
Figure 25: Major Companies within Commercial Seed Clusters



Source: CorpTech.Inc.

The seed clusters are by and large too small today to significantly influence the South Carolina economy over the short-term, in terms of employment or incomes. But if the linkages between the seed clusters and the existing clusters can be enhanced, these seed industries can become the “engines of growth” for the traditional clusters. Similarly, seed clusters can spur each other onwards through their own linkages. The result can be the swift development of rich clusters, which focus in many directions but are loosely connected to their larger cluster formation. Figure 26 illustrates one potential vision of how this dynamic could unfold in South Carolina.

Figure 26: Future Cluster Transformation From Established & Seed Clusters



Source: DRI•WEFA Inc.

IV.5. Cluster Regional Comparison

Comparing cluster structure and performance with other regions is a valuable diagnostic tool. The position of competing regions can provide benchmarks that help stimulate economic development strategy formulation. The strength of a cluster within a given region can be indicated by its size, its employment concentration ratio within a region, or by the rate at which it is growing. DRI•WEFA has combined these measurements to create a **Cluster Power Index** (all growth forecasts referred to below are from DRI•WEFA). While these three types of indicators are commonly used to evaluate a cluster, the weighted combination of these indicators to create a single index that ranks cluster strength throughout the U.S. is unique to DRI•WEFA.

With the clusters defined as they exist in South Carolina, every state in the United States has been measured using this index. This reveals the biggest competitors to South Carolina in each of its clusters. Figure 27 reports the top five competitors for South Carolina in each of its clusters. It is interesting to note that, except in the traditional clusters of textiles and apparel, very few of South Carolina's immediate neighbors are competitors to its clusters. This is both an opportunity and a challenge. Within the southeast region, South Carolina can position itself as a specialty in these clusters. However, the local clusters will also have to work harder to develop their own linkages, when there are few other local centers to tie into.

Among South Carolina's *Star* clusters, the **Tourism** cluster exhibits the most strength compared to its competitors. South Carolina ranked 5th in the Cluster Power Index. With the heavy weighting of the tourism industry in Nevada's economy, as well as its rapid growth, that state earns first rank. The large tourism sector in California and Florida put them also in the top tier. While both of the next two states, Colorado and South Carolina, do not have either the largest tourism sectors or the highest concentration of tourism in the state economy, they do have significantly-sized tourism markets that will experience very rapid growth over the next five years.

The **Components & Sub-Assemblies** cluster turns up in some unexpected places. All of the top five states except California have a small cluster size, but these clusters are quite concentrated in their state's employment and are experiencing rapid growth. Of course, the sheer size of this industry cluster in California leads it to a substantial competitive position. South Carolina ranks rather low in Cluster Power in this cluster, with a ranking of only 23rd in the nation. While this cluster holds much promise for the future, it is also the one that has the most intense competition. Cluster participants must be mindful of the competition when designing strategies for this cluster. South Carolina's **Transportation Cluster** is centered around its water transportation services, but it also includes warehousing and trucking and courier services. The combination of these industries shifts the competitor mix. South Carolina ranks fifth in the nation in terms of the employment concentration ratio of its water transportation industry. In a broader cluster, however, it ranks 15th. The size and concentration of trucking and courier industries in competitor states give them a higher Cluster Power Index. Hence, Tennessee, supported by the Federal Express hub, ranks first in this Cluster Power.

The *Opportunity* cluster of **Professional Services** reveals a few surprises as well. Large markets such as California and Washington DC top the list, but New York state is only 5th, with the surprising states of Florida and Nevada preceding it. While not at the top of any one scale, Florida's cluster is reasonably large, reasonably concentrated, and growing at an above average pace. Hitting all three criteria lands it in 3rd place. Although quite small, the spectacular growth of Nevada's Professional Services cluster also pulls it into the top tier of Cluster Power Index. South Carolina ranks relatively low in this sector, with a rank of 30.

South Carolina is relatively competitive among all its *Cash Cow* clusters, ranking in the top 15 states in six out of seven of the clusters. Both the **Apparel** and **Textiles** cluster face their greatest competition

among neighboring states. The **Machinery & Fabricated Metals** cluster, **Transportation Equipment** cluster, and **Materials** cluster are largely dominated by the industrial heavyweights of Michigan, Ohio, and Indiana. Other competitors are also making their mark. Oregon is a new entry to the Transportation Equipment cluster, showing dramatic growth over the next few years, according to DRI•WEFA forecasts. Kentucky is also among the top five, giving further evidence of the migrating Motown effect. South Carolina has its lowest competitive position in the **Forestry, Wood & Paper** cluster.

Benchmark competitors for South Carolina's sole *Challenge* cluster, **Food and Agriculture**, underscore the market position of this cluster in South Carolina. All of the top five states in this cluster exhibit a dominance in employment concentration and/or size. In comparison, South Carolina ranks 40th in the nation in terms of the competitiveness of its cluster.

Figure 27: Top Five Benchmark States for South Carolina's Clusters

Apparel Cluster	Index	Rank
California	100.0	1
New York	77.9	2
Alabama	70.0	3
Mississippi	60.1	4
Kentucky	58.8	5
South Carolina	52.0	12

Machinery Cluster	Index	Rank
Michigan	100.0	1
Ohio	95.3	2
Wisconsin	86.2	3
California	79.9	4
Illinois	78.9	5
South Carolina	58.4	14

Tourism Cluster	Index	Rank
Nevada	100.0	1
California	71.3	2
Florida	67.3	3
Colorado	61.7	4
South Carolina	58.2	5
South Carolina	58.2	5

Components Cluster	Index	Rank
Vermont	100.0	1
Idaho	94.4	2
California	88.8	3
Oregon	87.3	4
New Hampshire	82.1	5
South Carolina	47.5	23

Materials Cluster	Index	Rank
Ohio	100.0	1
Indiana	98.9	2
Pennsylvania	87.5	3
Michigan	71.3	4
Texas	68.6	5
South Carolina	62.2	8

Trans. Eq. Cluster	Index	Rank
Michigan	100.0	1
Indiana	60.3	2
Oregon	54.3	3
Ohio	48.2	4
Kentucky	46.2	5
South Carolina	34.8	8

Food & Ag Cluster	Index	Rank
California	100.0	1
North Dakota	94.2	2
Idaho	89.1	3
Iowa	88.8	4
South Dakota	85.2	5
South Carolina	33.3	40

Prof. Srv. Cluster	Index	Rank
California	100.0	1
Washington DC	96.0	2
Florida	94.2	3
Nevada	86.8	4
New York	80.8	5
South Carolina	37.8	30

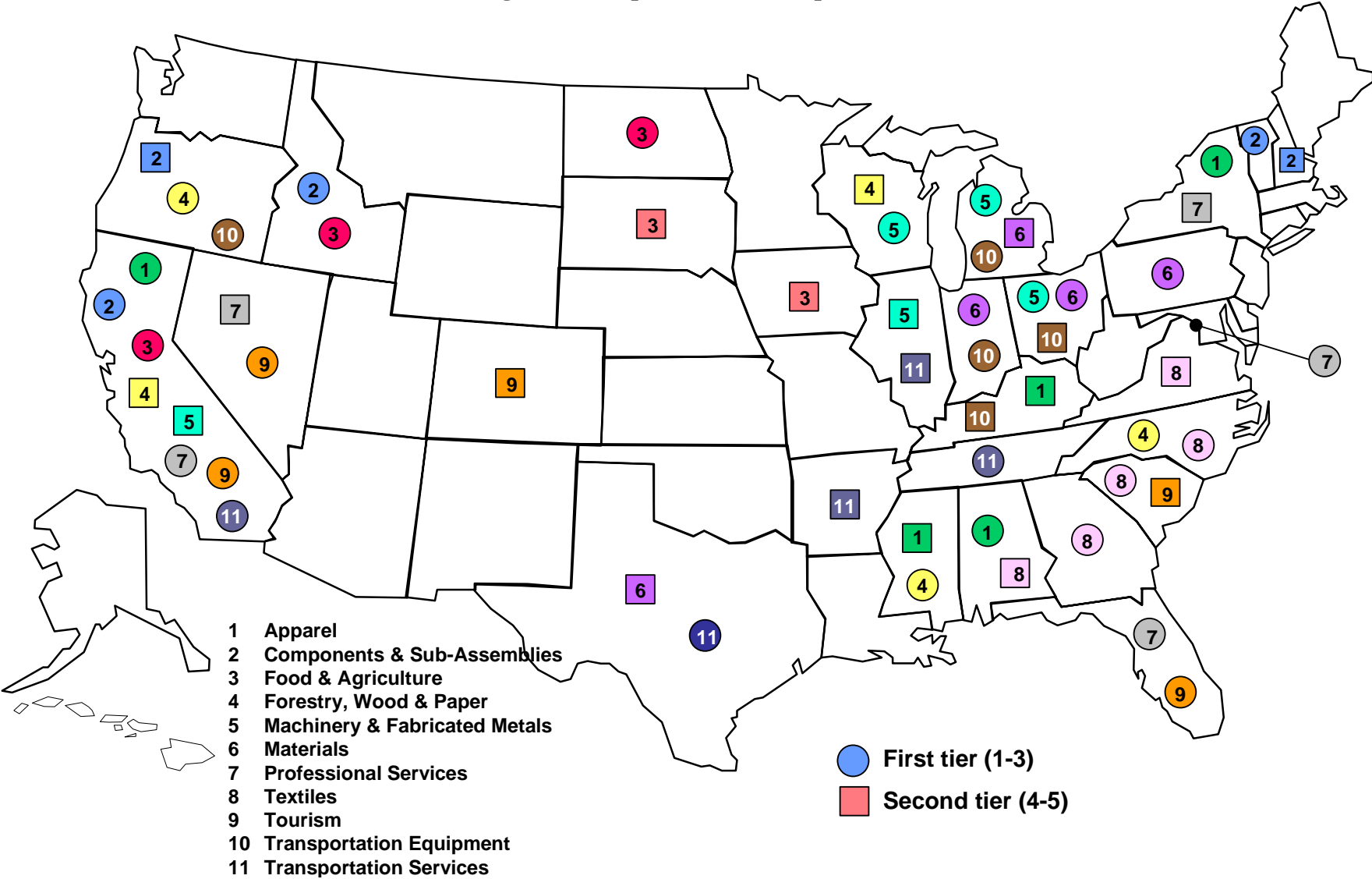
Trans. Srv. Cluster	Index	Rank
Tennessee	100.0	1
California	89.6	2
Texas	89.3	3
Illinois	78.7	4
Arkansas	75.1	5
South Carolina	61.4	15

Forestry Cluster	Index	Rank
North Carolina	100.0	1
Mississippi	99.3	2
Oregon	96.9	3
Wisconsin	93.3	4
California	90.3	5
South Carolina	65.0	17

Textiles Cluster	Index	Rank
North Carolina	100.0	1
Georgia	95.7	2
South Carolina	93.4	3
Alabama	67.1	4
Virginia	42.9	5
South Carolina	93.4	3

Source: DRI•WEFA Inc.

Figure 28: Map of Cluster Competitors



Source: DRI•WEFA Inc.

V. Economic Foundations

V.1. Summary

To assess South Carolina's economic competitiveness – its ability to generate higher economic output from a given increase in investment – the state's six economic foundations were examined and measured against the benchmark states. These foundations are labor force skills (education), access to capital, technology, infrastructure, general business climate, and quality of life. The following points summarize the assessment of South Carolina's economic foundations:

Labor Force Skills—South Carolina's educational system lags behind its benchmark states in terms of quality, availability of high-quality research-centered institutions, and access to financial support. To its benefit, there is evidence that South Carolina is already taking steps to try to improve its educational system.

Access to Capital— Investment capital is caught in a negative cycle in South Carolina. A dearth of good investment opportunities in the state has stunted the growth of venture capital businesses. In turn, as a result of limited investment funding, businesses with good opportunities for investment have difficulty accessing the necessary capital. Business formation in South Carolina appears stagnant.

Technology—R&D funding and activity is low in the state, in terms of both government sponsored and corporate initiatives.

Infrastructure—Several of South Carolina's infrastructure indicators provide positive support to its overall development. For example, in terms of geographical proximity, South Carolina is well positioned for the market place. The state, however, is at a disadvantage as its IT infrastructure is less adequate than the benchmark states.

General Business Climate—The cost of doing business in South Carolina is favorable—operating costs are relatively low.

Quality of Life—On average, South Carolina rates well in terms of “quality of life”. The low cost of living relative to average earnings is a key positive contributor to the state's quality of life.

V.2. Labor Force Skills

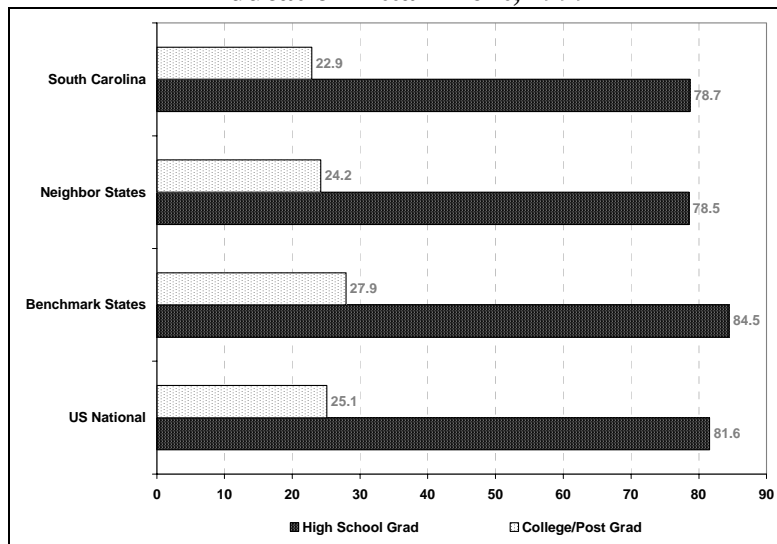
The growth of knowledge-based industries and their increasing role in cultivating a vibrant economy has made the availability of skilled, professional labor the crux of economic foundations. The availability of good schools locally, especially institutions of higher learning, is an important factor in producing readily employable labor, especially with today's emphasis on knowledge-based industries. Solid elementary and high school education is extremely important as this determines the number of students progressing to higher education. Providing students with a solid base in science and math can also encourage higher enrollment in courses such as computer science and engineering, and boost the state's skilled labor pool to fuel the growth of high-tech industries.

