

TARGET CLUSTER ANALYSIS

Piedmont Triad Region, N.C.

Submitted by

MARKET STREET SERVICES, INC.

www.marketstreetservices.com

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Background

BACKGROUND

The Piedmont Triad Region (“Triad” or “Region”), defined as the 12-county area that is the jurisdiction of the Piedmont Triad Partnership and several other regional organizations, is a diverse region with multiple assets and continuing needs. The Piedmont Triad Partnership (“PTP”) contracted with *Market Street Services*, a national economic and workforce consulting firm headquartered in Atlanta, Georgia, to gain a better understanding of where the Piedmont Triad Region is today, and to update its *Regional Vision Plan* and move the Piedmont Triad Region towards its goals.

Market Street has outlined a process for the Piedmont Triad Region that will succeed in uniting all regional communities under the umbrella of quality growth and sustainable development. At the end of the strategic visioning period, the Triad will have a regional roadmap guiding local communities towards a visionary future together.

As the second stage of *Market Street’s* work for the Piedmont Triad Region, this *Target Cluster Analysis* recommends the most important and most promising business sectors for economic developers to pursue. Community participation and engagement has also been a critical component to laying the groundwork for the success of the *Regional Vision Plan*.

The results of this analysis will be the basis of *Market Street’s* work as the project proceeds through the four phases, as outlined below:

- I. ***Competitive Realities.*** A realistic assessment of the Region’s demographic and economic trends and its business competitiveness compared to three peer metropolitan areas. Complementing the quantitative data analysis is feedback gathered and compiled into a ***Regional Input Summary.***
- II. ***Target Cluster Analysis.*** Identifies primary business sectors that have the highest probability of sustained success for the future of the Region’s economy. The *Target Cluster Analysis* examines national trends and builds upon the work of the *Competitive Realities.*
- III. ***Regional Vision Plan.*** Developing the *Plan* will bring together all subsequent project deliverables and will provide a blueprint for the Region’s future actions. The *Plan* will address targeted business clusters, entrepreneurship, improving factors that affect business competitiveness, and leveraging regional partnerships.

- IV. ***Implementation Plan.*** Effective implementation is critical to the ultimate success of the *Regional Vision Plan*. The Steering Committee and *Market Street* will work together to designate lead organizations, provide program assessments, determine funding reallocations, establish timetables, and recommend marketing and communication approaches.



Executive Summary

EXECUTIVE SUMMARY

As the second stage of *Market Street Services'* work for the Piedmont Triad Region, this *Target Cluster Analysis* recommends the most important and most promising business sectors for economic developers to pursue. The main criteria used to identify and recommend target clusters were:

- ✓ Does the Region have a significant presence in this target cluster, in terms of employment quantity or concentration?
- ✓ Are the industries in the target cluster export sectors?
- ✓ Does the target cluster have good growth prospects nationally?
- ✓ Is there wealth creation potential in the target cluster, in terms of high wages and advancement opportunities?
- ✓ Is the existing workforce prepared to take jobs in this target cluster, and do community colleges and universities provide needed education and training programs related to this target cluster?
- ✓ Do all of the targets combine to provide opportunities for rural, urban, and suburban areas of the Region?

EXISTING STRENGTHS

The *Competitive Realities* report showed that manufacturing employed over 145,000 people in 2003, or 21 percent of all jobs in the Region. Of the major business sectors, manufacturing had the highest concentration or location quotient, 1.84. Within manufacturing, the sub-sectors that have the greatest strength in terms of location quotients are furniture, textiles and apparel, and tobacco products. Because these sub-sectors have experienced significant job losses since 2001 and have dim growth prospects, *Market Street* does not recommend them for target clusters.

There are some possibilities for growth within these sub-sectors of manufacturing, which can help stem some of the heavy job losses. The Region should be prepared for the shift of apparel companies' employment focus from manufacturing to branding and marketing. There may also be opportunities for custom-made products and high-tech garments and fabric, perhaps for the defense sector. Within furniture manufacturing, upholstered furniture and ready-to-assemble furniture should be more stable than case-goods furniture, and steel and high-end office furniture are more likely to stay in the United States as well. The Piedmont Triad Region should seek growth opportunities in the production of kitchen cabinetry and wood flooring, which requires similar workforce skills as that of furniture manufacturing.

TARGET CLUSTERS

Market Street has categorized the Piedmont Triad Region's target clusters into tiers. The first tier represents targets that have the strongest growth prospects for all

counties in the Region. These are: Health Care (including Biotechnology), Logistics, and Wholesale Trade. The second tier includes target clusters that are more specialized in the Region. The third tier of target clusters is comprised of the Arts, which includes design and film. This target is still emerging and is fairly fragmented in the Region.

Target Clusters by Tier

Tier	Target Clusters	Tier Description
Tier 1	Health Care (including Biotechnology) Logistics Wholesale Trade	Strongest growth prospects for all counties in the Region
Tier 2	Finance and Insurance Food Processing	Specialized
Tier 3	Arts	Emerging

In addition to the target clusters, *Market Street* has identified “areas of emphasis” for the Piedmont Triad Region to work on to increase job growth opportunities. These are important components of economic development that cut across clusters but represent areas of potentially significant job creation. The areas of emphasis are:

- Tourism;
- Entrepreneurship;
- Homeland security and defense; and
- Education.

This *Target Cluster Analysis* describes the Piedmont Triad Region’s assets and weaknesses in each target cluster. Goals and specific action steps for growing these target clusters will be part of the next phase of the strategic planning process and included in the *Regional Vision Plan*.

HEALTH CARE

The health care sector includes services, research, and manufacturing sub-sectors. The sector is defined as follows:

- Health Care Products and Services
 - Medical Equipment and Supplies Manufacturing (NAICS 3391)
 - Ambulatory Health Care Services (NAICS 621)
 - Hospitals (NAICS 622)
 - Nursing and Residential Care Facilities (NAICS 623)
- Biotechnology
 - Research and Development in the Physical, Engineering, and Life Sciences (NAICS 54171)
 - Pharmaceutical and Medicine Manufacturing (NAICS 3254)

The greatest impact in the health care target for the Piedmont Triad Region in terms of number of jobs and reach into rural counties will be in health care services and medical supplies and device manufacturing. Sub-sectors of particular focus are health care practitioners, laboratories and testing, health care services for senior citizens, and medical equipment and supplies. Biotechnology is still an emerging sub-sector and the reach of its growth will be limited in the near term.

The Region must work to improve workforce recruitment and retention in health care fields. This includes providing a smooth continuum from the classroom to the workplace. Currently, no health care industry council exists to facilitate discussions and interactions among health care employers to address major issues like workforce retention.

LOGISTICS

The logistics sector (NAICS 484, 488, 492, 493) includes truck transportation, warehousing and storage of goods, courier and shipping services, and support activities related to modes of transportation; the sector is also referred to as *distribution*. Given the Region's extensive highway transportation network, its location, and its accessibility, the logistics cluster is a natural fit and will leverage the Region's strengths.

The most exciting opportunity and challenge for the Region is to leverage the new FedEx hub to fully develop linkages throughout the logistics sector. There are opportunities for suppliers, such as trucks, parts, and repair services, and even more opportunities for customers who would benefit from FedEx's immediate shipping services.

Having a readily available workforce with skills and experience in truck driving, warehousing and distribution operations, and logistics and scheduling systems is important to growing the Region's logistics cluster. Training programs should be further developed, and workforce retention is also an issue.

WHOLESALE TRADE

Wholesale trade firms buy large lots of goods, usually from manufacturers, and sell them in smaller quantities to businesses, governments, other wholesalers, or institutional customers. They provide businesses a nearby source of goods made by many different manufacturers, and they simplify product, payment, and information flows by acting as intermediaries between the manufacturer and the final customer. The Region's transportation network and developing logistics sector are key assets to attracting and expanding wholesale businesses.

Because wholesalers are so varied in the products they sell and the markets that they sell to, there is currently very little interaction among the Region's companies to

discuss common needs and ideas. Wholesalers may have similar problems with regulations, workforce retention, or road conditions, and as a group, they may be better able to find ways to address these issues. Also, the business of wholesale trade is inextricably linked to logistical functions. Supporting these linkages through industry trade groups or forums helps to ensure that needs of both sides are being met.

FINANCE AND INSURANCE

The finance industry is quite diverse, with retail operations that serve consumers and business owners, investment banking operations that serve larger institutions, and secondary markets that buy and sell financial instruments based on risk tolerance. The insurance industry has a similar market setup, with various risk management products sold to households, businesses, and institutions, as well as secondary markets for re-insurance and other instruments. The Piedmont Triad Region's finance and insurance cluster has a diverse group of businesses that includes:

- Commercial banks, savings institutions, credit unions
- Credit cards and consumer lending, mortgage banking
- Investment banking, securities and commodities trading, portfolio management
- Insurance carriers, claims adjusters, agencies and brokerages
- Pension fund management, trust fund management, real estate investment trusts

Due to the heavy concentration of existing jobs in Guilford and Forsyth Counties, future growth in finance and insurance is likely to be focused on these counties.

To prevent job cuts resulting from frequent consolidation activity from having a long-term effect on employees, the Region should develop this sector to the fullest possible extent in terms of breadth of services. This means focusing not only on banks, but also credit cards, other types of lending, claims adjusters, various types of insurance, and portfolio management. Skills are often portable among firms even if they offer different types of services.

The Region's finance and insurance sector also lacks a business group for meeting to discuss common needs and issues. This does not have to be solely at the chief executive level; department heads can also meet to discuss topics such as human resources, technology needs, or education and training.

FOOD PROCESSING

Food Manufacturing (NAICS 311) is a very broad category that includes a number of manufacturing, milling, refining and processing sub-sectors. The industry is typically shielded from downturns in the economy, because households continue to consume

food even in tough economic times. Local economic developers should concentrate on the high-end niches in these categories that provide well-paying, higher skill jobs without the workplace hazards characteristic of certain food processing employment. The sub-sectors that have higher value-added products include pet food manufacturing, snack food products, prepared food, and other specialty foods. As a target cluster, food processing is meant to provide job opportunities to those without specialized skills or high education levels, particularly in the rural areas of the Region.

The greatest challenge for this target cluster is to move from low-value production (poultry processing dominates) to high value-added products. There will need to be considerable efforts made to fully develop the target cluster. Linkages among food processing companies, between food processing companies and suppliers, and any sort of industry support infrastructure are yet to be established.

ARTS

“Arts” is a very broad term that includes multiple types of media and activities. Americans for the Arts identified six creative industries in which arts could be categorized: museums/collections; performing arts; visual/photography; film, radio, and TV; design/publishing; and schools/services.

The arts have traditionally been regarded as a cultural amenity that has a positive impact on the quality of life in a community. However, the arts can also be regarded as a viable component of economic development. There are artists who earn a living in the business world, either through freelancing or steady employment, doing design work for profit-driven firms. Individual artists are finding new markets through the Internet, arts festivals, and other direct sales routes. While the economic impact of the arts in terms of direct and indirect employment (the multiplier effect) is likely to be limited in its reach, the arts play an important role for promoting entrepreneurship and self-sufficiency.

The Piedmont Triad Region has a tremendous number of assets in the arts; however, they tend to be fragmented by location and organization. The main challenges for developing this emerging cluster include coordination across organizations and cities, achieving regional branding without sacrificing the uniqueness of individual communities, improving the interactions between professionals and universities, and leadership development.

CONCLUSION

Target clusters are not just for traditional business recruitment. Developing clusters is a much more holistic economic development approach, which includes business recruitment as just one component. Successfully developing target clusters must include a combination of supporting existing businesses, establishing

communication networks, developing education and training programs, and creating an environment attractive to both businesses and workers.



Introduction

INTRODUCTION

Central to this *Target Cluster Analysis* is the understanding of what a “cluster” is, what makes it a “target cluster,” and what role a “target cluster” has in an economic development strategy.

CLUSTERS

“Cluster” is a widely used but frequently misunderstood term in economic development. Michael Porter, the Harvard Business School professor often credited for popularizing the term, has given the following definition:

A cluster is a geographically proximate group of companies and associated institutions in a particular field, linked by commonalities and complementarities.

Michael Porter. *On Competition*. 1998. p. 199.

Within Porter’s definition are the key requirements for a group of businesses to become a cluster: geographic proximity and linked industries and institutions – vertically from suppliers to customers, and horizontally to other firms and organizations doing similar functions, having common inputs, and using the same labor pool. Clusters include and are supported by institutions such as universities, trade associations, and workforce training providers.

Groups of businesses cluster together because firms in the same or closely related industry sector share the same relative infrastructure, geography, population, and so forth, and gain competitive advantages and economies of scale by locating in the same vicinity. Close proximity with like firms can allow businesses to learn about best practices, new technologies, create (and often compete for) a labor pool, and reduce transportation costs. By identifying and working with these business agglomerations, regions can take advantage of common interests to improve the competitiveness of its clusters.

Clusters can increase productivity because of the following factors:¹

- Complementary relationships that benefit companies in a cluster;
- Exposure to competitors that raises expectations, quality, and worker motivation;
- Better access to suppliers and workers;
- Access to relevant public and private institutions; and

¹ Porter, Michael. “Clusters and the new economics of competition.” *Harvard Business Review*. November/December 1998. p. 77-90.

- Access to a flow of specialized information about other companies in a cluster (i.e. effective business strategies, performance measures, and so forth).

Clusters transcend industrial classification codes by emphasizing the importance of linkages and relationships with other firms and organizations. Clusters promote both competition and cooperation, which together help foster innovation. The existence of a cluster does not automatically imply that the cluster is strong and successful. Opportunities for economic growth lie in supporting existing clusters by enhancing and expanding linkages, and developing emerging clusters by addressing gaps and missing linkages.

