Report:
ENVIRONMENTAL SCAN

AngelouEconomics
technology-based economic development

Presented to:
CENTRALINA COUNCIL OF GOVERNMENTS

www.angeloueconomics.com

MAY 2006

Report 2:
Environmental Scan

TABLE OF CONTENTS

INTRODUCTION 1

ASSESSMENT 2

SWOT ANALYSIS 51

TARGET NICHE SECTORS 70

Draft Report
May 2006

Presented to:

Centralina Council of Governments

Developed by:

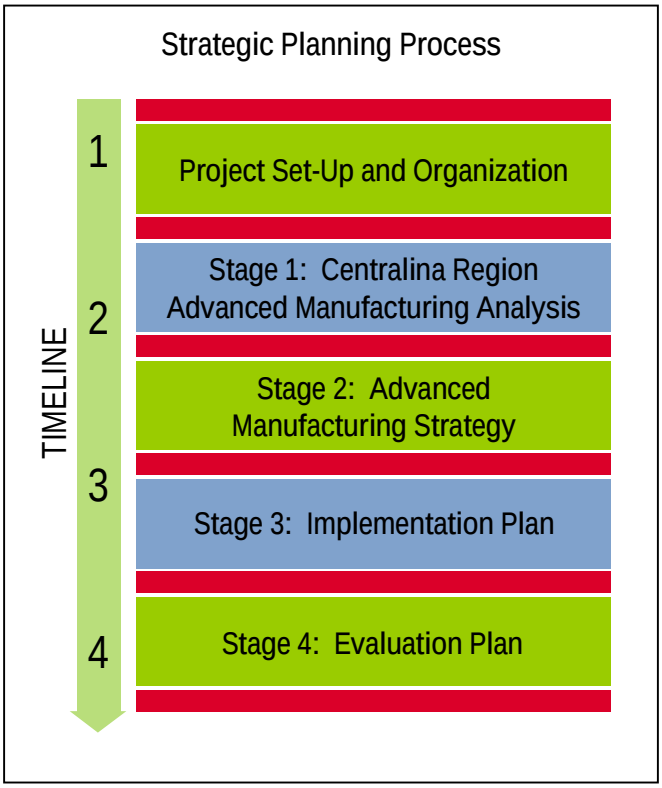
AngelouEconomics
technology-based economic development

RTI INTERNATIONAL

Introduction

This Report 2 completes the Stage One phase of the feasibility study. The objective of this report is to identify the advanced manufacturing clusters in the Centralina region, to assess their current condition, and to highlight the strengths and weaknesses of the region in support of an advanced manufacturing economy in Centralina. Finally, we present detailed profiles of the target niche sectors and the assets in the region that can or do support them.

This report is one of several reports that will drive toward the implementation of an Advanced Manufacturing Strategy for Centralina:



The intent of the next stage of the project is to present recommendations to Centralina that will allow it to capture emerging opportunities or apply best practices in advanced manufacturing.

The Centralina Regional Comprehensive Economic Development Strategy (CEDS) report, completed in 2005, recommended that the environment for manufacturing in the region could be enhanced by promoting innovation and incorporating advanced manufacturing in all relevant business sectors. The CEDS proposed that the region perform a feasibility analysis to determine how a center for advanced manufacturing could assist the region's growth. This Feasibility Study will fulfill that recommendation.

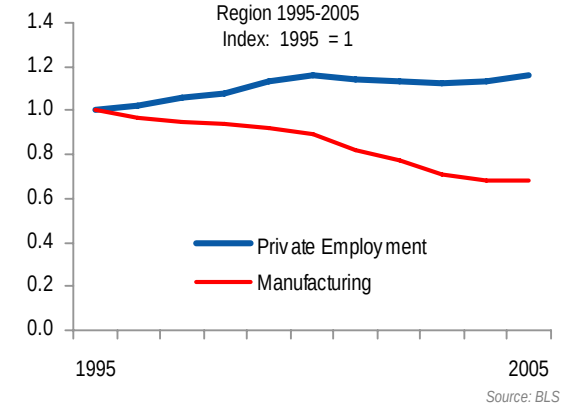
Centralina Region

Overview

The study area encompasses 12 counties with a population of 2 million people. Over the past fifteen years the area has grown by 41.7%, outpacing the nation and both North and South Carolina. Residents enjoy an above average median household income, with strong historical growth. Educational attainment is on par with the nation and above the Carolinas, indicating that the area has access to a skilled workforce. The unemployment rate is low and has the potential to create a tight labor supply should it drop any lower. The combination of these characteristics lends itself to a high quality of life for residents.

The employment landscape has shifted significantly over the past 10 years in the 12 county area. From 1995 to 2005 manufacturing employment has declined by 60,000 or 32%. Much of this loss is concentrated in traditional manufacturing industries like textiles and fabric mills. Over the same period, total private employment added 112,000 or 15.8%. Growth in Professional Services and Financial Activities has accounted for much of this growth.

EMPLOYMENT GROWTH



Source: BLS

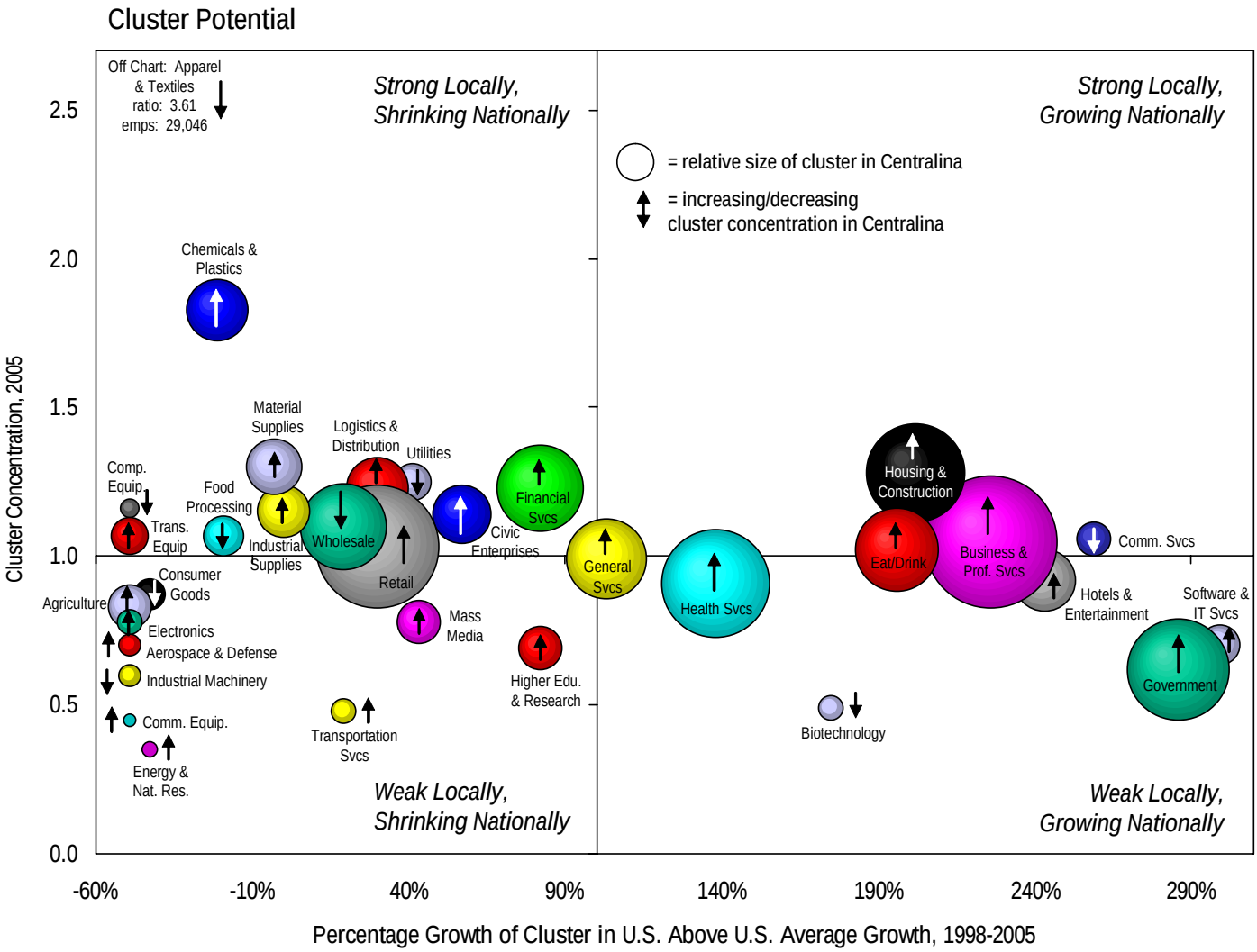
At a Glance

2005	Region	South Carolina	North Carolina	United States
Population	2.0 m	4.2 m	8.6 m	296 m
Pop Growth '90-'05	41.7%	21.3%	30.4%	19.1%
Median HH Income	$49,800	$40,900	$43,300	$46,300
Growth in HH Income '90-'05	64.5%	55.4%	62.5%	54.0%
% Bachelor's Degree or higher	27.5%	24.8%	25.3%	27.7%
% of Adults age 25-44	30.5%	27.9%	29.2%	28.2%
Unemployment rate	5.4%	6.8%	5.2%	5.1%
Private Employment	821,300	1.5 m	3.9 m	110.2 m
Emp. Growth 95-05	15.8%	13.3%	11.7%	13.8%
Manufacturing Emp	127,200	262,000	566,600	14.2 m
Mftg Emp. Growth 95-05	-32.2%	-24.5%	-31.0%	-17.6%

Industry Cluster Strength: 12 County Region

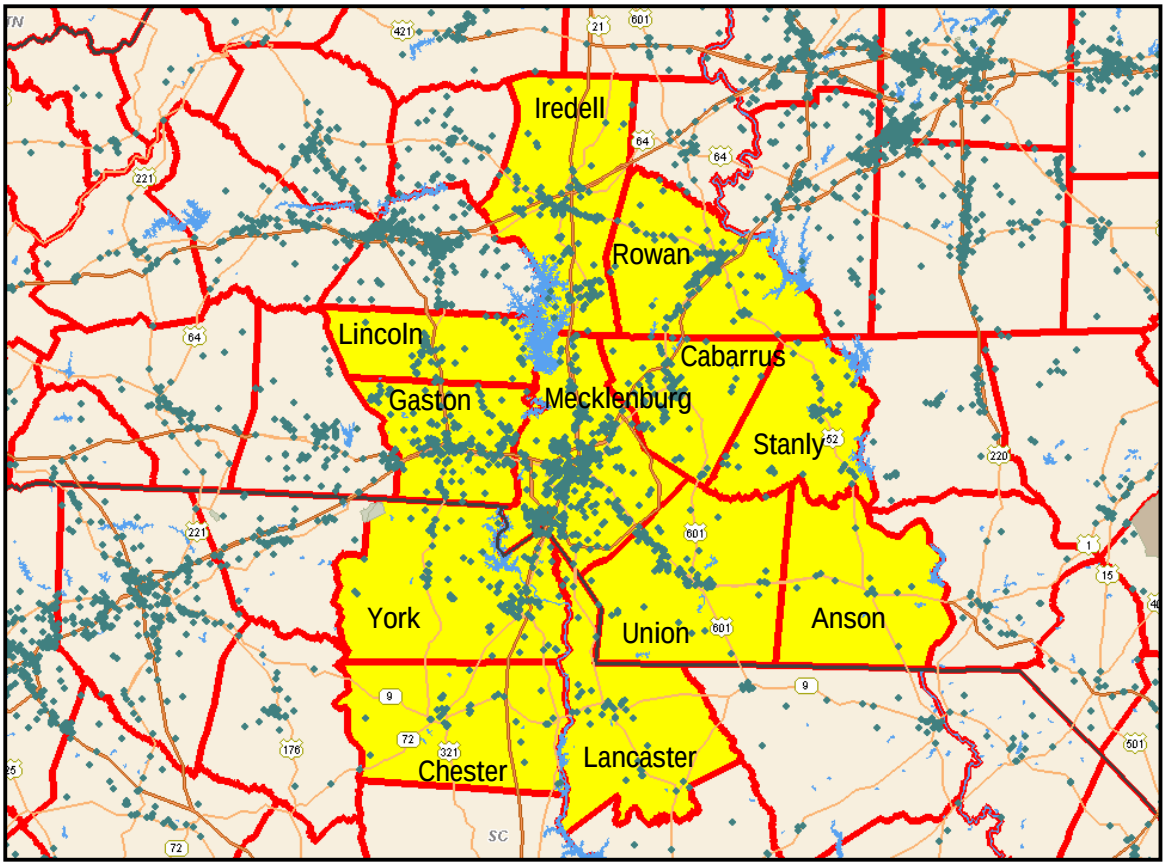
The bubble chart below illustrates the industry cluster strength in the 12 county region. The size of each bubble represents the relative size of employment in the region. The position on the y-axis is indicative of the actual cluster ratio, which is the local industry employment relative to the nation. The position along the x-axis specifies the amount of growth the industry has experienced at the national level. The arrows designate whether or not the industry is growing locally.

Some of the regions strongest clusters include apparel, textiles, chemicals, transportation equipment manufacturing, and material supplies. Unfortunately, some of these industries are losing employment at either the national or local level. The region also enjoys cluster strength in financial services, construction, professional services, and retail; all of which are growing at both the national and local level.



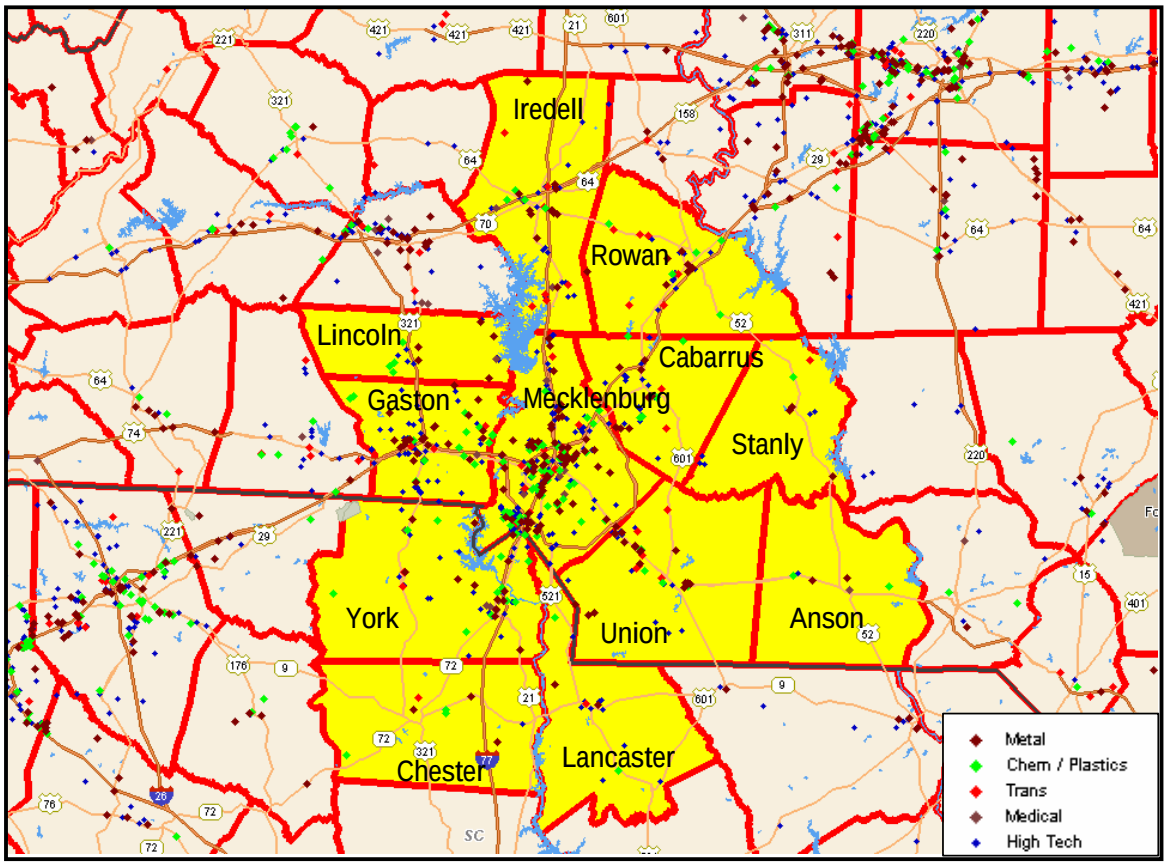
Manufacturing Map

The following map outlines the twelve counties in the study area, with the dots representing manufacturing companies in the region. The majority of the firms are clustered in Charlotte, Gastonia, Salisbury, Rock Hill, and along the major highways.



Advanced Manufacturing Map

The following map outlines the twelve counties in the study area, with the colored dots representing companies within various advanced manufacturing industries. Judging from the concentration of colored dots, the regions strengths lie in transportation equipment, plastics, and metals manufacturing.



Employment Projections

The following charts outline industry employment projections for the Centralina region and North Carolina. The region and state are projected to lose employment in the overall manufacturing industry, while gaining employment in service-oriented industries. A closer look at the manufacturing industry reveals that employment will increase in advanced manufacturing industries such as chemical, computer, plastics, and primary metal manufacturing. Projections are less promising for apparel, textile, and furniture manufacturing.