Since there are no national standards to measure worker quality, educational attainment is used as a yardstick to measure labor force preparedness and quality. Most jobs (semi-skilled, sub-professional) require at least high school certification, while higher level jobs (skilled, professional, technical, and managerial) generally call for at least an associate's degree or a bachelor's degree. According to the 1999 *Strategic Plan for Economic Development in South*

Carolina, South Carolina has the largest share of urban area adults without a high school diploma among the nine southern states⁴. It also had the smallest share of urban area adults with some post-secondary training, or with a bachelor’s degree, or with an advanced degree. Consequently, South Carolina’s urban work force is over-represented in manufacturing occupations and under-represented in professional and technical occupations. The caveat is that these data, at the metropolitan area level, are from the 1990 Decennial Population Census.

More recent state level data, although not at the same level of detail, is available from Census 2000. Currently, 78.7% of South Carolina’s adult population have high school diplomas and 22.9% have at least a bachelor’s degree. Compared to its neighbors, South Carolina is on par in terms of semi-skilled labor preparedness, but lagging in skilled and professional labor force preparedness. Relative to both best practice states and the national average, however, South Carolina is lagging in both categories.

Figure 29
Education Attainment, 1999

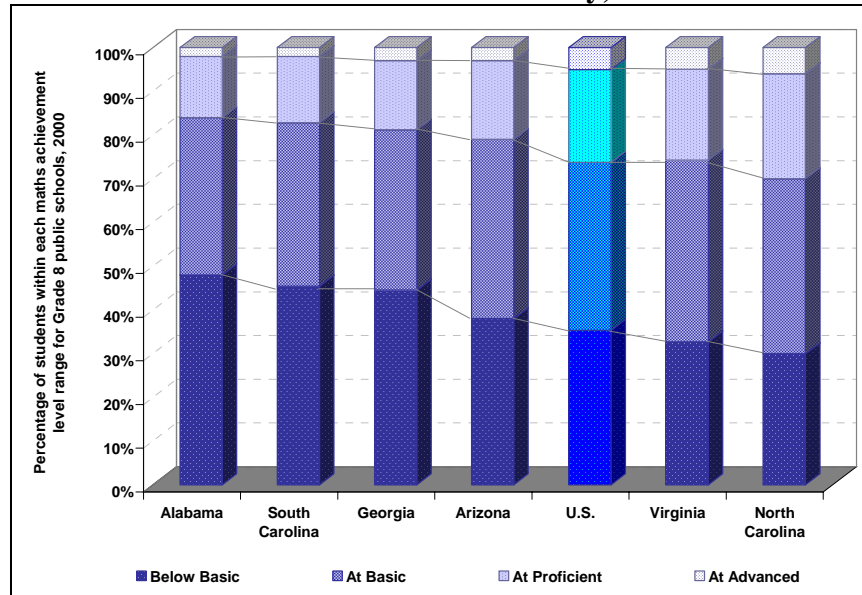


Neighbor States: Alabama, Georgia, North Carolina, & Virginia
Best Practice States: Arizona & Colorado
Source: Census Bureau

According to the *Measuring Up 2000* survey, a national survey conducted by the National Center for Public Policy and Higher Education, students in South Carolina are generally a little worse off than their national counterparts. The percentage of 8th graders scoring at or above “Proficient” level on national assessment exams are low -- 14% in math, 22% in reading, and 15% in writing. Particularly worrisome is that South Carolina has one of the largest groups of 8th graders that do not even have a grasp on basic math. Of South Carolina’s 8th graders, 45% were assessed to have less than basic understanding of math. Among the neighboring and best practice states, only Alabama is worse off in this aspect -- 48% of 8th graders do not have an understanding of rudimentary math. Although Georgia also has 45% of its 8th graders deemed to be “below basic”, the state has a larger share of students tested to be at and above “Proficient” than South Carolina.

⁴ Virginia, Georgia, Kentucky, Mississippi, Tennessee, North Carolina, South Carolina, Alabama, and Florida.

Figure 30
8th Graders Math Proficiency, 2000



Source: National Center for Public Policy and Higher Education

In fact, proficiency in science is worse than proficiency in reading and writing and the gap worsens as the grade level progresses. According to the *Strategic Plan for Economic Development in South Carolina*, in urban school systems, 20% of all third grade students, versus 23% of eighth graders, are more proficient in reading and writing. In rural systems, 24% of third graders, versus 26% of eighth graders, are more proficient in reading and writing. Moreover, the share of students proficient in science declines sharply from the third to the eighth grade -- 67% to 46% in urban areas and 58% down to 37% in rural areas.

While SAT scores may be an imperfect measure of scholastic achievement, they do provide another comparable measure to assess the relative ability of those who take the test. The average score of students taking the Scholastic Assessment Test (SAT) is still lower for South Carolina than most other states. Not only is the Math score lower than average, but so is the Verbal score. Alabama has higher SAT scores basically because only the cream of the crop - a meager 9% - took the test. In South Carolina, 57% of students took the SAT, which is higher than the national average of 45%. As a result of the lower scores, fewer students in South Carolina are able to enter the better colleges.

Table 6
SAT Test Scores, 2001

	Math	Verbal	Percent of Graduates Taking SAT 2001
Alabama	554	559	9
Colorado	542	539	31
Arizona	525	523	34
U.S.	514	506	45
Virginia	501	510	68
North Carolina	499	493	65
Georgia	489	491	63
South Carolina	488	486	57

Source: American School Board Journal

When top-notch higher education facilities are available within the state, a larger number of local students could enroll in these institutions of higher learning. Not only would tuition be more affordable to residents of the state, but the geographic proximity would also be an attractive factor. South Carolina has only 16 campuses of technical institutes and 4 regional two-year campuses in the state, by far the fewest number among the nine southern states. However, enrollment rates at these institutions are relatively much higher, ranking fourth out of the nine southern states, according to the 1999 *Strategic Plan for Economic Development in South Carolina*. Thus, although the absolute number of two-year and technical institutions may be small, they appear to be effectively utilized in terms of enrollment. While more attention is traditionally focused on four-year university programs, shorter programs such as these institutions can have a strong role in preparing a labor force with needed skills as well.

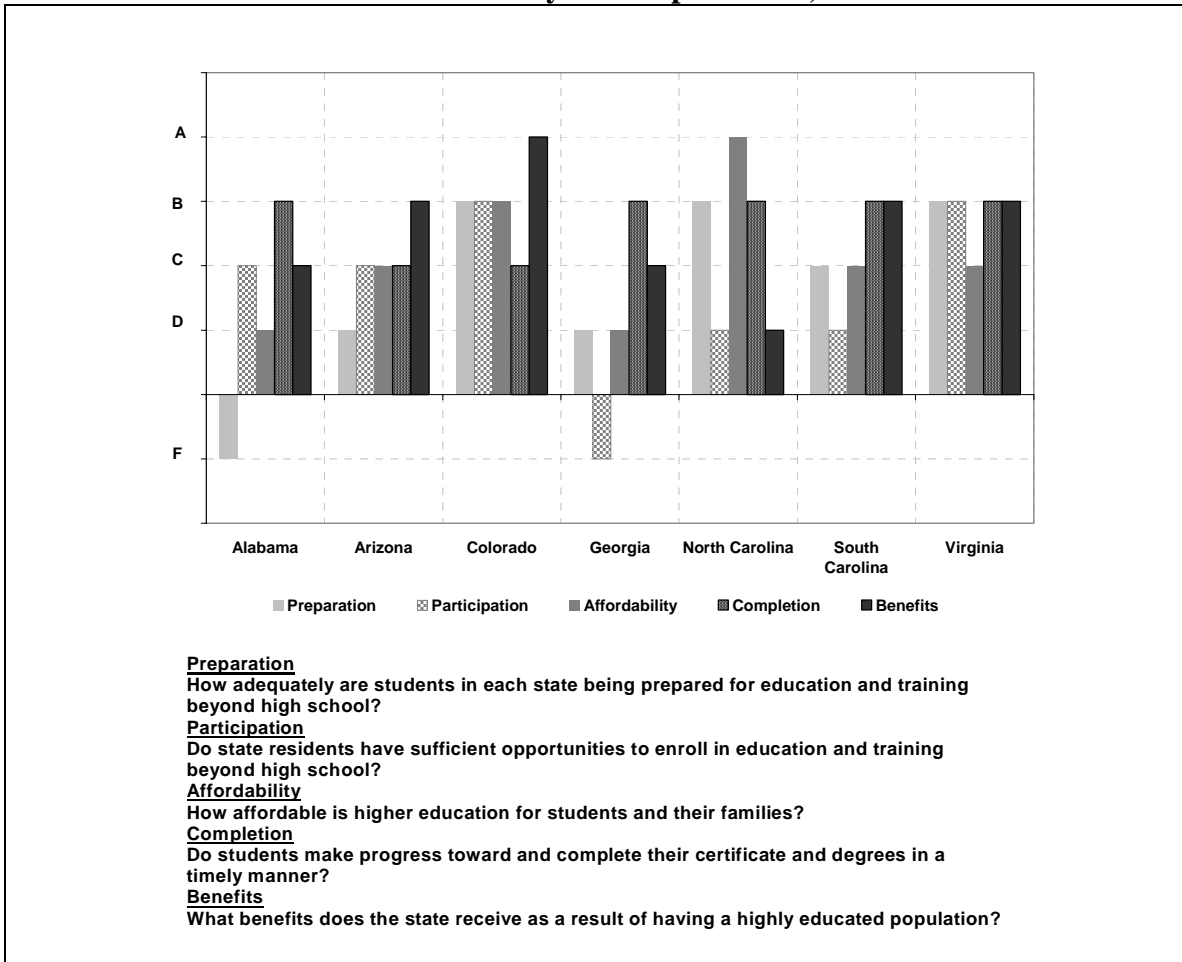
In terms of four-year institutions, South Carolina does indeed have a large number of post-secondary institutions. However, South Carolina, along with Alabama and Arizona, does not have any first-tier undergraduate national universities or liberal arts colleges. It is host to only three national second-tier institutions of higher education -- Clemson, Furman, and Wofford. In contrast, Virginia has three national first-tier higher education institutions (i.e. University of Virginia, William & Marry, Washington & Lee) and four second-tier universities and colleges (i.e. Virginia Tech, Hollins, Randolph Macon Women's College, and Sweet Briar). North Carolina has four first-tiers (Duke, UNC, Wake Forest, and Davidson) and one second-tier (NCS). Georgia has two first-tiers -- Emory and Georgia Tech -- and three second-tiers -- University of Georgia, Agnes Scott, and Spelman. Of course, other factors beyond accessibility are just as critical, if not more. For example, affordability of higher education and the quality of fundamental learning are very important to cultivating a student population that have both the intellectual preparedness as well as the financial ability to obtain post secondary school education.

The *Measuring Up 2000* survey scored South Carolina's education system relatively poorly in three areas -- the quality of education ("Preparation"), higher education enrollment ("Participation"), and affordability. Among its neighboring states, only Georgia scored worse in these three categories. These three categories are probably the most important among the survey's five categories in cultivating a strong, readily employable labor force. A very low proportion of 11th and 12th graders perform well on college entrance exams and, consequently, a very low percentage of South Carolina's high school students go on to college immediately after high school. Moreover, only a fair proportion of young adults (18 to 24 age cohort) are enrolled in college-level education or training and a very low percentage of working-age adults (25 to 44 age cohort) enroll in post-high school education or training. Part of this could be due to the

inability of a rather large group of South Carolinians to finance higher education. Furthermore, even after financial aid, South Carolina's education system requires families to devote a relatively large share of family income to attend its public two- and four-year colleges, which serve approximately 83% of the students in the state. Private institutions, which account for 17% of enrollment, are even more expensive and beyond the reach of many families. In addition, investment in financial aid for low-income families is low.

North Carolina, which scored high marks for an affordable education system, also makes relatively little investment in financial aid. However, not only is a higher percentage of federal Pell Grant aid allocated to low-income families, but state college tuition in North Carolina is approximately 45% less than in South Carolina. As a result, tuition at the lowest priced colleges only take up 6% of the poorest families' income in North Carolina whereas in South Carolina, it would require about 12% of income.

**Figure 31
State Education System Report Card, 2000**



Source: The National Center for Public Policy and Higher Education

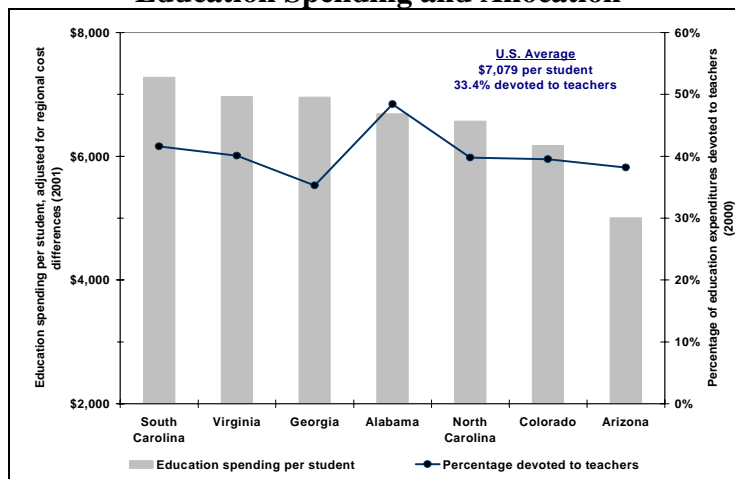
The accessibility of institutions, enrollment and graduation rates, and performance levels of post-secondary institutions in South Carolina are related to another key economic issue – research and development (discussed more fully in V.4 Technology). R&D is a necessary ingredient in building up the technology base in a state, and linking it with key industrial and cluster developments. The education system is one of the pillars of promoting R&D. More comprehensive endowed-chair programs could attract more top academics to South Carolina’s colleges and universities, bringing their R&D skills with them. Setting higher education priorities at a state level, and encouraging industry partnerships to colleges and universities would also contribute to R&D activities. The greater link between R&D within higher education and industry may have the additional benefit of improving the motivation and performance of students participating in the R&D programs.

In terms of the distribution of education resources, South Carolina is making a concerted effort to improve its education system in the hope of cultivating a skilled labor force that would nurture the development of a dynamic economy. The 1999 survey by Education Week revealed that South Carolina had inadequate resources allocated toward education. Since then, the state has been pouring financial resources into its education system. Aid awarded by state grant programs in fiscal year 1999 totaled some \$89 million, with need-based and non-need-based aid accounting

for 37% and 63%, respectively⁵. More scholarship initiatives have also been drafted early this year, in the hope of further boosting the state’s higher education enrollment.

After adjusting for regional cost differentials, South Carolina spent an average of \$7,275 per student in 2001, more than all its neighbors as well as the national average (\$7,079). This represents a 9.7% increase from the amount spent in 2000, placing South Carolina among the top states in expanding education expenditures. The national average rate of increase was 3.9%. Furthermore, 41.6% of education expenditures were devoted to teachers, compared to the national average of 33.4%. Among its regional counterparts and best practice states, only Alabama devoted a higher percentage of education expenditures to teachers⁶. However, it is important to note again, that these figures are state averages. Actual funding per student ranges from \$2000 to \$10,000 in individual school districts across the state. There is currently significant public discussion about this issue, but there are no plans in place yet to address this situation.