BUSINESS SECTORS

A business sector is a group of businesses that perform similar functions, although they may sell to different markets or operate under different business models. Sectors generally align with industrial classification codes and can be described broadly as well as specifically. For example, health care is a broad sector that encompasses all firms involved with providing health care services or products. Within health care is the medical supplies and equipment manufacturing sub-sector, which includes companies that make hospital beds and needles.

Clusters are groups of business sectors that are related through vertical and horizontal linkages. They often cut across and include multiple sector classifications.

TARGET CLUSTERS

The purpose of this *Target Cluster Analysis* is to identify groups of business sectors on which to focus economic development efforts in order to develop them fully into clusters. In the descriptions of the target clusters, the terms “target,” “target clusters,” and “sectors” are used to describe the same concept: business sectors that are targeted for recruitment, retention, and expansion.

The Piedmont Triad Region can further develop target clusters by identifying missing linkages and establishing support infrastructure. For example, the Region’s economic developers could look to attract more suppliers for existing businesses, and the Region could introduce training programs for employees within a target cluster. That is not to say that the Piedmont Triad Region should ignore opportunities that arise from business sectors that are not targets; targets are simply meant to concentrate resources on areas that have the highest probability of broad success for the Region. Not all existing clusters would be suitable for targets, because not all existing clusters have the growth prospects needed to support the Region.

As one part of the *Regional Vision Plan* development process, this *Target Cluster Analysis* addresses the requirements of the North Carolina legislative mandate for

regional planning and meets the needs of the Piedmont Triad Region by including the following components:

1. Methodology – Describe the analytical methods used to identify potential target clusters.
2. Existing Strengths – Analyze the Region’s existing industry strengths and discuss whether they would be suitable for future development.
3. Target Clusters – Recommend groups of business sectors for development into clusters, based on existing strengths and industry trends. For each target cluster, the analysis will include:
 - a. Definition and description of the target, including industry trends.
 - b. Explanation of why this an ideal target for the Region. The main criteria considered are:
 - ✓ Does the Region have a significant presence in this target cluster, in terms of employment quantity or concentration?
 - ✓ Are the industries in the target cluster export sectors?
 - ✓ Does the target cluster have good growth prospects nationally?
 - ✓ Is there wealth creation potential in the target cluster, in terms of high wages and advancement opportunities?
 - ✓ Is the existing workforce prepared to take jobs in this target cluster, and do community colleges and universities provide needed education and training programs related to this target cluster?
 - ✓ Do all of the targets combine to provide opportunities for rural, urban, and suburban areas of the Region?
 - c. Description of the target’s primary location needs and site selection factors.
 - d. Description of the target’s workforce requirements, in terms of types of occupations and related education and skill levels.
 - e. Description of the Region’s assets in the target cluster, in terms of existing companies, infrastructure, education and training programs, and recent activity.
 - f. Identification of the primary weaknesses or challenges that should be addressed to improve the Region’s comparative advantage in this target cluster.



Methodology

METHODOLOGY

Identifying specific target clusters requires both *quantitative* and *qualitative* research. Quantitative examination of indicators like wages paid or local employment compared to national averages determines the magnitude and impact of specific business sectors.

These data are collected according to North American Industry Classification Systems (NAICS) codes from the U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages and from the Employment Security Commission of North Carolina.² *Market Street* used the most recent available data.

NAICS classifies businesses into sectors similar to the now defunct Standard Industrial Classification (SIC) codes system, but in categories more closely aligned with today's service-oriented economy. Twenty different divisions represent the broadest (two-digit) NAICS codes, which were used in analyzing employment in potential target clusters. These divisions and their corresponding NAICS codes are:

Division	NAICS Code
Forestry, Fishing, Hunting & agriculture support	11
Mining	21
Utilities	22
Construction	23
Manufacturing	31-33
Wholesale Trade	42
Retail Trade	44-45
Transportation & Warehousing	48-49
Information	51
Finance & Insurance	52
Real Estate & Rental & Leasing	53
Professional, Scientific, & Technical Services	54
Management of Companies & Enterprises	55
Admin., Support, Waste Management, Remediation Services	56
Educational Services	61
Health Care & Social Assistance	62
Arts, Entertainment, & Recreation	71
Accommodation & Food Services	72
Other Services (except public administration)	81
Auxiliaries (exc. corporate, subsidiary & regional management)	95

Within each major sector grouping (two-digit level) are business sectors classified into increasingly specific categories, down to the six-digit level NAICS code. In recommending target clusters, *Market Street* used more specific sector classification

² Data are sometimes suppressed, or only ranges of employment size are listed, if the information provided would compromise the identity of a particular employer.

codes where it was appropriate. Target clusters can cut across multiple sectors, and *Market Street's* goal in identifying targets was to be specific enough to clearly understand the focus of the target, but also to be broad enough so that the target was not limited and confined to a small number of opportunities.

An important quantitative term used in this report is *location quotient* (LQ). A location quotient is a ratio representing the strength of a particular local business sector in relation to the national average. It is represented formulaically as:

$$LQ = \frac{(\text{Regional Employment in Sector} / \text{Total Regional Employment})}{(\text{National Employment in Sector} / \text{Total National Employment})}$$

If a location quotient is *greater* than 1.0, the area has a larger share of employment in that sector than the nation. The higher the LQ, the more concentrated the level of local employment compared to its U.S. equivalent. LQs provide insight into a community's economic structure and its level of industrial diversity. If one or two sectors dominate local employment, slowdowns in these industries may decimate an area's economy.

Conversely, if a location quotient is *less* than 1.0, this indicates a smaller local share of employment than the nation. Just because a sector has a location quotient below 1.0 does not preclude it from being a target business cluster for the community. Similarly, an LQ over 1.0 does not automatically mean the community should aim for that sector. A number of factors, including national trends, local support services, and regional clusters, contribute to the viability of a local industry group.

Another important concept in local economic development is the *traded*, or *export* sector. A traded sector is a community's economic engine – that part of the economy that sells goods and services to customers outside the region, importing income that then circulates throughout the rest of the local economy. The “new” money entering the economy is then used to purchase local goods and services, creating new wealth in the Piedmont Triad Region. Conversely, retail is considered a *non-traded* sector because those monies originate within the community and have no “multiplier effect” on other spending. Local economic developers should always strive to recruit and develop traded industries because these sectors have a greater benefit to overall community vitality.



Review of Previous Findings

REVIEW OF PREVIOUS FINDINGS

The *Competitive Realities* report and community feedback from the *Regional Input Summary* presented a number of key findings that are relevant to the identification of potential target clusters.

- ⇒ In terms of numbers of jobs cut in the Region between 2001 and 2003, the manufacturing, retail, and transportation and warehousing sectors were affected the most, while the information sector had the highest percentage decrease in employment. The bright spots in the economy during this two-year period were in health care, education, and accommodation and food services.
- ⇒ The Region has a higher proportion of its employment in the manufacturing sector than North Carolina and the United States. That fact, combined with health care and professional and business services employment that is less than the state and national proportions, means that the Region may go through additional adjustments to its economy as it moves away from manufacturing and more towards service-related businesses.
- ⇒ The manufacturing sector continued to be impacted by job losses, with over 21,000 jobs lost between 2001 and 2003. A significant proportion of the Region's manufacturing is in textiles, furniture, and apparel, the same sub-sectors that saw the greatest job losses. These sub-sectors also pay lower wages than other manufacturing sectors.
- ⇒ Health care was one of the few sectors to gain employment in the Region, with over 4,500 jobs added between 2001 and 2003. Doctors' offices, home health care services, and elderly care contributed the most jobs.
- ⇒ The Region's educational attainment lags behind both the state and the nation. It is troubling that there is such great variation in educational attainment among the counties in the Region.
- ⇒ The Region has a readily available semi-skilled and unskilled workforce. However, employers find it difficult to attract professional level workers and technical workers to the Region.
- ⇒ By far the most frequently mentioned strength of the Region was its location. Many feel that the Region's transportation infrastructure is unparalleled, and its potential needs to be leveraged more.

- ⇒ Availability of quality job opportunities is perceived as the Region's greatest challenge, although education and workforce skills were also a major concern.
- ⇒ Many community stakeholders mentioned the importance of inclusiveness of economic development efforts – the importance of engaging minorities, regular citizens, rural areas, as well as small businesses.



Existing Strengths

EXISTING STRENGTHS

As mentioned in the Introduction, the main criteria used to recommend target clusters were:

- ✓ Does the Region have a significant presence in this target cluster, in terms of employment quantity or concentration?
- ✓ Are the industries in the target cluster export sectors?
- ✓ Does the target cluster have good growth prospects nationally?
- ✓ Is there wealth creation potential in the target cluster, in terms of high wages and advancement opportunities?
- ✓ Is the existing workforce prepared to take jobs in this target cluster, and do community colleges and universities provide needed education and training programs related to this target cluster?
- ✓ Do all of the targets combine to provide opportunities for rural, urban, and suburban areas of the Region?

Keeping these criteria in mind, this section of the *Target Cluster Analysis* addresses the Piedmont Triad Region's primary manufacturing sub-sectors' suitability as target clusters.

The *Competitive Realities* report showed that manufacturing employed over 145,000 people in 2003, or 21 percent of all jobs in the Region. Of the major business sectors, manufacturing had the highest concentration or location quotient, 1.84. Within manufacturing, the sub-sectors that have the greatest strength in terms of location quotients are furniture, textiles and apparel, and tobacco products. As shown in the following table, these sub-sectors have experienced significant job losses since 2001.

Employment in Region's Traditional Manufacturing Sub-Sectors

Industry Description	Region Employment			U.S. Employment
	2Q 2004	2001 - 2Q 2004 Change	Location Quotient 2Q 2004	2001 - 2Q 2004 Change
Tobacco Manufacturing (NAICS 3122)	7,444	-10.2%	51.93	-16.4%
Textile Mills (NAICS 313)	22,168	-24.8%	17.08	-27.0%
Textile Product Mills (NAICS 314)	3,877	-20.1%	4.04	-12.3%
Apparel Manufacturing (NAICS 315)	12,635	-25.3%	8.05	-31.6%
Furniture and Related Product Mfg (NAICS 337)	19,441	-17.9%	6.31	-11.1%

Source: Employment Security Commission of North Carolina, U.S. Bureau of Labor Statistics

The next sections discuss the future economic prospects of these traditional strengths, and why they are not recommended as the Region's target clusters.

TOBACCO MANUFACTURING

North Carolina has a long history in tobacco manufacturing. Indeed, R.J. Reynolds Tobacco Company was founded in Winston-Salem. Today, the company has merged with Brown and Williamson Tobacco Corporation to form Reynolds American. Lorillard, another major tobacco manufacturer, has its headquarters in Greensboro. Over 7,000 people are employed in tobacco manufacturing in the Piedmont Triad Region, mostly in Forsyth County (nearly 6,000 jobs). Alamance, Guilford, and Rockingham Counties also have tobacco manufacturing employment. The tobacco manufacturing sector shed 16.4 percent of its jobs nationally and 10.2 percent of its jobs in the Piedmont Triad Region, from 2001 to 2nd quarter 2004.

U.S. cigarette consumption declined 3 percent in 2003 and was expected to drop another 3 percent in 2004.³ Domestic consumption has declined due to increasing health awareness and rising cigarette prices. U.S. cigarette manufacturers have had to look for growth in other countries. Even so, U.S. cigarette exports have decreased from 244 billion pieces in 1996 to 120 billion pieces in 2003, as a result of increasing offshore manufacturing, economic troubles in Asian countries, and declining consumption in some countries in Europe and Asia.⁴ Following the 2001 Master Settlement Agreement, cigarette manufacturers have faced increasing competition as new cigarette manufacturers entered the marketplace selling cheaper, generic cigarettes.⁵

From an economic growth standpoint, *Market Street* does not recommend the pursuit of tobacco manufacturing as a target sector. Although the Region has an existing strength in this sector, employment is concentrated in just a few counties, and cigarette manufacturers are increasingly challenged to find opportunities for growth. Any increases in employment in this sector are likely to be overseas.

TEXTILES AND APPAREL MANUFACTURING

The textiles manufacturing sub-sector is closely related to apparel manufacturing; textiles manufacturing involves making the fabric or yarn, and apparel manufacturing creates the garments from the fabric or yarn. The textile product mills sub-sector makes non-apparel products such as sheets, towels, and draperies. Together, the three sub-sectors have shed over 12,500 jobs in the Piedmont Triad Region between 2001 and 2nd quarter 2004, a 25 percent loss. Nationwide, job losses in textiles and apparel manufacturing totaled nearly 250,000 during this period. The

³ United States Department of Agriculture. "Tobacco Yearbook - Summary." December 15, 2004. <http://usda.mannlib.cornell.edu/reports/erssor/specialty/tbs-bb/2004/tbs2004s.txt>.

⁴ Capehart, Thomas. United States Department of Agriculture. "Trends in the Cigarette Industry After the Master Settlement Agreement." October 2001.

<http://www.ers.usda.gov/publications/tbs/oct01/tbs250-01/tbs250-01.pdf>. And USDA "Tobacco Yearbook - Summary." December 15, 2004.

⁵ Capehart, Tom. United States Department of Agriculture. "U.S. Tobacco Import Update." February 2004. <http://usda.mannlib.cornell.edu/reports/erssor/specialty/tbs-bb/2004/tbs2003-01.pdf>.

lifting of U.S. quotas on textile and apparel imports began in January 2005 and was a major factor in the recent closing of a number of WestPoint Stevens' plants, affecting 2,500 employees (560 in Burlington).⁶

Industry analysts expect similar announcements to continue as China and India increase their share of worldwide textiles and apparel production. The end of the quotas could affect an additional 650,000 U.S. jobs, and the World Trade Organization's estimates China's share of the U.S. clothing import market will triple to 65 percent in five years.⁷ Patrick Conway, an economics professor at the University of North Carolina-Chapel Hill (UNC-Chapel Hill), has studied the textiles and apparel industry extensively and believes that traditional mill jobs are doomed.⁸ The only survivors are likely to be nimble firms that use technology to improve their operations and produce specialty, niche products.