Employment Projections: Annualized Growth Rate From 2002 to 2012

Industry	North Carolina	Centralina	Mecklenburg County	Gaston County
Construction	1.8%	2.5%	2.7%	1.8%
Education and Health Services	2.4%	2.4%	3.0%	2.5%
Financial Activities	2.0%	1.2%	3.4%	1.8%
Goods-Producing	0.0%	0.3%	1.1%	-1.2%
Government	1.2%	1.0%	1.8%	2.1%
Information	1.9%	1.3%	2.4%	-0.3%
Leisure and Hospitality	2.2%	2.5%	3.5%	2.0%
Manufacturing	-0.5%	-0.4%	-0.1%	-1.6%
Natural Resources and Mining	-1.8%	-1.3%	-1.4%	-7.1%
Other Services (Except Government)	1.7%	1.9%	2.6%	2.0%
Professional and Business Services	3.0%	3.0%	3.7%	3.0%
Services-Providing	2.1%	2.2%	2.9%	1.9%
Trade, Transportation, and Utilities	1.7%	2.2%	2.0%	0.7%

Source: Employment Security Commission of North Carolina

Employment Projections: Annualized Growth Rate From 2002 to 2012

Manufacturing Industry	North Carolina	Centralina	Mecklenburg County	Gaston County
Apparel Manufacturing	-9.3%	-6.9%	-6.7%	-12.8%
Beverage and Tobacco Product Manufacturing	-3.2%	-1.5%	-1.4%	1.8%
Chemical Manufacturing	1.0%	0.8%	0.0%	-0.5%
Computer and Electronic Product Manufacturing	0.3%	-1.4%	0.1%	3.1%
Electrical Equip., Appliance, and Component Mftg	1.3%	2.5%	2.9%	5.2%
Fabricated Metal Product Manufacturing	1.3%	2.3%	-0.2%	0.0%
Food Manufacturing	1.0%	-0.3%	0.0%	-2.4%
Furniture and Related Product Manufacturing	-0.4%	-2.0%	-0.1%	1.2%
Leather and Allied Product Manufacturing	-4.0%	2.5%	-2.2%	-4.0%
Machinery Manufacturing	1.0%	0.3%	-0.1%	-4.7%
Miscellaneous Manufacturing	-0.1%	-0.5%	-2.8%	-7.4%
Nonmetallic Mineral Product Manufacturing	0.5%	0.3%	1.0%	-3.4%
Paper Manufacturing	-0.9%	2.4%	-0.1%	1.7%
Petroleum and Coal Products Manufacturing	-0.8%	-1.5%	-	-
Plastics and Rubber Products Manufacturing	1.4%	1.6%	0.2%	4.9%
Primary Metal Manufacturing	0.0%	1.2%	1.0%	-
Printing and Related Support Activities	-0.1%	-1.9%	-0.5%	1.0%
Textile Mills	-6.0%	-5.3%	-5.9%	-9.7%
Textile Product Mills	-1.4%	-4.8%	-2.8%	-0.7%
Wood Product Manufacturing	0.9%	1.4%	5.6%	-0.2%

Source: Employment Security Commission of North Carolina

Occupation Cluster Strength: Charlotte MSA

The subsequent two charts provide a detailed inventory of skilled workers relevant to advanced manufacturing in the Charlotte MSA. The cluster ratio provides an indication of the concentration of workers for a particular occupation relative to the national average. The Charlotte MSA is lacking research and development assets, as many of the occupations in computer, mathematics, engineering, and the sciences have low cluster ratios. However, the majority of production occupations exceed the national average, suggesting that the area can provide a sufficient supply of skilled laborers for the actual manufacturing of products. Wage rates are comparable to the U.S. and often below occupational averages.

Charlotte MSA: Breakdown of Computer, Mathematical, Architecture, Engineering, Life Sciences, and Physical Sciences Occupations

Occupation Code	Occupation Title	Occupation Employment	Occupation Cluster Ratio	Charlotte Mean Salary	U.S. Mean Salary	Wage Differential
15-0000	Computer and Mathematical Occupations	20,940	1.11	$64,850	$66,370	97.7%
15-1021	Computer Programmers	3,140	1.23	$73,140	$66,480	110.0%
15-1031	Computer Software Engineers, Applications	1,560	0.55	$72,970	$78,570	92.9%
15-1032	Computer Software Engineers	1,800	0.87	$80,560	$83,460	96.5%
15-1051	Computer Systems Analysts	4,260	1.33	$70,980	$69,470	102.2%
15-1071	Network and Computer Systems Administrators	2,020	1.20	$63,020	$62,300	101.2%
15-1081	Network Systems and Data Comm Analysts	1,540	1.36	$69,520	$64,080	108.5%
15-1099	Computer Specialists, All Other	300	0.39	$54,540	$62,930	86.7%
17-0000	Architecture and Engineering Occupations	12,970	0.85	$57,730	$63,060	91.5%
17-2041	Chemical Engineers	220	1.20	$80,570	$78,030	103.3%
17-2061	Computer Hardware Engineers	110	0.21	$78,180	$85,540	91.4%
17-2072	Electronics Engineers, Except Computer	450	0.52	$68,570	$78,620	87.2%
17-2081	Environmental Engineers	150	0.47	$64,970	$69,200	93.9%
17-2112	Industrial Engineers	980	0.82	$63,240	$67,820	93.2%
17-2131	Materials Engineers	40	0.30	$57,740	$70,700	81.7%
17-2141	Mechanical Engineers	890	0.63	$68,790	$69,480	99.0%
17-2199	Engineers, All Other	190	0.19	$68,200	$76,720	88.9%
17-3012	Electrical and Electronics Drafters	340	1.66	$43,460	$47,970	90.6%
17-3013	Mechanical Drafters	430	0.88	$51,720	$45,720	113.1%
17-3019	Drafters, All Other	50	0.35	$37,340	$47,300	78.9%
17-3023	Electrical and Electronic Engineering Technicians	1,360	1.22	$45,870	$47,920	95.7%
17-3024	Electro-Mechanical Technicians	110	1.01	$52,090	$43,930	118.6%
17-3025	Environmental Engineering Technicians	130	1.03	$37,970	$41,950	90.5%
17-3027	Mechanical Engineering Technicians	200	0.68	$43,530	$45,750	95.1%
17-3029	Engineering Technicians, Except Drafters	60	0.11	$47,580	$51,640	92.1%
19-0000	Life, Physical, and Social Science Occupations	5,090	0.69	$55,430	$57,550	96.3%
19-1031	Conservation Scientists	30	0.31	$45,990	$53,440	86.1%
19-2031	Chemists	560	1.11	$58,660	$62,400	94.0%
19-2041	Environmental Scientists and Specialists	340	0.76	$47,060	$56,280	83.6%
19-2042	Geoscientists, Except Hydrologists & Geographers	50	0.29	$51,840	$77,890	66.6%
19-3031	Clinical, Counseling, and School Psychologists	380	0.60	$50,130	$63,340	79.1%
19-4021	Biological Technicians	60	0.15	$41,610	$36,520	113.9%
19-4031	Chemical Technicians	730	1.85	$39,860	$40,040	99.6%
19-4091	Environmental Science and Protection Technicians	140	0.71	$33,150	$37,480	88.4%
19-4092	Forensic Science Technicians	80	1.21	$45,150	$47,560	94.9%
19-4093	Forest and Conservation Technicians	30	0.26	$33,030	$34,800	94.9%
19-4099	Life, Physical, and Social Science Technicians	110	0.26	$35,690	$44,260	80.6%

Source: Bureau of Labor Statistics

Occupation Cluster Strength Continued: Charlotte MSA

Charlotte MSA: Breakdown of Production Occupations

Occupation Code	Occupation Title	Occupation Employment	Occupation Cluster Ratio	Charlotte Mean Salary	U.S. Mean Salary	Wage Differential
51-0000	Production Occupations	76,220	1.16	$29,860	$29,480	101.3%
51-1011	First-Line Managers of Production Workers	5,570	1.26	$49,750	$48,290	103.0%
51-2023	Electromechanical Equipment Assemblers	310	0.91	$28,410	$27,960	101.6%
51-2041	Structural Metal Fabricators and Fitters	670	1.14	$31,640	$31,180	101.5%
51-2092	Team Assemblers	11,620	1.46	$25,400	$25,780	98.5%
51-2099	Assemblers and Fabricators, All Other	770	0.48	$36,130	$29,300	123.3%
51-4011	Computer-Controlled Machine Tool Operators	970	1.16	$33,870	$31,830	106.4%
51-4012	Numerical Tool and Proc Control Programmers	120	1.11	$35,280	$43,320	81.4%
51-4021	Extruding and Drawing Machine Setters, Operators	830	1.43	$31,110	$28,370	109.7%
51-4022	Forging Machine Setters, Operators	210	0.91	$37,030	$29,500	125.5%
51-4023	Rolling Machine Setters, Operators	260	1.03	$33,310	$30,950	107.6%
51-4031	Cutting, & Press Machine Setters, Operators	2,190	1.32	$27,210	$27,240	99.9%
51-4032	Drilling and Boring Machine Tool Setters	360	1.31	$32,930	$30,730	107.2%
51-4034	Lathe and Turning Machine Tool Setters	350	0.76	$35,250	$32,910	107.1%
51-4035	Milling and Planing Machine Setters	190	0.99	$30,330	$32,150	94.3%
51-4041	Machinists	3,040	1.30	$33,960	$35,000	97.0%
51-4051	Metal-Refining Furnace Operators and Tenders	170	1.58	$37,050	$33,850	109.5%
51-4072	Molding, Coremaking, & Casting Machine Setters	1,280	1.27	$27,180	$26,490	102.6%
51-4081	Multiple Machine Tool Setters	500	0.79	$33,750	$31,460	107.3%
51-4111	Tool and Die Makers	340	0.53	$41,800	$44,640	93.6%
51-4121	Welders, Cutters, Solderers, and Brazers	2,140	0.95	$32,390	$32,220	100.5%
51-4122	Welding, Soldering, and Brazing Machine Setters	310	1.08	$29,440	$32,760	89.9%
51-4191	Heat Treating Equipment Setters, Operators	280	1.65	$35,320	$30,810	114.6%
51-4192	Lay-Out Workers, Metal and Plastic	30	0.42	$33,540	$34,060	98.5%
51-4193	Plating and Coating Machine Operators	240	0.94	$28,730	$28,480	100.9%
51-4194	Tool Grinders, Filers, and Sharpeners	130	1.01	$27,800	$31,820	87.4%
51-5023	Printing Machine Operators	1,220	1.02	$34,780	$32,100	108.3%
51-6011	Laundry and Dry-Cleaning Workers	1,400	1.01	$17,710	$18,290	96.8%
51-6021	Pressers, Textile, Garment, and Related Materials	640	1.25	$18,090	$17,980	100.6%
51-6052	Tailors, Dressmakers, and Custom Sewers	260	1.47	$22,900	$24,800	92.3%
51-6062	Textile Cutting Machine Setters, Operators	260	1.78	$21,420	$22,400	95.6%
51-6063	Textile Knitting and Weaving Machine Operators	940	3.26	$22,590	$23,800	94.9%
51-6064	Textile Winding and Drawing Out Machine Operators	2,730	8.43	$21,400	$23,260	92.0%
51-6099	Textile, Apparel, and Furnishings Workers	260	1.73	$19,520	$23,280	83.8%
51-7011	Cabinetmakers and Bench Carpenters	710	0.93	$24,560	$27,290	90.0%
51-7041	Sawing Machine Operators	180	0.47	$22,220	$24,030	92.5%
51-7042	Woodworking Machine Operators	560	0.96	$21,160	$24,090	87.8%
51-8091	Chemical Plant and System Operators	440	1.13	$37,390	$45,830	81.6%
51-9011	Chemical Equipment Operators and Tenders	460	1.54	$39,830	$39,560	100.7%
51-9061	Inspectors, Sorters, Samplers, and Weighers	4,340	1.34	$29,560	$31,560	93.7%
51-9081	Dental Laboratory Technicians	290	1.02	$35,170	$33,810	104.0%
51-9111	Packaging and Filling Machine Operators	3,280	1.24	$23,990	$24,580	97.6%
51-9191	Cementing and Gluing Machine Operators	90	0.56	$28,160	$25,910	108.7%
51-9195	Molders, Shapers, and Casters	180	0.74	$23,960	$25,250	94.9%
51-9199	Production Workers, All Other	350	0.18	$28,510	$27,190	104.9%

Source: Bureau of Labor Statistics

Value Add and Capital Expenditure

The chart below outlines value add and capital expenditure growth for each of the 12 counties from 1997 to 2002, the most recent years available. Capital Expenditure provides an indication of which manufacturing industries are investing in physical assets such as buildings and machinery in preparation for growth. Growth in Value Add shows which industries are increasing output of their products. Textiles is decreasing both Value Add and Capital expenditures across all counties, while numerous counties show growth in chemical manufacturing, plastics, and fabricated metal manufacturing. Not all industries are available due to nondisclosure rules.

County	NAICS	Description	97 Value Add	02 Value Add	Value Add Growth	97 Cap Ex	02 Cap Ex	Cap Ex Growth
Anson Co, NC	31-33	Manufacturing	$174,021	$122,924	-29.4%	$19,988	$8,212	-58.9%
	313	Textile Mills	$60,067	-	-	$4,465	$3,910	-12.4%
Cabarrus Co, NC	31-33	Manufacturing	$6,096,688	$9,915,722	62.6%	$288,731	$66,083	-77.1%
	326	Plastics and Rubber Products Mftg	$56,468	$46,427	-17.8%	$4,730	$2,177	-54.0%
Gaston Co, NC	31-33	Manufacturing	$2,758,229	$1,528,182	-44.6%	$198,591	$134,987	-32.0%
	313	Textile Mills	$712,414	$341,837	-52.0%	$86,818	$30,972	-64.3%
	3131	Fiber, Yarn, and Thread Mills	$329,641	-	-	$64,256	$15,573	-75.8%
	325	Chemical Mftg	$301,187	$235,156	-21.9%	$30,397	$31,696	4.3%
	326	Plastics and Rubber Products Mftg	$41,776	$60,846	45.6%	$2,374	$4,855	104.5%
	332	Fabricated Metal Product Mftg	$211,228	$101,911	-51.8%	$10,333	$11,417	10.5%
	332710	Machine Shops	$40,530	$40,445	-0.2%	$2,162	$9,578	343.0%
Iredell Co, NC	31-33	Manufacturing	$1,288,969	$1,758,357	36.4%	$118,836	$87,339	-26.5%
	313	Textile Mills	$152,098	$98,165	-35.5%	$41,109	$11,142	-72.9%
	3132	Fabric Mills	$125,464	$60,529	-51.8%	$39,999	$9,597	-76.0%
	321	Wood Product Mftg	$41,637	$44,319	6.4%	$2,137	$2,250	5.3%
	326	Plastics and Rubber Products Mftg	$106,133	$151,049	42.3%	$8,177	$10,558	29.1%
	326199	All Other Plastics Product Mftg	$42,140	$71,204	69.0%	$5,867	$6,122	4.3%
	331	Primary Metal Mftg	$36,360	$58,477	60.8%	$4,188	$3,934	-6.1%
	332	Fabricated Metal Product Mftg	$55,871	$65,757	17.7%	$3,572	$4,870	36.3%
	333	Machinery Mftg	$194,841	$143,374	-26.4%	$13,214	$4,077	-69.1%
	336	Transportation Equipment Mftg	$174,609	$184,401	5.6%	$4,945	$3,158	-36.1%
Lincoln Co, NC	31-33	Manufacturing	$470,853	$487,944	3.6%	$24,374	$60,852	149.7%
	313	Textile Mills	$129,417	$88,290	-31.8%	$7,730	$4,190	-45.8%
	3132	Fabric Mills	$80,317	$33,933	-57.8%	$4,843	$2,296	-52.6%
	337	Furniture and Related Product Mftg	$146,554	$83,915	-42.7%	$4,240	$3,100	-26.9%
Mecklenburg Co, NC	31-33	Manufacturing	$4,383,550	$4,226,071	-3.6%	$298,484	$277,079	-7.2%
	311	Food Mftg	$632,154	$747,362	18.2%	$43,215	$42,270	-2.2%
	313	Textile Mills	$48,547	-	-	$4,933	$2,109	-57.2%
	322	Paper Mftg	$176,911	$176,950	0.0%	$10,825	$10,644	-1.7%
	323	Printing and Related Support Activities	$256,648	$263,375	2.6%	$39,297	$20,713	-47.3%
	3231	Printing and Related Support Activities	$256,648	$263,375	2.6%	$39,297	$20,713	-47.3%
	323110	Commercial Lithographic Printing	$116,442	-	-	$23,603	$9,816	-58.4%
	325	Chemical Mftg	$393,988	$422,259	7.2%	$46,371	$32,041	-30.9%
	3251	Basic Chemical Mftg	-	$198,504	-	$17,608	$14,022	-20.4%
	326	Plastics and Rubber Products Mftg	$552,228	$572,928	3.7%	$44,921	$46,547	3.6%
	327	Nonmetallic Mineral Product Mftg	$81,474	$66,549	-18.3%	$6,081	$2,825	-53.5%
	3273	Cement and Concrete Product Mftg	-	$55,831	-	$5,570	$2,422	-56.5%
	332	Fabricated Metal Product Mftg	$270,196	$264,868	-2.0%	$24,715	$16,853	-31.8%
	3323	Architectural and Structural Metals Mftg	$44,832	$96,412	115.1%	$4,430	$10,590	139.1%
	3329	Other Fabricated Metal Product Mftg	$58,311	$49,351	-15.4%	$7,212	$1,526	-78.8%
	333	Machinery Mftg	$485,224	$487,795	0.5%	$19,013	$50,423	165.2%

(Value Add and Capital Expenditure in $1000s)