Figure 32
Education Spending and Allocation



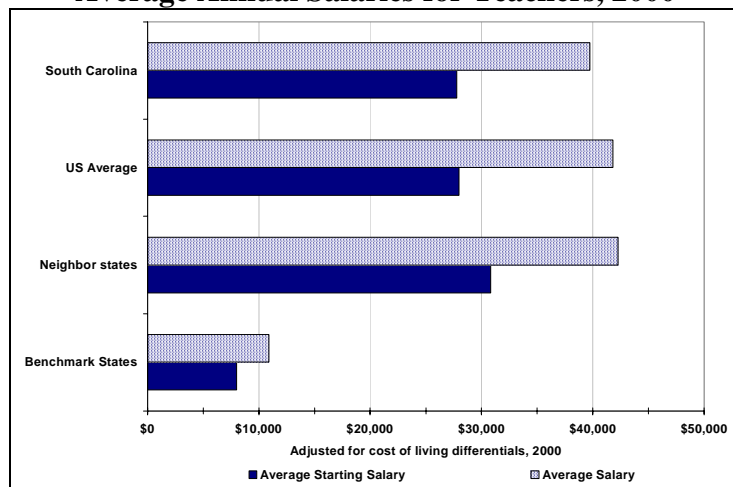
Source: Education Week

On average, South Carolina is able to pay its teachers relatively well, compared to most other states. It is very much on par with its neighbors, as well as most of the nation, in terms of teacher compensation. Relative to the best practice states of Arizona and Colorado, South Carolina is well ahead in this aspect; 63% of its secondary school teachers in South Carolina hold degrees in the subjects they teach and the state fully supports ongoing professional development and training for the teaching population. Approximately 64.8% of teachers in the neighboring states hold degrees in the subjects they teach. Nonetheless, teaching is still among the lowest paid professions and South Carolina does not have policies encouraging pay for performance for teachers.

⁵ Source: *Change*, March 1, 2002

⁶ The Deputy Superintendent of Education in South Carolina reports that per pupil expenditure for FY2001 was \$6,990, and that the proportion of this spent on classroom teachers was 59%.

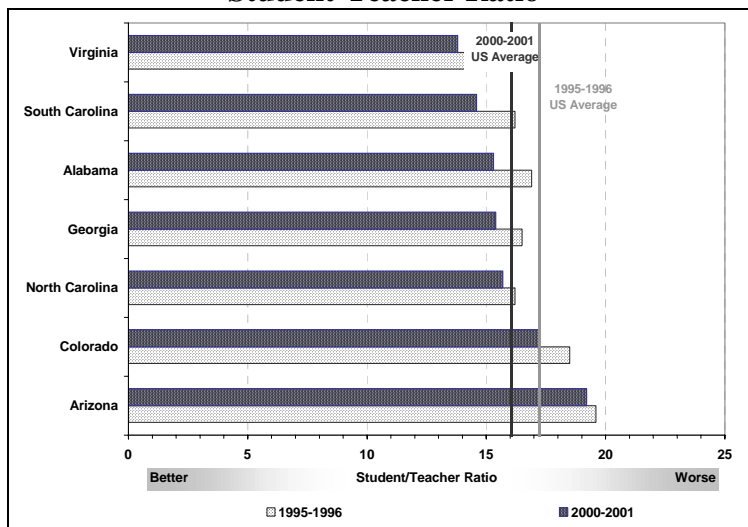
Figure 33
Average Annual Salaries for Teachers, 2000



Source: Education Week

Given the financial resources, the state average of the student-teacher ratio has improved considerably since the mid-1990s. In this respect, South Carolina is on rather solid standing relative to its counterparts and most of the nation. The number of students per teacher was 16.2 in 1995-1996, and this ratio is estimated to be 14.6 in 2000-2001 period. Virginia is the only neighboring state that has a better ratio than South Carolina.

Figure 34
Student-Teacher Ratio



Source: American School Board Journal

The following table shows that South Carolina has, to a certain degree, seen the fruit of its efforts to improve its education system. Proficiency scores for Math, Science, and Reading have improved since the previous survey. However, despite the increase in grant aid, equity of resource allocation is still very much a problem that the state would need to address. The new additions to grant aid are mostly, if not all, merit-based aid, which, historically, benefit students from middle- to high-income families more than students from low-income families.

Table 7
South Carolina Elementary & Secondary Education Report Card

Measure		1999 <i>Quality Counts</i> Survey	2002 <i>Quality Counts</i> Survey
Percent of Students Scoring At or Above Proficient			
Math	4 th Grade	12%	18%
	8 th Grade	14%	21%
Science	8 th Grade	17%	20%
Reading	4 th Grade	20%	22%
Standards & Assessments		B	B+
Resources			
Adequacy		C+	B-
Equity		B	C

Source: Education Week

V.3. Infrastructure

Infrastructure provides support to the growth of businesses. One of the basic elements of infrastructure is transportation or good connectivity, which makes a place more easily accessible. Geographic proximity to a sizeable population ensures a reasonable market, both to source from and to sell to. As the *Strategic Plan for Economic Development in South Carolina* has indicated, South Carolina lies within 500 miles of 28% of all Americans, whereas Arizona and Alabama have smaller regional and domestic markets for their goods and services. The table below shows that, compared to its neighbors and the best practice states, the **highway network** in South Carolina is in good standing. If anything, there are indications the state is “over serviced” in terms of roads and highways.

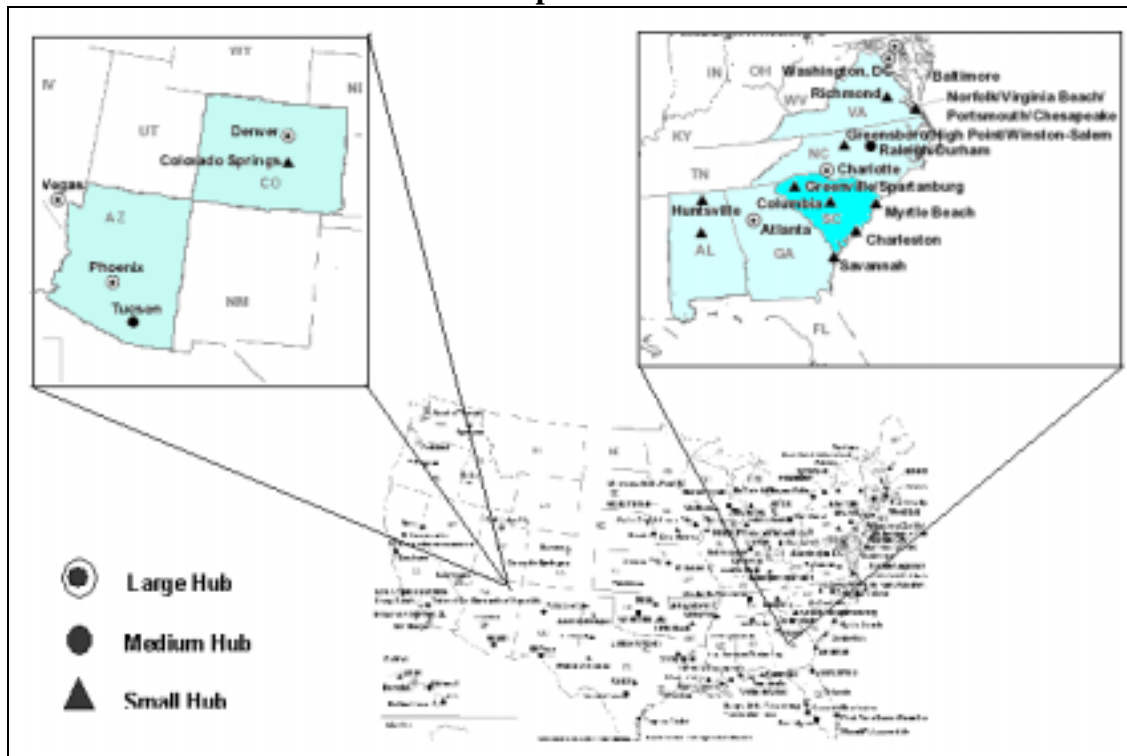
Table 8
Highway Density, 2000

State	2000 Highway Miles				Total
	Rural		Urban		
	Interstate	Non-Interstate	Interstate	Non-Interstate	
Alabama	600	714	306	276	1,896
Arizona	996	262	172	42	1,472
Colorado	767	29	184	34	1,014
Georgia	807	724	437	154	2,122
North Carolina	649	823	375	201	2,048
South Carolina	671	173	158	107	1,109
Virginia	731	431	387	114	1,663
State	2000 Net Land Area (Square Miles)			Miles of Highway per Square Mile of Land	
	Rural	Urban	Percent Urban	Rural	Urban
	Alabama	47,566	3,187	6.3	0.03
Arizona	110,757	2,852	2.5	0.01	0.08
Colorado	101,942	1,787	1.7	0.01	0.12
Georgia	54,384	3,667	6.3	0.03	0.16
North Carolina	45,485	3,230	6.6	0.03	0.18
South Carolina	28,686	1,425	4.7	0.03	0.19
Virginia	37,118	2,480	6.3	0.03	0.20

Source: Federal Highway Administration

In terms of an **air transportation network**, the *Strategic Plan for Economic Development in South Carolina* used direct air service from airports in each state to twenty major U.S. business destinations⁷ as a measure of connectivity by air transport. At the time the report was written, South Carolina was served by approximately 124 non-stop flights to 12 of the 20 destinations. This was low relative to the other states, such as North Carolina (373 non-stop service to 20 destinations) and Georgia (485 non-stop flights to 20 destinations). This is partly because South Carolina does not have the bigger hubs that the other states have. Even though Virginia does not have a large air transportation hub, it is very close to the one in Washington, DC.

Figure 35
Air Transportation Hubs

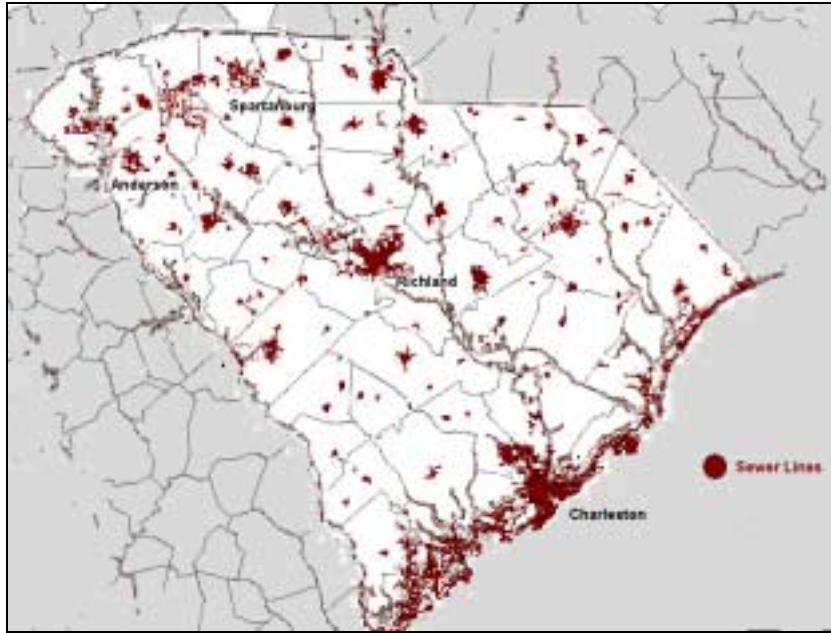


Source: Bureau of Transportation Statistics

The other components of basic infrastructure are **water and sewerage systems** (see Figure 36 and Figure 37). South Carolina has, on average, adequate water and sewer infrastructure, which is generally concentrated in major cities or counties. In the rural parts of the state, coverage of adequate infrastructure is more of a concern. Compared to the rest of the nation, South Carolina’s water and waste systems fall in the “middle-of-the-road”, average-ranking category. However, with Greenville County quickly becoming a more important area for businesses and R&D activities, the sewer system in that area could encounter bottleneck issues in the foreseeable future unless it is upgraded or expanded.

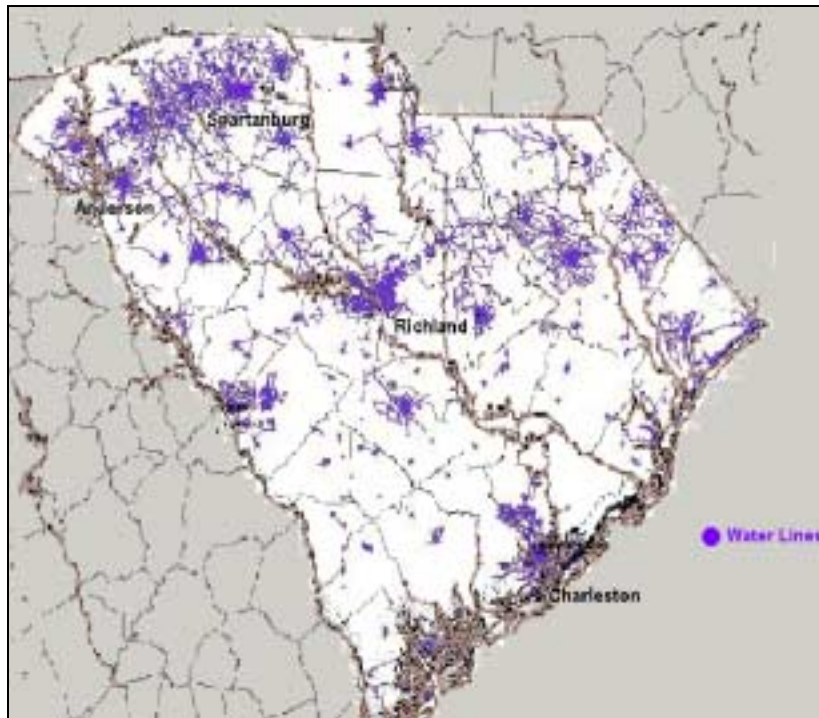
⁷ Atlanta, Boston, Charlotte, Chicago, Cleveland, Cincinnati, Dallas, Denver, Detroit, Houston, Los Angeles, Memphis, Miami, Nashville, New York, Philadelphia, Pittsburgh, San Francisco, St. Louis, and Washington.