With the end of international quotas, the U.S. textiles and apparel industry is increasingly challenged to maintain its existence. Given this uphill battle, *Market Street* does not recommend that textiles and apparel be a target sector for future growth. The Piedmont Triad Region's real challenge will be to find re-employment opportunities for displaced workers, many of whom are low skilled and have limited education. Companies like VF Corporation and Levi Strauss have shifted their U.S. employment focus from manufacturing to branding, sales, and marketing. While there are opportunities for job growth on the marketing side of apparel, the skills required for those jobs are very different from the skills of displaced factory workers. The Region should also seek opportunities in the high-value end of the textiles and apparel market, where custom-made products and high-tech products for defense are in demand.

FURNITURE MANUFACTURING

The Piedmont Triad Region lost over 4,000 jobs in furniture manufacturing (17.9 percent) between 2001 and 2nd quarter 2004. The January 2005 announcement of the closing of the Dunmore Furniture Industries plant in Hickory and the February 2005 announcement of the closing of the Broyhill Furniture Industries plant in Conover, affecting over 350 jobs combined, are signs that North Carolina as a whole has continued to suffer losses in furniture manufacturing even since the most recently available data (2nd quarter 2004) were released.⁹

⁶ *The Triad Journal Serving the Greater Triad Area*. "WestPoint Stevens to close Triad factory, cut 560 local jobs." January 10, 2005. <http://triad.bizjournals.com/triad/stories/2005/01/10/daily9.html>.

⁷ Magnussen, Paul. *BusinessWeek*. "Who'll Survive The Textile Trade Shakeout?" December 20, 2004.

⁸ Caudle, Neil. *Endeavors*. "North Carolina Textiles, part one: The End of an Era." Fall 2004. <http://research.unc.edu/endeavors/fall2004/textiles.html>.

⁹ *The Triad Journal Serving the Greater Triad Area*. "Broyhill to close Catawba County plant." February 2, 2005. <http://www.bizjournals.com/triad/stories/2005/01/31/daily38.html?GP=OTC-MJ1752087487>. "Hickory furniture plant shuts down, leaving 250 jobless." January 13, 2005. <http://triad.bizjournals.com/triad/stories/2005/01/10/daily41.html>.

Imports, particularly from China, are threatening U.S. furniture manufacturers. China has surpassed Italy to become the largest furniture exporter in the world, increasing its furniture exports by 335 percent from 1994 to 2001.¹⁰ It has also surpassed Canada to become the largest furniture exporter to the U.S. market, selling \$2.8 billion worth of furniture to the U.S. in 2001.¹¹ A SunTrust Robinson Humphrey analyst report in January 2002 estimated that over 40 percent of case goods (wooden) furniture sold in the U.S. was imported.¹² In January 2005, the estimate had risen to 55 or 60 percent, and is predicted to approach 80 percent within three to four years.¹³ As UNC-Chapel Hill researchers wrote in their 2003 report on the furniture industry, “The United States furniture industry is in trouble... Even with broad consolidation, it is unlikely that there will be many opportunities for U.S. manufacturers to compete with foreign producers in an industry where profits are dictated by costs.”¹⁴

The UNC-Chapel Hill researchers did note that North Carolina has a few advantages that it must leverage to protect its case goods furniture industry: design, finishing, and retail, in addition to the large retail markets in Hickory and High Point. However, the High Point International Home Furnishings Market is feeling pressure from Las Vegas, where construction of the World Market Center is underway. By 2010, the center will contain 7.5 million square feet of showroom space geared towards home furnishings, compared to 12 million square feet in High Point.¹⁵ One survey of furniture industry representatives showed that 15 percent of respondents would attend a Las Vegas furniture market instead of High Point, and another 38 percent indicated they would attend both markets.¹⁶

Industry experts agree that the case goods furniture market is in jeopardy. However, the upholstered furniture and low-end ready-to-assemble furniture markets should be somewhat stable, because the cost of trans-oceanic shipping is higher than profit margins allow. Steel and high-end office furniture are market segments that are also fairly stable.

Based on extreme global pricing pressure and limited growth prospect, *Market Street* does not recommend the furniture manufacturing industry as a target business sector. While furniture manufacturing still employs nearly 20,000 people in the

¹⁰ Bryson, V., Lanzillotti, G., Myerberg J., Miller, E., and Tian, F. UNC-Chapel Hill. *Industry Economics*. “The Furniture Industry (Case Goods): The Future of the Industry United States versus China.” March 7, 2003. http://www.kenan-flagler.unc.edu/assets/documents/furn_paper.pdf.

¹¹ Ibid.

¹² Ibid.

¹³ Morse, Dan. *The Wall Street Journal*. “Coping with the Asian Invasion.” January 31, 2005. p. R7. (Import estimate by Keith Hughes, SunTrust Robinson Humphrey.)

¹⁴ Bryson, V., Lanzillotti, G., Myerberg J., Miller, E., and Tian, F.

¹⁵ Normington, Mick. *The Triad Journal Serving the Greater Triad Area*. “Showrooms, marketing take shape in Las Vegas.” January 7, 2005.

<http://triad.bizjournals.com/triad/stories/2005/01/10/story7.html>.

¹⁶ *Las Vegas Review-Journal*. “Officials worry over Las Vegas: East Coast furniture execs fret about World Market Center impact.” November 15, 2003. http://www.reviewjournal.com/lvrj_home/2003/Nov-15-Sat-2003/business/22591268.html.

Piedmont Triad Region, many of those jobs are threatened as imports continue to enter the U.S. market. The firms that survive will be those that focus on specialized, value-added services like design, finishing, and retail or marketing. The High Point International Home Furnishings Market needs to compete with Las Vegas by improving visitors' travel experiences and giving them convincing reasons to support the major market in High Point.

The Piedmont Triad Region should seek growth opportunities in the production of kitchen cabinetry and wood flooring, which requires similar workforce skills as that of furniture manufacturing. Making kitchen cabinetry and wood flooring is much more automated than furniture manufacturing, and factories are therefore more likely to remain in the United States.¹⁷

¹⁷ Email from Dan Morse. *Wall Street Journal*. Atlanta Bureau.



Target Clusters

TARGET CLUSTERS

Market Street has categorized the Piedmont Triad Region’s target clusters into tiers. The first tier represents targets that have the strongest growth prospects for all counties in the Region. These are: Health Care (including Biotechnology), Logistics, and Wholesale Trade.

The second tier includes target clusters that are more specialized in the Region. Finance and Insurance is a recommended target cluster because of high average wages and strong national growth prospects. However, the bulk of employment in Finance and Insurance is in Guilford and Forsyth Counties. Due to existing strengths, a skilled workforce, and proximity to urban areas, growth in this target cluster is likely to be concentrated in the two counties. The other second tier target cluster is Food Processing, particularly higher-end products. It is recommended because of the potential to provide job opportunities for lower-skilled workers and those in rural areas.

Target Clusters by Tier

Tier	Target Clusters	Tier Description
Tier 1	Health Care (including Biotechnology) Logistics Wholesale Trade	Strongest growth prospects for all counties in the Region
Tier 2	Finance and Insurance Food Processing	Specialized
Tier 3	Arts	Emerging

The third tier of target clusters is comprised of the Arts, which includes design and film. This target is still emerging and is fairly fragmented in the Region.

In addition to these target clusters, *Market Street* has identified “areas of emphasis” for the Piedmont Triad Region to work on to increase job growth opportunities. These are important components of economic development that cut across cluster categories but represent areas of potentially significant job creation. The areas of emphasis are:

- Tourism;
- Entrepreneurship;
- Homeland security and defense; and
- Education.

This *Target Cluster Analysis* describes the Piedmont Triad Region’s assets and weaknesses in each target cluster. Goals and specific action steps for growing these target clusters will be part of the next phase of the strategic planning process and included in the *Regional Vision Plan*.



Target Clusters:

HEALTH CARE

HEALTH CARE (INCLUDING BIOTECHNOLOGY)

INDUSTRY DESCRIPTION AND TRENDS

As the nation's overall population ages along with the "baby boom" generation, an increasing number of individuals will require medical services, hospital, nursing, and at-home care, and will purchase trillions of dollars worth of medications, medical devices, and other health related products. U.S. health care consumption rose from 10.9 percent of national Gross Domestic Product (GDP) in 1988, to more than 14 percent in 2002. That figure is expected to reach 17 percent of GDP by the year 2011.¹⁸

Already, the health services sector is primed for even greater growth both at the national and local levels as seniors become increasingly dependent on medical facilities. It is a powerful economic sector, reaching nearly 14 million U.S. jobs in 2004. The U.S. Bureau of Labor Statistics predicts that employment in health care services will grow by 32.4 percent from 2002 to 2012, compared to 14.8 percent growth in jobs overall. Additionally, nine out of the 20 fastest-growing national occupations will be in this sector.¹⁹ The State of North Carolina ranks 2nd among U.S. states for employment growth in offices of osteopathic physicians from 1996 to 2001.²⁰ North Carolina also ranks 2nd among U.S. states for employment growth in hospitals during that period. People are increasingly willing to travel for high quality health care services. While only a few health care facilities have a national draw, there are many that have a statewide (or even multi-state) draw.

Biotechnology, a component of the health care sector, is "the application of biological knowledge and techniques pertaining to molecular, cellular, and genetic processes to develop products and services."²¹ It is a heavily research-intensive field. The Brookings Institution identified nine metropolitan areas where biotechnology activity is concentrated: Boston, Los Angeles, New York, Philadelphia, Raleigh-Durham, San Diego, San Francisco, Seattle, and Washington/Baltimore.²² However, growth in biotechnology will have limited impact in the short term, because the research development process requires a long timeframe, and most existing firms are quite small. In fact, in 2001, only 44 biotechnology firms in the nation had more than 1,000 employees.²³ Even so, competition for these companies is fierce as many states

¹⁸ DeVol, Ross C. and Rob Koepp. "America's Health Care Economy." Milken Institute, August 2003, p. 2.

¹⁹ U.S. Bureau of Labor Statistics. <http://www.bls.gov/emp/emptab3.htm>. Accessed September 7, 2004.

²⁰ Milken Institute.

²¹ Cortright, Joseph and Heike Mayer. "Signs of Life: The Growth of Biotechnology Centers in the U.S." Brookings Institution. June 2002. p. 8.

²² Ibid.

²³ Ibid.

and metropolitan areas try to establish a biotechnology cluster without first assessing their competitive positions.

Biotechnology can be roughly categorized into the following health care applications²⁴:

- Genomics and Proteomics – understanding the structure and function of genes and proteins as a foundation for therapeutic and preventative treatment.
- Regenerative Medicine – improving the ability to repair and maintain tissue, including tissue engineering, stem cell research, and cell nuclear replacement.
- Vaccines – production and delivery systems for vaccines.
- Therapeutics – treating diseases through a variety of approaches which involve biological substances and processes (i.e. drugs and medications, replacement protein therapies, replacement gene therapies, and drug delivery systems).
- Diagnostics – developing methods to detect diseases and health problems.

Health care and, especially, biotechnology jobs feature higher than average wages. While doctors and nurse specialists earn top salaries, the jobs available to individuals without substantial training can still provide viable, high-paying career opportunities in a relatively stable profession. Furthermore, numerous technical support occupations in health care services require only one or two years of education beyond high school.

The health care and biotechnology sector encompasses services, research, and manufacturing sub-sectors and includes:

- Health Care Products and Services
 - Medical Equipment and Supplies Manufacturing (NAICS 3391)
 - Ambulatory Health Care Services (NAICS 621)
 - Hospitals (NAICS 622)
 - Nursing and Residential Care Facilities (NAICS 623)
- Biotechnology
 - Research and Development in the Physical, Engineering, and Life Sciences (NAICS 54171)
 - Pharmaceutical and Medicine Manufacturing (NAICS 3254)

Because biotechnology is not fully defined by NAICS code classifications, the “Research and Development in the Physical, Engineering, and Life Sciences” sub-sector includes research activities related to sciences other than biotechnology. Pharmaceutical and Medicine Manufacturing includes more traditional pill and drug

²⁴ Biotechnology Industry Organization. “Guide to Biotechnology.” 2004-2005. <http://www.bio.org/speeches/pubs/er/healthcare.asp>.

manufacturing, as well as biomanufacturing – the production of vaccines, diagnostics, enzymes, and amino acids that come out of biotechnology research.

Health Care and Biotechnology

- Health Care NAICS definition:
 - 3391 Medical equipment and supplies manufacturing
 - 621 Ambulatory health care services
 - 622 Hospitals
 - 623 Nursing and residential care facilities
- Biotechnology NAICS definition:
 - 3254 Pharmaceutical and medicine manufacturing
 - 54171 Research and development in the physical, engineering, and life sciences
- Examples:
 - Laboratory apparatus and hospital furniture, surgical and medical instruments, dental equipment and supplies
 - Health care practitioners, outpatient care and medical centers
 - Medical and diagnostic laboratories, ambulance services
 - Hospitals, nursing homes, mental health facilities
 - Allergy drugs, insulin products – research and manufacturing
- Total U.S. employment is 14.6 million, as of 2nd quarter 2004.
- The national average annual pay is \$40,398.
- Location Factors:
 - ✓ Close proximity to existing hospitals and health care facilities.
 - ✓ Available, affordable, and technically skilled labor force.
 - ✓ Close proximity to a university medical school and research laboratories.
 - ✓ Strong quality of life.