Source: Census Bureau

Value Add and Capital Expenditure Continued

County	NAICS	Description	97 Value Add	02 Value Add	Value Add Growth	97 Cap Ex	02 Cap Ex	Cap Ex Growth
Rowan Co, NC	31-33	Manufacturing	$1,506,095	$1,009,776	-33.0%	$94,422	$121,991	29.2%
	313	Textile Mills	$190,905	$78,651	-58.8%	$18,731	$3,158	-83.1%
	325	Chemical Mftg	-	$202,122	-	$19,625	$15,434	-21.4%
	327	Nonmetallic Mineral Product Mftg	$102,224	-	-	$10,689	$3,788	-64.6%
Stanly Co, NC	31-33	Manufacturing	$547,139	$414,579	-24.2%	$53,212	$22,329	-58.0%
	313	Textile Mills	$124,505	$59,502	-52.2%	$22,970	$2,061	-91.0%
	321	Wood Product Mftg	$92,436	$88,413	-4.4%	$2,848	$7,325	157.2%
Union Co, NC	31-33	Manufacturing	$1,256,260	$979,246	-	$94,110	$65,225	-
	311	Food Mftg	$282,603	-	-	$2,567	$4,242	65.3%
	315	Apparel Mftg	$28,238	-	-	$888	$481	-45.8%
	326	Plastics and Rubber Products Mftg	$74,075	$40,031	-46.0%	$22,833	$22,241	-2.6%
	332	Fabricated Metal Product Mftg	$103,079	-	-	$9,907	$4,003	-59.6%
Chester Co, SC	31-33	Manufacturing	$441,185	$561,359	27.2%	$30,721	$26,204	-14.7%
Lancaster Co, SC	31-33	Manufacturing	$510,375	$659,063	29.1%	$68,284	$19,481	-71.5%
York Co, SC	31-33	Manufacturing	$1,162,970	$1,163,203	0.0%	$77,608	$81,341	4.8%
	313	Textile Mills	$102,136	$38,272	-62.5%	$6,302	$1,258	-80.0%
	325	Chemical Mftg	$278,931	$308,546	10.6%	$14,155	$17,673	24.9%
	332	Fabricated Metal Product Mftg	$93,228	$126,772	36.0%	$6,012	$21,370	255.5%
	333	Machinery Mftg	$100,714	$49,023	-51.3%	$5,079	$1,650	-67.5%
	336	Transportation Equipment Mftg	$54,255	$37,757	-30.4%	$7,932	$6,559	-17.3%

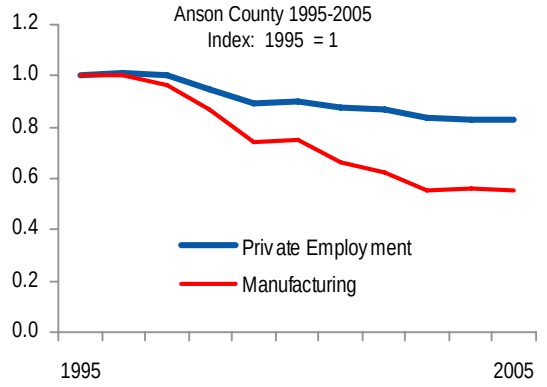
(Value Add and Capital Expenditure in $1000s)

Source: Census Bureau

Anson County, North Carolina

Anson County is the smallest county in the study area with a population of 25,200 people. Over the past fifteen years the area has grown by 7.3%, well below state and national levels. Median household income is below average and has only experienced moderate growth compared to the state and nation. Educational attainment is below the nation and the Carolinas, indicating that the area might struggle to find skilled workers. The unemployment rate is 7.6%, which is above state and national levels. Anson's workforce is relatively young with 26.9% of the population between the ages of 24 and 44.

EMPLOYMENT GROWTH



Source: BLS

The employment base has declined over the past 10 years in Anson County. From 1995 to 2005 manufacturing employment has declined by 1,500 or 44.7%. Much of this loss is concentrated in traditional manufacturing industries such as textiles and fabricated metal products. Over the same period, total private employment lost 1,200 or 17.4%, which is actually less than the losses experienced in manufacturing. Growth in services industries made up some ground for the losses in manufacturing.

At a Glance

2005	Anson County	Region	North Carolina	United States
Population	25,200	2.0 m	8.6 m	296 m
Pop Growth '90-'05	7.3%	41.7%	30.4%	19.1%
Median HH Income	$32,500	$49,800	$43,300	$46,300
Growth in HH Income '90-'05	48.4%	64.5%	62.5%	54.0%
% Bachelor's Degree or higher	10.1%	27.5%	25.3%	27.7%
% of Adults age 25-44	26.9%	30.5%	29.2%	28.2%
Unemployment rate	7.6%	5.4%	5.2%	5.1%
Private Employment	5,580	821,300	3.9 m	110.2 m
Emp. Growth 95-05	-17.4%	15.8%	11.7%	13.8%
Manufacturing Emp	1910	127,200	566,600	14.2 m
Mftg Emp. Growth 95-05	-44.7%	-32.2%	-31.0%	-17.6%

Cluster Strength: Anson County, North Carolina

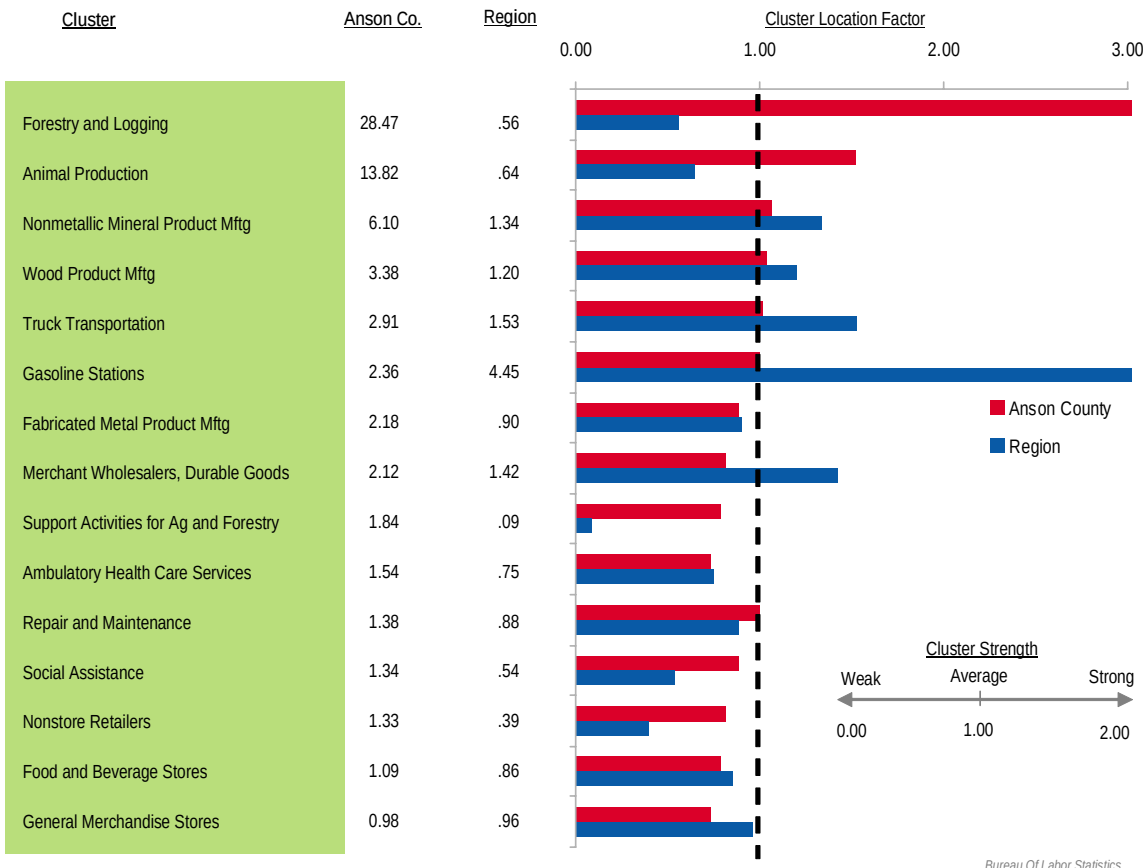
Anson County's strongest clusters include Forestry and Logging, Nonmetallic Mineral Product Manufacturing, Wood Product Manufacturing, and Truck Transportation. Unfortunately, many of these industries have experienced significant decline. Anson County's employment makeup is shifting from goods producing to service providing as the only industries in the past 10 years to experience positive growth are service oriented.

Employment by Industry: Anson County, North Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	6,758	6,100	5,677	5,579	-17.4%	-8.5%	-1.7%
101	Goods-Producing	4,357	3,410	2,604	2,476	-43.2%	-27.4%	-4.9%
1011	Natural Resources and Mining	623	549	447	340	-45.4%	-38.1%	-23.9%
1012	Construction	273	263	244	243	-11.0%	-7.6%	-0.4%
1013	Manufacturing	3,461	2,598	1,913	1,893	-45.3%	-27.1%	-1.0%
102	Service-Providing	2,401	2,689	3,073	3,103	29.2%	15.4%	1.0%
1021	Trade, Transportation, and Utilities	1,135	1,232	1,400	1,313	15.7%	6.6%	-6.2%
1022	Information	38	41	36	33	-13.2%	-19.5%	-8.3%
1023	Financial Activities	172	161	172	127	-26.2%	-21.1%	-26.2%
1024	Professional and Business Services	210	347	380	436	107.6%	25.6%	14.7%
1025	Education and Health Services	440	416	644	647	47.0%	55.5%	0.5%
1026	Leisure and Hospitality	306	378	342	390	27.5%	3.2%	14.0%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN ANSON COUNTY, 2005



Manufacturing Cluster Strength: Anson County, North Carolina

Due to nondisclosure requirements within the Bureau of Labor Statistics, several of Anson County's detailed manufacturing employment figures are not available. We can assume that textile manufacturing is left off this chart and that employment is most likely declining in conjunction with industry trends. From available data, we can determine that much of the county's manufacturing base consists of low tech manufacturing such as wood manufacturing and fabricated metal product manufacturing. Anson County provides a competitive wage environment with manufacturing wages at 61% of the national average.

Anson County, North Carolina

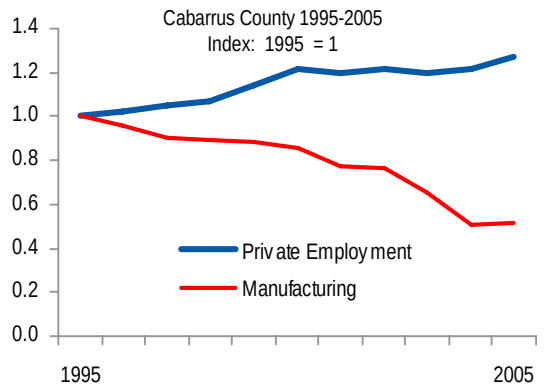
NAICS	Description	2005 Emp	Cluster Ratio	Growth 03 to 05	Growth 00 to 05	Growth 95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	5,579	1.0	-1.7%	-8.5%	-17.4%	$26,258	$39,617	66.3%
31-33	Mftg	1,914	2.7	0.1%	-26.3%	-44.7%	$29,664	$48,538	61.1%
321	Wood Product Mftg	100	3.5	-2.9%	-	-	$26,430	$33,370	79.2%
327	Nonmetallic Mineral Product Mftg	140	5.5	2.9%	-	-	$37,748	$43,032	87.7%
332	Fabricated Metal Product Mftg	175	2.3	28.7%	-33.2%	-19.0%	$32,519	$41,219	78.9%
3329	Other Fabricated Metal Product Mftg	47	3.3	62.1%	-	-	$38,331	$45,678	83.9%

Source: Bureau of Labor Statistics

Cabarrus County, North Carolina

Cabarrus County is the fifth largest county in the 12 county study area with a population of 150,600. Over the past fifteen years the area has grown by 52.2%, outpacing the nation and both North and South Carolina. Residents enjoy an above average median household income, with strong historical growth trends. Educational attainment is below the state and nation, indicating that the area may have difficulty finding skilled workers. The unemployment rate is 4.5%, which is much lower than the state and national average and can cause a tight labor supply. The county is benefits from having an above average share of young workers, with 30% of the population in the 25 to 44 age range. The combination of these characteristics lends itself to a high quality of life for residents.

EMPLOYMENT GROWTH



Source: BLS

The chart above shows a dramatic shift in manufacturing employment relative to total private employment. From 1995 to 2005 manufacturing employment declined by 7,500 or 47.5%, almost half. Much of this loss is concentrated in plastics and textile manufacturing. Over the same period, total private employment added 10,600 or 27.2%. Growth in Professional Services and Leisure and Hospitality accounted for much of this growth.

At a Glance

2005	Cabarrus County	Region	North Carolina	United States
Population	150,600	2.0 m	8.6 m	296 m
Pop Growth '90-'05	52.2%	41.7%	30.4%	19.1%
Median HH Income	$51,500	$49,800	$43,300	$46,300
Growth in HH Income '90-'05	70.4%	64.5%	62.5%	54.0%
% Bachelor's Degree or higher	20.5%	27.5%	25.3%	27.7%
% of Adults age 25-44	30.0%	30.5%	29.2%	28.2%
Unemployment rate	4.5%	5.4%	5.2%	5.1%
Private Employment	49,400	821,300	3.9 m	110.2 m
Emp. Growth 95-05	27.2%	15.8%	11.7%	13.8%
Manufacturing Emp	8,100	127,200	566,600	14.2 m
Mftg Emp. Growth 95-05	-47.9%	-32.2%	-31.0%	-17.6%

Cluster Strength: Cabarrus County, North Carolina

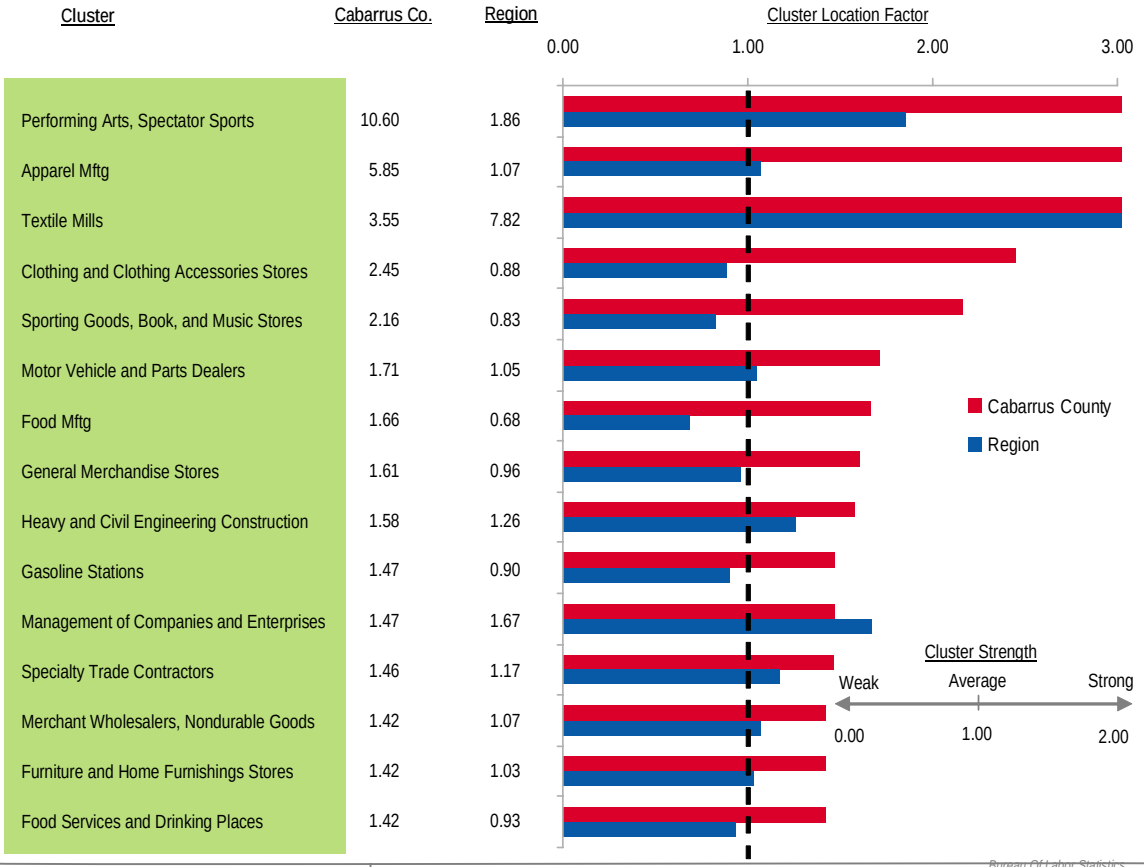
Cabarrus County's strongest clusters include performing arts, apparel manufacturing, textile mills, and clothing stores. The county seems to offer a variety of entertainment options as seven of the top fifteen industries are in retail or leisure and hospitality. Outside of the manufacturing and information industry, all other major industries have experienced positive growth over the past ten years, with retail trade and professional and business services realizing exceptional growth.