Figure 36
Sewer Lines



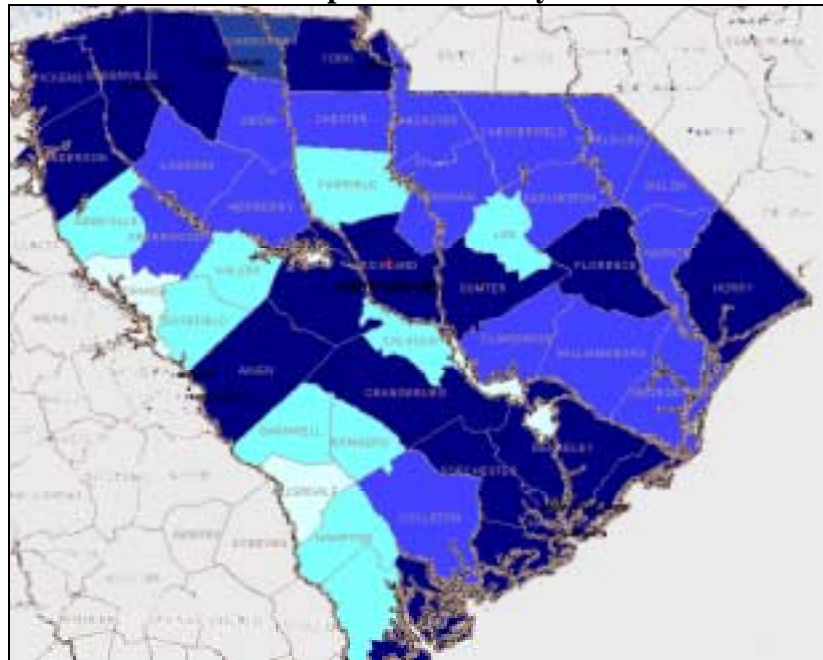
Source: University of South Carolina

Figure 37
Water Lines



Source: University of South Carolina

Figure 38
Population Density



Less Dense

More Dense

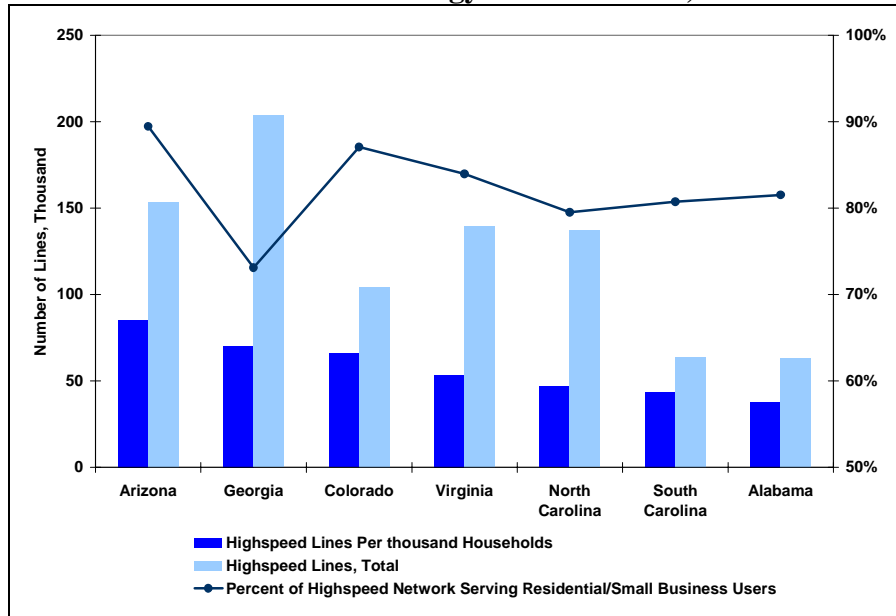
As for the **availability of business real estate**, the *Strategic Plan for Economic Development in South Carolina* found that metropolitan areas in South Carolina have a proportionately larger inventory of vacant Class A office space than do urban areas within most of its neighboring states. Class A office space is designed for high quality tenants in excellent locations. High quality finish, professional management, and excellent location, are the hallmarks of such real estate. However, South Carolina has a very tight market for manufacturing space and a limited inventory of distribution space in existing buildings. Moreover, the study also found that a portion of the available space is dated—no longer suitable for most new production facilities. This suggests a lack of proper space for activities that will spur the South Carolina economy into the new millennium (e.g. R&D).

Another important infrastructure indicator is a state's **telecommunications or IT readiness**, the structural cornerstone of the new economy. IT infrastructure seems to be less adequate in South Carolina than in the other benchmark states. Among the benchmark states, the share of households with Internet access is the lowest in South Carolina (32%), followed by Alabama (36%) and Arizona (43%). Colorado leads the group with 52% of households with Internet access. As for North Carolina, Virginia, and Georgia, the shares are 45%, 44%, and 43%, respectively.

High-speed lines, which are defined as lines transferring over 200 kbps in at least one direction (e.g. ADSL, coaxial cable, etc.), are a better measure of information technology infrastructure than telephone lines. It is the main mode of Internet connection for most businesses and will soon overtake dial-up services as the preferred Internet access mode for residential users. The following chart shows that, next to Alabama, South Carolina has the lowest number of high-speed lines. Even when number of households is taken into account, South Carolina is still

lagging behind most of the benchmark states in terms of fiber density. Arizona has the most number of lines per one thousand households, followed by Georgia, Colorado, and Virginia.

Figure 39
Information Technology Infrastructure, 2000



Source: Federal Communications Commission

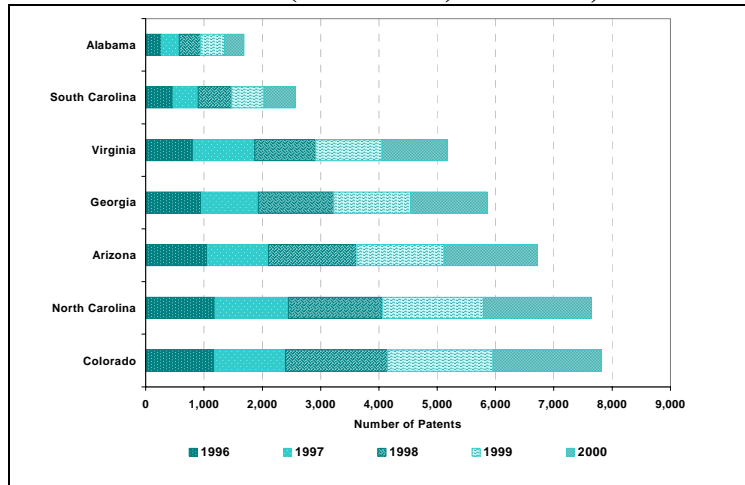
Another important factor that should be noted is the adequacy of **the power generation and distribution system**. Power outages can be extremely damaging to high-tech production, such as semiconductor manufacturing, and cost businesses a tremendous amount of money and resources. So far, South Carolina has not experienced any major power outages that are not associated with storms like Hurricane Floyd and the snowstorm in 2000.

V.4. Technology

Having a strong R&D base is an essential component of economic development as it drive the growth of knowledge-based industries and requires a highly educated labor force.

Patents define the boundaries of intellectual property in a manner that can be protected and built upon. These walls of protection form a barrier to entry, allowing the patent holder to reap the high economic returns during the life of the patent and giving angel investors and other forms of venture capital reason to invest in these businesses. With the exception of Alabama, inventors in South Carolina have consistently generated fewer patents than the group of benchmark states during the period 1996-2000. This is in spite of the presence of incubators and accelerators set up to foster innovation in the state.

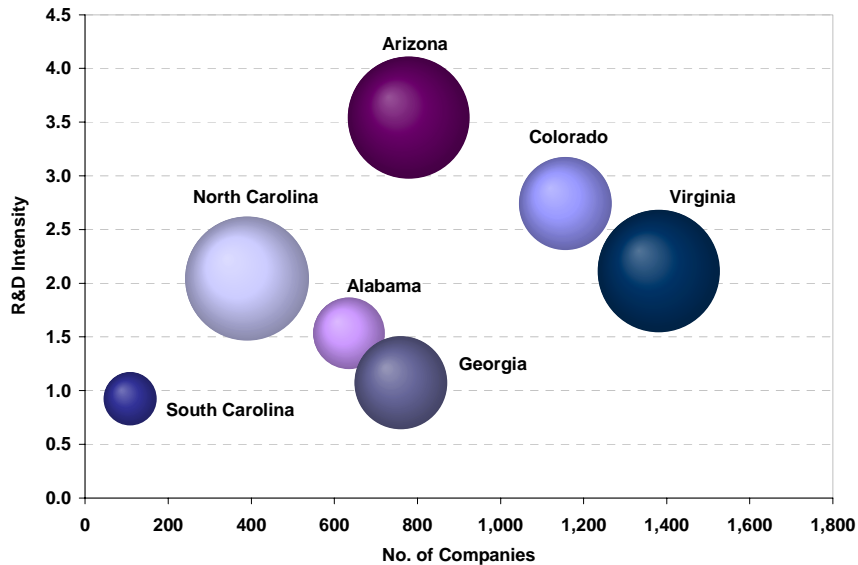
Figure 40
Number of Patents (All Classes) Awarded, 1996-2000



Source: United States Patent and Trademark Office

R&D, often the precursor to the most rewarding patents awarded, has been seriously lacking in South Carolina. Not only were the total R&D expenditures and number of companies undertaking R&D low, but R&D intensity in South Carolina is also the lowest among the group of benchmark states (see Figure 41).

Figure 41
R&D Profile by State, 1999
 (Size of bubble = Amount of R&D)

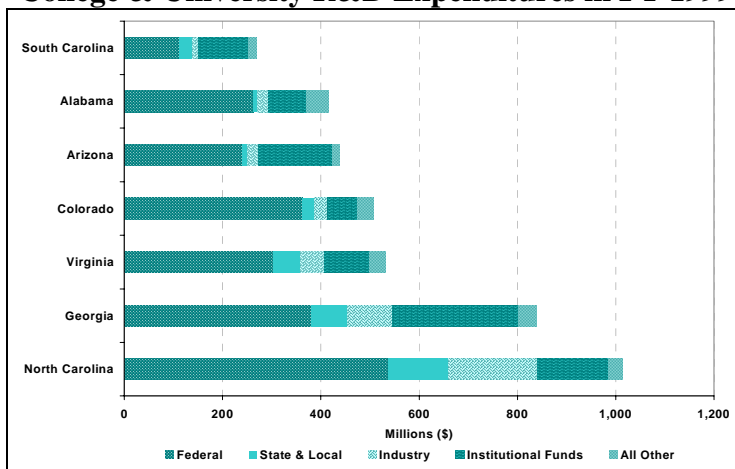


* $R\&D\ Intensity_{state} = R\&D\ Expenditure_{state} / GSP_{state}$
 Source: National Science Foundation

Even though federal R&D funding to South Carolina has grown over the past three decades, it is still low. In terms of federal R&D per capita, South Carolina ranks a low 45th place out of all the states. In order to improve the situation, South Carolina is participating in the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR) that was started to help states become more competitive in winning federal R&D dollars. In fiscal year 1999, the Department of Defense and the U.S. Department of Health and Human Services accounted for over 51% of all federal R&D funding in South Carolina.

Next to government and federally funded labs, colleges and universities usually receive the bulk of federal R&D funds. Three universities in South Carolina conduct the majority of research in the state, but only one -- Medical University of South Carolina (95th) -- is ranked among the top 100 universities and colleges that receive the most federal R&D funds. In stark contrast, North Carolina is home to four universities that are among the top 100 university recipients of federal R&D dollars -- Duke University (18th), University of North Carolina Chapel Hill (21st), Wake Forest (65th), and North Carolina State University (75th). As a result of its low federal R&D funding, R&D expenditure in South Carolina's colleges and universities is the lowest among the benchmark states.

Figure 42
College & University R&D Expenditures in FY 1999



Source: National Science Foundation

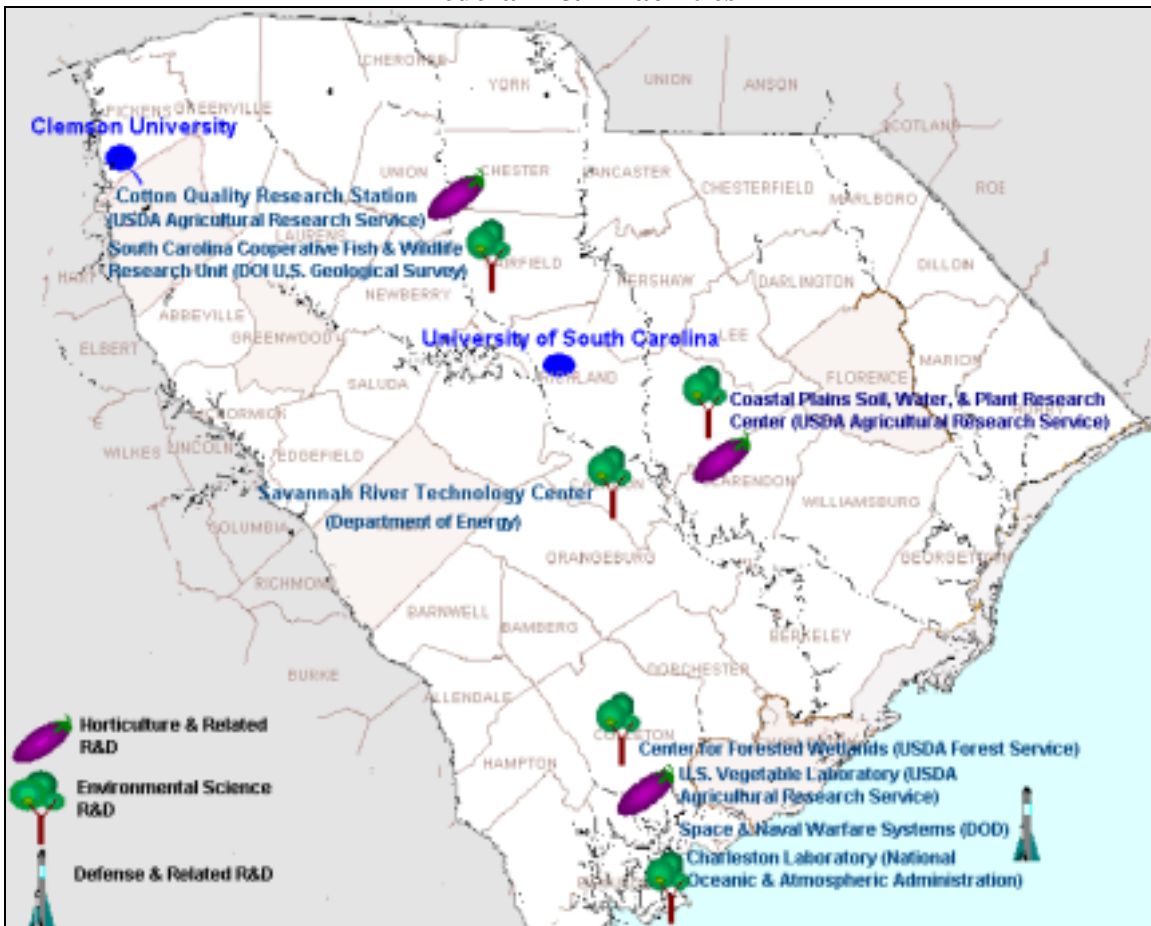
In terms of corporate R&D, South Carolina is disadvantaged in that it does not have as many companies with deep pockets setting up their R&D facilities in the state. Milliken & Company, which operates a textile-related research facility in Spartanburg, is one of the largest R&D industrial firms in South Carolina. As a benchmark, companies like Glaxo Wellcome, IBM, Covance, Cisco Systems, and Medco Research, have established R&D facilities in the Research Triangle Park in North Carolina. Virginia, where industrial firms are the top performers of R&D, is home to research facilities of companies, such as Bell Boeing Joint Venture Program, Lockheed Martin, Raytheon Corporation, and Science Applications International Corporation. In 2000, industry funded R&D in South Carolina amounted to just about \$15.5 million, putting the state at 34th place among the 50 states. In a similar fashion, the state is handicapped by having fewer advanced government or federally funded labs compared to the other states. It would be no surprise if this were largely due to the relatively small pool of science and engineering students in South Carolina.