Ambulatory Health Care Services (NAICS 621) accounted for the largest share of the 670,000 new jobs created in the health care industry between 2001 and 2003, while most other sectors lost jobs during this period. Ambulatory Health Care Services includes doctor and dentist offices, ambulance services, medical laboratories, and health and medical centers outside of hospitals. Employment in this sub-sector grew 7.4 percent over the two-year period, while the overall health care sector grew 5.3 percent.²⁵

The Nursing and Residential Care Facilities (NAICS 623) sub-sector is also growing rapidly as the notion of “retirement homes” changes to reflect the more active,

²⁵ For ambulatory health care services (NAICS 621), hospitals (NAICS 622), and nursing and residential care facilities (NAICS 623).

independent lifestyles of today's seniors. A new type of professional-care facility allows residents to buy a home or condominium independent of the care facility, and then transition to a professionally supervised residence when they are no longer able to care for themselves. Home health care services are also experiencing growth, as people look for ways to cut medical costs by avoiding more institutionalized care.

Growth opportunities in the health care sector are not limited to service sub-sectors and care facilities, however. The health care industry ranges from health services to medical products and devices, to research and testing, where much of the emerging biotechnology sector is recorded.

PIEDMONT TRIAD REGION'S ASSETS

Health care and biotechnology accounted for 10.7 percent of all jobs in the Piedmont Triad Region in 2nd quarter 2004, up from 9.4 percent in 2001. The Region's overall health care and biotechnology employment grew faster than the national rate. As shown in the following table, health care employment in the Region increased by 9.5 percent between 2001 and 2nd quarter 2004, with ambulatory health care services seeing the greatest growth in terms of numbers of jobs. Within the ambulatory health care services sub-sector, the greatest job growth was in home health care services, physicians, and medical and diagnostic laboratories. The high demand for these services results in an average sub-sector wage above the national average.

Health Care and Biotechnology Employment and Wages

Industry Description	Region Employment			U.S. Employment	Average Annual Wage 2Q 2004	
	2Q 2004	2001 - 2Q 2004 Change	Location Quotient 2Q 2004	2001 - 2Q 2004 Change	Region	U.S.
Health Care and Biotechnology	74,793	9.5%	0.95	11.2%	\$35,800	\$40,398
Pharmaceutical & Medicine Manufacturing (NAICS 3254)	877	6.8%	0.57	2.1%	\$59,807	\$75,398
Medical Equipment & Supplies Manufacturing (NAICS 3391)	1,550	-2.8%	0.96	-3.4%	\$37,756	\$47,820
Research & Development in the Physical, Engineering, & Life Sciences (NAICS 54171)	507	34.1%	0.18	3.9%	\$62,038	\$76,258
Ambulatory Health Care Services (NAICS 621)	27,999	18.8%	1.04	10.3%	\$45,275	\$43,870
Hospitals (NAICS 622)	26,563	0.3%	0.91	5.2%	\$34,526	\$41,127
Nursing and Residential Care Facilities (NAICS 623)	17,297	11.7%	1.06	5.2%	\$20,258	\$23,240

Source: Employment Security Commission of North Carolina, U.S. Bureau of Labor Statistics

There are 20 hospitals in the Piedmont Triad Region, with a total of 4,917 beds.²⁶ As shown in the following table, five of these hospitals are on the Triad *Business Journal's* list of top 25 hospitals in the state by number of licensed beds. Also, the health systems that run the hospitals are among the 25 largest employers in the Region.²⁷

Largest Piedmont Triad Hospitals by Number of Beds

Hospital	Licensed Beds
Forsyth Medical Center	906
Wake Forest University Baptist Medical Center	781
Moses Cone Memorial Hospital	535
High Point Regional Health System	384
Alamance Regional Medical Center	319

Source: *The Business Journal Serving the Greater Triad Area*. "Book of Lists 2005".

The Milken Institute ranked the Piedmont Triad Area 13th out of the top 25 metro areas for its employment in "Other Health Care Practitioners," which includes chiropractors, optometrists, and physical, occupational, and speech therapists.²⁸ In addition, *U.S. News and World Report* identified the North Carolina Baptist Hospital as being one of the top 50 hospitals in the country for cancer (28th), urology (24th), geriatrics (26th), and ear, nose and throat (46th).²⁹ Still, the hospital faces formidable competition from Duke University Medical Center and UNC-Chapel Hill hospitals, which are highly ranked in even more specialty areas.

Laboratory and diagnostic testing, considered to be part of the ambulatory health care services sub-sector, is a potential growth area for the Piedmont Triad Region. The Laboratory Corporation of America (LabCorp) has its headquarters in Burlington. The company, which has more than 23,000 employees in 31 primary testing locations and 1,100 patient service centers, is increasingly using technology partners to improve its operations.³⁰ LabCorp has recently signed an agreement with an electronic medical records company to allow doctors and clinicians to order lab tests and receive results online.³¹ The Region can look for opportunities to provide these health-related technology services.

²⁶ Piedmont Triad Partnership. <http://www.piedmonttriadnc.com/healthcare.asp>. Accessed 2/1/05.

²⁷ *The Business Journal Serving the Greater Triad Area*. "Book of Lists 2005". p. 52.

²⁸ DeVol and Koepp. "America's Health Care Economy". Milken Institute. August 2003. http://www.milkeninstitute.org/pdf/healthpole_fullreport_2003.pdf.

²⁹ *U.S. News and World Report*. "Best Hospitals 2004." <http://www.usnews.com/usnews/health/hosptl/tophosp.htm>.

³⁰ Laboratory Corporation of America. http://www.labcorp.com/about_labcorp/index.html. Accessed February 1, 2005.

³¹ *The Business Journal Serving the Greater Triad Area*. "LabCorp signs deal with electronic medical records company." February 1, 2005.

<http://www.bizjournals.com/triad/stories/2005/01/31/daily23.html?f=et84>.

Biotechnology is still a nascent, but emerging, field in the Piedmont Triad Region. Employment is currently almost entirely in Forsyth and Guilford Counties, where the major universities and research facilities are located. The North Carolina Biotechnology Center has identified over 150 companies that have biotechnology or related bioscience operations within the state.³² In 2004, Ernst and Young ranked North Carolina as the state with the third most biotechnology firms, but it had identified only 88 firms in the state.³³ In any case, most of the state's biotechnology firms are located in the Research Triangle Park and surrounding areas.

There are about 15 biotechnology firms located in the Piedmont Triad Region. Given biotechnology's limited employment in the Region (up to 500 in research and about 900 in drug manufacturing) and the nature of research and development, growth in this field will be long term and will continue to be concentrated in Forsyth and Guilford Counties. The Region's existing biotechnology activities do not appear to be focused on specific diseases, therapies, or other areas.

The Piedmont Triad Research Park (PTRP) in Winston-Salem is an effort to create a biotechnology cluster by providing academic institutions, private firms, and support organizations with office and laboratory space. Wake Forest and Winston-Salem State Universities are the main academic tenants, and the North Carolina Biotechnology Center's first satellite office is located in the research park. Wake Forest recently recruited Dr. Anthony Atala from Harvard University; his laboratories will be located in PTRP with a research focus on tissue regeneration. Dr. Atala's arrival and his promises to start two new biotechnology firms have sparked interest from venture capitalists.³⁴ A few private companies have moved to the research park, bringing its total employment to 285 corporate employees and 295 university faculty, staff, and students.³⁵ The research park is in its early stages of development and lease-up; over 200 acres are planned for development over a 20 to 25 year period.

The Piedmont Triad Biotechnology Advisory Committee met for the first time in April 2004 to identify common industry needs and activities and to be the regional advocate for biotechnology. The Committee is comprised of university and community college leaders, banking executives, and a few industry representatives. The Life Sciences Executive Roundtable, organized by the Piedmont Triad Entrepreneurial Network and the Piedmont Triad Partnership, serves a slightly different function in that it includes only company executives discussing biotechnology needs.

³² North Carolina Biotechnology Center. "Biotechnology Companies in North Carolina: A Quick List." May 2004.

³³ Ernst and Young. "Resurgence: Global Biotechnology Report 2004—The Americas Perspective." p. 20. <http://www.bio.org/speeches/pubs/er/statistics.asp>.

³⁴ Source: Normington, Mick. "Winston-Salem research park breaks ground on new building." *The Business Journal Serving the Greater Triad Area*. April 24, 2004.

³⁵ Piedmont Triad Research Park. "Fact Sheet." October 12, 2004.

Although employment in medical equipment and supplies manufacturing is small compared to health care services, the sub-sector pays relatively high wages (\$37,756 in the Region in 2nd quarter 2004) and is expected to grow by 6.4 percent between 2002 and 2012.³⁶ Also, it has an existing Regional presence beyond Forsyth and Guilford Counties; 41 percent of the Region's employment in this sub-sector is located in Randolph County. Alamance, Davidson, and Rockingham Counties have an existing, but smaller, presence in medical equipment and supplies manufacturing.

As discussed in the *Competitive Realities* Report, the Region saw a 46 percent increase in the number of residents age 45 to 55 between 1990 and 2000, reflecting the aging of the Baby Boom generation. As this demographic group reaches retirement and life spans continue to increase, demand for health care products and services will experience even stronger growth than what has been seen up until now.

The greatest impact in the health care target for the Piedmont Triad Region in terms of number of jobs and reach into rural counties will be in health care services and medical supplies and device manufacturing. Sub-sectors of particular focus are health care practitioners, laboratories and testing, health care services for senior citizens, and medical equipment and supplies. Biotechnology is still an emerging sub-sector and the reach of its growth will be limited in the near term. However, in order to make the most of its research resources in the long term, the Region may need to develop a focus or specialty area within biotechnology.

WORKFORCE REQUIREMENTS AND ASSETS

Health care institutions will need thousands of additional accountants, personnel specialists, managers, buyers, computer support specialists, and chemists. While doctors and nurses will still be in demand, more widespread opportunities will be created for health technologists (i.e. clinical laboratory technologists, EKG technologists, etc.); health technicians (i.e. emergency medical technicians, dispensing opticians, etc.); and pharmacy and therapy occupations (i.e. nutritionists, physical therapists, pharmacists, etc.).³⁷

With only 45 percent of health care employment in professional occupations, the majority of the sector's jobs do not require advanced degrees. Furthermore, health service occupations are the positions expected to experience the largest growth by 2012. The U.S. Bureau of Labor Statistics (BLS) provides its projections of the five fastest growing occupations for each level of education or training. The table on the next page displays only the health care-related occupations that were the fastest growing for each education level. Many health care jobs require no more than an associate degree.

³⁶ U.S. Bureau of Labor Statistics, 2004 release of employment projections.

³⁷ HealthCareJobs.org

Fastest Growing Health Care-Related Occupations by Education Levels (2002-2012)

Education or Training Needed	Fastest Growing Occupations
First professional degree	<ul style="list-style-type: none"> ▪ Pharmacists ▪ Veterinarians ▪ Chiropractors ▪ Physicians and surgeons ▪ Optometrists
Doctoral degree	<ul style="list-style-type: none"> ▪ Medical scientists, except epidemiologists ▪ Clinical, counseling, and school psychologists ▪ Biochemists and biophysicists
Master's degree	<ul style="list-style-type: none"> ▪ Physical therapists ▪ Mental health and substance abuse social workers ▪ Rehabilitation counselors ▪ Epidemiologists
Bachelor's degree	<ul style="list-style-type: none"> ▪ Medical and health services managers ▪ Physician assistants
Associate degree	<ul style="list-style-type: none"> ▪ Medical records and health information technicians ▪ Physical therapist assistants ▪ Veterinary technologists and technicians ▪ Dental hygienists ▪ Occupational therapist assistants
Post-secondary vocational award	<ul style="list-style-type: none"> ▪ Respiratory therapy technicians ▪ Emergency medical technicians and paramedics
Moderate-term on-the-job training	<ul style="list-style-type: none"> ▪ Medical assistants ▪ Dental assistants
Short-term on-the-job training	<ul style="list-style-type: none"> ▪ Home health aides ▪ Physical therapist aides ▪ Occupational therapist aides ▪ Personal and home care aides

Source: U.S. Bureau of Labor Statistics. *Occupational Outlook Handbook*. 2004.
<http://www.bls.gov/oco/ocotjt1.htm>

About 56 percent of jobs in medical equipment and supplies manufacturing are in production occupations, including assembly and fabrication jobs as well as medical and dental laboratory technicians. Educational requirements for these jobs range from on-the-job training to a two-year degree. Educational requirements for biotechnology manufacturing employment can often be provided by community and technical colleges.

Higher education institutions in the Piedmont Triad Region offer a number of health care-related programs. Nursing was the second most numerous associate degree awarded in the Region in 2003-2004, and is offered by nearly all of the Region's community and technical colleges. Together, the network of community and technical colleges offers the following health care education programs (degree, diploma, and certificate):

- Biomedical Photography (Randolph CC only)
- Biotechnology
- Cardiovascular Sonography (Forsyth TCC only)
- Cardiovascular/Vascular
- Chemical Process Technology
- Interventional Technology (Forsyth TCC only)
- CT and MRI Technology (Forsyth TCC only)
- Dental Hygiene and Dental Assisting
- Emergency Medical Science
- Health Information Technology (Davidson CC only)
- Medical Assisting
- Medical Laboratory Technology
- Medical Office Administration
- Medical Sonography
- Medical Transcription
- Nuclear Medicine Technology (Forsyth TCC only)
- Nursing (incl. associate's degree, practical nursing, and assistant)
- Occupational Technology (Rockingham CC only)
- Pharmacy Technology
- Phlebotomy
- Physical Therapy Assistant (Guilford TCC only)
- Radiation Therapy Technology
- Radiography (Forsyth TCC only)
- Surgical Technology (Guilford TCC only)

BioWork is a 128-hour introductory course in biotechnology offered at a few community colleges in North Carolina. It was developed by the North Carolina Biotechnology Center, with guidance from industry representatives, and prepares students for entry-level jobs in biomanufacturing. Piedmont Community College, which serves Caswell County, is the only community college serving the Region that has a BioWork program.

The Golden LEAF Foundation allocated \$60 million to take biotechnology education programs beyond the introductory level. The Foundation has funded BioNetwork, a statewide initiative to provide biotechnology programs focused on five community colleges in the state. This initiative is in its early stages and plans are still being developed. Forsyth and Guilford Technical Community Colleges were selected to co-manage the North Carolina BioNetwork Pharmaceutical Manufacturing and Training Center in Winston-Salem.