Employment by Industry: Cabarrus County, North Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	38,803	47,374	46,657	49,366	27.2%	4.2%	5.8%
101	Goods-Producing	18,643	17,643	14,135	12,670	-32.0%	-28.2%	-10.4%
1011	Natural Resources and Mining	154	189	171	185	20.1%	-2.1%	8.2%
1012	Construction	2,894	4,073	3,902	4,365	50.8%	7.2%	11.9%
1013	Manufacturing	15,596	13,381	10,062	8,120	-47.9%	-39.3%	-19.3%
102	Service-Providing	20,160	29,731	32,522	36,696	82.0%	23.4%	12.8%
1021	Trade, Transportation, and Utilities	8,557	12,395	12,595	13,734	60.5%	10.8%	9.0%
1022	Information	707	1,005	692	636	-10.0%	-36.7%	-8.1%
1023	Financial Activities	1,262	1,932	1,390	1,563	23.9%	-19.1%	12.4%
1024	Professional and Business Services	2,387	4,274	5,429	6,339	165.6%	48.3%	16.8%
1025	Education and Health Services	2,519	3,078	3,866	4,508	79.0%	46.5%	16.6%
1026	Leisure and Hospitality	3,502	5,722	7,126	8,252	135.6%	44.2%	15.8%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN CABARRUS COUNTY, 2005



Manufacturing Cluster Strength: Cabarrus County, North Carolina

A closer look at the manufacturing industry in Cabarrus County reveals that the county's strengths lie in apparel manufacturing, textile mills, chemical manufacturing, and engine parts manufacturing. Several of these strong clusters are losing strength, as employment shifts to other manufacturing industries or to service industries. Emerging manufacturing clusters that have shown strong recent growth are medical supplies, fabricated metal product, and food manufacturing. Overall wages in the county are below the national average, with manufacturing wages slightly above the national average.

Cabarrus County, North Carolina

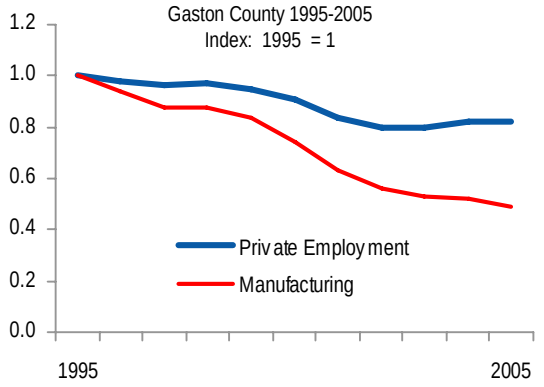
NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	49,366	1.0	5.8%	4.2%	27.2%	$33,006	$39,617	83.3%
31-33	Mftg	8,120	1.3	-19.3%	-39.3%	-47.9%	$48,844	$48,538	100.6%
311	Food Mftg	1,097	1.7	18.3%	59.0%	-1.0%	$31,521	$35,127	89.7%
3118	Bakeries & Tortilla Mftg	119	1.0	-38.3%	-	-	$10,835	$30,888	35.1%
313	Textile Mills	349	3.6	-85.8%	-93.3%	-95.2%	$36,819	$33,593	109.6%
3132	Fabric Mills	111	2.4	-	-	-	$43,805	$34,666	126.4%
314	Textile Product Mills	12	0.2	-33.3%	-71.4%	-77.4%	$16,698	$29,451	56.7%
315	Apparel Mftg	682	5.9	12.9%	-44.1%	-66.7%	$21,341	$28,301	75.4%
3151	Apparel Knitting Mills	596	35.6	9.2%	-6.9%	-38.4%	$19,359	$29,945	64.7%
3152	Cut & Sew Apparel Mftg	85	0.9	46.6%	-85.3%	-92.1%	$35,486	$27,895	127.2%
321	Wood Product Mftg	60	0.2	-4.8%	-	-	$28,196	$33,370	84.5%
323	Printing & Related Support Activities	120	0.4	-1.6%	26.3%	18.8%	$28,608	$39,890	71.7%
323110	Commercial Lithographic Printing	41	0.4	-2.4%	-	-	$27,317	$42,464	64.3%
323114	Quick Printing	21	0.7	75.0%	-	-	$19,923	$32,783	60.8%
325	Chemical Mftg	366	0.9	2.5%	13.3%	18.4%	$55,592	$71,009	78.3%
3251	Basic Chemical Mftg	153	2.3	2.0%	-	-	$72,585	$77,864	93.2%
3256	Soap, Cleaning Compound, & Toilet Prep Mftg	46	0.9	-	-	-	$36,607	$52,025	70.4%
326	Plastics & Rubber Products Mftg	467	1.3	-9.8%	-52.1%	-57.9%	$29,897	$39,321	76.0%
327	Nonmetallic Mineral Product Mftg	245	1.1	-21.7%	16.1%	150.0%	$43,378	$43,032	100.8%
3273	Cement & Concrete Product Mftg	186	1.7	22.4%	10.1%	89.8%	$44,809	$42,593	105.2%
327320	Ready-Mix Concrete Mftg	88	1.6	29.4%	-	-	$48,447	$43,582	111.2%
332	Fabricated Metal Product Mftg	692	1.0	24.2%	-1.7%	38.1%	$35,038	$41,219	85.0%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mft	158	1.0	53.4%	3.3%	68.1%	$28,095	$40,106	70.1%
3329	Other Fabricated Metal Product Mftg	131	1.0	-	-	-	$41,237	$45,678	90.3%
333	Machinery Mftg	76	0.1	15.2%	-	-	$44,569	$50,934	87.5%
336	Transportation Equip Mftg	231	0.3	-26.9%	0.4%	58.2%	$50,016	$56,930	87.9%
3363	Motor Vehicle Parts Mftg	186	0.6	-29.5%	3.3%	37.8%	$53,345	$50,285	106.1%
336312	Gasoline Engine & Engine Parts Mftg	113	3.9	68.7%	-	-	$62,985	$57,207	110.1%
336399	All Other Motor Vehicle Parts Mftg	46	0.6	0.0%	21.1%	53.3%	$38,498	$43,127	89.3%
3369	Other Transportation Equip Mftg	28	1.6	115.4%	-	-	$38,405	$52,305	73.4%
337	Furniture & Related Product Mftg	137	0.5	45.7%	140.4%	185.4%	$31,969	$32,568	98.2%
339	Miscellaneous Mftg	297	1.0	7.6%	34.4%	162.8%	$39,856	$43,919	90.7%
3391	Medical Equip & Supplies Mftg	39	0.3	69.6%	-	-	$30,413	$50,700	60.0%
3399	Other Miscellaneous Mftg	258	1.7	1.6%	-	-	$41,284	$37,967	108.7%
339932	Game, Toy, & Children's Vehicle Mftg	4	0.6	-	-	-	$19,081	$51,417	37.1%
339950	Sign Mftg	145	4.3	-5.2%	17.9%	-	$35,011	$35,730	98.0%

Source: Bureau of Labor Statistics

Gaston County, North Carolina

Gaston County is the second largest county in the study area with a population of 195,500 people. Over the past fifteen years the area has grown by 11.7%, below state and national levels. Median household income is on par with the state and slightly below the national average. Median household income growth lags just behind the state and nation. Educational attainment is below the nation and the Carolinas, indicating that the area may struggle to find skilled workers. The unemployment rate is 6.1%, which is only slightly above state and national levels. Gaston County's workforce is relatively young with 28.2% of the population between the ages of 24 and 44.

EMPLOYMENT GROWTH



Source: BLS

The employment base has experienced moderate growth over the past 10 years in comparison to the state and nation. From 1995 to 2005 the manufacturing industry lost 17,300 or 50% of the workforce. Much of this loss is concentrated in traditional manufacturing industries such as textiles and yarn mills. Over the same period, total private employment lost 13,600 or 18.3%, which is actually less than the losses experienced in manufacturing. Growth in education and health services offset the losses in manufacturing.

At a Glance

2005	Gaston County	Region	North Carolina	United States
Population	195,500	2.0 m	8.6 m	296 m
Pop Growth '90-'05	11.7%	41.7%	30.4%	19.1%
Median HH Income	$43,000	$49,800	$43,300	$46,300
Growth in HH Income '90-'05	52.7%	64.5%	62.5%	54.0%
% Bachelor's Degree or higher	15.5%	27.5%	25.3%	27.7%
% of Adults age 25-44	28.4%	30.5%	29.2%	28.2%
Unemployment rate	6.1%	5.4%	5.2%	5.1%
Private Employment	61,000	821,300	3.9 m	110.2 m
Emp. Growth 95-05	-18.3%	15.8%	11.7%	13.8%
Manufacturing Emp	16,900	127,200	566,600	14.2 m
Mftg Emp. Growth 95-05	-50.5%	-32.2%	-31.0%	-17.6%

Cluster Strength: Gaston County, North Carolina

Gaston County's top five clusters include a mix of manufacturing industries. Unfortunately, many of these same industries have experienced significant decline, with transportation equipment manufacturing representing a bright spot in manufacturing. Gaston County's employment makeup is shifting from goods producing to service providing, as the only major industries in the past 10 years to experience positive growth are service oriented or in construction.

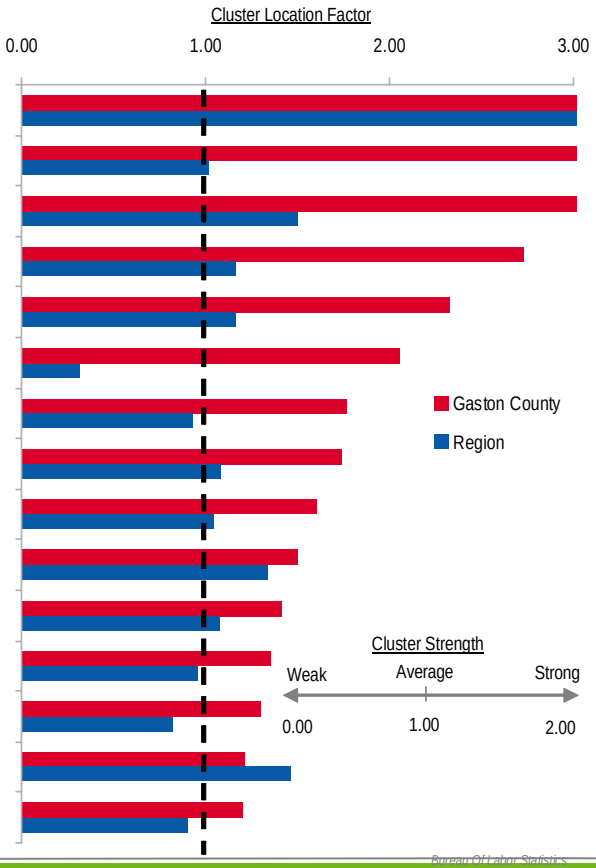
Employment by Industry: Gaston County, North Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	74,651	67,730	59,446	61,022	-18.3%	-9.9%	2.7%
101	Goods-Producing	36,991	29,103	21,320	20,407	-44.8%	-29.9%	-4.3%
1011	Natural Resources and Mining	168	172	87	81	-51.8%	-52.9%	-6.9%
1012	Construction	2,590	3,509	3,043	3,382	30.6%	-3.6%	11.1%
1013	Manufacturing	34,233	25,422	18,190	16,943	-50.5%	-33.4%	-6.9%
102	Service-Providing	37,660	38,627	38,127	40,614	7.8%	5.1%	6.5%
1021	Trade, Transportation, and Utilities	15,313	14,527	13,468	13,705	-10.5%	-5.7%	1.8%
1022	Information	818	725	662	647	-20.9%	-10.8%	-2.3%
1023	Financial Activities	2,189	2,473	2,309	2,159	-1.4%	-12.7%	-6.5%
1024	Professional and Business Services	5,591	5,538	5,127	5,966	6.7%	7.7%	16.4%
1025	Education and Health Services	6,491	7,796	8,984	10,204	57.2%	30.9%	13.6%
1026	Leisure and Hospitality	5,151	5,636	5,571	5,841	13.4%	3.6%	4.8%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN GASTON COUNTY, 2005

Cluster	Gaston Co.	Region
Textile Mills	38.53	7.82
Transportation Equipment Mftg	5.14	1.02
Textile Product Mills	4.01	1.50
Furniture and Related Product Mftg	2.73	1.16
Fabricated Metal Product Mftg	2.33	1.16
Utilities	2.06	0.32
Nursing and Residential Care Facilities	1.77	0.93
Machinery Mftg	1.74	1.09
Motor Vehicle and Parts Dealers	1.61	1.05
Nonmetallic Mineral Product Mftg	1.50	1.34
Health and Personal Care Stores	1.41	1.08
General Merchandise Stores	1.36	0.96
Sporting Goods, Book, and Music Stores	1.30	0.83
Plastics and Rubber Products Mftg	1.21	1.46
Gasoline Stations	1.20	0.90



Manufacturing Cluster Strength: Gaston County, North Carolina

A closer look at the manufacturing industry in Gaston County reveals that the county's strengths lie in apparel manufacturing, textile mills, plastics, machinery, transportation equipment, and nonmetallic mineral product manufacturing. Several of these strong clusters are losing strength, as employment shifts to other manufacturing industries or to service industries. Textile product mills, electronic equipment, transportation equipment, and cement and concrete product manufacturing are several of the few manufacturing industries to post positive growth rates over the past two years. Overall wages and manufacturing wages in the county are below the national average. More manufacturing industries are included on the next page.

Gaston County, North Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	61,022	1.0	2.7%	-9.9%	-18.3%	$30,507	$39,617	77.0%
31-33	Mftg	16,943	2.2	-6.9%	-33.4%	-50.5%	$38,773	$48,538	79.9%
311	Food Mftg	213	0.3	-	-	-	$36,865	$35,127	104.9%
313	Textile Mills	4,678	38.5	-15.3%	-46.5%	-66.7%	$30,248	$33,593	90.0%
3131	Fiber, Yarn, & Thread Mills	3,437	121.9	-16.0%	-46.2%	-64.2%	$29,657	$30,370	97.7%
313111	Yarn Spinning Mills	3,170	154.1	-19.4%	-44.3%	-64.4%	$30,150	$29,861	101.0%
3132	Fabric Mills	488	8.4	-11.4%	-40.6%	-80.4%	$35,110	$34,666	101.3%
313210	Broadwoven Fabric Mills	135	3.9	-21.1%	-40.0%	-80.7%	$30,047	$33,581	89.5%
3133	Textile & Fabric Finishing & Fabric Coating Mills	753	21.5	-14.7%	-50.6%	-61.5%	$29,798	$34,406	86.6%
314	Textile Product Mills	378	4.0	31.7%	8.0%	-14.5%	$26,274	$29,451	89.2%
315	Apparel Mftg	32	0.2	-73.8%	-89.7%	-96.3%	$16,471	$28,301	58.2%
321	Wood Product Mftg	105	0.3	0.0%	-78.2%	-9.5%	$27,950	$33,370	83.8%
322	Paper Mftg	287	1.1	-41.4%	-54.2%	-38.3%	$49,569	$50,749	97.7%
323	Printing & Related Support Activities	170	0.5	-43.9%	-40.4%	-34.1%	$29,294	$39,890	73.4%
323110	Commercial Lithographic Printing	47	0.3	-74.9%	-66.7%	-45.3%	$25,241	$42,464	59.4%
323112	Commercial Flexographic Printing	13	0.6	-	-	-	$41,723	$41,866	99.7%
323113	Commercial Screen Printing	28	0.8	115.4%	-	-	$22,173	$29,224	75.9%
323114	Quick Printing	12	0.3	-42.9%	-42.9%	-42.9%	$20,330	$32,783	62.0%
323119	Other Commercial Printing	13	0.5	0.0%	-	-	$21,494	$39,104	55.0%
325	Chemical Mftg	574	1.2	-16.4%	-27.0%	-53.3%	$58,532	$71,009	82.4%
3256	Soap, Cleaning Compound, & Toilet Prep Mftg	40	0.6	-	-	-	$41,258	$52,025	79.3%
326	Plastics & Rubber Products Mftg	535	1.2	-47.9%	-64.3%	-29.9%	$33,488	$39,321	85.2%
3261	Plastics Product Mftg	285	0.8	-68.4%	-	-	$35,148	$37,869	92.8%
326199	All Other Plastics Product Mftg	273	1.5	-62.9%	-71.7%	-18.5%	$32,393	$36,161	89.6%
3262	Rubber Product Mftg	72	0.8	-41.5%	-	-	$29,605	$44,761	66.1%
327	Nonmetallic Mineral Product Mftg	416	1.5	-17.8%	0.2%	-	$27,733	$43,032	64.4%
3273	Cement & Concrete Product Mftg	67	0.5	48.9%	-	-	$43,230	$42,593	101.5%