V.4.1. Special Focus: South Carolina Technology Assets

The number and nature of South Carolina’s technology assets provide the mechanism for understanding a key element of the state’s technology foundations. For the purposes of this study a technology asset is any R&D establishment no matter what its source of funding is. These can be private company establishments, federal labs, or research departments or programs and universities or colleges. While the distribution of these assets across the state may superficially seem to be random, when we consider the area or type of research activity, some interesting patterns of geographic agglomeration can be observed. These points of agglomeration tend to be focused on the location of either colleges, universities, and/or major research-consuming companies.

First, we focus on federally-funded facilities (see Figure 43 for a map showing the distribution and classification of these facilities). Federal R&D research obligations and facilities provide direct, high-level impact in terms of technical jobs. Also, such large-scale and respected R&D facilities often lead to some form of technology transfer that could encourage further research by private entities that yield new technologies or products. As detailed in the earlier section, South Carolina compares rather poorly to most other states in terms of R&D and ranks low at 45th in federal R&D per capita.

**Figure 43
Federal R&D Facilities**



Source: Rand

By far, South Carolina receives the most federal R&D dollars from the Department of Defense (DOD) and Health and Human Services (HHS). Department of Energy (DOE) is the third largest federal sponsor of R&D in South Carolina. As such, it is no surprise that the federal R&D facilities fall into three broad categories -- defense, horticulture, and environmental-related research. Of particular interest is the Savannah River Technology Center, a federally funded R&D center sponsored by DOE and operated by Westinghouse. The center focuses on developing, testing, and demonstrating equipment and techniques for processing nuclear materials; cleaning up and protecting the environment; processing and stabilizing hazardous and radioactive waste materials; decontamination and decommissioning; and minimizing the danger from nuclear proliferation⁸.

The Space and Naval Warfare Systems Center Charleston is a unit of DOD. It conducts R&D in areas of command, control, communications, intelligence, surveillance, reconnaissance, and navigation. Approximately 1,442 civilian personnel are employed in this unit, only a portion of whom are directly involved in R&D activities. Also located in Charleston are Center for Forested Wetlands (USDA Food Services), U.S. Vegetable Laboratory (USDA Agricultural Research Service), and Charleston Laboratory (National Oceanic & Atmospheric Administration). The Center for Forested Wetlands is on the Charleston campus of Clemson University and it conducts research to develop, quantify, and synthesize ecological information needed to sustainably manage and restore the structure, functions, and productivity of forested wetland ecosystems through research and technology transfer in the areas of ecological management. Also situated on Clemson University campus, the U.S. Vegetable Laboratory conducts research to solve national problems in vegetable crop production and protection with emphasis on the southeastern United States⁹.

Other federal R&D centers are the Coastal Plains Soil, Water, & Plant Research Center, South Carolina Cooperative Fish & Wildlife Research Unit, and the Cotton Quality Research Station. As shown in the following chart, these federal R&D units are located in Anderson, Greenwood, Aiken, Charleston, and Florence counties. Most of the federal R&D centers are located close to a college or university.

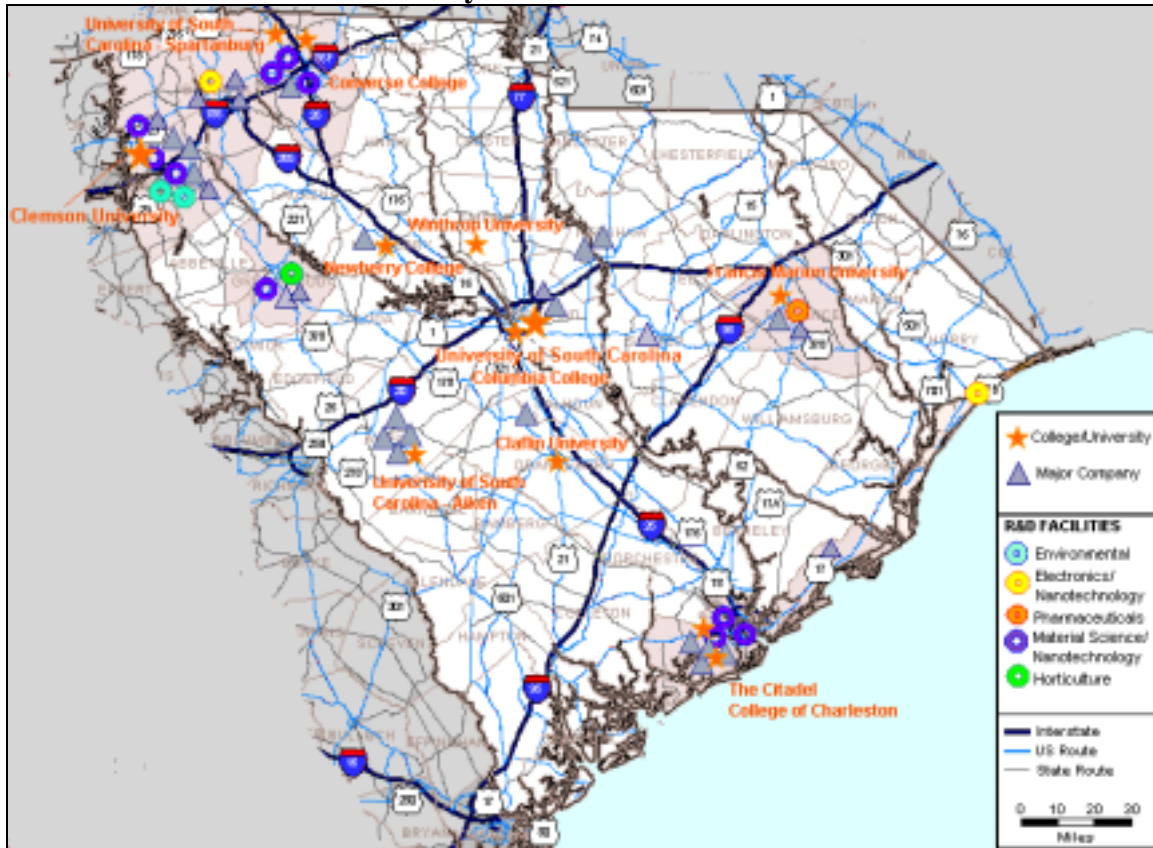
Next, we turn to **corporate or privately-funded R&D**. The distribution of these technology assets is illustrated in Figure 44. These institutions are also listed in the table provided in Appendix 2. First, it is clear that these R&D facilities are generally located in counties that have federal R&D centers, namely Florence, Charleston, Greenwood, and Anderson. Second, there is almost always a college or university, as well as a few major employers, such as Owens Corning, AVX, and General Electric, close by. Third, these locations are connected by major highways, which enables easy travel from one place to another.

In terms of areas of research, South Carolina's privately-funded R&D falls under five broad categories -- environmental, electronics, material science, pharmaceuticals, and horticulture. Facilities engaged in environmental and horticulture R&D tend to be situated around federal R&D centers. For example, Environmental Systems Engineering and Clemson Technical Center, both delving in environmental or waste handling research, are in Anderson County, and Park Seed Company, which engages in horticulture related R&D, is located in Greenwood County. These two neighboring counties happen to be home to federal R&D centers, South Carolina Cooperative Fish & Wildlife Research Unit, and the Cotton Quality Research Station.

⁸ Rand

⁹ Rand

Figure 44
Privately-Funded R&D Facilities



Source: Company websites; Nexis.com

Material science research dominates the private-sector R&D arena and most research facilities can be found in Northwestern South Carolina. These include Hoechst Research & Technology, Michelin Americas Research & Development Corporation, W.R. Grace & Co., Milliken Research Center, and Bishop Center for Engineering Ceramic Manufacturing. Similarly, we also find another group of research facilities engaged in material science R&D clustered in Charleston, South Carolina. Even though the industry affiliation of these facilities and their geographic location show no particular pattern, it is quite clear, however, that the nature of the research and knowledge involved are similar or fall in the same science discipline of material science. For example, Milliken Research Center is associated with the textile industry and it endeavors to develop state-of-the-art fabrics or materials that exhibit desirable traits such as toughness, resilience, and malleability. Michelin Americas Research & Development Corporation engages in R&D that hopes to produce a better material for automotive tires and the Tile Council of America researches possible avenues to produce better, stronger tiles. As diverse as the activities may seem, they all involve manipulating and creating new polymers.

As such, we can postulate that there is some degree of technology transfer happening in these geographic agglomerations of R&D facilities, colleges, universities, and companies. The other encouraging aspect that should be highlighted is that much of these activities involve some form

of nanotechnology¹⁰ (e.g. nanoelectronics), which is the micro-science of tomorrow. It has enabled revolutionary breakthroughs in materials, pharmaceuticals, and information technology. Top private patents in the state have mostly been awarded for material science related research.

Table 9
Top 15 Private Patent Holders

PATENT HOLDER	NO. OF PATENTS (1996 - 2000)	PATENT HOLDER	NO. OF PATENTS (1996 - 2000)
MILLIKEN RESEARCH CORPORATION	74	CLEMSON UNIVERSITY	23
NCR CORPORATION ^β	74	ASTEN GROUP, INC.	22
W. R. GRACE & CO.-CONN.	71	UNITED STATES OF AMERICA, DEPARTMENT OF ENERGY	21
WESTVACO CORPORATION	69	SONOCO PRODUCTS COMPANY, INC.	20
MILLIKEN & COMPANY	53	KEMET ELECTRONICS CORPORATION	19
POWER TOOL HOLDERS, INC.	49	SONOCO DEVELOPMENT, INC.	19
WESTINGHOUSE AIR BRAKE COMPANY	48	HILL-ROM COMPANY, INC.	18
GENERAL ELECTRIC COMPANY	41	MEDICAL UNIVERSITY OF SOUTH CAROLINA	18
CRYOVAC, INC. [*]	31	WESTINGHOUSE SAVANNAH RIVER COMPANY, INC.	17
THE ESAB GROUP, INC.	31	BIC CORPORATION	15
RELIANCE ELECTRIC INDUSTRIAL COMPANY	29	HOECHST CELANESE CORPORATION	15
BAYER CORPORATION	28	SAWGRASS SYSTEMS, INC.	15
MICHELIN RECHERCHE ET TECHNIQUE	25	WANGNER SYSTEMS CORPORATION	14
BASF CORP.	28	WESTINGHOUSE ELECTRIC CORP.	14
RYOBI NORTH AMERICA, CORP.	25	ALBEMARLE CORPORATION	13

^β NCR Corp. sold its West Columbia campus in August 2001.

^{*} Cryovac is a division and trademark of W.R. Grace

Source: United States Patent and Technology Office

In sum, even though the current R&D scene in South Carolina seriously lags most states in the nation, there already is a small base of R&D expertise that is postured strategically to catapult the economy into the next generation.

However, there are signs that this base may be at risk. Company-sponsored R&D is typically carried out at the company's headquarter locations. While the number of company headquarters in South Carolina (with greater than 100 employees) has grown at the same pace as the U.S. average, the number of employees within those corporate headquarters has shrunk. From 1996 to 2002, headquarter employment within South Carolina fell by 3.6%, while U.S. corporate headquarter employment rose by 18.6%. As the size of corporate offices falls within South Carolina, R&D budgets may shrink, and the number of professional and executives within the state falls as well.

¹⁰ "Nano" means 10⁻⁹, a billionth part. Nanotechnology is technology that takes things down to the molecular level and often involves manipulation of individual atoms.

V.5. Investment Capital

Access to local debt and equity financing is crucial to nurturing a vibrant economy with strong entrepreneurial spirit. No business can grow without capital funding for development and launching of new products, moving from pilot scale to full production, expansion of market, and other business strategies.

Except for three years in the 1990-2000 period, South Carolina has had more business terminations than business starts in every year. As a result, business formation has been rather stagnant in South Carolina. Colorado and Georgia, on the other hand, have had more ups and downs in both business starts and closures, indicating a stronger entrepreneurial spirit. For example, in 1994 and 1999, business starts in Georgia rose to 39,069 and 30,133, respectively. At the same time, Georgia saw 35,200 companies fail in 1994 and close to 27,000 go belly-up in 1999.

Figure 45
Business Starts and Closures

State	Business Starts				Business Closures			
	1995	2000	Percent Change, 1990 - 2000	Rank (1=Most Starts)	1995	2000	Percent Change, 1990 - 2000	Rank (1=Least Closures)
Alabama	9,140	10,067	8.7	49	10,968	9,302	(14.9)	2
Arizona	12,044	15,175	54.3	3	15,431	11,984	(15.8)	4
Colorado	19,703	25,462	112.9	1	17,933	7,561	(41.2)	3
Georgia	24,478	28,925	29.7	47	23,161	26,754	9.4	16
North Carolina	21,650	23,310	18.6	41	23,389	23,467	8.4	25
South Carolina	10,447	11,114	12.1	29	10,391	11,721	9.2	39
Virginia	19,433	22,219	11.9	18	18,493	20,569	(4.1)	11
United States Average	11,654	12,008	4.7		9,750	10,784	3.5	

Source: U.S. Small Business Administration

The following table suggests that South Carolina receives, on average, less financing than most of its benchmark states. As expected, Colorado and Georgia are the top two receivers of venture capital. This is very much in line with the picture portrayed in the 1999 *Strategic Plan for Economic Development in South Carolina*.