Grants have been awarded through BioNetwork for course development at Alamance Community College, Davidson County Community College, and Guilford Technical Community College. Alamance Community College has had an established biotechnology program for 18 years, and 80 percent of its students are offered jobs in industry or research universities before they graduate.³⁸ In addition, Forsyth Technical Community College was awarded \$5 million from the U.S. Department of Labor to develop curricula in biotechnology research and development. It is one of only five community colleges in the U.S. selected to develop biotechnology curricula and training programs, which will then be used as national models.

³⁸ *North Carolina*. "What Makes Us Think We Can Be No. 1?" November 2004. p. 22.

Many of the Region's four-year institutions also offer health care education and life sciences programs. UNC-Greensboro and Winston-Salem State University awarded the most bachelor's degrees in health professions in 2002-2003. UNC-Greensboro's School of Nursing provides undergraduate and graduate programs, including a new doctorate of nursing starting in the fall of 2005. Winston-Salem State University offers bachelor's and master's degrees in nursing, occupational therapy, physical therapy, and clinical laboratory science. Wake Forest is the Region's only university to have a doctoral program in biology.

The four-year universities drive much of the health care and biotechnology research in the Region. For example, the Guilford Genomic Medicine Project is a collaborative project among UNC-Greensboro, Moses Cone Hospital, and Duke University to do genetic research and identify new approaches to disease prevention and treatment.³⁹ North Carolina A&T University and UNC-Greensboro are starting to collaborate on research projects, some of which are biotechnology-related. The two schools have planned the Greensboro Center for Innovative Development (also known as Millennial Campus), which will include a science research park on the south side of the campus. Research areas would include biotechnology, food and nutrition, and others.⁴⁰ This is a long-term project that will require fundraising and development of both physical space and research capacity.

Wake Forest University is the only medical school in the Piedmont Triad Region, graduating 91 doctors in 2002-2003. The program is an extremely important asset to the health care sector in the Region, because it partners with the North Carolina Baptist Hospital to train physicians, conduct medical research, and develop advanced procedures and technologies.

CHALLENGES FOR THE REGION

Workforce recruitment and retention is a major issue for the health care target cluster. The Region must work to attract more people into the education and training programs at all levels, from technicians to nursing to pharmaceutical research. According to the North Carolina Institute of Medicine, the state does not currently have a nursing shortage, but it does have a pending shortage of future nurses and nursing faculty to train them.⁴¹ The North Carolina Center for Nursing estimates that the state will have a nursing shortage (Registered Nurses) sometime between 2002 and 2013 based on one forecasting model. Based on another model, the state will

³⁹ *The Business Journal Serving the Greater Triad Area*. "Department of Defense budget helps three Greensboro projects." July 23, 2004.

⁴⁰ University of North Carolina – Greensboro. "Joint Millennial Center Concept." <http://www.uncg.edu/iiss/concept.html>. Accessed March 2, 2005.

⁴¹ Task Force on the North Carolina Nursing Workforce. "North Carolina Nursing Workforce Report: 2004." <http://www.nciom.org/projects/nursingworkforce/nursingreport.html>.

experience a shortage near 2010.⁴² One person interviewed in the Regional Input process stated that there is a shortage of Registered Nurses, pharmacists, and especially clinical research associates. There are a number of statewide resources, such as the North Carolina Center for Nursing and the North Carolina Area Health Education Centers that can be tapped for help in addressing shortages of health professionals.

To increase the success rate of students in nursing and other health education programs, there needs to be a smooth continuum from the classroom to the workplace. That may mean introducing more internship and hands-on training programs. Some of the Region's hospitals do provide scholarships, internships, and other recruiting tools.⁴³

Another reason for the nursing shortage is the profession's high turnover rate. Nurses work long hours in sometimes stressful and difficult conditions. The Moses Cone Health System has taken some steps to address this; they have established a mentoring program that pairs first-year nurses with more experienced peers. Hospital leaders and nurses should come together to discuss further possibilities for improving working conditions and reducing turnover.

Currently, no health care industry council exists to facilitate discussions and interactions among health care employers to address major issues like workforce retention. The biotechnology advisory council and executive roundtable could serve as models for establishing similar groups within the broader health care sector.

⁴² North Carolina Center for Nursing. "North Carolina Trends in Nursing: 1983-2003 RN and LPN Supply Trends." November 2004.

<http://www.nursenc.org/research/Trends2004/Supply%20Trends%202004%20report.pdf>.

⁴³ Tosczak, Mark. *The Business Journal Serving the Greater Triad Area*. "Nursing vacancies down in the Triad, but recruiters can't rest on their laurels." October 22, 2004.



Target Clusters:

LOGISTICS

LOGISTICS

INDUSTRY DESCRIPTION AND TRENDS

Advances in technology have spawned new ways of doing business and have reduced the virtual distance between people, even if the physical distance remains vast. Such technologies have not only created a demand for advanced logistical services, such as Amazon.com's need to be able to get its products to its online customers rapidly, but have also redefined the logistics sector itself. No longer is logistics merely the transport of a product from one point to another by various modes of transportation; the sector has grown to include technology services that manage and optimize the entire process from the point when an order is entered to the time the customer receives it.

The logistics sector (NAICS 484, 488, 492, 493) includes truck transportation, warehousing and storage of goods, courier and shipping services, and support activities related to modes of transportation; as it is here, the sector is also referred to as *distribution*.⁴⁴ Although air, rail, water, and passenger transportation are also key parts of the logistics sector, they are not included in the Region's target because they are not expected to be growth areas for the Region.⁴⁵

Technological advances are revolutionizing operational processes in the logistics sector, with computerization and wireless technology redefining the practice of goods distribution. Current technology allows businesses to track the location of individual vehicles via satellite, and use refrigerated units to provide computerized feedback on specific operational times and temperatures. Advanced in-house technology and hand-held wireless devices in the field also greatly streamline inventory-maintenance operations. Support activities can include scheduling, supply-chain management, fleet management, network optimization, and other processes. An effective logistics services network is critical to profitability for many manufacturing, wholesale, and other companies involved with the shipment of goods.

According to the U.S. Bureau of Transportation Statistics' 2004 annual report, demand for transportation-related goods and services represented over 10 percent of the U.S. economy in the year 2000, supporting nearly one in eight U.S. jobs. Purchases of transportation-related goods and services comprised 10.2 percent of the

⁴⁵ Although air cargo will clearly be a part of the new Federal Express hub operations, air cargo is not part of the target cluster as a sub-sector for economic development recruitment. Only a few companies dominate this market, making recruitment and growth difficult. However, Federal Express' air cargo service is an important part of the cluster infrastructure and will help catalyze the growth and attraction of other types of companies.

Gross Domestic Product (GDP) in 2001, or \$1.03 trillion. Only housing, health care, and food accounted for greater shares of GDP in 2001.⁴⁶

Logistics

- NAICS definition:
 - 484 Truck transportation
 - 488 Support activities for transportation
 - 492 Couriers and messengers
 - 493 Warehousing and storage
- Examples:
 - Freight trucking
 - Parcel delivery, packaging services
 - Transportation arrangement services – brokers, freight forwarding
 - Warehousing, storage, inventory management services
 - Supply chain and network management, fleet management services
- Total U.S. employment is 3.1 million, as of 2nd quarter 2004.
- The national average annual pay is \$36,922.
- Location Factors:
 - ✓ Close proximity to customers, suppliers, and markets.
 - ✓ Available labor force with truck driving and technical skills.
 - ✓ Close proximity to training resources.
 - ✓ Close proximity to transportation infrastructure.
 - ✓ Low labor costs.

PIEDMONT TRIAD REGION'S ASSETS

Many respondents of the Regional Input online survey overwhelmingly said that the Piedmont Triad Region's greatest strength was its location, access, and transportation system. Indeed, the Region is served by five interstate highways and a network of federal roads and state highways. It is also within 500 miles of nearly 30 percent of the U.S. population and 1,000 miles of 74 percent of the nation's population. Although physical location is a key site selection factor for a diminishing number of businesses and industries, the Region can seek to leverage its locational assets for the business sectors that value those geographical and transportation-related attributes.

Many businesses have already recognized the value of the Piedmont Triad's location and transportation network and its relatively low business costs, and have decided to

⁴⁶ U.S. Bureau of Transportation Statistics, *2004 Annual Report on Transportation Statistics*.
http://www.bts.gov/publications/national_transportation_statistics/2004/html/table_03_05.html.
 Accessed on February 1, 2005.

make major investments in the Region. The Region already has a major United Parcel Service (UPS) sorting facility, a U. S. Postal Service bulk mail center, and a number of major trucking firms. The current projects receiving the most attention are the construction of the Federal Express (FedEx) Mid-Atlantic Hub at the Piedmont Triad International Airport, and the Dell computer assembly facility at the Alliance Science and Technology Park in Winston-Salem. While the Dell operation is not classified as part of the logistics sector, it will depend heavily on logistics services to get its products to its customers. The strength of the Triad's location and transportation network can be leveraged by developing its logistics sector to service and attract manufacturing and wholesale businesses that need to distribute and ship their products.

With the recent downturn in the economy, the Region's logistics sector also suffered, shedding 14.4 percent of its jobs between 2001 and 2nd quarter 2004. The job loss is most likely attributable to the decline in the Region's manufacturing sector. However, with the Piedmont Triad's locational assets and major projects like Dell and Federal Express, this sector is poised to experience strong growth.

Logistics Employment and Wages

Industry Description	Region Employment			U.S. Employment	Average Annual Wage 2Q 2004	
	2Q 2004	2001 - 2Q 2004 Change	Location Quotient 2Q 2004	2001 - 2Q 2004 Change	Region	U.S.
Logistics	24,880	-14.4%	1.51	-1.9%	\$33,918	\$36,992
Truck Transportation (NAICS 484)	13,147	-14.3%	1.81	-2.7%	\$35,887	\$36,456
Support Activities for Transportation (NAICS 488)	3,387	-17.9%	1.02	-1.5%	\$39,328	\$42,436
Couriers and Messengers (NAICS 492)	3,749	-3.2%	1.27	-7.9%	\$25,733	\$35,173
Warehousing and Storage (NAICS 493)	4,597	-19.7%	1.55	6.6%	\$30,974	\$34,035

Source: Employment Security Commission of North Carolina, U.S. Bureau of Labor Statistics

WORKFORCE REQUIREMENTS AND ASSETS

Occupations within the logistics industry require a range of skills; positions include truck drivers, warehouse managers, software engineers, and logistics coordinators. On a national level, the outlook for truck drivers and warehouse workers (Transportation and Material-Moving Workers) is strong. The number of these workers is expected grow 13.1 percent, accounting for 1.3 million additional jobs by 2012. Among transportation occupations, motor vehicle operators will add the most jobs, 760,000. Material moving occupations will grow 8.9 percent and will add 422,000 jobs.⁴⁷

⁴⁷ www.bls.gov/oco/ocos246.htm#outlook

Although some workers need a college degree, most logistics jobs do not require education beyond high school. New workers usually receive training after they begin work—for instance, in operation of inventory management databases, on-line purchasing systems, or electronic data interchange systems. Technological advances and market forces are rapidly altering this industry. Even workers in small firms need to keep informed about supply chain processes, management methodologies, and information systems. In addition, these technological advances affect the skill requirements for occupations across the entire industry—from warehouse workers to truck drivers to those in management. As a result, numerous firms devote significant resources to worker training.

Many firms offer on-the-job training. However, because providing training is becoming more costly and complex, the industry is increasingly using third-party training organizations and trade associations to reduce this burden. To increase productivity, many companies make their employees responsible for more than one function and cross-train them by familiarizing them with many aspects of the company. Most employees will need to be highly trained and skilled workers who can operate well in an increasingly technological, dynamic, and solutions-oriented environment.⁴⁸

Currently, there are few education programs related specifically to logistics in the Region's community and technical colleges. The Truck Driver Training certificate is available from Davidson Community College, the Logistics Management degree is available from Guilford Technical Community College, and the Global Logistics Technology degree is offered by Forsyth Technical Community College. Guilford Tech also offers an eight-week truck driving course through its Quick Jobs program. Part of the Dell incentive package was \$8.3 million in job training assistance, which means that Forsyth Technical Community College is likely to have the leading role in developing training programs for new Dell employees. Although many of the jobs will be assembly jobs, there may be a need to train some of the employees in logistics.

Higher-level jobs in management or technology require four-year degrees related to those areas. The Millennial Campus that will be built as a joint project between North Carolina A&T University and UNC-Greensboro may include a Transportation Logistics Cluster center, although it will take some years for this center to develop its research.⁴⁹

⁴⁸ Hallock, Thom. "The Future of Logistics." *Business Facilities Magazine*. March 2004. p. L-1-2.

⁴⁹ Normington, Mick. *The Business Journal Serving the Greater Triad Area*. "UNCG's enrollment pushing expansion efforts campuswide." August 20, 2004.
<http://triad.bizjournals.com/triad/stories/2004/08/23/story3.html>.

CHALLENGES FOR THE REGION

The most exciting opportunity and challenge for the Region is to leverage the FedEx hub project to fully develop linkages throughout the logistics sector. There are opportunities for suppliers, such as trucks, parts, and repair services, and even more opportunities for customers who would benefit from FedEx's immediate shipping services. Having a readily available workforce with skills and experience in truck driving, warehousing and distribution operations, and logistics and scheduling systems is important to growing the Region's logistics cluster.