Source: Bureau of Labor Statistics

Manufacturing Cluster Strength Continued: Gaston County, North Carolina

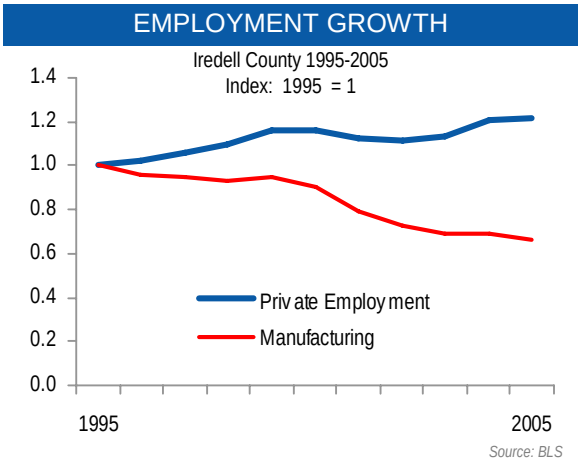
Gaston County, North Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
332	Fabricated Metal Product Mftg	1,948	2.3	-3.8%	-23.4%	-21.9%	$39,476	$41,219	95.8%
3323	Architectural & Structural Metals Mftg	593	2.7	4.2%	-32.4%	5.7%	$34,485	$38,436	89.7%
332312	Fabricated Structural Metal Mftg	291	5.9	-0.7%	45.5%	219.8%	$34,544	$40,505	85.3%
332322	Sheet Metal Work Mftg	81	1.4	-	-81.9%	-71.1%	$41,983	$38,504	109.0%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mft	551	2.9	36.4%	16.7%	7.4%	$38,673	$40,106	96.4%
332710	Machine Shops	185	1.3	-	-	-	$35,869	$39,059	91.8%
3328	Coating, Engraving, Heat Treating, & Allied Activities	160	2.0	-10.1%	8.1%	42.9%	$33,526	$36,110	92.8%
332813	Electroplating, Plating, Polishing, Anodizing, & Colorir	90	2.2	-	-	-	$34,627	$34,527	100.3%
3329	Other Fabricated Metal Product Mftg	144	0.9	-4.6%	-	-	$40,156	$45,678	87.9%
333	Machinery Mftg	1,113	1.7	-4.5%	-46.2%	-70.7%	$35,627	$50,934	69.9%
3332	Ind Machinery Mftg	600	8.8	-9.2%	-52.6%	-65.3%	$36,941	$56,956	64.9%
333292	Textile Machinery Mftg	571	142.7	-0.9%	-51.4%	-62.7%	$37,077	$41,151	90.1%
3335	Metalworking Machinery Mftg	282	2.5	4.4%	64.0%	25.9%	$34,211	$46,413	73.7%
333514	Special Die & Tool, Die Set, Jig, & Fixture Mftg	52	1.2	-46.4%	-54.8%	-58.4%	$34,000	$45,632	74.5%
3336	Engine, Turbine, & Power Transmission Equip Mftg	39	0.7	-20.4%	-	-	$22,798	$58,680	38.9%
3339	Other General Purpose Machinery Mftg	87	0.6	-17.1%	-81.4%	-94.8%	$36,382	$50,270	72.4%
334	Computer & Electronic Product Mftg	96	0.1	-47.3%	-41.8%	-	$34,910	$76,285	45.8%
3344	Semiconductor & Other Electronic Component Mftg	31	0.1	-	-	-	$31,236	$70,196	44.5%
335	Electrical Equip, Appliance, & Component Mftg	99	0.4	20.7%	296.0%	175.0%	$36,427	$46,381	78.5%
335314	Relay & Ind Control Mftg	12	0.5	-	-	-	$90,536	$57,239	158.2%
336	Transportation Equip Mftg	5,037	5.1	12.5%	-12.6%	-11.2%	$49,547	$56,930	87.0%
3363	Motor Vehicle Parts Mftg	3,442	9.1	0.5%	-8.0%	3.9%	$44,826	$50,285	89.1%
337	Furniture & Related Product Mftg	855	2.7	20.1%	17.8%	48.2%	$29,994	$32,568	92.1%
3371	Household & Institutional Furniture & Kitchen Cabinet	718	3.4	19.9%	15.8%	59.6%	$29,453	$30,449	96.7%
337110	Wood Kitchen Cabinet & Countertop Mftg	52	0.6	30.0%	-18.8%	-7.1%	$24,140	$31,587	76.4%
339	Miscellaneous Mftg	344	1.0	12.1%	-6.0%	-64.3%	$31,469	$43,919	71.7%
3391	Medical Equip & Supplies Mftg	40	0.2	-4.8%	-	-	$26,185	$50,700	51.6%
3399	Other Miscellaneous Mftg	305	1.6	15.1%	-	-	$32,059	$37,967	84.4%

Source: Bureau of Labor Statistics

Iredell County, North Carolina

Iredell County is the sixth largest county in the study area with a population of 140,000 people. Over the past fifteen years the county has grown by 50.3%, well above state and national levels. Median household income is on par with the nation and slightly above the state average and has experienced strong growth since 1990. With 18.8% of residents 25 and older with a bachelor's degree or higher, educational attainment is below national and state averages, indicating that the area may struggle to find skilled workers. The unemployment rate is 5.0%, which is slightly below the state and nation. 28.5% of the population is between the ages of 24 and 44, almost identical to the national average.



The employment base has experienced strong growth over the past 10 years in comparison to the state and nation. From 1995 to 2005 the manufacturing industry lost 6,300 or 34.2% of the workforce. Much of this loss is concentrated in apparel and transportation equipment manufacturing. Over the same period, total private employment added 9,100 or 21.5%, outpacing the state and nation. Growth in leisure and hospitality and professional services have accounted for much of the growth.

At a Glance

2005	Iredell County	Region	North Carolina	United States
Population	140,000	2.0 m	8.6 m	296 m
Pop Growth '90-'05	50.3%	41.7%	30.4%	19.1%
Median HH Income	$46,400	$49,800	$43,300	$46,300
Growth in HH Income '90-'05	60.8%	64.5%	62.5%	54.0%
% Bachelor's Degree or higher	18.8%	27.5%	25.3%	27.7%
% of Adults age 25-44	28.5%	30.5%	29.2%	28.2%
Unemployment rate	5.0%	5.4%	5.2%	5.1%
Private Employment	51,600	821,300	3.9 m	110.2 m
Emp. Growth 95-05	21.5%	15.8%	11.7%	13.8%
Manufacturing Emp	12,100	127,200	566,600	14.2 m
Mftg Emp. Growth 95-05	-34.2%	-32.2%	-31.0%	-17.6%

Cluster Strength: Iredell County, North Carolina

Iredell County's top clusters include textile mills, performing arts, paper, and apparel manufacturing. Iredell County's employment makeup is shifting, as there has been a sharp contrast in employment growth between manufacturing and service industries. Professional and business services and education and health services have experienced phenomenal growth since 1995.

Employment by Industry: Iredell County, North Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	42,433	49,354	47,840	51,568	21.5%	4.5%	7.8%
101	Goods-Producing	20,964	20,642	16,524	16,068	-23.4%	-22.2%	-2.8%
1011	Natural Resources and Mining	345	423	481	415	20.3%	-1.9%	-13.7%
1012	Construction	2,280	3,675	3,353	3,580	57.0%	-2.6%	6.8%
1013	Manufacturing	18,339	16,545	12,689	12,073	-34.2%	-27.0%	-4.9%
102	Service-Providing	21,469	28,712	31,317	35,499	65.4%	23.6%	13.4%
1021	Trade, Transportation, and Utilities	9,071	11,317	12,283	13,859	52.8%	22.5%	12.8%
1022	Information	318	380	363	350	10.1%	-7.9%	-3.6%
1023	Financial Activities	969	1,211	1,346	1,523	57.2%	25.8%	13.2%
1024	Professional and Business Services	2,315	3,954	3,797	4,675	101.9%	18.2%	23.1%
1025	Education and Health Services	3,621	5,265	6,349	6,346	75.3%	20.5%	0.0%
1026	Leisure and Hospitality	4,143	5,087	5,440	6,687	61.4%	31.5%	22.9%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN IREDELL COUNTY, 2005

Manufacturing Cluster Strength: Iredell County, North Carolina

A closer look at the manufacturing industry in Iredell County reveals that the county's strengths lie in apparel manufacturing, textile mills, paper, medical equipment, and transportation equipment manufacturing. Several of these strong clusters are losing strength, as employment shifts to other manufacturing industries or to service industries. Emerging clusters in the county that have recently experienced positive growth include structural metal, control instruments, and plastics manufacturing. Overall wages and manufacturing wages in the county are below the national average. More manufacturing industries are included on the next page.

Iredell County, North Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	51,568	1.0	7.8%	4.5%	21.5%	$31,492	$39,617	79.5%
31-33	Mftg	12,073	1.8	-4.9%	-27.0%	-34.2%	$38,081	$48,538	78.5%
311	Food Mftg	590	0.9	-1.3%	-11.9%	15.9%	$39,598	$35,127	112.7%
3111	Animal Food Mftg	146	6.4	11.5%	-7.0%	32.7%	$42,508	$44,315	95.9%
311119	Other Animal Food Mftg	146	10.2	11.5%	-7.0%	32.7%	$42,508	$39,874	106.6%
313	Textile Mills	1,298	12.7	-13.5%	-39.0%	-60.7%	$32,126	$33,593	95.6%
3132	Fabric Mills	717	14.6	-9.6%	-36.8%	-66.7%	$35,736	$34,666	103.1%
313221	Narrow Fabric Mills	232	43.4	-7.9%	11.5%	107.1%	$33,918	$30,123	112.6%
313230	Nonwoven Fabric Mills	227	31.1	1.3%	-	-	$35,184	$45,529	77.3%
314	Textile Product Mills	67	0.8	-43.7%	-	-	$26,670	$29,451	90.6%
3141	Textile Furnishings Mills	86	1.9	-	-	-	$29,360	$30,120	97.5%
315	Apparel Mftg	441	3.6	-33.9%	-59.2%	-65.0%	$34,111	$28,301	120.5%
3151	Apparel Knitting Mills	58	3.3	-	-	-	$44,193	$29,945	147.6%
321	Wood Product Mftg	635	2.4	18.7%	-23.1%	-1.7%	$30,894	$33,370	92.6%
3219	Other Wood Product Mftg	487	3.3	21.4%	-27.6%	-9.1%	$32,753	$31,691	103.4%
322	Paper Mftg	1,023	4.5	-4.0%	-7.8%	19.6%	$44,511	$50,749	87.7%
322211	Corrugated & Solid Fiber Box Mftg	385	7.1	-9.6%	-22.8%	1.0%	$48,859	$46,031	106.1%
323	Printing & Related Support Activities	87	0.3	40.3%	107.1%	24.3%	$25,176	$39,890	63.1%
323110	Commercial Lithographic Printing	20	0.2	0.0%	-	-	$27,447	$42,464	64.6%
323113	Commercial Screen Printing	32	1.0	52.4%	-	-	$22,472	$29,224	76.9%
323114	Quick Printing	13	0.4	-	-	-	$23,200	$32,783	70.8%
323119	Other Commercial Printing	22	0.9	-	-	-	$28,212	$39,104	72.1%
325	Chemical Mftg	264	0.6	-9.6%	26.3%	183.9%	$38,884	$71,009	54.8%
3255	Paint, Coating, & Adhesive Mftg	206	6.5	1.5%	-	-	$41,828	$54,611	76.6%
326	Plastics & Rubber Products Mftg	1,000	2.7	11.9%	2.6%	3.7%	$34,088	$39,321	86.7%
3261	Plastics Product Mftg	967	3.3	-	-	-	$34,388	$37,869	90.8%
326199	All Other Plastics Product Mftg	587	3.7	63.5%	12.9%	86.9%	$34,737	$36,161	96.1%

Source: Bureau of Labor Statistics

Manufacturing Cluster Strength Continued: Iredell County, North Carolina

Iredell County, North Carolina

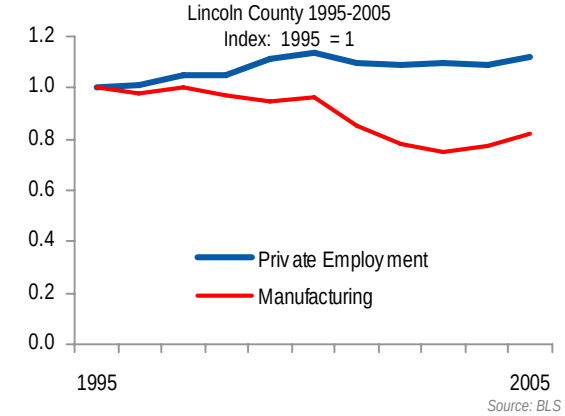
NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
3262	Rubber Product Mftg	33	0.4	-	-	-	$25,322	$44,761	56.6%
327	Nonmetallic Mineral Product Mftg	606	2.6	-0.5%	28.9%	-7.5%	$37,341	$43,032	86.8%
3272	Glass & Glass Product Mftg	359	7.1	-8.4%	142.6%	160.1%	$35,555	$44,872	79.2%
3273	Cement & Concrete Product Mftg	157	1.4	12.1%	-	-	$43,224	$42,593	101.5%
327991	Cut Stone & Stone Product Mftg	10	0.8	-	-	-	$31,046	$33,581	92.5%
331	Primary Metal Mftg	565	2.6	22.8%	47.9%	144.6%	$35,730	$51,376	69.5%
332	Fabricated Metal Product Mftg	1,182	1.7	22.5%	16.8%	50.0%	$37,166	$41,219	90.2%
3323	Architectural & Structural Metals Mftg	205	1.1	35.8%	36.7%	127.8%	$32,875	$38,436	85.5%
332312	Fabricated Structural Metal Mftg	43	1.0	616.7%	-	-	$32,741	$40,505	80.8%
332322	Sheet Metal Work Mftg	5	0.1	-	-	-	$28,040	$38,504	72.8%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mft	272	1.7	223.8%	198.9%	209.1%	$36,309	$40,106	90.5%
3328	Coating, Engraving, Heat Treating, & Allied Activities	43	0.6	-41.9%	-50.6%	-27.1%	$54,673	$36,110	151.4%
332813	Electroplating, Plating, Polishing, Anodizing, & Colorin	19	0.5	-	-	-	$30,535	$34,527	88.4%
3329	Other Fabricated Metal Product Mftg	28	0.2	-50.9%	-	-	$29,489	$45,678	64.6%
333	Machinery Mftg	776	1.4	3.1%	-58.4%	-54.6%	$48,735	$50,934	95.7%
3332	Ind Machinery Mftg	279	4.9	-5.1%	-4.5%	4.5%	$51,976	$56,956	91.3%
3335	Metalworking Machinery Mftg	85	0.9	107.3%	84.8%	54.5%	$39,644	$46,413	85.4%
333514	Special Die & Tool, Die Set, Jig, & Fixture Mftg	18	0.5	0.0%	-	-	$23,988	$45,632	52.6%
334	Computer & Electronic Product Mftg	216	0.4	4.9%	-21.7%	-20.9%	$41,347	$76,285	54.2%
3345	Nav, Measuring, Electromedical, & Control Insrmts Mf	76	0.4	4.1%	-	-	$41,607	$72,470	57.4%
336	Transportation Equip Mftg	1,104	1.3	-14.0%	-37.0%	-24.0%	$46,429	$56,930	81.6%
3363	Motor Vehicle Parts Mftg	1,032	3.2	-13.9%	-39.6%	-26.1%	$46,590	$50,285	92.7%
336340	Motor Vehicle Brake System Mftg	29	1.4	-	-	-	$49,105	$48,946	100.3%
3369	Other Transportation Equip Mftg	51	2.8	10.9%	-	-	$50,821	$52,305	97.2%
337	Furniture & Related Product Mftg	540	2.0	-33.2%	-56.3%	-68.2%	$27,276	$32,568	83.8%
339	Miscellaneous Mftg	836	2.8	-31.5%	-45.7%	-53.8%	$39,057	$43,919	88.9%
3391	Medical Equip & Supplies Mftg	667	4.7	-10.3%	-8.4%	-3.1%	$41,226	$50,700	81.3%
339113	Surgical Appliance & Supplies Mftg	129	3.2	-	-	-	$42,476	$52,691	80.6%
339116	Dental Laboratories	17	0.7	6.3%	-	-	$25,766	$32,999	78.1%
3399	Other Miscellaneous Mftg	169	1.0	-64.5%	-79.2%	-	$30,498	$37,967	80.3%
339950	Sign Mftg	32	0.9	113.3%	-	-	$26,512	$35,730	74.2%

Source: Bureau of Labor Statistics

Lincoln County, North Carolina

Lincoln County is a mid sized county in the study area with a population of 69,500. Over the past fifteen years the county has grown by 38.1%, outpacing both the state and nation, but not the region. Residents earn an above average median household income relative to the state, with strong historical growth trends. Educational attainment is below the state and nation, indicating that the area may have difficulty finding skilled workers. The unemployment rate is 5.7%, which is slightly above the other benchmarks but still low from a historical perspective. 28.5% of Lincoln County residents are in the 25 to 44-age range, which is almost identical to the nation.

EMPLOYMENT GROWTH



Source: BLS

The chart above illustrates a shift in manufacturing employment relative to total private employment. From 1995 to 2005 manufacturing employment declined by 1,300 or 17.6%, equal to the U.S. and far below the region and state. Overall manufacturing employment losses have been slowed by gains in machinery and fabricated metal product manufacturing. Over the same period, total private employment added 1,800 or 12%. Growth in Construction and Leisure and Hospitality accounted for much of this growth.

At a Glance

2005	Lincoln County	Region	North Carolina	United States
Population	69,500	2.0 m	8.6 m	296 m
Pop Growth '90-'05	38.1%	41.7%	30.4%	19.1%
Median HH Income	$45,800	$49,800	$43,300	$46,300
Growth in HH Income '90-'05	59.5%	64.5%	62.5%	54.0%
% Bachelor's Degree or higher	14.3%	27.5%	25.3%	27.7%
% of Adults age 25-44	28.5%	30.5%	29.2%	28.2%
Unemployment rate	5.7%	5.4%	5.2%	5.1%
Private Employment	16,400	821,300	3.9 m	110.2 m
Emp. Growth 95-05	12.0%	15.8%	11.7%	13.8%
Manufacturing Emp	6,200	127,200	566,600	14.2 m
Mftg Emp. Growth 95-05	-17.6%	-32.2%	-31.0%	-17.6%

Cluster Strength: Lincoln County, North Carolina

Lincoln County's top six clusters are a mix of low and high tech manufacturing industries; all of which are strong clusters for the region as well. Of the county's 15 top industry clusters, none are in professional business services or research related industries, which could make it difficult to support further growth in advanced manufacturing.