**Table 10
Financing Indicators**

State	Equity Financing				
	Venture Capital		SBIR* Award		SBIC ^δ Award
	2002 Q1 (million \$)	Average Size per Deal (million \$)	2001 (million \$)	Average award (\$)	2001 (million \$)
Alabama	12.5	3.1	24.97	304,530	18.48
Arizona	77.4	12.9	20.78	216,504	50.32
Colorado	204.7	9.7	53.65	224,490	198.93
Georgia	133.3	6.1	10.84	216,821	106.88
North Carolina	64.6	4.6	11.11	188,331	92.75
South Carolina	1.2	1.2	3.79	199,313	31.20
Virginia	100.3	5.3	59.81	256,709	163.67
Debt Financing					
Commercial Loans (\$ per non-farm worker)					
	1995	2000	Compound Annual Growth Rate 1990-2000		
Alabama	4,572.55	12,776.84	12.8%		
Arizona	2,051.70	2,464.67	0.0%		
Colorado	2,115.63	1,744.14	-1.2%		
Georgia	6,524.28	7,326.87	6.4%		
North Carolina	8,600.78	49,334.69	26.0%		
South Carolina	1,621.52	1,569.21	-1.9%		
Virginia	2,529.26	1,276.53	-10.2%		

* Small Business Innovation Research

^δ Small Business Investment Corporations

Sources: FDIC; Venture Economic, Small Business Administration; DRI•WEFA

Venture capital is a key source of funding for higher risk projects and so are “Angel” investors. South Carolina, along with a few of its neighboring states, has tried to replicate the network of angel investors after the Silicon Valley model. However, funding from venture capital in South Carolina has been sparse. Simply setting up the pool of investment funds is a step forward but it is not the final answer. Entrepreneurs attract investors (and vice versa) and South Carolina seems to be somewhat lacking in this aspect. Projects that have higher returns associated with first mover advantage, which usually fall in areas such as high-tech, pharmaceuticals, and biochemicals, tend to be more attractive targets for private equity investors—another ramification from the relatively low level of R&D activity in the state.

The Small Business Administration’s Small Business Investment Corporations (SBICs) program is another source of capital for the small business owner. SBICs provide leverage to local lenders and investors and fill the gap between available sources of venture capital and the needs of small businesses in start-up and growth situations. Unlike its neighbors and best practice states, South Carolina does not have any SBIC set up locally. However, this is probably not the reason that South Carolina received about the lowest SBIC and SBIR awards among the Southern states. Scanning across the board, South Carolina received less of every type of funding, which seems to suggest that there are fewer ventures or businesses to fund, rather than an outright lack of local financing infrastructure.

V.6. General Business Climate

Factors that most often affect key business decisions are those that affect the cost of operation; these include labor costs, corporate tax burden, utility cost, and rent. According to the 2000 survey conducted by the Small Business Survival Committee, South Carolina ranks 15th most attractive to small businesses among the 50 states. The survey takes into account various taxes (e.g. corporate income tax, capital gains tax, property tax, sales tax, etc.), workers' compensation costs, and number of bureaucrats (a proxy for red tape). As the following paragraphs will detail, South Carolina is very competitive in terms of operation costs.

In terms of **labor costs**, South Carolina is on very good standing. According to *Expansion Management 2000*, South Carolina is among the states with the lowest overall employee costs. Virginia and Georgia, which have very low unemployment insurance costs, were also listed as states with highly competitive labor costs. The table below shows that wage rates for South Carolina are much lower than the national average in all the main sectors.

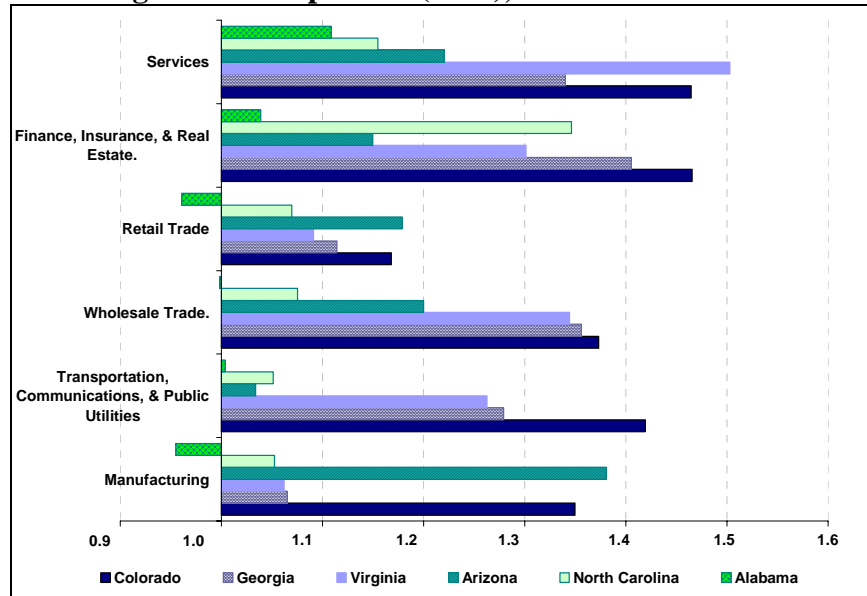
Table 11
Annual Wage Rates, 2000

	Manufacturing	Transportation, Communications, & Public Utilities	Wholesale Trade.	Retail Trade	Finance, Insurance, & Real Estate.	Services
Colorado	47,450	54,709	51,985	19,074	52,315	37,279
United States	44,778	43,643	46,740	18,432	55,556	33,666
Georgia	37,448	49,301	51,338	18,194	50,172	34,114
Virginia	37,334	48,670	50,893	17,814	46,451	38,251
Arizona	48,541	39,849	45,431	19,246	41,045	31,059
North Carolina	37,004	40,519	40,709	17,466	48,061	29,395
Alabama	33,582	38,700	37,799	15,690	37,092	28,218
South Carolina	35,158	38,546	37,860	16,329	35,702	25,454

Source: Bureau of Labor Statistics

Focusing within the group of best practice states, only Alabama has lower wage rates than South Carolina -- Manufacturing (4% lower), Wholesale Trade (0.2% lower), and Retail Trade (4% lower).

Figure 46
Wage Rate Comparison (2000), South Carolina = 1.0



Source: Bureau of Labor Statistics

South Carolina also has the second lowest **union membership** in the United States—4.5%. North Carolina has the lowest—4.2%. Highly unionized labor can increase employment costs significantly with potential benefits and compensation negotiations, strikes, and work stoppages. In fact, the rates of unionization in our benchmark group of states are lower than the national average. Hawaii, New Jersey, and New York had the highest rate of union membership.

Table 12
Union Membership

	Union Membership (Percent of Non-Farm Employees)
United States	13.9
Alabama	9.7
Colorado	9.1
Georgia	7.4
Virginia	6.8
Arizona	6.5
South Carolina	4.5
North Carolina	4.2

Source: Bureau of Labor Statistics, 1998 Survey

Compared to the findings of the *Strategic Plan for Economic Development in South Carolina*, South Carolina has certainly made some progress in improving its employment cost competitiveness. The 1999 study showed that wages in the major industries are generally higher in South Carolina than its neighbors. While wage rates played an important part in lowering the overall labor cost in South Carolina, South Carolina’s drive to attract company headquarters to the state could have also played a part. This strategy included a variety of incentives such as tax credits for new jobs, investment, and training.

Business tax burden—direct and indirect—often eat away a tenth of a company’s income. While states like Iowa and North Dakota have different tax brackets for different levels of corporate income, most states, including South Carolina and the best practice states, impose a flat corporate tax rate. State and local government in South Carolina impose a tax burden of approximately 2.7% of the state’s gross state product (GSP), which is quite moderate relative to the benchmark states. The same holds true when state and local taxes are considered as a share of total tax collections.

Table 13
Tax Burden, 2000

State	Corporate Tax Rate	State & Local Taxes as Percent of GSP, 2000	State & Local Taxes as Percent of Total Tax Collections, 2000
Alabama	6.5	2.4%	21.3%
Arizona	6.968	2.8%	27.5%
Colorado	4.63	2.9%	21.3%
Georgia	6	2.7%	23.3%
North Carolina	6.9	3.0%	27.5%
South Carolina	5	2.7%	24.8%
Virginia	6	3.0%	21.4%

Source: DRI•WEFA; Federation of Tax Administrators

In addition, **other costs** in South Carolina are relatively muted as well. The *Strategic Plan for Economic Development in South Carolina* showed that office and industrial real estate costs are very competitive in South Carolina. Only Alabama has lower priced commercial and industrial rental. Electricity costs are very modest as well. The average business facility spends about 2.4% of its operating budget on energy services. Some manufacturing processes, such as maintaining clean rooms, can consume a large amount of energy. According to the 1999 study, South Carolina’s average energy bill for a moderate load industrial user is moderately lower than the average bills for four of the best practice states. Table 14 shows that electricity prices in South Carolina are lower than most of the benchmark states for both the commercial and industrial sectors.

Table 14
Electricity Prices, 1999

State	1999 Electricity Prices (\$/Million BTU)	
	Commercial	Industrial
Alabama	\$ 19.23	\$ 11.20
Arizona	\$ 20.93	\$ 14.79
Colorado	\$ 16.83	\$ 12.83
Georgia	\$ 19.75	\$ 12.16
North Carolina	\$ 18.63	\$ 13.39
South Carolina	\$ 18.42	\$ 10.91
Virginia	\$ 15.84	\$ 11.26
Average	\$ 18.52	\$ 12.36

Source: Department of Energy

V.7. Quality of Life

As the digital age of virtual reality pushes communication to new heights of sophistication and efficiency, and regional travel gets more affordable, state borders are becoming less of a boundary to business relocation. Today, labor is more mobile than ever before. With stiff competition narrowing the differences in business climates, the quality of life is therefore becoming an increasingly important factor that influences a company's decision on where to locate its new facilities. A company that is located in a place that is deemed to be an excellent place to live would have to offer less compensation for the same employee with the same qualifications than if it were located in a less desirable area. However, this measure is largely a subjective judgement based on individual values. There is no set definition of what makes up this “quality of life” measure. So sometimes, as the 1999 *Strategic Plan for Economic Development for South Carolina* has noted, effective touting and selling can greatly improve a community’s reputation.

The following table provides some summary statistics of several key indicators of quality of life: cost-of-living, of which housing affordability is key; a sense of security within the area; climate; pollution; and cultural and recreational opportunities. More detailed statistics on each of these general areas are presented in Appendix 3.

Overall, South Carolina compares favorably in most quality of life indicators. Housing affordability is higher than most benchmark states, crime rates are among the lowest of the benchmark states, climate is generally warm and not too extreme, and air quality is above the national average. While South Carolina offers residents very good recreational opportunities, its cultural resource availability is slightly below the national average.

Table 15
Summary of Quality of Life Indicators, 2000¹¹

	Housing Affordability Index (Higher=More Affordable)	Overall Crime Index (Lower=Better)	Annual Days with >90F	Air Quality (Higher=Better)	Arts Index
Alabama	117.8	143	39	23	7
Arizona	105.8	141	164	10	4
Colorado	101.6	93	32	56	31
Georgia	89.2	131	19	54	17
North Carolina	97.9	103	25	67	14
South Carolina	112.1	139	64	82	9
Virginia	99.2	114	41	79	18

Source “Best Places to Live” Survey, Money Magazine

¹¹ The tables for Quality of Life indicators report data from these MSAs: Birmingham, AL; Phoenix-Mesa, AZ; Denver, CO; Atlanta, GA; Raleigh-Durham, NC; Columbia, SC; and Richmond, VA.

Appendix 1 – Cluster Composition Table

Figure 47: Cluster Definitions

Cluster Names	SIC3 Description	SC Employ 2002	SC Emp. Growth 2002- 07	U.S. Emp. Growth 2002- 07	SC Employ 2007	Employ ment Percent Change in Emp. Con. Ratio 2002 1997-02	SC Sales 2002 (\$Millions)	SC Sales Growth 2002- 07	U.S. Sales Growth 2002- 07	
Apparel	237 Fur Goods	26	-5.1	-1.3	20	433.7	26.6	3.3	-2.6	-0.1
Apparel	236 Girl's and Children's Outerwear	662	-7.8	-1.4	441	406.6	60.8	83.6	-5.4	-0.1
Apparel	238 Miscellaneous Apparel and Accessories	937	-6.0	-1.2	688	294.9	-20.6	118.2	-3.5	0.1
Apparel	239 Misc. Fabricated Textile Products	6,919	-6.6	-0.3	4,920	236.7	-29.8	1,005.7	-3.5	1.8
Apparel	232 Men's and Boys' Furnishings	3,086	-10.1	-2.1	1,817	215.3	-4.0	389.9	-7.7	-0.8
Apparel	233 Women's and Misses' Outerwear	1,942	-9.8	-1.2	1,160	106.2	-16.1	244.6	-7.5	0.1
Apparel	231 Men's and Boys' Suits and Coats	248	-10.1	-2.0	146	97.8	-23.2	31.4	-7.7	-0.7
Apparel	234 Women's and Children's Undergarments	105	-11.5	-2.6	57	53.6	-18.6	13.3	-9.2	-1.3
Apparel Total		13,925	-7.9	-1.1	9,249	195.5	-13.9	1,889.8	-5.0	0.5
Components & Sub-Assemblies	369 Misc. Electrical Equipment & Supplies	3,667	1.7	-0.3	3,981	198.7	25.0	920.5	13.6	2.7
Components & Sub-Assemblies	363 Household Appliances	2,503	-0.2	-0.8	2,474	153.8	-3.3	652.5	4.4	2.5
Components & Sub-Assemblies	361 Electric Distribution Equipment	1,491	1.0	-0.7	1,570	148.2	2.1	324.0	6.9	2.6
Components & Sub-Assemblies	364 Electric Lighting and Wiring Equipment	3,159	1.1	-0.3	3,340	143.3	6.9	622.7	7.3	3.5
Components & Sub-Assemblies	362 Electrical Industrial Apparatus	2,632	0.1	-0.2	2,649	110.1	3.6	491.1	5.4	3.6
Components & Sub-Assemblies	367 Electronic Components and Accessories	8,284	-0.1	1.1	8,238	90.6	-7.3	3,575.7	16.4	10.9
Components & Sub-Assemblies Total		21,736	0.5	0.3	22,252	119.3	0.5	6,586.5	13.1	7.5
Food & Agriculture	497 Irrigation Systems	65	5.3	2.3	84	240.0	8.9	11.5	8.3	6.7
Food & Agriculture	201 Meat Products	10,315	1.6	0.2	11,155	141.4	2.1	2,053.1	4.0	4.0
Food & Agriculture	075 Animal Services, Ex. Veterinary	1,835	1.5	2.1	1,978	88.5	2.5	164.3	4.2	4.1
Food & Agriculture	074 Veterinary Services	3,054	2.8	2.6	3,512	84.7	4.5	200.5	12.4	2.6
Food & Agriculture	02 Agricultural Production - Livestock	20,566	-0.2	0.2	20,325	76.0	-4.2	1,220.0	2.2	2.6
Food & Agriculture	206 Sugar and Confectionery Products	922	-0.3	-0.4	906	72.3	23.2	221.5	4.4	4.9
Food & Agriculture	205 Bakery Products	2,073	-2.9	-0.2	1,787	63.6	-4.2	359.6	1.5	5.3
Food & Agriculture	01 Agricultural Production - Crops	19,248	-1.0	0.0	18,324	62.1	-8.8	1,141.8	1.4	2.5
Food & Agriculture	072 Crop Services	461	2.6	2.2	525	56.1	6.4	41.3	5.3	4.2
Food & Agriculture	203 Preserved Fruits and Vegetables	1,448	-5.1	-0.4	1,115	56.1	-13.5	361.0	0.5	5.3