Workforce development and community college leaders should work with FedEx to ensure that their employees receive adequate training and education. The UPS hub in Louisville, Kentucky can be used as a successful model. The state of Kentucky, University of Louisville, and two community colleges worked with UPS to develop a program called Metropolitan College, to help employees earn degrees while maintaining full-time or part-time jobs at UPS. Employees who work shifts from 10 p.m. to 4 a.m. are eligible to take classes for free at the coordinating institutions, which have special class schedules to meet their needs. UPS splits the cost of tuition with the state and has also helped make dormitory arrangements for students. FedEx will likely have a strong interest in making sure that their employees are able to receive the education they need to be successful within the company and be promoted from within.

Employee turnover is a major problem at trucking companies as people leave their truck driving jobs in search of better pay or more flexible hours and shifts. Trucking companies may consider collaborating to discuss possible solutions and employee retention strategies.



Target Clusters:

WHOLESALE TRADE

WHOLESALE TRADE

INDUSTRY DESCRIPTION AND TRENDS

The wholesale trade sector comprises establishments engaged in wholesaling merchandise, generally without transformation, and rendering services incidental to the sale of merchandise. The wholesaling process is an intermediate step in the distribution of merchandise. Wholesalers are organized to sell or arrange the purchase or sale of (a) goods for resale (i.e., goods sold to other wholesalers or retailers), (b) capital or durable non-consumer goods, and (c) raw and intermediate materials and supplies used in production. Wholesalers sell merchandise to other businesses and normally operate from a warehouse or office.

Besides selling and moving goods to their customers, wholesaler-distributors may provide other services to clients, such as the financing of purchases, customer service and technical support, marketing services such as advertising and promotion, technical or logistical advice, and installation and repair services. Many wholesalers even have retail operations as an additional revenue source.

Wholesale Trade

- NAICS definition:
 - 423 Merchant wholesalers – durable goods
 - 424 Merchant wholesalers – nondurable goods
 - 425 Electronic markets and agents/brokers
- Examples:
 - Wholesalers of books, automotive parts, office equipment
 - Wholesalers of groceries, alcoholic beverages, flowers
 - Agents, brokers, online business-to-business markets
- Total U.S. employment is 5.6 million, as of 2nd quarter 2004.
- The national average annual pay is \$50,318.
- Location Factors:
 - ✓ Close proximity to customers, suppliers, and markets.
 - ✓ Available labor force with truck driving and technical skills.
 - ✓ Close proximity to training resources.
 - ✓ Close proximity to transportation infrastructure.
 - ✓ Near growth (population and income) markets.
 - ✓ Close proximity to cargo hub.

Wholesale trade firms are essential to the economy. They buy large lots of goods, usually from manufacturers, and sell them in smaller quantities to businesses, governments, other wholesalers, or institutional customers. They simplify product, payment, and information flows by acting as intermediaries between the manufacturer and the final customer. They store goods that neither manufacturers nor retailers can store until consumers require them. In so doing, they fill several roles in the economy.⁵⁰ They provide businesses a nearby source of goods made by many different manufacturers; they provide manufacturers with a manageable number of customers, while allowing their products to reach a large number of users; and they allow manufacturers, businesses, institutions, and governments to devote minimal time and resources to transactions by taking on some sales and marketing functions—such as customer service, sales contact, order processing, and technical support—that manufacturers otherwise would have to perform.

Wage and salary jobs in wholesale trade are projected to grow by 11.3 percent over the 2002 to 2012 period, compared with the 14.8 percent rate of growth projected for all industries combined. Wholesale trade generally offers good opportunities for self-employment and small business ownership.

PIEDMONT TRIAD REGION'S ASSETS

As shown in the following table, wholesale trade employs over 30,000 people in the Piedmont Triad Region, accounting for 4.5 percent of the Region's jobs. The Region actually added jobs (1.8 percent gain) in this sector between 2001 and 2nd quarter 2004. The greatest job gain was by wholesalers of non-durable goods.

Wholesale Trade Employment and Wages

Industry Description	Region Employment			U.S. Employment	Average Annual Wage 2Q 2004	
	2Q 2004	2001 - 2Q 2004 Change	Location Quotient 2Q 2004	2001 - 2Q 2004 Change	Region	U.S.
Wholesale Trade	31,808	1.8%	1.05	-1.6%	\$40,865	\$50,318
Merchant Wholesalers Durable Goods (NAICS 423)	18,086	-1.3%	1.14	-5.4%	\$41,990	\$51,427
Merchant Wholesalers Nondurable Goods (NAICS 424)	10,503	10.8%	0.97	-0.5%	\$37,197	\$45,654
Electronic Markets and Agents/Brokers (NAICS 425)	3,219	-7.0%	0.86	14.7%	\$46,516	\$59,072

Source: Employment Security Commission of North Carolina, U.S. Bureau of Labor Statistics

The products that wholesalers sell can vary quite widely, and companies in the Piedmont Triad Region are no exception. Carolina Coffee, based in Greensboro, sells

⁵⁰ U.S. Bureau of Labor Statistics.

coffee beans to shops in the Southeast. Hinkle's Office Products closed its retail store and is expanding its commercial wholesale operations in Kernersville.⁵¹ These are just two examples of wholesale trade businesses in the Region. The Region's transportation network and developing logistics sector are key assets to attracting and expanding wholesale businesses.

The Region's average wage in wholesale trade was \$40,865 in 2nd quarter 2004, higher than the average wage for all jobs in the Region: \$37,637.

WORKFORCE REQUIREMENTS AND ASSETS

The activities of wholesale trade firms commonly center on storing, selling, and transporting goods. As a result, the three largest occupational groups in the industry are *office and administrative support workers* (many of whom work in inventory management); *sales and related workers*, and *workers in transportation and material moving occupations* (mostly truck drivers and material movers). In 2002, 68 percent of wholesale trade workers were concentrated in these three groups.⁵²

Many jobs in wholesale trade do not require education beyond high school. On-the-job training is most common in wholesale businesses; workers must learn inventory management databases, on-line purchasing systems, and other business operational activities. Many employers cross-train employees to perform multiple functions so that they can become familiar with multiple aspects of the business.

Four-year, technical, and community colleges offer a variety of programs for training in this sector. Those who are enrolled in diploma, certificate, or degree programs could take advantage of opportunities in the wholesale trade sector. The types of degrees that could be directly related to training required for wholesale trade occupations include Business Administration, Information Systems, Computer Programming, Electronics Engineering Technology, Office Systems Technology, and so forth.

Wholesale trade has historically offered good advancement opportunities, from the lowest skilled jobs up through management positions. For example, unskilled workers can start in the warehouse or stock room. After they become familiar with the products and procedures of the firm, workers may be promoted to counter sales, or even to inside sales positions. Others may be trained to install, service, and repair the products sold by the firm. Eventually, workers may advance to outside sales positions or to managerial positions. Wholesale trade firms often emphasize promotion from within, especially in the numerous small businesses in the industry.

⁵¹ Somerville, Leigh. *The Business Journal Serving the Greater Triad Area*. "Hinkle's to close W-S store, expand wholesale operations." March 12, 2003.

<http://triad.bizjournals.com/triad/stories/2003/03/10/daily31.html>.

⁵² U.S. Bureau of Labor Statistics.

Even in some of the largest firms, it is not uncommon to find top executives who began as part-time warehouse help.

In addition to advancement opportunities within a firm, there also are opportunities for self-employment. For example, wholesale brokers match buyers with sellers and never actually own goods; those with the proper connections can start a business with only a small investment, and perhaps even work out of their homes. Also, starting a wholesale distribution business can be easier than establishing many other kinds of businesses. Although wholesale distribution firms usually require a substantial investment, obtaining exclusive distribution rights to a successful product can be the foundation of a profitable new business.

CHALLENGES FOR THE REGION

Because wholesalers are so varied in the products they sell and the markets that they sell to, there is currently very little interaction among the Region's companies to discuss common needs and ideas. Wholesalers may have similar problems with regulations, workforce retention, or road conditions, and as a group, they may be better able to find ways to address these issues.

The business of wholesale trade is inextricably linked to logistical functions. Supporting these linkages through industry trade groups or forums helps to ensure that needs of both sides are being met.



Target Clusters:

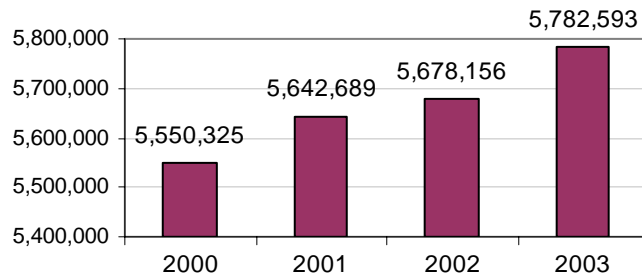
FINANCE AND INSURANCE

FINANCE AND INSURANCE

INDUSTRY DESCRIPTION AND TRENDS

The finance and insurance industry is driven by economic growth, both domestically and globally. National employment in this sector grew 15.1 percent between 1996 and 2003, compared to 8.5 percent for all jobs.⁵³ Finance and insurance businesses accounted for 7.7 percent of gross domestic product (GDP) in 2002, with the sector growing faster than the GDP every year between 2000 and 2003.⁵⁴ As shown in the chart below, employment in the finance and industry sector has been so strong that it has grown even during the past recession where jobs were being shed in other sectors. BLS expects employment in finance and insurance to grow by 10.1 percent, or 590,000 jobs, between 2002 and 2012.

**U.S. Finance and Insurance Employment
(Private Sector)**



Source: U.S. Bureau of Labor Statistics

The finance industry is quite diverse, with retail operations that serve consumers and business owners, investment banking operations that serve larger institutions, and secondary markets that buy and sell financial instruments based on risk tolerance. The insurance industry has a similar market setup, with various risk management products sold to households, businesses, and institutions, as well as secondary markets for re-insurance and other instruments.

Jobs in finance and insurance have high average wages and provide good opportunities for advancement. Although some occupations are facing pressure from global outsourcing, core competencies and innovation efforts are kept within the United States, because these are the areas that firms can maintain their competitive edge. Also, there are still a large number of occupations, such as retail banking, that require face-to-face interaction and cannot be outsourced.

⁵³ U.S. Bureau of Labor Statistics.

⁵⁴ U.S. Bureau of Economic Analysis. <http://www.financialservicesfacts.org/financial2/today/gdp/>

Finance and Insurance

- NAICS definition:
 - 522 Credit intermediation & related activity
 - 523 Financial investment & related activity
 - 524 Insurance carriers & related activities
 - 525 Funds, trusts, & other financial vehicles
- Examples:
 - Commercial banks, savings institutions, credit unions
 - Credit cards and consumer lending, mortgage banking
 - Investment banking, securities and commodities trading, portfolio management
 - Insurance carriers, claims adjusters, agencies and brokerages
 - Pension fund management, trust fund management, real estate investment trusts
- Total U.S. employment is 5.8 million, as of 2nd quarter 2004.
- The national average annual pay is \$60,912.
- Location Factors:
 - ✓ Quality of life.
 - ✓ Population center.
 - ✓ Highly educated workforce.
 - ✓ Strong telecommunications infrastructure.

PIEDMONT TRIAD REGION'S ASSETS

The finance and insurance sector employs nearly 30,000 people in the Piedmont Triad Region, making up 4.1 percent of all of the Region's jobs. Over 80 percent of those jobs are located in Forsyth and Guilford Counties. Although there were significant job losses in the insurance sub-sector since 2001 (14.9 percent), banks (Credit Intermediation and Related Activity sub-sector) added nearly 2,000 jobs (12.7 percent) during this period.

Finance and Insurance Employment and Wages

Industry Description	Region Employment			U.S. Employment	Average Annual Wage 2Q 2004	
	2Q 2004	2001 - 2Q 2004 Change	Location Quotient 2Q 2004	2001 - 2Q 2004 Change	Region	U.S.
Finance and Insurance Services	28,766	0.4%	0.92	2.7%	\$48,075	\$60,912
Credit Intermediation & Related Activity (NAICS 522)	16,544	12.7%	1.09	8.1%	\$44,753	\$49,824
Financial Investment & Related Activity (NAICS 523)	1,238	-8.2%	0.30	-8.9%	\$98,730	\$116,220
Insurance Carriers & Related Activities (NAICS 524)	10,588	-14.9%	0.92	0.9%	\$47,192	\$55,500
Funds Trusts & Other Financial Vehicles (NAICS 525)	396	140.0%	0.81	-1.6%	\$52,057	\$69,930

Source: Employment Security Commission of North Carolina, U.S. Bureau of Labor Statistics

Average wages in finance and insurance were \$48,075 for the Region in 2nd quarter 2004. While this is lower than the national average, the sector still provides relatively high wages and good job advancement opportunities. However, due to the heavy concentration of existing jobs in Guilford and Forsyth Counties, future growth in finance and insurance is likely to be focused on these counties.

Citi Cards, Bank of America, and American Express have substantial employment in customer service centers in the Piedmont Triad Region. Citi Cards, the largest provider of credit card products, is planning a \$35 million expansion to increase its current employment in Guilford County by about 1,000. Although Wachovia merged with First Union in 2001 and moved its headquarters from Winston-Salem to Charlotte, the company still employs about 3,000 people in Winston-Salem. BB&T Corporation is currently headquartered in Winston-Salem, and a number of community banks have significant operations throughout the Region.

The Region has a notable presence of multiple types of insurance providers. GMAC Insurance sells automobile insurance and employs over 1,000 people in Winston-Salem. United HealthCare of North Carolina, a subsidiary of UnitedHealth Group, provides health insurance and also employs over 1,000 people in the Triad Region. Jefferson-Pilot Corporation is a major life insurance provider and is based out of Greensboro. Aetna U.S. Healthcare employs about 1,200 people in High Point. In addition, there are a number of agencies that sell various types of insurance on behalf of providers.

WORKFORCE REQUIREMENTS AND ASSETS

The finance and insurance sector has some of the most highly educated and skilled workers of any industry. Occupations within finance and insurance generally fall into

the categories of management, sales, financial and technical analysts, administration, and customer service. The health insurance professions also require people with nursing (RN/BSN) and other medical-related backgrounds. Most, although not all, jobs require at least a bachelor's degree. Certain administrative and customer service jobs, including bank tellers and insurance claims processing clerks, do not require a four-year degree. However, the finance and insurance sectors have been revolutionized by technological advancements in data processing and customer management systems. Learning how to use new software applications is vital to enhancing job advancement opportunities.