Employment by Industry: Lincoln County, North Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	14,637	16,735	16,083	16,399	12.0%	-2.0%	2.0%
101	Goods-Producing	8,418	8,637	7,257	7,916	-6.0%	-8.3%	9.1%
1011	Natural Resources and Mining	115	123	99	122	6.1%	-0.8%	23.2%
1012	Construction	722	1,242	1,435	1,550	114.7%	24.8%	8.0%
1013	Manufacturing	7,581	7,272	5,722	6,243	-17.6%	-14.2%	9.1%
102	Service-Providing	6,218	8,098	8,826	8,483	36.4%	4.8%	-3.9%
1021	Trade, Transportation, and Utilities	2,949	3,538	3,687	3,443	16.8%	-2.7%	-6.6%
1022	Information	153	165	156	170	11.1%	3.0%	9.0%
1023	Financial Activities	425	570	500	505	18.8%	-11.4%	1.0%
1024	Professional and Business Services	707	1,302	1,377	786	11.2%	-39.6%	-42.9%
1025	Education and Health Services	766	992	1,198	1,182	54.3%	19.2%	-1.3%
1026	Leisure and Hospitality	926	1,179	1,365	1,785	92.8%	51.4%	30.8%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN LINCOLN COUNTY, 2005

Manufacturing Cluster Strength: Lincoln County, North Carolina

Lincoln County is one the few counties to experience growth in manufacturing in the near term. Over the past two years manufacturing employment has grown 9.1%, while services actually decreased 3.9%. Some of Lincoln County's strongest manufacturing clusters are textiles, chemicals, machinery, and furniture manufacturing. Based on recent employment growth, some of the County's promising industries include nonmetallic mineral product, fabricated metal product, and machinery manufacturing. Lincoln County offers an inexpensive manufacturing workforce, as the average wage is only 69.3% of the national average.

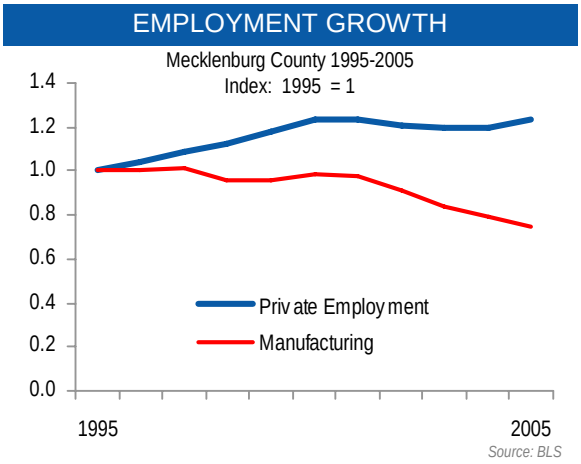
Lincoln County, North Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	16,399	1.0	2.0%	-2.0%	12.0%	$27,770	$39,617	70.1%
31-33	Mftg	6,243	3.0	9.1%	-14.2%	-17.6%	$33,649	$48,538	69.3%
313	Textile Mills	1,191	36.5	-10.8%	-47.8%	-56.7%	$24,026	$33,593	71.5%
3131	Fiber, Yarn, & Thread Mills	265	35.0	-44.0%	-	-	$19,502	$30,370	64.2%
3132	Fabric Mills	485	31.0	-18.6%	-57.7%	-70.0%	$24,105	$34,666	69.5%
3133	Textile & Fabric Finishing & Fabric Coating Mills	215	22.8	-19.2%	-	-	$29,985	$34,406	87.2%
313312	Textile & Fabric Finishing (except Broadwoven Fabric	215	62.2	-19.2%	-	-	$29,985	$32,691	91.7%
321	Wood Product Mftg	162	2.0	-	-	-	$28,778	$33,370	86.2%
323	Printing & Related Support Activities	20	0.2	-9.1%	-45.9%	-52.4%	$22,423	$39,890	56.2%
323110	Commercial Lithographic Printing	4	0.1	-63.6%	-	-	$22,240	$42,464	52.4%
325	Chemical Mftg	300	2.3	-4.8%	-	-	$47,623	$71,009	67.1%
326	Plastics & Rubber Products Mftg	96	0.8	-	-	-	$37,455	$39,321	95.3%
327	Nonmetallic Mineral Product Mftg	223	3.0	23.9%	19.3%	153.4%	$38,904	$43,032	90.4%
3273	Cement & Concrete Product Mftg	190	5.4	11.8%	-	-	$40,517	$42,593	95.1%
332	Fabricated Metal Product Mftg	1,821	8.1	19.1%	1.4%	43.2%	$42,860	$41,219	104.0%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mft	39	0.8	-18.8%	-7.1%	18.2%	$32,960	$40,106	82.2%
333	Machinery Mftg	353	2.1	27.9%	31.2%	59.0%	$38,149	$50,934	74.9%
337	Furniture & Related Product Mftg	1,276	15.2	6.4%	2.0%	-22.1%	$27,484	$32,568	84.4%
3371	Household & Institutional Furniture & Kitchen Cabinet	1,253	22.1	24.9%	24.3%	-15.3%	$27,636	$30,449	90.8%
3372	Office Furniture (including Fixtures) Mftg	23	1.2	-88.3%	-90.6%	-85.5%	$19,248	$37,967	50.7%
339	Miscellaneous Mftg	98	1.0	55.6%	50.8%	-	$30,456	$43,919	69.3%

Source: Bureau of Labor Statistics

Mecklenburg County, North Carolina

Mecklenburg County is the largest county in the study area with a population of 787,100. Over the past fifteen years the county has grown by 54%, far outpacing the region, state and nation. Residents enjoy an above average median household income, with strong historical growth trends. Educational attainment is well above the state and nation, indicating that the area has access to a wealth of skilled workers. The unemployment rate is 4.9%, and could create a tight labor supply should it drop any lower. One third of Mecklenburg County residents are in the 25 to 44-age range, which is above the nation.



Many business owners and entrepreneurs can be found in this demographic, making it critical to the economic vitality of a region. Typically, technology companies locate in regions that have 33% or more of their residents in this age group.

At a Glance

2005	Mecklenburg County	Region	North Carolina	United States
Population	787,100	2.0 m	8.6 m	296 m
Pop Growth '90-'05	54%	41.7%	30.4%	19.1%
Median HH Income	$56,900	$49,800	$43,300	$46,300
Growth in HH Income '90-'05	68.3%	64.5%	62.5%	54.0%
% Bachelor's Degree or higher	42.1%	27.5%	25.3%	27.7%
% of Adults age 25-44	33.3%	30.5%	29.2%	28.2%
Unemployment rate	4.9%	5.4%	5.2%	5.1%
Private Employment	459,700	821,300	3.9 m	110.2 m
Emp. Growth 95-05	22.9%	15.8%	11.7%	13.8%
Manufacturing Emp	35,000	127,200	566,600	14.2 m
Mftg Emp. Growth 95-05	-24.8%	-32.2%	-31.0%	-17.6%

The chart above illustrates a gradual shift in manufacturing employment relative to total private employment over the past ten years. From 1995 to 2005 manufacturing employment declined by 11,500 or 24.8%, just above the U.S. but below the region and state. Overall manufacturing employment losses have been slowed by gains in machinery and fabricated metal product manufacturing. Over the same period, total private employment added 85,500 or 22.9%. The majority of this growth occurred in financial activities and professional business services.

Cluster Strength: Mecklenburg County, North Carolina

Mecklenburg County's top seven clusters are a mix of high and low end business services, all of which are strong clusters for the region as well. Unlike the other counties in the study area manufacturing does not make a large portion of employment. Of the County's 15 top industry clusters, none are in the manufacturing industry and employment in the manufacturing has declined at the 2, 5, 10 year mark. Financial Activities has grown by an astounding 69.8% over the past ten years, making the area a financial hub in the U.S.

Employment by Industry: Mecklenburg County, North Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	374,162	460,107	447,147	459,659	22.9%	-0.1%	2.8%
101	Goods-Producing	70,946	78,184	69,253	67,997	-4.2%	-13.0%	-1.8%
1011	Natural Resources and Mining	499	660	960	1,044	109.2%	58.2%	8.8%
1012	Construction	23,885	31,466	29,289	31,931	33.7%	1.5%	9.0%
1013	Manufacturing	46,562	46,059	39,004	35,022	-24.8%	-24.0%	-10.2%
102	Service-Providing	303,217	381,923	377,894	391,661	29.2%	2.5%	3.6%
1021	Trade, Transportation, and Utilities	110,104	121,023	112,485	115,424	4.8%	-4.6%	2.6%
1022	Information	17,237	21,604	20,123	23,157	34.3%	7.2%	15.1%
1023	Financial Activities	35,175	44,098	57,540	59,710	69.8%	35.4%	3.8%
1024	Professional and Business Services	66,363	104,505	92,625	90,466	36.3%	-13.4%	-2.3%
1025	Education and Health Services	27,602	31,711	36,056	38,996	41.3%	23.0%	8.2%
1026	Leisure and Hospitality	34,288	44,629	43,861	47,349	38.1%	6.1%	8.0%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN MECKLENBURG COUNTY, 2005

Manufacturing Cluster Strength: Mecklenburg County, North Carolina

A closer look at the manufacturing industry in Mecklenburg County reveals that the county's strengths lie in rubber products, fabricated structural metal, surface-active agents, and numerous machinery manufacturing industries. Several of these strong clusters are losing strength, as employment shifts to other manufacturing industries or to service industries. Emerging clusters in the county that have recently experienced positive growth include wood products, coating, electroplating, electrical equipment manufacturing. Both overall wages and manufacturing wages in the county are above the national average, making the area less competitive from a cost perspective. More manufacturing industries are included on the next two pages.

Mecklenburg County, North Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	459,659	1.0	2.8%	-0.1%	22.9%	$49,983	$39,617	126.2%
31-33	Mftg	35,022	0.6	-10.2%	-24.0%	-24.8%	$55,550	$48,538	114.4%
311	Food Mftg	3,290	0.5	-18.1%	-20.5%	-32.6%	$42,324	$35,127	120.5%
3118	Bakeries & Tortilla Mftg	2,114	1.8	-24.3%	-28.1%	-31.7%	$39,774	$30,888	128.8%
311812	Commercial Bakeries	739	1.4	-9.9%	-23.7%	-	$32,264	$36,051	89.5%
3119	Other Food Mftg	868	1.3	-6.8%	-7.5%	-15.0%	$49,732	$44,854	110.9%
312	Beverage & Tobacco Product Mftg	759	0.9	-12.9%	-43.7%	-19.3%	$65,445	$51,182	127.9%
313	Textile Mills	376	0.4	-30.4%	-56.0%	-69.2%	$39,310	$33,593	117.0%
3131	Fiber, Yarn, & Thread Mills	51	0.2	-56.4%	-82.7%	-80.6%	$75,467	$30,370	248.5%
3132	Fabric Mills	129	0.3	-42.2%	-59.2%	-82.2%	$35,677	$34,666	102.9%
313230	Nonwoven Fabric Mills	106	1.6	-	-	-	$38,662	$45,529	84.9%
3133	Textile & Fabric Finishing & Fabric Coating Mills	196	0.7	-2.0%	-19.7%	-16.2%	$32,294	$34,406	93.9%
313312	Textile & Fab. FinishingMills	117	1.2	-	-	-	$33,571	$32,691	102.7%
314	Textile Product Mills	718	1.0	-12.5%	-25.7%	-32.8%	$35,758	$29,451	121.4%
3141	Textile Furnishings Mills	413	1.0	-14.8%	-14.1%	-14.8%	$31,179	$30,120	103.5%
314121	Curtain & Drapery Mills	67	1.0	-	-	-	$53,937	$23,878	225.9%
3149	Other Textile Product Mills	305	1.0	-9.2%	-37.1%	-47.8%	$41,959	$28,566	146.9%
314912	Canvas & Related Product Mills	103	1.1	24.1%	-	-	$28,898	$29,045	99.5%
314999	All Other Misc Textile Product Mills	203	1.5	-	-	-	$48,379	$27,169	178.1%
315	Apparel Mftg	186	0.2	-48.0%	-64.8%	-82.0%	$27,112	$28,301	95.8%
3152	Cut & Sew Apparel Mftg	12	0.0	-	-	-	$20,776	$27,895	74.5%
321	Wood Product Mftg	891	0.4	79.3%	10.4%	127.3%	$41,913	$33,370	125.6%
3211	Sawmills & Wood Preservation	14	0.0	-	-	-	$39,715	$35,034	113.4%
3219	Other Wood Product Mftg	578	0.4	20.2%	-25.7%	60.1%	$38,702	$31,691	122.1%
321911	Wood Window & Door Mftg	377	1.2	318.9%	3.6%	288.7%	$32,014	$36,027	88.9%
321918	Other Millwork (including Flooring)	199	0.8	24.4%	6.4%	51.9%	$40,756	$32,282	126.3%
321920	Wood Container & Pallet Mftg	79	0.3	-	-	-	$23,767	$25,197	94.3%
322	Paper Mftg	1,970	1.0	-19.2%	-29.9%	-20.7%	$48,017	$50,749	94.6%
3221	Pulp, Paper, & Paperboard Mills	303	0.5	83.6%	53.8%	113.4%	$50,545	$64,079	78.9%
322130	Paperboard Mills	276	1.7	-	-	-	$50,644	$63,449	79.8%
3222	Converted Paper Product Mftg	1,667	1.2	-26.7%	-36.3%	-28.9%	$47,557	$45,261	105.1%
322211	Corrugated & Solid Fiber Box Mftg	713	1.5	-32.4%	-45.2%	-37.7%	$41,583	$46,031	90.3%
322222	Coated & Laminated Paper Mftg	193	1.4	-	-	-	$57,435	$50,032	114.8%
323	Printing & Related Support Activities	3,173	1.2	-3.2%	-16.5%	-13.0%	$43,635	$39,890	109.4%
323110	Commercial Lithographic Printing	1,296	1.2	-0.2%	5.9%	-5.8%	$46,657	$42,464	109.9%
323111	Commercial Gravure Printing	50	0.7	4.2%	-	-	$60,904	$42,471	143.4%
323112	Commercial Flexographic Printing	225	1.3	19.0%	-15.4%	-13.5%	$49,349	$41,866	117.9%
323113	Commercial Screen Printing	199	0.7	41.1%	26.8%	23.6%	$26,048	$29,224	89.1%
323114	Quick Printing	277	1.0	-19.5%	-61.0%	-8.6%	$36,051	$32,783	110.0%
323115	Digital Printing	50	0.6	-12.3%	-	-	$40,592	$44,445	91.3%
323116	Manifold Business Forms Printing	614	3.9	2.3%	5.9%	8.5%	$42,488	$45,576	93.2%
323119	Other Commercial Printing	198	0.9	-22.7%	-34.7%	-4.3%	$41,521	$39,104	106.2%

Source: Bureau of Labor Statistics

Manufacturing Cluster Strength Continued: Mecklenburg County, North Carolina

Mecklenburg County, North Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
323121	Tradebinding & Related Work	42	0.4	-47.5%	-53.8%	-66.1%	$26,191	$30,269	86.5%
323122	Prepress Services	208	1.7	-16.5%	-30.0%	-55.8%	$52,004	$52,094	99.8%
325	Chemical Mftg	2,303	0.6	-25.8%	-26.8%	-15.9%	$60,331	$71,009	85.0%
3251	Basic Chemical Mftg	677	1.1	-21.7%	-25.4%	-4.9%	$73,703	$77,864	94.7%
325188	All Other Basic Inorganic Chemical Mftg	78	0.6	1.3%	-	-6.0%	$50,216	$72,774	69.0%
3252	Resin, Syn. Rubber, & Syn. Fibers & Filaments Mftg	249	0.6	-35.3%	-48.2%	-14.7%	$76,404	$65,886	116.0%
3255	Paint, Coating, & Adhesive Mftg	233	0.8	-14.3%	42.9%	52.3%	$49,564	$54,611	90.8%
3256	Soap, Cleaning Compound, & Toilet Prep Mftg	341	0.7	-26.7%	-36.7%	-59.6%	$58,482	$52,025	112.4%
325612	Polish & Other Sanitation Good Mftg	52	0.5	-10.3%	-17.5%	-5.5%	$50,909	$57,946	87.9%
325613	Surface Active Agent Mftg	216	10.2	-32.7%	-52.2%	-71.4%	$68,904	$62,988	109.4%
3259	Other Chemical Product & Prep Mftg	599	1.4	-6.8%	9.5%	1.5%	$49,707	$54,775	90.7%
325910	Printing Ink Mftg	349	6.6	-7.4%	2.0%	-6.2%	$49,140	$57,304	85.8%
325998	All Other Misc Chemical Product & Prep Mftg	44	0.3	-43.6%	-	-	$63,222	$57,596	109.8%
326	Plastics & Rubber Products Mftg	3,905	1.2	-10.9%	4.3%	-7.7%	$52,546	$39,321	133.6%
3261	Plastics Product Mftg	1,939	0.7	-7.0%	7.1%	-13.7%	$43,805	$37,869	115.7%
3262	Rubber Product Mftg	1,966	2.8	-14.4%	-	-	$61,166	$44,761	136.6%
326212	Tire Retreading	16	0.5	-70.4%	-	-	$30,807	$32,752	94.1%
326220	Rubber & Plastics Hoses & Belting Mftg	373	3.2	5.4%	-	-	$35,947	$39,938	90.0%
327	Nonmetallic Mineral Product Mftg	823	0.4	-29.1%	-31.8%	-22.0%	$47,150	$43,032	109.6%
3271	Clay Product & Refractory Mftg	57	0.2	32.6%	35.7%	5.6%	$70,524	$39,678	177.7%
3272	Glass & Glass Product Mftg	1	0.0	-	-	-	$29,509	$44,872	65.8%
3273	Cement & Concrete Product Mftg	691	0.7	-10.8%	-16.2%	2.5%	$46,096	$42,593	108.2%
327320	Ready-Mix Concrete Mftg	391	0.8	3.4%	-24.2%	6.3%	$48,482	$43,582	111.2%
327331	Concrete Block & Brick Mftg	99	1.0	0.0%	-	-	$44,575	$40,939	108.9%
327390	Other Concrete Product Mftg	150	0.6	-38.3%	-	-	$44,012	$36,864	119.4%
3279	Other Nonmetallic Mineral Product Mftg	71	0.2	57.8%	47.9%	97.2%	$39,174	$42,843	91.4%
327991	Cut Stone & Stone Product Mftg	61	0.5	125.9%	-	-	$39,815	$33,581	118.6%
331	Primary Metal Mftg	933	0.5	1.1%	-2.6%	-16.6%	$55,911	$51,376	108.8%
3312	Steel Product Mftg from Purchased Steel	49	0.2	22.5%	-	-	$32,575	$50,573	64.4%
331524	Aluminum Foundries (except Die-Casting)	10	0.1	-	-	-	$18,470	$37,863	48.8%
332	Fabricated Metal Product Mftg	3,377	0.5	-5.0%	-25.0%	-21.8%	$50,777	$41,219	123.2%
3322	Cutlery & H&tool Mftg	47	0.2	-	-35.6%	-48.4%	$56,671	$47,367	119.6%
332212	H& & Edge Tool Mftg	32	0.2	-33.3%	-	-	$54,155	$41,617	130.1%
3323	Architectural & Structural Metals Mftg	1,172	0.7	-3.9%	-8.3%	7.1%	$63,381	$38,436	164.9%
332312	Fabricated Structural Metal Mftg	539	1.5	15.4%	9.8%	51.4%	$44,565	$40,505	110.0%
332322	Sheet Metal Work Mftg	254	0.6	12.4%	-12.4%	3.3%	$34,475	$38,504	89.5%
3324	Boiler, Tank, & Shipping Container Mftg	412	1.1	1.7%	-16.9%	-9.3%	$36,561	$47,072	77.7%
3326	Spring & Wire Product Mftg	338	1.4	-4.5%	-36.1%	-29.1%	$45,080	$37,903	118.9%
3327	Machine Shops; Turned Product Mftg	397	0.3	-7.2%	-24.7%	-14.4%	$44,727	$40,106	111.5%
3328	Coating, Engraving, Heat Treating, & Allied Act.	342	0.6	25.7%	8.2%	15.9%	$45,472	$36,110	125.9%
332811	Metal Heat Treating	121	1.6	14.2%	-	-	$52,818	$44,023	120.0%
332812	Metal Coating, Engraving , & Allied Services to Mftg	89	0.4	-6.3%	-	-	$44,867	$35,575	126.1%