Cluster Names	SIC3 Description	SC Employ 2002	SC Emp. Growth 2002- 07	U.S. Emp. Growth 2002- 07	SC Employ 2007	Employ ment Percent Change in Emp. Con. Ratio 2002 1997-02	SC Sales 2002 (\$Millions)	SC Sales Growth 2002- 07	U.S. Sales Growth 2002- 07	
Food & Agriculture	092 Fish Hatcheries & Preserves	84	0.9	1.2	88	55.7	8.7	26.3	3.3	4.3
Food & Agriculture	091 Commercial Fishing	77	-1.1	0.8	73	52.2	4.4	24.1	1.3	3.9
Food & Agriculture	202 Dairy Products	964	-0.7	-0.3	929	46.3	5.2	482.8	2.7	3.7
Food & Agriculture Total		61,047	-0.1	0.2	60,717	75.1	-3.2	6,296.4	3.1	3.6
Forestry, Wood, and Paper	085 Forestry Services	1,433	2.6	2.5	1,631	331.4	0.1	449.3	5.1	5.6
Forestry, Wood, and Paper	263 Paperboard Mills	2,135	-4.3	-1.1	1,712	289.4	-6.0	940.9	1.6	4.5
Forestry, Wood, and Paper	241 Logging	2,939	-1.2	-0.9	2,765	254.5	-8.9	913.8	4.0	3.9
Forestry, Wood, and Paper	262 Paper Mills	3,157	-0.6	-2.2	3,062	228.2	8.7	1,390.0	5.5	3.4
Forestry, Wood, and Paper	267 Misc. Converted Paper Products	7,229	1.6	0.1	7,834	207.7	9.4	2,061.9	5.9	3.6
Forestry, Wood, and Paper	249 Miscellaneous Wood Products	2,164	1.0	0.4	2,273	173.5	8.9	454.8	5.4	4.5
Forestry, Wood, and Paper	242 Sawmills and Planing Mills	3,908	0.7	-0.4	4,052	155.0	-4.0	748.5	5.4	4.3
Forestry, Wood, and Paper	265 Paperboard Containers and Boxes	4,318	-1.4	-0.5	4,018	141.0	-7.2	876.4	1.1	3.9
Forestry, Wood, and Paper	243 Millwork, Plywood & Structural Members	3,953	1.4	-0.3	4,232	95.1	-10.1	671.9	5.9	4.3
Forestry, Wood, and Paper	244 Wood Containers	779	1.3	0.7	831	93.0	-9.8	65.0	6.2	4.9
Forestry, Wood, and Paper	251 Household Furniture	2,081	-1.9	0.2	1,886	59.1	-21.8	266.3	0.6	4.1
Forestry, Wood, and Paper Total		34,096	0.1	-0.2	34,296	151.3	-4.2	8,839.0	4.5	4.0
Machinery & Fabricated Metals	356 General Industrial Machinery	7,573	2.8	-0.3	8,691	214.9	4.4	1,310.8	9.6	4.3
Machinery & Fabricated Metals	342 Cutlery, Handtools, and Hardware	3,022	-1.1	-0.5	2,860	185.1	19.1	660.3	3.4	3.2
Machinery & Fabricated Metals	352 Farm and Garden Machinery	2,404	1.0	-0.7	2,531	181.8	-13.7	528.6	6.3	2.6
Machinery & Fabricated Metals	354 Metal Working Machinery	6,550	3.4	-0.2	7,733	170.4	12.6	1,159.8	10.1	4.2
Machinery & Fabricated Metals	349 Misc. Fabricated Metal Products	6,660	1.1	0.0	7,020	157.1	6.5	1,189.6	5.9	3.6
Machinery & Fabricated Metals	355 Special Industry Machinery	3,012	-0.7	-0.1	2,913	117.6	-14.5	489.6	7.5	5.0
Machinery & Fabricated Metals	358 Refrigeration and Service Machinery	3,279	4.0	-0.2	3,996	108.9	-3.9	600.6	8.7	2.8
Machinery & Fabricated Metals	343 Plumbing and Heating, Ex. Electric	644	0.3	0.3	654	98.0	5.7	174.8	5.1	3.6
Machinery & Fabricated Metals	359 Industrial Machinery, NEC	5,314	2.9	0.5	6,139	89.0	-7.6	629.6	9.1	4.1
Machinery & Fabricated Metals	341 Metal Cans and Shipping Containers	359	-4.6	-2.0	284	83.6	-12.3	194.8	1.5	2.6
Machinery & Fabricated Metals	344 Fabricated Structural Metal Products	4,849	-1.5	0.1	4,494	73.0	-9.8	860.3	2.0	3.5
Machinery & Fabricated Metals	346 Metal Forgings and Stampings	2,288	0.1	-0.4	2,297	69.1	12.3	492.0	5.0	3.6
Machinery & Fabricated Metals	348 Ordnance and Accessories, NEC	272	-7.8	-2.5	181	61.0	-0.8	40.0	-1.1	3.5
Machinery & Fabricated Metals	347 Metal Services, NEC	857	-0.2	0.4	850	47.4	0.4	131.0	5.5	4.2
Machinery & Fabricated Metals	345 Screw Machine Products, Bolts, Etc.	785	1.0	1.2	825	46.5	14.5	85.0	4.5	3.8

Cluster Names	SIC3 Description	SC Employ 2002	SC Emp. Growth 2002- 07	U.S. Emp. Growth 2002- 07	SC Employ 2007	Employ ment Percent Change in Emp. Con. Ratio 2002 1997-02	SC Sales 2002 (\$Millions)	SC Sales Growth 2002- 07	U.S. Sales Growth 2002- 07	
Machinery & Fab. Metals Total		47,868	1.5	0.0	51,468	116.5	-1.4	8,546.6	6.9	3.7
Materials	282 Plastics Materials and Synthetics	9,878	-0.2	-0.5	9,792	545.9	-31.5	3,879.3	4.6	4.5
Materials	281 Industrial Inorganic Chemicals	5,134	-4.9	-0.4	3,991	486.0	-47.2	2,671.7	-0.2	4.4
Materials	305 Hose & Belting & Gaskets & Packing	2,830	2.5	0.2	3,209	333.3	27.9	476.3	5.5	2.6
Materials	306 Fabricated Rubber Products, NEC	3,041	-1.4	-0.1	2,832	237.1	17.4	520.6	1.8	2.5
Materials	322 Glass and Glassware, Pressed or Blown	1,715	-3.6	-1.8	1,430	206.7	-5.0	367.3	1.1	2.2
Materials	321 Flat Glass	304	-2.5	-2.8	268	184.4	16.5	64.9	2.2	0.4
Materials	333 Primary Nonferrous Metals	610	-3.3	-1.2	516	176.0	13.8	184.2	-7.8	2.8
Materials	308 Miscellaneous Plastics Products NEC	16,089	1.6	0.2	17,376	163.6	24.7	2,826.2	5.0	3.1
Materials	286 Industrial Organic Chemicals	2,676	1.3	-0.2	2,854	153.8	4.5	1,360.9	6.4	4.6
Materials	323 Products of Purchased Glass	1,409	0.6	0.2	1,455	149.1	23.8	301.3	5.5	3.4
Materials	335 Nonferrous Rolling and Drawing	3,283	0.5	-0.5	3,358	143.7	6.2	1,001.4	4.1	3.9
Materials	289 Miscellaneous Chemical Products	1,543	0.7	-0.1	1,598	118.3	-9.9	446.8	5.9	4.5
Materials	331 Blast Furnace and Basic Steel Products	3,334	-0.4	-1.9	3,266	118.1	14.7	1,338.2	5.2	3.0
Materials	287 Agricultural Chemicals	568	-0.2	0.3	562	97.3	-31.3	206.8	0.7	2.2
Materials Total		52,414	0.0	-0.3	52,507	202.7	-9.5	15,645.7	3.8	3.6
Professional Services	871 Engineering & Architectural Services	14,636	1.4	1.2	15,716	87.5	-4.0	2,258.1	6.6	6.9
Professional Services	874 Management and Public Relations	18,390	4.2	4.0	22,610	87.0	6.6	2,037.1	7.5	7.7
Professional Services	872 Accounting, Auditing, & Bookkeeping	6,214	2.7	2.0	7,106	52.0	2.6	656.7	7.1	6.9
Professional Services	873 Research and Testing Services	1,626	3.2	2.7	1,902	20.2	3.5	182.5	6.7	6.9
Professional Services Total		40,866	3.0	2.6	47,334	70.6	2.6	5,134.3	7.1	7.2
Textiles	222 Broadwoven Fabric Mills, Manmade	16,965	-5.2	-2.2	13,022	2,038.1	0.8	2,751.8	-3.3	-0.1
Textiles	226 Textile finishing, Except Wool	11,321	-1.3	-0.9	10,611	1,915.9	19.5	1,822.6	0.6	1.3
Textiles	221 Broadwoven Fabric Mills, Cotton	9,076	-1.0	-2.1	8,627	1,719.1	8.1	1,471.1	0.9	-0.1
Textiles	224 Narrow Fabric Mills	1,793	0.6	-1.8	1,843	817.1	28.2	163.8	3.6	0.7
Textiles	228 Yarn and Thread Mills	7,602	-3.2	-2.5	6,464	779.9	-3.3	1,061.3	-1.5	0.2
Textiles	229 Miscellaneous Textile Goods	5,482	-0.2	-1.0	5,435	752.0	7.0	913.6	2.0	0.7
Textiles	225 Knitting Mills	7,600	-1.8	-2.6	6,923	526.4	40.0	1,113.4	1.7	0.2
Textiles	227 Carpets and Rugs	2,359	-1.2	-1.4	2,216	284.1	-9.1	569.8	1.0	2.5
Textiles Total		62,198	-2.4	-1.9	55,141	1,011.6	8.6	9,867.4	-0.2	0.8
Tourism	097 Hunting, Trapping, Game Prop.	231	1.2	1.4	245	217.3	-0.1	72.4	3.6	4.5

Cluster Names	SIC3 Description	SC Employ 2002	SC Emp. Growth 2002- 07	U.S. Emp. Growth 2002- 07	SC Employ 2007	Employ ment Percent Change in Emp. Con. Ratio 2002 1997-02	SC Sales 2002 (\$Millions)	SC Sales Growth 2002- 07	U.S. Sales Growth 2002- 07
Tourism	799 Misc. Amusement, Recreation Services	28,166	4.2	2.3	34,520	134.8	1,905.1	9.3	7.4
Tourism	703 Camps and Recreational Vehicle Parks	1,175	3.0	1.7	1,360	130.0	60.4	8.3	7.8
Tourism	701 Hotels and Motels	36,080	3.1	0.6	41,992	128.7	1,854.9	8.5	6.6
Tourism	581 Eating and Dining Places	146,435	2.5	1.7	166,039	118.7	5,403.1	5.2	6.3
Tourism	791 Dance Studios, Schools, and Halls	942	2.7	2.2	1,074	115.7	80.8	7.7	7.2
Tourism	841 Museums and Art Galleries	1,238	6.2	2.8	1,672	87.1	151.8	11.2	8.8
Tourism	792 Producers, Orchestra, Entertainers	2,294	4.1	2.6	2,810	65.5	313.0	9.1	7.4
Tourism	793 Bowling Centers	886	-0.1	-1.2	882	64.8	29.0	6.1	5.0
Tourism	794 Commercial Sports	952	5.1	2.0	1,223	49.6	183.5	10.3	7.3
Tourism	842 Botanical and Zoological Gardens	131	4.7	3.1	165	36.8	16.1	9.6	9.2
Tourism Total		218,530	2.9	1.6	251,982	119.6	10,070.1	7.0	6.7
Transportation Equipment	301 Tires and Inner Tubes	4,457	-0.3	-2.0	4,384	532.0	1,239.8	4.6	1.6
Transportation Equipment	351 Engines and Turbines	2,750	1.2	-1.5	2,926	259.8	1,112.8	8.5	2.4
Transportation Equipment	374 Railroad Equipment	791	1.4	-0.5	846	188.7	246.8	5.7	6.2
Transportation Equipment	371 Motor Vehicles and Equipment	16,785	2.0	0.0	18,561	138.5	6,758.3	6.3	3.5
Transportation Equipment Total		24,783	1.5	-0.2	26,717	171.6	9,357.7	6.4	3.3
Transportation Services	449 Water Transportation Services	4,287	-1.1	1.5	4,048	194.7	967.8	1.0	4.7
Transportation Services	422 Public Warehousing and Storage	4,870	3.8	3.0	5,864	139.1	742.2	8.6	7.0
Transportation Services	473 Freight Transportation Arrangement	3,316	5.3	2.3	4,283	133.5	338.7	9.7	6.7
Transportation Services	421 Trucking & Courier Services, Ex. Air	35,565	2.9	1.7	41,022	119.9	5,427.0	7.7	5.6
Transportation Services Total		48,038	2.8	1.9	55,217	127.0	7,475.7	7.1	5.7
Total Clusters		625,566	1.3	1.1	666,964	126.3	89,720.8	5.5	4.9
Total All Industries		2,055,083	1.3	1.1	2,196,803	100.0	312,955.1	5.4	5.7

Source: DRI•WEFA Inc.