Community colleges within the Region provide basic education that is suitable for the positions that do not require a four-year degree. Associate degrees, diplomas, and certificates are awarded by the Region's community and technical colleges in the following areas:

- Accounting
- Banking and Finance (Randolph CC only)
- Business Administration
- Information Systems

It should be noted that advancement into higher paying positions will certainly require a four-year degree. Many of the Region's four-year colleges and universities have bachelors and even graduate programs in business, accounting, economics, and management. Wake Forest University's Babcock School of Management was recognized by *BusinessWeek* as one of the top 50 full-time MBA programs globally in 2004 and has similar standing in other business school rankings.

Finance and insurance jobs are not limited to people with business-oriented degrees. People enter the finance and insurance sectors from a variety of academic disciplines. Many analysts are hired who have science and engineering degrees, because they are valued for their quantitative and analytical abilities.

CHALLENGES FOR THE REGION

The finance and insurance sectors are subject to frequent consolidation activity, which often results in job cuts after the merger or acquisition. Such activity is healthy for the industry and frees up resources to create new and sometimes competing products and services. To prevent job cuts from having a long-term effect on employees, the Region should develop this sector to the fullest possible extent in terms of breadth of services. This means focusing not only on banks, but also credit cards, other types of lending, claims adjusters, various types of insurance, and portfolio management. Skills are often portable among firms even if they offer different types of services.

The Region's finance and insurance sector also lacks a business group for meeting to discuss common needs and issues. This does not have to be solely at the chief

executive level; department heads can also meet to discuss topics such as human resources, technology needs, or education and training. The Region's universities, particularly their management programs, are resources that should be tapped for ideas as well as students.



Target Clusters:

FOOD PROCESSING

FOOD PROCESSING

INDUSTRY DESCRIPTION AND TRENDS

Food Manufacturing (NAICS 311) is a very broad category that includes a number of manufacturing, milling, refining and processing sub-sectors. According to the Department of Commerce, the value of shipments in the processed food industry has grown steadily from 1997 to 2003, by 9 percent to \$461.6 billion.⁵⁵ The industry is typically shielded from downturns in the economy, because households continue to consume food even in tough economic times. The Bureau of Labor Statistics expects jobs in food processing to grow 10.5 percent between 2002 and 2012.⁵⁶ Local economic developers should concentrate on the high-end niches in these categories that provide well-paying, higher skill jobs without the workplace hazards characteristic of certain food processing employment. The sub-sectors that have higher value-added products include pet food manufacturing, snack food products, prepared food, and other specialty foods.

Households continue to be strapped for time and demand quick and easy meals. However, health is joining convenience as the primary criteria for consumers and drivers for new product innovations. Drinkable yogurts, sugar substitutes, and “pre-prepared” foods have experienced double-digit growth rates.⁵⁷ Consumers are willing to pay two to three times the cost for a product with added convenience.⁵⁸ Such foods include grab-and-go snacks and pre-marinated chicken. Foods that emphasize freshness and quality are also in high demand. Gourmet cheeses, specialty breads, pre-sliced fruits and vegetables, and salad bags provide convenience without sacrificing health.

Dog and cat food shipments increased by 13 percent to \$9.7 billion from 1997 to 2001.⁵⁹ This industry has seen growth partly due to an increase in pet ownership. Seven large companies dominate the dog and cat food industry, holding 86 percent of the market: Nestle, Iams, Hill’s Pet Nutrition, Masterfoods, Ol’Roy, Del Monte, and Nutro Products.⁶⁰ Because this sub-sector is so concentrated, it may be difficult for the Region to create or attract jobs in that market. However, the sub-sector’s

⁵⁵ Department of Commerce, International Trade Administration. “2004 Industry Outlook for Processed Foods.” http://www.ita.doc.gov/td/ocg/outlook_food04.pdf. Accessed February 2, 2005.

⁵⁶ <http://www.bls.gov/emp/emptab21.htm>.

⁵⁷ Partos, Lindsey. *FoodProductionDaily.com*. “Consumer convenience drives product development.” January 28, 2005. <http://www.foodproductiondaily.com/news/news-ng.asp?n=57684-consumer-convenience-drives>. Accessed February 2, 2005.

⁵⁸ Arabe, Katrina. *Industrial News Room*. “What’s Cooking in the Food Processing Industry.” February 28, 2003. http://news.thomasnet.com/IMT/archives/2003/02/whats_cooking_i.html. Accessed February 2, 2005.

⁵⁹ Department of Commerce, International Trade Administration. “Overview of the Dog and Cat Food Industry.” June 2004. http://ita.doc.gov/td/ocg/petfood_overview04.pdf. Accessed February 2, 2005.

⁶⁰ Ibid.

relatively high wages make it worth watching for growth opportunities. As the Iams' plant in rural Vance County (north of Raleigh) shows, these firms often choose rural locations.

Important location factors for food processing include land costs, labor costs, natural gas costs and accessibility, transportation networks, and proximity to major highways. Logistical support is vital to the industry's operations.

Food processing facilities typically use a large volume of water to process food products and clean plant equipment, yielding large amounts of wastewater that must be treated (typical use for a medium-size facility can be approximately 200,000 gallons per day for incoming clean water and outgoing wastewater, respectively). As a result, food-processing plants generally require storage ponds or tanks for wastewater treatment, and some food processing facilities have on-site wastewater treatment processes that effectively and efficiently remove unwanted waste byproducts from the water. The water is then sent to municipal water treatment facilities for additional cleaning and reintroduction into the water supply. Such a process helps to conserve local water resources.

Food Processing

- NAICS definition:
 - 311 Food Manufacturing
- Examples:
 - Snack foods – chips, cookies, etc.
 - Dog and cat food
 - Prepared foods – frozen dinners, pre-sliced vegetables
- Total U.S. employment is 1.5 million, as of 2nd quarter 2004.
- The national average annual pay is \$33,742.
- Location Factors:
 - ✓ Available, low-cost workforce; high education attainment not a prerequisite for most production occupations.
 - ✓ Large supply of affordable water.
 - ✓ Access to effective distribution infrastructure.
 - ✓ Large supply of low-cost land and low-rent buildings.
 - ✓ Well-developed utilities infrastructure.

PIEDMONT TRIAD REGION'S ASSETS

The Piedmont Triad Region employs about 3,600 people in food processing. Nearly half of that employment is in poultry processing plants (Animal Slaughtering and

Processing sub-sector), where work conditions can be difficult and wages are not terribly high. As mentioned previously, The Piedmont Triad Region should seek opportunities for growth in the higher value-added areas of food processing, where wages are higher and working conditions are better.

The Region lost almost 12 percent of its jobs in food manufacturing between 2001 and 2nd quarter 2004. Much of this was due to job losses in bread and bakery products manufacturing.

Food Processing Employment and Wages

Industry Description	Region Employment			U.S. Employment	Average Annual Wage 2Q 2004	
	2Q 2004	2004 Change	Quotient 2Q 2004	2001 - 2Q 2004 Change	Region	U.S.
Food Manufacturing (NAICS 311)	3,645	-11.9%	0.46	-5.3%	\$28,450	\$33,742
Animal Food Manufacturing (NAICS 3111)	78	1.3%	0.30	-7.5%	\$35,676	\$41,647
Sugar/Confectionery Product Manufacture (NAICS 3113)	48	-5.9%	0.12	-14.9%	\$20,378	\$37,709
Fruit Vegetable & Specialty Foods Mfg (NAICS 3114)	140	-3.4%	0.15	-12.0%	\$39,733	\$35,196
Dairy Product Manufacturing (NAICS 3115)	266	-8.9%	0.38	-3.3%	\$39,247	\$40,630
Animal Slaughtering and Processing (NAICS 3116)	1,739	-0.3%	0.64	-2.5%	\$26,342	\$27,576
Bakeries and Tortilla Manufacturing (NAICS 3118)	1,045	-34.4%	0.69	-6.1%	\$22,784	\$29,821
Other Food Manufacturing (NAICS 3119)	218	-6.8%	0.26	2.1%	\$36,332	\$43,557

Source: Employment Security Commission of North Carolina, U.S. Bureau of Labor Statistics

As a target cluster, food processing is meant to provide job opportunities to those without specialized skills or high education levels, particularly in the rural areas of the Region. Food processing businesses are located in all counties in the Region except for Montgomery County. For example, Yankee Commodity Foods recently acquired a building in Randolph County to operate a canned vegetable factory. The vegetables come from farms within North Carolina, further supporting the state's economy.

WORKFORCE REQUIREMENTS AND ASSETS

Production workers account for nearly 50 percent of all food-processing jobs, most of which require little formal education or training. In fact, many occupations can be learned in a few days. As such, graduation from high school is preferred but not always required for food processing employment. In general, new hires start as helpers to experienced workers and learn skills on the job. Even though basic

operational knowledge of most machines is learned quickly, employees generally need several years of experience to keep the equipment running smoothly, efficiently, and safely.

Some food processing workers need specialized training and education. Inspectors and quality control workers, for example, are often trained food-safety specialists, and may need a certificate to secure employment. Occupations that are research-focused, such as food technologists and scientists, usually require a master's or doctoral degree.

Requirements for other jobs are similar to most professional industries. Employers usually hire high school graduates for secretarial and other clerical work, while graduates with postsecondary degrees are sought for research, technical, diagnostic, and related positions. College graduates or highly experienced workers are preferred for middle management or professional jobs in personnel, accounting, marketing, or sales.⁶¹

The Region's workforce development institutions offer a number of training programs in basic business management, human resources, industrial maintenance, computers, and clerical skills needed for many food processing support positions. Alamance, Guilford, and Montgomery Community Colleges offer culinary technology programs, which prepare students to work in entry-level jobs in food service occupations. Many of these skills are portable to food manufacturing. However, there are no specific programs in food science, nutrition, food manufacturing technology, and food-borne disease at the two-year degree level. At the four-year degree level, UNC-Greensboro's Department of Nutrition and North Carolina A&T University's Department of Human Environment and Family Sciences (within the School of Agriculture and Environmental Sciences) offer undergraduate and graduate programs in food science and nutrition.

CHALLENGES FOR THE REGION

The greatest challenge for this target cluster is to move from low-value production (poultry processing dominates) to high value-added products. There will need to be considerable efforts made to fully develop the target cluster. Linkages among food processing companies, between food processing companies and suppliers, and any sort of industry support infrastructure are yet to be established.

While there is some research activity at UNC-Greensboro and North Carolina A&T University in nutrition and food safety, the only connection to food processing companies appears to be related to poultry processing. University researchers should seek to partner with companies to achieve mutual benefits in food safety and product development.

⁶¹ U.S. Department of Labor, Bureau of Labor Statistics, accessed from <http://www.bls.gov/oco/cg/cgs011.htm> on February 8, 2005.



Target Clusters:

ARTS

ARTS

INDUSTRY DESCRIPTION AND TRENDS

“Arts” is a very broad term that includes multiple types of media and activities. Americans for the Arts identified six creative industries in which arts could be categorized: museums/collections; performing arts; visual/photography; film, radio, and TV; design/publishing; and schools/services.⁶² There are many different types of organizations involved in arts. They include: arts-centric businesses, non-profit support organizations, and organizations that produce art (such as symphonies, theaters, and museums).

Nationally, there were 548,000 arts-related businesses, employing 2.99 million people in 2004.⁶³ However, that is a conservative number, because the data source, Dun and Bradstreet, under-represents non-profit arts organizations and does not include individual artists and unincorporated arts entities.

Arts

- Definition:
 - Museums and collections
 - Performing arts
 - Visual arts and photography
 - Film, radio, and TV
 - Design and publishing
 - Schools and services

- Total U.S. employment is about 3 million as of 2004.

- Location Factors:
 - ✓ Areas with affordable housing.
 - ✓ Strong quality of life.
 - ✓ Active and nurturing arts community.
 - ✓ Colleges and universities.

The arts have traditionally been regarded as a cultural amenity that has a positive impact on the quality of life in a community. However, the arts can also be regarded as a viable component of economic development. There are artists who earn a living in the business world, either through freelancing or steady employment, doing or

⁶² http://www.artsusa.org/aboutus/creativeindustries_correction.asp.

⁶³ http://www.artsusa.org/aboutus/creativeindustries_correction.asp.

design work for profit-driven firms. Individual artists are finding new markets through the Internet, arts festivals, and other direct sales routes. While the economic impact of the arts in terms of direct and indirect employment (the multiplier effect) is likely to be limited in its reach, the arts play an important role for promoting entrepreneurship and self-sufficiency.

PIEDMONT TRIAD'S REGION ASSETS

According to the Americans for the Arts, the Greensboro--Winston-Salem--High Point metropolitan area ranks 41st out of 276 metro areas for its number of arts-related businesses. There were 2,234 of such businesses in 2004, but as mentioned previously, this number is conservative, because it excludes individual artists and unincorporated arts entities. The Greensboro--Winston-Salem--High Point metropolitan area had 1.79 arts-related businesses per 1,000 residents, ranking 107th in the nation for its per capita arts businesses.