Source: Bureau of Labor Statistics

Manufacturing Cluster Strength Continued: Mecklenburg County, North Carolina

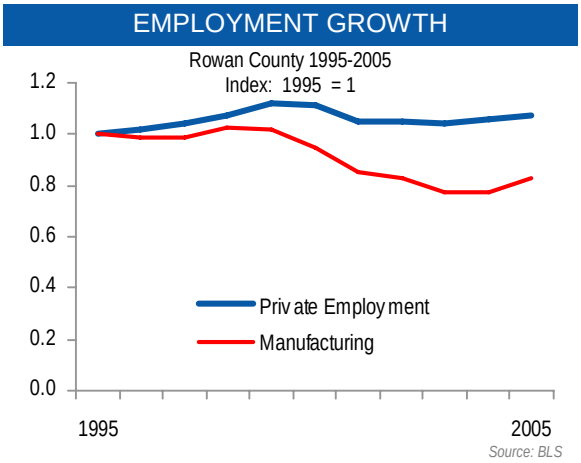
Mecklenburg County, North Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
332813	Electroplating, Plating, Anodizing, & Coloring	133	0.4	84.7%	-2.2%	14.7%	$38,853	$34,527	112.5%
3329	Other Fabricated Metal Product Mftg	431	0.4	-31.0%	-58.9%	-64.8%	$51,632	$45,678	113.0%
332912	Fluid Power Valve & Hose Fitting Mftg	99	0.7	-6.6%	-	-	$43,225	$50,533	85.5%
332999	All Other Misc. Fabricated Metal Prod.Mftg	37	0.1	-51.3%	-88.5%	-91.2%	$39,576	$38,480	102.8%
333	Machinery Mftg	5,127	1.1	-0.7%	-26.1%	-24.9%	$66,077	$50,934	129.7%
3332	Ind Machinery Mftg	756	1.5	-3.6%	-53.8%	-66.7%	$70,184	$56,956	123.2%
333291	Paper Industry Machinery Mftg	77	1.7	-3.8%	-77.3%	-79.7%	$210,762	$52,601	400.7%
333292	Textile Machinery Mftg	429	14.2	-1.8%	-59.9%	-71.3%	$54,432	$41,151	132.3%
333293	Printing Machinery & Equip Mftg	194	3.4	-4.4%	-	-	$52,010	$54,898	94.7%
3333	Commercial & Service Industry Machinery Mftg	337	0.7	-	-	-	$50,221	$56,437	89.0%
333314	Optical Insrmt & Lens Mftg	180	1.9	-	-	-	$59,572	$63,104	94.4%
333411	Air Purification Equip Mftg	55	0.8	-66.9%	-	-	$49,905	$35,150	142.0%
333415	Air-Conditioning & & Ind Refrigeration Equip Mftg	139	0.3	-61.9%	-59.9%	-65.6%	$40,675	$42,837	95.0%
3335	Metalworking Machinery Mftg	554	0.7	6.7%	-37.9%	-27.1%	$58,111	$46,413	125.2%
333511	Ind Mold Mftg	166	0.9	-	-	-	$57,878	$46,571	124.3%
333514	Special Die & Tool, Die Set, Jig, & Fixture Mftg	119	0.4	24.0%	28.0%	-5.6%	$44,368	$45,632	97.2%
333515	Cutting Tool & Machine Tool Accessory Mftg	43	0.4	53.6%	-51.7%	-49.4%	$41,818	$43,564	96.0%
3336	Engine, Turbine, & Power Transmission Equip Mftg	1,159	2.9	7.7%	12.1%	10.3%	$63,340	$58,680	107.9%
333612	Speed Changer, Ind High-Speed Drive, & Gear Mftg	295	5.2	30.5%	-	-	$48,213	$49,301	97.8%
3339	Other General Purpose Machinery Mftg	1,534	1.4	-0.3%	-28.8%	1.1%	$81,541	$50,270	162.2%
333999	All Other Misc General Purpose Machinery Mftg	370	2.2	-20.4%	-47.7%	-16.7%	$46,360	$49,260	94.1%
334	Computer & Electronic Product Mftg	3,993	0.7	-15.4%	-37.2%	-34.7%	$89,159	$76,285	116.9%
3342	Communications Equip Mftg	15	0.0	-	-61.5%	-	$50,185	$77,161	65.0%
3345	Nav, Meas, Electromedical, & Control Insrmts Mftg	162	0.1	58.8%	125.0%	-14.3%	$54,722	$72,470	75.5%
334510	Electromedical & Electrotherapeutic Apparatus Mftg	5	0.0	-	-	-	$99,153	$73,519	134.9%
334513	Insrmts & Prod. Mftg for Meas. & Control Ind Proc.Variables	13	0.1	-55.2%	-	-	$65,233	$59,793	109.1%
334514	Totalizing Fluid Meter & Counting Device Mftg	15	0.3	7.1%	-	-	$25,141	$49,526	50.8%
334515	Insrmt Mftg Meas.& Testing Elect. & Elect. Signals	29	0.2	-23.7%	-	-	$49,801	$80,527	61.8%
3346	Mftg & Reproducing Magnetic & Optical Media	1,353	7.3	-11.5%	-	84.3%	$108,351	$64,357	168.4%
335	Electrical Equip, Appliance, & Component Mftg	257	0.1	9.4%	-15.7%	24.8%	$45,083	$46,381	97.2%
3353	Electrical Equip Mftg	177	0.3	59.5%	7.3%	115.9%	$49,790	$49,193	101.2%
335313	Switchgear & Switchboard Apparatus Mftg	154	1.2	113.9%	-	-	$48,044	$51,931	92.5%
3359	Other Electrical Equip & Component Mftg	63	0.1	-25.0%	34.0%	-7.4%	$32,589	$46,940	69.4%
336	Transportation Equip Mftg	585	0.1	-9.9%	-4.1%	-41.1%	$61,776	$56,930	108.5%
3362	Motor Vehicle Body & Trailer Mftg	139	0.2	-1.4%	-13.1%	-19.2%	$40,265	$37,760	106.6%
3363	Motor Vehicle Parts Mftg	277	0.1	-24.5%	81.0%	-56.4%	$55,744	$50,285	110.9%
337	Furniture & Related Product Mftg	794	0.3	4.2%	-0.6%	8.0%	$36,028	$32,568	110.6%
3371	Household & Institutional Furniture & Kitchen Cabinet Mftg	519	0.3	7.0%	5.7%	81.5%	$38,286	$30,449	125.7%
337110	Wood Kitchen Cabinet & Countertop Mftg	277	0.4	8.6%	-16.3%	45.0%	$35,646	$31,587	112.8%
337122	Nonupholstered Wood Household Furniture Mftg	83	0.2	13.7%	-40.7%	33.9%	$39,659	$28,059	141.3%
339	Misc Mftg	1,545	0.6	1.6%	-20.7%	-28.3%	$40,478	$43,919	92.2%
3391	Medical Equip & Supplies Mftg	559	0.4	-10.3%	-31.0%	-44.7%	$45,688	$50,700	90.1%
339112	Surgical & Medical Insrmt Mftg	29	0.1	-	-	-	$170,832	$59,964	284.9%
339113	Surgical Appliance & Supplies Mftg	53	0.1	-62.1%	-85.8%	-89.4%	$36,711	$52,691	69.7%
339115	Ophthalmic Goods Mftg	4	0.0	-	-	-	$18,654	$42,384	44.0%
339116	Dental Laboratories	213	1.0	-5.3%	6.5%	21.0%	$37,999	$32,999	115.2%
3399	Other Misc Mftg	986	0.7	9.8%	-13.4%	-13.9%	$37,525	$37,967	98.8%
339920	Sporting & Athletic Goods Mftg	51	0.2	4.1%	-	-	$46,648	$39,427	118.3%
339950	Sign Mftg	430	1.4	17.5%	14.7%	49.8%	$36,336	$35,730	101.7%

Source: Bureau of Labor Statistics

Rowan County, North Carolina

Rowan County is a mid sized county in the study area with a population of 136,300. Over the past fifteen years the county has grown by 23.3%, outpacing the nation, but not the region or state. The median household income is $41,200, which is just below the state and national average. Educational attainment is well below the state and nation, indicating that the area may not have ready access to skilled workers. The unemployment rate is 5.5%, just above the other benchmarks but still considered low. 27.7% of Rowan County residents are in the 25 to 44-age range, which is just below the nation. Many business owners and entrepreneurs can be found in this demographic, making it critical to the economic vitality of a region. Typically, technology companies locate in regions that have 33% or more of their residents in this age group.



At a Glance

2005	Rowan County	Region	North Carolina	United States
Population	136,300	2.0 m	8.6 m	296 m
Pop Growth '90-'05	23.3%	41.7%	30.4%	19.1%
Median HH Income	$41,200	$49,800	$43,300	$46,300
Growth in HH Income '90-'05	56.5%	64.5%	62.5%	54.0%
% Bachelor's Degree or higher	15.5%	27.5%	25.3%	27.7%
% of Adults age 25-44	27.7%	30.5%	29.2%	28.2%
Unemployment rate	5.5%	5.4%	5.2%	5.1%
Private Employment	40,000	821,300	3.9 m	110.2 m
Emp. Growth 95-05	7.5%	15.8%	11.7%	13.8%
Manufacturing Emp	11,700	127,200	566,600	14.2 m
Mftg Emp. Growth 95-05	-17.3%	-32.2%	-31.0%	-17.6%

The chart above illustrates a gradual shift in manufacturing employment relative to total private employment over the past ten years. From 1995 to 2005 manufacturing employment declined by 2,400 or 17.3%, just below the U.S. and far below the region and state. Overall manufacturing employment losses have been slowed by gains in transportation equipment and rubber products manufacturing. Over the same period, total private employment added 2,800 or 7.5%. The majority of this growth occurred in trade, transportation and utilities, and education and health services.

Cluster Strength: Rowan County, North Carolina

11 of Rowan County's top 15 clusters are a mix of low and high tech manufacturing industries; most of which are strong clusters for the region as well. Of the county's 15 top industry clusters, none are in professional business services or research related industries, which could make it difficult to support further growth in advanced manufacturing. Rowan County is one of few counties where manufacturing growth exceeded services growth over the past two years.

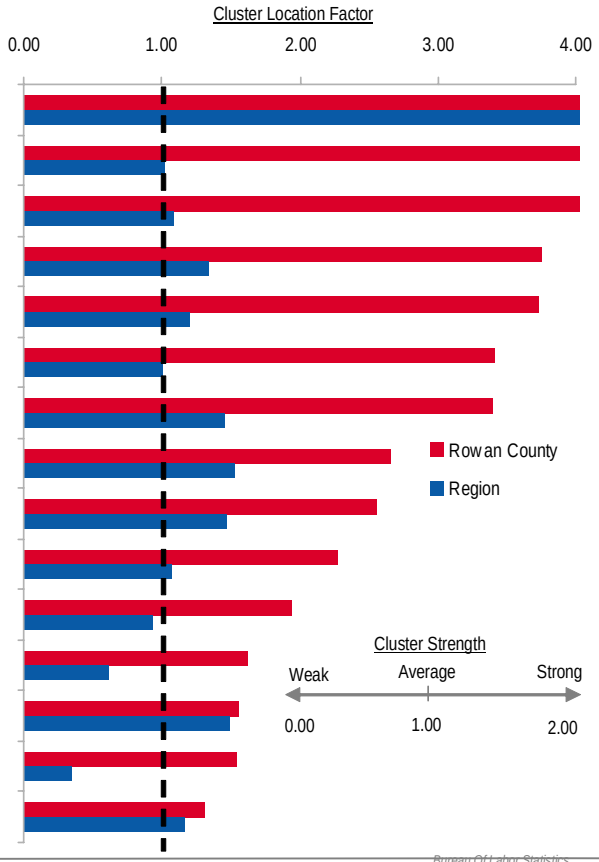
Employment by Industry: Rowan County, North Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	37,251	41,330	38,835	40,034	7.5%	-3.1%	3.1%
101	Goods-Producing	16,642	16,119	13,627	14,480	-13.0%	-10.2%	6.3%
1011	Natural Resources and Mining	526	439	514	485	-7.8%	10.5%	-5.6%
1012	Construction	1,961	2,235	2,181	2,289	16.7%	2.4%	5.0%
1013	Manufacturing	14,155	13,445	10,932	11,707	-17.3%	-12.9%	7.1%
102	Service-Providing	20,609	25,212	25,208	25,554	24.0%	1.4%	1.4%
1021	Trade, Transportation, and Utilities	7,439	9,209	9,176	9,527	28.1%	3.5%	3.8%
1022	Information	243	293	297	299	23.0%	2.0%	0.7%
1023	Financial Activities	1,039	1,028	1,074	1,064	2.4%	3.5%	-0.9%
1024	Professional and Business Services	3,688	5,104	3,864	3,845	4.3%	-24.7%	-0.5%
1025	Education and Health Services	4,316	5,109	5,743	5,839	35.3%	14.3%	1.7%
1026	Leisure and Hospitality	3,002	3,456	3,495	3,602	20.0%	4.2%	3.1%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN ROWAN COUNTY, 2005

Cluster	Rowan Co.	Region
Textile Mills	7.33	7.82
Transportation Equipment Mftg	7.24	1.02
Warehousing and Storage	5.08	1.08
Nonmetallic Mineral Product Mftg	3.76	1.34
Wood Product Mftg	3.73	1.20
Chemical Mftg	3.41	1.01
Plastics and Rubber Products Mftg	3.40	1.46
Truck Transportation	2.66	1.53
Paper Mftg	2.55	1.47
Apparel Mftg	2.28	1.07
Nursing and Residential Care Facilities	1.94	0.93
Waste Management and Remediation Svcss	1.62	0.61
Textile Product Mills	1.56	1.50
Electrical Equip, Appliance, and CompMftg	1.54	0.35
Furniture and Related Product Mftg	1.31	1.16



Manufacturing Cluster Strength: Rowan County, North Carolina

A closer look at the manufacturing industry in Rowan County reveals that the county's strengths lie in textile mills, transportation equipment, nonmetallic mineral product, wood product manufacturing, and chemical manufacturing. Emerging clusters in the county that have recently experienced strong positive growth include motor vehicle parts, turned products, and paper manufacturing. Both overall wages and manufacturing wages in the county are below the national average, making the area competitive from a cost perspective.