Appendix 2 – South Carolina’s Technology Assets

Table 16
Corporate Research Center Specializations

Facility	Area/Focus	Location
Environmental Systems Engineering	Environmental/Waste Handling Research	Anderson County
Clemson Technical Center	Environmental/Waste Handling Research	Anderson County
Park Seed Co.	Horticulture	Greenwood Country
Milliken Research Center	Material Science/Nanotechnology	Spartanburg
W.R. Grace & Co.	Material Science/Nanotechnology	Duncan
Westvaco Corporation	Material Science/Nanotechnology	Charleston
Bayer	Material Science/Nanotechnology	Bushy Park
Michelin Americas Research & Development Corporation	Material Science/Nanotechnology	Spartanburg
Hoechst Research & Technology	Material Science/Nanotechnology	Clemson
Fuji Photo & Film, Greenwood Research Laboratories	Material Science/Nanotechnology	Greenwood Country
Tile Council for America	Material Science/Nanotechnology	Anderson County
Bishop Center for Engineering Ceramic Manufacturing	Material Science/Nanotechnology	Anderson County
Kemet Electronics Corporation	Material Science/Nanotechnology	Greenville
Sawgrass Systems	Material Science/Nanotechnology	Charleston
Roche Carolina	Pharmaceuticals	Florence

Source: Company websites; Nexis.com

Table 17
Federal Research Center Specializations

Facility	Area/Focus	Location
Cotton Quality Research Station	Horticulture & Related R&D	Clemson
South Carolina Cooperative Fish and Wildlife Research Unit	Environmental Science R&D	Clemson
Savannah River Technology Center	Environmental Science R&D	Aiken
Space and Naval Warfare Systems Center	Defense R&D	Charleston
U.S. Vegetable Laboratory	Horticulture & Related R&D	Charleston
Center for Forested Wetlands	Environmental Science R&D	Charleston
Charleston Laboratory (National Oceanic and Atmospheric Administration)	Environmental Science R&D	Charleston
Coastal Plains Soil, Water, and Plant Research Center	Environmental Science R&D; Horticulture & Related R&D	Florence

Source: Rand

Appendix 3 – Detailed Quality of Life Indicators

Cost-of-living is a key quality of life indicator. It affects purchasing power and ability to consume. *Techies.com* recently developed an Affordability Index (covering 38 most popular markets) for tech professionals by combining average tech wages with the Cost-of-Living Index¹² published by the American Chamber of Commerce Researchers Association. The Affordability Index indicated that Texas offers the best mix of top tech salaries and low cost-of-living, making it a prime location for job-seeking tech professionals to consider.

Table 18
Best Deals for Tech Professionals (2000)
 Higher = More Affordable (Relative to Detroit)

U.S. Region	Affordability Index	U.S. Region	Affordability Index
Dallas	118	Denver	105
Houston	115	N. Carolina	105
Austin	114	S. Carolina	105
Salt Lake City	112	Cincinnati	105
Atlanta	112	South Florida	105
D.C./Baltimore	112	St. Louis	104
Seattle	110	Great Plains	103
Phoenix	109	Kansas City	103
Mid-South U.S.	109	Indianapolis	103
Central Florida	108	Upstate N.Y.	101
Chicago	107	Hartford, Conn.	101
Portland, Ore.	106	Detroit	100

Source: Techies.com

Housing related expenditure very often takes up the biggest piece of an average worker’s paycheck. Breaking down the cost index to a few key components, the table below shows that, next to Alabama, South Carolina has the most affordable housing in our group of benchmark states. Rent is extremely cheap compared to most other markets and the price of an average home is also very reasonable. Furthermore, home appreciation is solid, allowing homeowners to accumulate more equity in South Carolina. However, utility costs are high and the annual property tax is also closer to the higher end of the range.

¹² The Cost of Living Index published by the American Chamber of Commerce Researchers Association covers everything from housing costs to grocery items.

Table 19
Housing Costs – State MSAs¹³ (2000)

	Housing Affordability* (Higher=More Affordable)	Rent Index ^β	Median Home Price	Annual Property Tax (Per \$1000 of Home Value)	Home Utility Cost Index	Home Appreciation (Percent)
Alabama	117.8	68.1	128,800	7.10	101.3	7.7
Arizona	105.8	84.3	127,200	9.00	106.5	8.8
Colorado	101.6	101.5	170,100	8.20	85.3	8.9
Georgia	89.2	114.5	126,800	16.10	97.5	9.0
North Carolina	97.9	78.9	164,600	11.00	102.6	8.1
South Carolina	112.1	59.8	110,500	12.70	121.2	8.7
Virginia	99.2	73.8	129,100	12.00	128.2	7.7

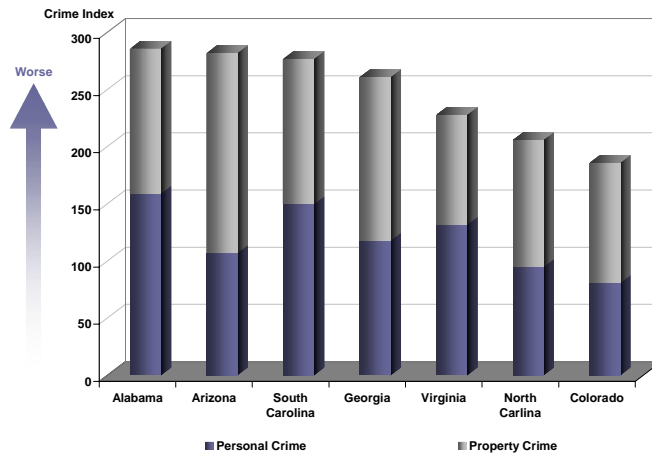
* Based on average for group of seven benchmark states

^βDetroit, MI was chosen as the benchmark for benchmark, i.e. 1-bedroom, \$1,200/month apartment = 100

Source: “Best Places to Live” Survey, Money Magazine; DRI•WEFA; Homestore.com

Apart from cost of living, a **sense of security** is another highly valued factor when deciding where one should locate. Although the crime rate in Columbia is higher than the national average, the city is still relatively safer than Birmingham, Alabama and Phoenix, Arizona.

Figure 48



Crime Index, 2000 (National Average=100)

Source “Best Places to Live” Survey, Money Magazine

Climate and environment are factors that cannot be changed. All else equal, places that have generally good weather and an attractive natural environment have the upper hand in luring talent. South Carolina lies along the Atlantic Coastal plain. The terrain in the western part of the state is rolling hills and the eastern part of the state is mostly flat and low, with considerable wetlands. In terms of climate, South Carolina compares rather favorably with its neighbors and competitors. Although it gets a little humid, the weather is not extreme. Compared to the

¹³ The tables for Quality of Life indicators report data from these MSAs: Birmingham, AL; Phoenix-Mesa, AZ; Denver, CO; Atlanta, GA; Raleigh-Durham, NC; Columbia, SC; and Richmond, VA.

benchmark states, South Carolina has relatively fewer days when the temperatures are below freezing. Furthermore, it has a good amount of sunshine.

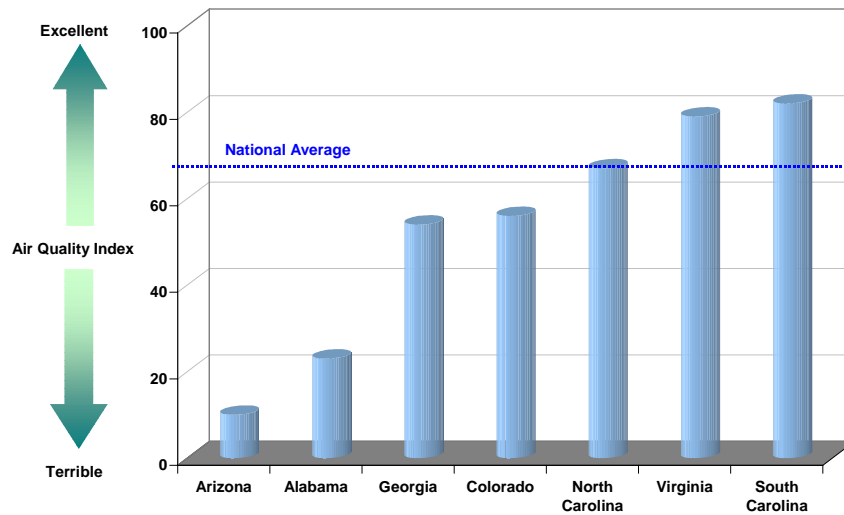
Table 20
Climate, 2000: Average Across State MSAs

	Annual days with some precipitation	Annual days with mostly sun	Annual snowfall (inches)	Annual days < 32° F	Annual days > 90° F	Average high temp in July °F	Average low temp in January °F
Alabama	118	210	1	60	39	90.3°	34.0°
Arizona	34	295	0	32	164	104.8°	37.6°
Colorado	88	246	60	163	32	87.4°	16.2°
Georgia	116	219	2	59	19	86.5°	33.4°
North Carolina	112	220	7	85	25	87.7°	30.0°
South Carolina	111	223	2	60	64	92.0°	33.9°
Virginia	113	210	14	85	41	88.2°	27.6°

Source "Best Places to Live" Survey, Money Magazine

In addition, South Carolina has the advantage of having relatively better air quality than most of the other states. Arizona and Alabama have the worst air quality among our group of benchmark states.

Figure 49
Air Quality Index, 2000
(Higher is Better)



Source: "Best Places to Live" Survey, Money Magazine

The *1997 Places Rated Almanac*, which attempts to compare recreational and cultural aspects such as the presence of art museums and galleries, the quality of public libraries, restaurant quality, and outdoor recreation assets, found that South Carolina offers residents very good **recreational opportunities** but its **cultural resources** are below the national average.

Compared to our benchmark states, recreational resources in South Carolina’s metropolitan areas are about the same as those in Virginia. The cultural aspect of the state is somewhat lacking, even when the comparison is just within the group of benchmark states. The “Best Places to Live” survey by Money Magazine attempts to measure this with an “Arts” Index (see Table 21).

Table 21
Cultural Assets

	Arts Index
Colorado	31
Virginia	18
Georgia	17
North Carolina	14
<i>National Average</i>	11.5
South Carolina	9
Alabama	7
Arizona	4

Source: “Best Places to Live” Survey, Money Magazine

Appendix 4 - Example of Cluster Development in Connecticut

From: Connecticut Industry Clusters: Competitive Strategies – Collaboration – Results

In 1998, Connecticut undertook a cluster-based economic development study. A task force was formed of 125 business leaders. They identified six industry clusters that are key to Connecticut's economic competitiveness. Some of these clusters, such as Tourism, were already naturally formed and already had strong public-private partnerships associated with them. Other clusters, such as manufacturing, financial services, telecommunications and information, health care services, and high technology, developed specific cluster strategies that included launching cluster associations. The entire process was kick-started with the establishment of the Governor's Council on Economic Competitiveness and Technology. This was comprised of CEOs from a cross-section of industries, legislative leaders, heads of key educational institutions, labor representatives, officials of industry associations and several state commissioners.

Highlights of Connecticut's cluster initiatives include:

- ◆ October 1998: Launched the BioScience cluster, overseen by the Connecticut United for Research Excellence (CURE). The cluster was launched with \$300,000 from state funds and \$700,000 in industry contributions.
- ◆ July 1999: With the direction of Aerospace Components Manufacturers, launched the Aerospace cluster. The state invested \$125,000 in seed funds, while industry contributed additionally.
- ◆ October 1999: The Software/Information Technology cluster was launched. The collaborative group is called eBizCT, an affiliate of the Connecticut Technology Council (CTC). More than \$300,000 in seed money helped launch the cluster, with half funded by the state.
- ◆ 1999: The Metal Manufacturing cluster began with a \$10,000 grant. The Metal Manufacturing Education and Training Alliance (META) recently received a \$1.7 million federal workforce training grant
- ◆ January 2001: The Connecticut Maritime Coalition was formed and launched the Maritime cluster. The cluster was seeded with \$103,000 from the state and matching private resources.

More information about each cluster and their initiatives can be found at

<http://www.state.ct.us/ecd/Clusters/default.htm>.

Glossary of Terms

benchmark states – states that serve as a point of reference for evaluating another state’s performance

benchmarking – comparing a process or level of achievement to similar entities, with the goal of discovering one’s own relative standing as well as the “best practice” entities

best practice states – states that employ some of the most effective strategies in economic development and exhibit the strongest benefits from these strategies

business climate – the cost and regulatory environment in which businesses must operate within a region

cash cow cluster – clusters that have above average concentration within a region, but face a market that is growing slower than average

challenge clusters - clusters that have below average concentration within a region, and face a market that is growing slower than average

cluster – a geographical concentration of industries that gain performance advantages through co-location. Industries may share similar workforce, input, or infrastructure needs, or may produce similar output.

Cluster Power Index – a weighted score that is indexed to reflect the relative rank of the strength of a cluster among all 50 states. The index is composed of the size current employment in the cluster, the forecast growth of the cluster’s regional output over the next five years, and the concentration of the cluster within the region

cluster strategy – general economic development directions that a cluster should take, according to its dynamism, concentration, and internal characteristics

clustering – proactively accelerating the process of creating institutions that provide needed economic infrastructure and strengthening linkages between networks of firms and these institutions

competitiveness – the relative ability of a region to strive towards an objective in a more successful manner than its rivals; in economic terms, the relative ability of a region to generate a higher amount of output (growth, income, revenues etc.) for a given increase in investment

demographic cohort – the segment of a population that falls between a specified age range

economic foundation – the economic infrastructure, labor force skill, access to capital, technology, infrastructure, business climate, and quality of life, that supports the location, growth, and competitiveness of companies within a region

economic value chain – the entire cycle of economic activities (R&D, design, assembly and production, distribution, and marketing) that contribute to the final output of a product

employment concentration ratio (ECR) – the sectoral share of a region’s employment relative to the national average share. An ECR greater than 1 indicates a strong market position or specialization within the region. This measure is sometimes called the location quotient.

FIRE – financial, insurance, and real estate industries

gross state product (GSP) – the total amount of value-added produced in a state

gross state product (GSP) per capita – the total amount of value-added produced in a state per state resident

industrial composition – the relative proportions of types of industries that exist in a region

industry cluster – see cluster

labor force participation rate - the percentage of all people aged 15 to 65 that are employed or actively seeking employment; measures the utilization rate of the potential pool of labor in a region

labor force skills – the educational attainments and technical abilities of the labor force (employees and those actively seeking employment)

linkages – the connections and common interests that unite the different actors along the value chain within a cluster, or between clusters

opportunity clusters – clusters that have a market that is growing at an above average rate but have a below average concentration within a region

proprietors' income – the income that owners of a business or an agricultural operation receive

quality of life – the amount of positive amenities (favorable climate, access to recreational and cultural activities, low cost of living) and limited amount of detractors (crime, pollution, congestion) in a region that contribute to an individual's perceived well-being of residence in that region

real disposable personal income per capita – the average amount of after-tax income from all sources that an individual receives

real personal income – the sum of all pre-tax income from all sources that is received by the population within a region

residence adjustment – a factor that is applied to the personal income received in a region that adjusts for income received at a place of employment other than the region of residence

seed cluster – a narrowly defined industry cluster that is much smaller than an established cluster, but shows signs of developing into a specialty within a region

segmentation analysis – the process of classifying an industry cluster according to its growth (dynamism) and concentration within a region

star clusters – clusters that have a market that is growing at an above average rate and have an above average concentration within a region

system of innovation – a model that emphasizes the interdependence of economic participants in creating innovation

technology assets – the corporate, federal, and academic research and development centers and similar facilities that generate new technologies or applications within a region

transfer payments – income maintenance payments (such as supplementary income), unemployment income, and pension and retirement income payments