The Piedmont Triad Region has a tremendous number of assets in the arts; however, they tend to be fragmented by location and organization. A few notable examples of the Region's arts assets include:

- The community of Seagrove in Randolph County has history of pottery-making. Over 80 potteries are located there, and many belong to the Seagrove Area Potters Association, which helps to organize and promote the potters.
- Downtown Winston-Salem also has a vibrant arts community, where a number of galleries, artist studios, and performing arts venues are located. The community is supported by the Arts Council of Winston-Salem and Forsyth County. Greensboro also has its United Arts Council, but the city is not quite as developed in its arts assets.
- The North Carolina School of the Arts is also located in Winston-Salem and has well regarded arts programs at the high school, undergraduate, and graduate levels. It has joined with the Region's three other public universities and two largest community colleges to establish the National Institute of Design, to link curricula and allow students to train in interdisciplinary design.
- The Piedmont Triad Film Commission is a regional organization created to attract more film-making to the Region, and the RiverRun International Film Festival, put on by the North Carolina School of the Arts, is in its second year. Film-making activities are fairly young and still developing in the Region. Breadth of physical landscape is a key location criterion for film-making, and the Region and many parts of the state have good access to mountains and bodies of water.

As a target cluster, the arts have the potential to benefit the Region from more than a job creation perspective. The arts serve a cultural function that provides a needed outlet for other residents of the Region. The population group that Richard Florida has defined as the “Creative Class” includes not just artists, but anyone who uses their mind as a productive tool in their jobs. Professionals like lawyers, architects, and engineers are part of this group. Developing the arts as a target cluster can also attract these highly educated, highly paid professionals to a metropolitan region.

CHALLENGES FOR THE REGION

Market Street conducted a focus group for those in the Piedmont Triad Region who were involved with the arts. Many felt that there is tremendous opportunity to transform the Region into an arts destination. The main issues identified included:

- There is a lack of coordination among arts organizations and across cities to harness a larger market.
- The Region needs to identify its target market and niche, and define the Region’s unifying theme.
- The uniqueness of individual communities must not be sacrificed for regional branding.
- There needs to be a better transition process from student to professional, and more collaboration between universities and professionals.
- Leadership development is needed, particularly in younger people.

The Region’s arts community may consider partnering with community colleges, management programs at universities, or other resources to develop a short training program to teach artists the business side of the field. This would include courses in marketing, starting a business, and managing finances.



Areas of Emphasis

AREAS OF EMPHASIS

In addition to target clusters, *Market Street Services* has identified “areas of emphasis” for the Piedmont Triad Region to work on to increase job growth opportunities. These are components of economic development that cut across many sectors and should be nurtured and developed into important tools to support the local economy and create jobs.

TOURISM

The tourism industry is a means for many communities to leverage local recreational and cultural assets to help stimulate job growth in an otherwise shaky economy. Tourists and the dollars they spend in a community can bolster area tax receipts, bring business to local stores and restaurants, and lead to the development of amenities that benefit existing residents’ quality of life as well. Making a locality attractive for tourists has the corresponding effect of augmenting the area’s appeal for relocating businesses and workers. After all, every visitor to an area is also a potential resident, business owner or marketing tool advertising the community’s strengths to friends, relatives and co-workers.

Tourism is an economic development tool, because it attracts people, and their money, to a region. The money tourists spend often stays in the local economy and can help support many of an area’s service-oriented businesses. Locations that are successful tourist destinations can also serve as marketing tools towards other prospective businesses. Because businesses looking to relocate or expand are increasingly concerned about quality of life factors such as recreational and cultural activities, an area that has popular tourist destinations will innately sell itself as a location where people want to be.

While many tourism-related occupations are relatively low paying, they nevertheless offer vocational and employment choices for localities with lower educational attainment levels. By potentially drawing frustrated jobseekers back into the labor force, these positions increase local incomes, ease the burden on social service agencies and give formerly displaced workers a much-needed boost of confidence and self-esteem. These jobs also provide reliable summer work for local teenagers, hold the potential to support an area’s immigrant and bilingual communities, and can often serve as entry points for future advancement in tourism-related companies.

The Piedmont Triad Region has wide range of tourism assets that encompass outdoor recreation, arts and culture, sporting events, dining and shopping, and entertainment. However, very few of these assets are marketed on a regional basis, thus limiting their potential impact. Greensboro and Winston-Salem each have their own Convention and Visitors Bureaus, and many of the other counties have their

own tourism entities as well. It does not appear that these organizations work together on marketing efforts.

Integrated tourism development can be a positive economic development tool if the following issues are addressed:

- Tourism resources can be used more effectively when they are pooled to market a larger area. It is not just about a larger amount of marketing dollars; marketing a larger area means that there are more assets to attract visitors.
- Conventions, events, and other business-related travel should be included in an overall tourism strategy. There is tremendous competition for these types of meetings and overcapacity in the convention business, so this area should not be the only focus of the tourism strategy.
- As a whole, the Piedmont Triad Region has not established a brand or identity to market to visitors. While there is much work to be done to achieve consensus on this issue, regional branding represents an opportunity going forward.
- The Region must identify niches and target markets. By trying to be everything to everyone, the Region is at risk of not effectively reaching anyone.
- The full range of tourism development includes organizations that are not primarily tourism focused, but are affected by tourism. One example is the Piedmont Land Conservancy, which has a role in protecting and providing the natural resources that constitute the Region's outdoor recreational activities.
- In the process of establishing a brand, the Region must still be able to preserve and cherish the identity of individual communities. The Region's individual cities and counties need to learn to balance self-promotion with a larger community or regional context.
- Tourism is not just about marketing, but also requires product development. Multi-day stays have substantially more economic impact than one-day trips, but the local tourism infrastructure must enable visitors to stay longer. Hotels, restaurants, and package trips are examples of infrastructure missing in some of the Region's communities. Visitors need to be able to have an integrated travel experience from beginning to end.

HOMELAND SECURITY AND DEFENSE

With national increases in the defense budget due to homeland security needs and conflicts abroad, the Piedmont Triad Region should look for opportunities to benefit from growth in defense spending. The Region's universities have been able to secure some federal funding related to defense and homeland security. Most notable are two projects: the Center for Advanced Materials and Smart Structures at North Carolina A&T University, and the Guilford Genomic Medicine Project. Between 1997 and 2003, the Center for Advanced Materials had attracted nearly \$9 million in federal dollars. In May 2004, it was awarded \$2.7 million from the Department of Defense to find methods to predict the failure of materials under stress.⁶⁴ As mentioned previously, the Guilford Genomic Medicine Project is a collaborative project among UNC-Greensboro, Moses Cone Hospital, and Duke University to do genetic research and identify new approaches to disease prevention and treatment. It is funded by a \$3.4 million grant from the Department of Defense.

According to Russ Lea from the University of North Carolina system, the state's public universities have strengths in three areas that relate to homeland security:

- Agriculture – specifically, food processing and food safety
- Textiles – specifically, special protective fabrics
- Public health – specifically, detecting chemical, biological, or radiological threats

North Carolina A&T University has done research on food safety, and UNC-Greensboro has experience in detection of pollutants and bioterrorism.⁶⁵ Both universities should look to partner with private firms to speed the research process and improve chances for commercialization.

Private companies are also looking for ways to secure defense funds. The Region's firms secured over 200 federal contracts worth a total of \$163.3 million in the first nine months of 2003.⁶⁶ While those are not all defense related, some private firms have been successful in building refueling trucks, manufacturing military clothing, and developing sensors. One area with strong growth prospects is emergency communication technology and products, which can serve local and state governments, as well as hospitals, universities, and other institutions.

The Piedmont Triad Homeland Security Alliance was formed in September 2003 to discuss ideas and look for opportunities in government procurement and technology development. The group includes leaders from universities, economic development agencies, and various industries, like pharmaceutical research, electronics

⁶⁴ Normington, Mick. *The Business Journal Serving the Greater Triad Area*. "A&T engineering professors eye spot at GSO research park." July 14, 2004.

⁶⁵ Catanoso, Justin. *The Business Journal Serving the Greater Triad Area*. "UNC pitching Homeland Security." May 23, 2003.

⁶⁶ Latest available data from the North Carolina Small Business Technology and Development Center.

manufacturing, and physical security. Although there does not appear to be much recent activity from the group, the Alliance should continue its collaborative efforts. The group can help the Region develop a specific focus or specialty with respect to securing homeland security and defense grants and contracts.

The Region's businesses and economic developers must keep in mind that homeland security and defense is just one of multiple possible markets for their products. While businesses should look for opportunities in government procurement, it is risky to become overly reliant on that source of revenue.

ENTREPRENEURSHIP AND SMALL BUSINESS DEVELOPMENT

Efforts to nurture local entrepreneurs and fledgling businesses are also crucial components of any local economic development strategy. Including the self-employed, small businesses account for half of the private, non-farm U.S. workforce, pay 44 percent of the total U.S. private payroll, and generate over 50 percent of the nation's private Gross Domestic Product (GDP).⁶⁷ Small businesses also contributed the largest share of the millions of new jobs created during the late 1990s.

To focus solely on the recruitment and development of target sectors – and even the growth of the Piedmont Triad Region's existing large businesses – would do a disservice to the community's long-term economic well-being. Local residents and businesspeople with good ideas and a desire to learn the ins-and-outs of running a successful company should be provided the support they need to get their enterprises off the ground. Whether it is a high-growth company or a lifestyle business, entrepreneurship is a path to self-sufficiency, and local economic developers should ensure that potential job-creating businesses are given every chance to take root and grow. Supporting entrepreneurship in a community is a component of economic development that involves both a cultural shift and the dedication of resources.

During the Regional Input component of the *Regional Vision Plan* process, *Market Street* spoke with numerous Piedmont Triad Region entrepreneurs and small business development service providers to understand the opportunities and obstacles to starting and growing a business in the Region. The results of this analysis are as follows:

- The entrepreneurial environment in the Region is still developing. There are many lifestyle businesses, but not as many high growth, "fundable" businesses. However, the Region's strong quality of life, affordable cost of living, and central location make it a place worth staying to start a business.
- The network of service providers is also developing and is a result of only five years of work. There is a breadth of services provided, but there is a lack of

⁶⁷ U.S. Small Business Administration. <http://www.sba.gov/advo/stats/sbfaq.txt>. Accessed February 8, 2005.

depth. An advocacy role needs to be established to represent the needs of entrepreneurs and pull in information and resources from the various service providers, universities, governments, and economic development organizations.

- Entrepreneurs need to improve their own networks. Currently, the Piedmont Triad Entrepreneurial Network is the main organization for entrepreneurial support, but it lacks the resources to host more industry-focused roundtables, mentoring groups, and CEO-level interactions.
- There is a lack of importance and resources placed on small businesses by the government and media. The Region's chambers of commerce are not doing much to support entrepreneurship.
- The Region's entrepreneurial culture can be energized by attracting people to the Region and keeping them here. Examples include experienced entrepreneurs from other parts of the country and young professionals.

These issues highlight the Region's challenge and need for more coordination of resources, information, and networks related to entrepreneurship and small business development. Lifestyle businesses have different support needs than high growth companies, and the Region will need to determine the amount of resources to devote to each. *Market Street* will make recommendations focused on enhancing and expanding the Piedmont Triad Region's entrepreneurial and small business development infrastructure in the upcoming *Regional Vision Plan*.

EDUCATION

The education system was mentioned by respondents in the Regional Input process as one of the Piedmont Triad System's greatest strengths, particularly its two and four-year colleges and universities. In addition to the K-12 systems, the Region's educational system includes ten four-year institutions, the North Carolina School of the Arts, two bible colleges, nine community colleges, and additional unique assets such as the Center for Creative Leadership.

Wake Forest University is the predominant university in the Region with national draw and recognition; the other four-year institutions are much more regionally based. The key to harnessing the strength of the Piedmont Triad Region's colleges and universities is maximizing their collective impacts through collaborative activities and establishing an education-driven culture. This critical mass of educational assets has the potential to provide the following economic development benefits:

- Serve the necessary function of improving the educational attainment of residents in the Region.

- Attract businesses and smart people to the Region who want to tap into its educational resources.
- Retain businesses and smart people in the Region who have a connection to educational resources, even after graduation.
- Attract research funding from outside of the Region, including federal funding.
- Help existing businesses in the Region become more competitive by sharing technology, product, and process improvements.
- Be an important component of the regional economy in terms of employment and capital investments.

To fully achieve these economic development benefits requires the educational institutions to work with each other, and with businesses in the Region, to seek opportunities and address gaps. Many of the Region's higher education institutions understand their role in economic development and are beginning to collaborate more. This cross-institutional information and resource exchange could be increased and expanded to include universities and other research institutions outside of the Region. The Region's community colleges and universities should not regard themselves as isolated pods; any opportunity to increase the flow of information and idea generation among all regional higher education institutions is a way to strengthen the Region's educational and research base.



Conclusion

CONCLUSION

Target clusters are not just for traditional business recruitment. Developing clusters is a much more holistic economic development approach, which includes business recruitment as just one component. Successfully developing target clusters must include a combination of the following steps:

- ⇒ Supporting existing businesses by understanding their needs and addressing the obstacles to their growth and expansion.
- ⇒ Establishing or enhancing communication networks to allow information and idea exchange within the cluster.
- ⇒ Identifying and addressing gaps in education and training programs.
- ⇒ Fostering entrepreneurship by ensuring that the support infrastructure – such as financing, one-stop shops, and mentors – is meeting the needs of entrepreneurs.
- ⇒ Creating a living and working environment that is attractive to both businesses and workers within the cluster.

Having target clusters does not mean ignoring other opportunities that come along. Creating a positive business environment includes factors like education and workforce development, infrastructure, business costs, and quality of life. A strong business climate will attract and create opportunities for growth in many business sectors.

The target clusters recommended in this document are meant to focus economic development resources on the business sectors that have strongest opportunities for growth, provide good wages, and leverage the Region's existing assets. The first tier of targets is promising for all parts of the Region, and the second tier of targets is more focused on growth in specific areas of the Region. The arts, which represent the third tier, is an emerging target cluster that has potential to attract other types of people to the Region. Finally, *Market Street* has identified areas of emphasis in which to seek opportunities for growth in a more holistic way.

This *Target Cluster Analysis* provides a description of each target cluster, the Region's assets, and challenges to face in developing the target clusters. The strategic planning process moves to the next phase, the *Regional Vision Plan*, which will include goals and specific action steps for growing the recommended target clusters.