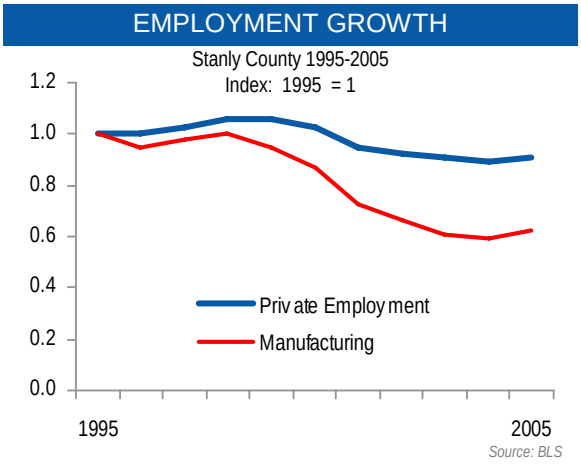
Rowan County, North Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	40,034	1.0	3.1%	-3.1%	7.5%	$32,616	$39,617	82.3%
31-33	Mftg	11,707	2.3	7.1%	-12.9%	-17.3%	$40,826	$48,538	84.1%
311	Food Mftg	154	0.3	-33.0%	-18.9%	-20.2%	$33,399	$35,127	95.1%
3116	Animal Slaughtering & Processing	60	0.3	-53.1%	-45.0%	-35.5%	$38,272	$28,460	134.5%
3119	Other Food Mftg	33	0.6	-15.4%	-	-	$49,172	$44,854	109.6%
313	Textile Mills	584	7.3	-48.6%	-66.1%	-84.9%	$27,334	$33,593	81.4%
3131	Fiber, Yarn, & Thread Mills	507	27.4	-32.3%	-39.0%	-59.8%	$27,750	$30,370	91.4%
314	Textile Product Mills	97	1.6	-28.1%	-	-	$21,706	$29,451	73.7%
315	Apparel Mftg	215	2.3	-46.4%	-44.0%	-70.0%	$24,448	$28,301	86.4%
321	Wood Product Mftg	756	3.7	-7.5%	-7.0%	27.9%	$29,452	$33,370	88.3%
3211	Sawmills & Wood Preservation	32	0.7	-68.9%	-77.9%	-68.6%	$22,260	$35,034	63.5%
3219	Other Wood Product Mftg	215	1.9	-69.9%	-67.8%	-56.0%	$28,320	$31,691	89.4%
321920	Wood Container & Pallet Mftg	29	1.4	-	-	-	$20,164	$25,197	80.0%
322	Paper Mftg	450	2.6	11.1%	-	-	$39,201	$50,749	77.2%
323	Printing & Related Support Activities	77	0.3	-6.1%	-29.4%	-28.7%	$24,822	$39,890	62.2%
325	Chemical Mftg	1,083	3.4	-14.3%	-30.0%	-	$49,705	$71,009	70.0%
3256	Soap, Cleaning Compound, & Toilet Prep Mftg	153	3.7	-31.4%	-	-	$57,109	$52,025	109.8%
326	Plastics & Rubber Products Mftg	987	3.4	89.8%	83.1%	82.4%	$36,422	$39,321	92.6%
3261	Plastics Product Mftg	88	0.4	11.4%	-	-	$31,492	$37,869	83.2%
3262	Rubber Product Mftg	899	14.7	104.3%	-	-	$36,904	$44,761	82.4%
327	Nonmetallic Mineral Product Mftg	687	3.8	7.5%	-1.7%	7.2%	$35,796	$43,032	83.2%
3271	Clay Product & Refractory Mftg	397	17.6	-12.0%	-25.2%	-18.5%	$38,453	$39,678	96.9%
327121	Brick & Structural Clay Tile Mftg	276	55.7	-3.8%	-	-	$36,798	$38,248	96.2%
3273	Cement & Concrete Product Mftg	92	1.1	-	-	-	$45,209	$42,593	106.1%
327320	Ready-Mix Concrete Mftg	64	1.5	-	-	-	$43,149	$43,582	99.0%
332	Fabricated Metal Product Mftg	377	0.7	16.4%	-13.3%	-28.5%	$33,094	$41,219	80.3%
3323	Architectural & Structural Metals Mftg	64	0.4	60.0%	-	-	$32,120	$38,436	83.6%
332323	Ornamental & Architectural Metal Work Mftg	9	0.6	-	-	-	$32,468	$35,493	91.5%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mftg	162	1.3	20.9%	31.7%	88.4%	$35,358	$40,106	88.2%
333	Machinery Mftg	384	0.9	-1.8%	-32.5%	-53.5%	$35,947	$50,934	70.6%
3339	Other General Purpose Machinery Mftg	37	0.4	-11.9%	-	-	$35,828	$50,270	71.3%
335	Electrical Equip, Appliance, & Component Mftg	243	1.5	-0.8%	-	-	$47,125	$46,381	101.6%
336	Transportation Equip Mftg	4,653	7.2	38.7%	-	-	$46,895	$56,930	82.4%
3363	Motor Vehicle Parts Mftg	383	1.5	303.2%	-	-	$34,077	$50,285	67.8%
336312	Gasoline Engine & Engine Parts Mftg	4	0.2	-	-	-	$32,315	$57,207	56.5%
3369	Other Transportation Equip Mftg	22	1.5	10.0%	-	-	$26,719	$52,305	51.1%
336999	All Other Transportation Equip Mftg	22	3.8	10.0%	-	-	$26,719	$41,399	64.5%
337	Furniture & Related Product Mftg	270	1.3	0.0%	-37.1%	-32.5%	$30,584	$32,568	93.9%
337110	Wood Kitchen Cabinet & Countertop Mftg	17	0.3	-	-	-	$25,096	$31,587	79.4%

Source: Bureau of Labor Statistics

Stanly County, North Carolina

Stanly County is the third smallest county in the study area with a population of 59,300. Over the past fifteen years the county has grown by 14.5%, below the region, state and nation. Although the median household income is below average, growth exceeds the nation and is almost on par with the state. Educational attainment is below the state and nation, indicating that the area may have trouble finding skilled workers. The unemployment rate is 5.5%, just above the other benchmarks but still considered low. Just above one quarter of residents are in the 25 to 44-age range, which is just below the nation. Many business owners and entrepreneurs can be found in this demographic, making it critical to the economic vitality of a region. Typically, technology companies locate in regions that have 33% or more of their residents in this age group.



At a Glance

2005	Stanly County	Region	North Carolina	United States
Population	59,300	2.0 m	8.6 m	296 m
Pop Growth '90-'05	14.5%	41.7%	30.4%	19.1%
Median HH Income	$40,500	$49,800	$43,300	$46,300
Growth in HH Income '90-'05	58.8%	64.5%	62.5%	54.0%
% Bachelor's Degree or higher	13.7%	27.5%	25.3%	27.7%
% of Adults age 25-44	26.8%	30.5%	29.2%	28.2%
Unemployment rate	5.5%	5.4%	5.2%	5.1%
Private Employment	15,900	821,300	3.9 m	110.2 m
Emp. Growth 95-05	-9.3%	15.8%	11.7%	13.8%
Manufacturing Emp	4,800	127,200	566,600	14.2 m
Mftg Emp. Growth 95-05	-38.3%	-32.2%	-31.0%	-17.6%

The chart above illustrates a gradual shift in manufacturing employment along side total private employment over the past ten years. From 1995 to 2005 manufacturing employment declined by 3,000 or 38.3%, well above the region, state and nation. Much of this loss occurred in textile and apparel manufacturing. Over the same period, total private employment lost 1,600 or 9.3%. Overall losses were offset by gains in service industries.

Cluster Strength: Stanly County, North Carolina

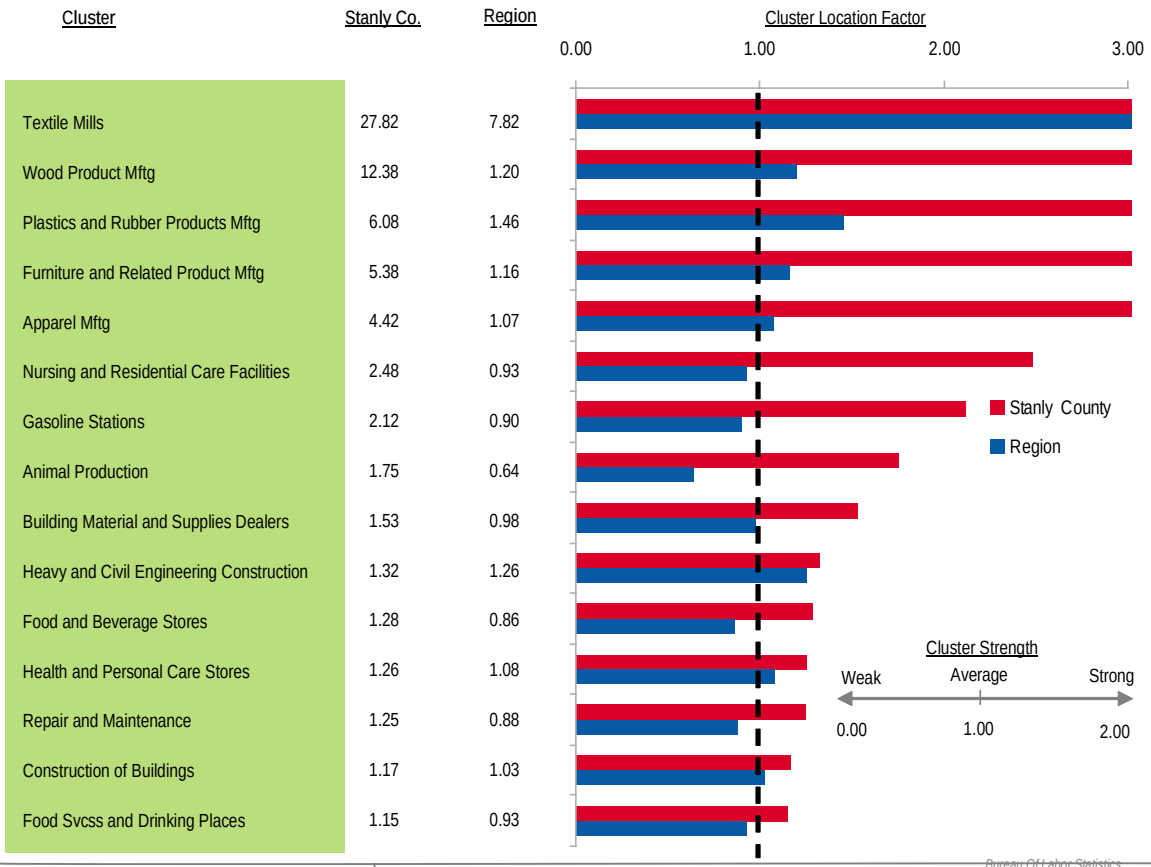
Stanly County's top five clusters are a mix of low and high tech manufacturing industries; all of which are strong clusters for the region as well. Of the County's 15 top industry clusters, none are in professional business services or research related industries, which could make it difficult to support further growth in advanced manufacturing. Stanly County is one of few counties where manufacturing growth exceeded services growth over the past two years.

Employment by Industry: Stanly County, North Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	17,571	18,039	15,952	15,938	-9.3%	-11.6%	-0.1%
101	Goods-Producing	8,983	8,194	6,081	6,196	-31.0%	-24.4%	1.9%
1011	Natural Resources and Mining	147	141	166	133	-9.5%	-5.7%	-19.9%
1012	Construction	974	1,216	1,109	1,214	24.6%	-0.2%	9.5%
1013	Manufacturing	7,862	6,837	4,806	4,848	-38.3%	-29.1%	0.9%
102	Service-Providing	8,588	9,845	9,872	9,742	13.4%	-1.0%	-1.3%
1021	Trade, Transportation, and Utilities	3,700	3,929	3,113	3,002	-18.9%	-23.6%	-3.6%
1022	Information	131	87	100	63	-51.9%	-27.6%	-37.0%
1023	Financial Activities	436	468	502	455	4.4%	-2.8%	-9.4%
1024	Professional and Business Services	667	869	979	896	34.3%	3.1%	-8.5%
1025	Education and Health Services	2,022	2,566	2,919	3,043	50.5%	18.6%	4.2%
1026	Leisure and Hospitality	1,219	1,406	1,680	1,650	35.4%	17.4%	-1.8%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN STANLY COUNTY, 2005



Manufacturing Cluster Strength: Stanly County, North Carolina

A closer look at the manufacturing industry in Stanly County reveals that the county's strengths lie in textile mills, wood products, plastics, and furniture manufacturing. Several of these clusters are losing strength, as employment shifts to other manufacturing industries or to service industries. Emerging clusters in the county that have recently experienced strong positive growth include food, nonmetallic mineral product, and machinery manufacturing. Both overall wages and manufacturing wages in the county are well below the national average, making the area competitive from a cost perspective.

Stanly County, North Carolina

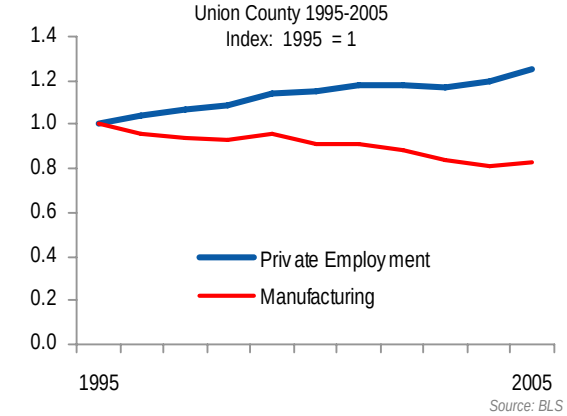
NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	15,938	1.0	-0.1%	-11.6%	-9.3%	$26,701	$39,617	67.4%
31-33	Mftg	4,848	2.4	0.9%	-29.1%	-38.3%	$33,151	$48,538	68.3%
311	Food Mftg	65	0.3	30.0%	-	-	$37,035	$35,127	105.4%
313	Textile Mills	882	27.8	-12.8%	-44.8%	-56.5%	$23,999	$33,593	71.4%
3131	Fiber, Yarn, & Thread Mills	315	42.8	-41.4%	-69.9%	-77.0%	$26,669	$30,370	87.8%
313241	Weft Knit Fabric Mills	67	79.2	-71.1%	-72.1%	-59.9%	$23,097	$31,579	73.1%
314129	Other Household Textile Product Mills	52	11.3	-	-	-	$14,061	$26,641	52.8%
315	Apparel Mftg	166	4.4	-36.6%	-80.7%	-90.0%	$17,512	$28,301	61.9%
315119	Other Hosiery & Sock Mills	19	8.6	-76.3%	-	-	$20,444	$26,102	78.3%
3152	Cut & Sew Apparel Mftg	106	3.6	-38.0%	-80.3%	-90.4%	$16,494	$27,895	59.1%
321	Wood Product Mftg	998	12.4	16.6%	50.5%	3.9%	$32,747	$33,370	98.1%
3211	Sawmills & Wood Preservation	183	10.6	-	-	-	$39,964	$35,034	114.1%
323	Printing & Related Support Activities	30	0.3	15.4%	-	-	$26,802	$39,890	67.2%
326	Plastics & Rubber Products Mftg	703	6.1	8.3%	-11.6%	27.4%	$37,413	$39,321	95.1%
327	Nonmetallic Mineral Product Mftg	46	0.6	21.1%	-	-	$35,080	$43,032	81.5%
332	Fabricated Metal Product Mftg	236	1.1	-11.9%	-33.7%	268.8%	$38,709	$41,219	93.9%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mftg	176	3.6	-9.3%	-	826.3%	$43,103	$40,106	107.5%
333	Machinery Mftg	100	0.6	12.4%	-43.2%	-42.9%	$40,197	$50,934	78.9%
337	Furniture & Related Product Mftg	440	5.4	12.0%	4.8%	12.0%	$28,927	$32,568	88.8%
3371	Household & Institutional Furniture & Kitchen Cabinet Mftg	200	3.6	16.3%	-	-	$28,518	$30,449	93.7%
3372	Office Furniture (including Fixtures) Mftg	240	12.5	8.6%	-	-	$29,269	$37,967	77.1%

Source: Bureau of Labor Statistics

Union County, North Carolina

Union County is the fourth largest county in the study area with a population of 159,700. Over the past fifteen years the county has grown by 89.7%, far outpacing the region, state and nation. Residents enjoy an above average median household income, with strong historical growth trends. Educational attainment is below the state and nation, indicating that the area may have trouble finding skilled workers. The unemployment rate is 4.2% and could create a tight labor supply should it drop any lower. 30.8% of Union County residents are in the 25 to 44-age range, which is above the nation. Many business owners and entrepreneurs can be found in this demographic, making it critical to the economic vitality of a region. Typically, technology companies locate in regions that have 33% or more of their residents in this age group.

EMPLOYMENT GROWTH



At a Glance

2005	Union County	Region	North Carolina	United States
Population	159,700	2.0 m	8.6 m	296 m
Pop Growth '90-'05	89.7%	41.7%	30.4%	19.1%
Median HH Income	$56,000	$49,800	$43,300	$46,300
Growth in HH Income '90-'05	80.9%	64.5%	62.5%	54.0%
% Bachelor's Degree or higher	22.8%	27.5%	25.3%	27.7%
% of Adults age 25-44	30.8%	30.5%	29.2%	28.2%
Unemployment rate	4.2%	5.4%	5.2%	5.1%
Private Employment	41,800	821,300	3.9 m	110.2 m
Emp. Growth 95-05	24.7%	15.8%	11.7%	13.8%
Manufacturing Emp	11,600	127,200	566,600	14.2 m
Mftg Emp. Growth 95-05	-17.0%	-32.2%	-31.0%	-17.6%

The chart above illustrates a gradual shift in manufacturing employment along side total private employment over the past ten years. From 1995 to 2005 manufacturing employment declined by 2,400 or 17%, just below the U.S. and well below the region and state. Overall manufacturing employment losses have been slowed by gains in machinery and plastics manufacturing. Over the same period, total private employment added 8,300 or 24.7%. The majority of this growth occurred in construction and professional and business services.

Cluster Strength: Union County, North Carolina

12 of Union County's top 15 clusters are a mix of low and high tech manufacturing industries; most of which are strong clusters for the region as well. Of the County's 15 top industry clusters, none are in professional business services or research related industries, which could make it difficult to support further growth in advanced manufacturing. Union County's employment base is quickly shifting towards service industries, as financial activities and professional and business services have experience strong growth over the past ten years.

Employment by Industry: Union County, North Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	33,477	38,624	39,255	41,760	24.7%	8.1%	6.4%
101	Goods-Producing	19,501	20,638	19,803	20,442	4.8%	-0.9%	3.2%
1011	Natural Resources and Mining	466	621	671	672	44.2%	8.2%	0.1%
1012	Construction	5,102	7,305	7,402	8,200	60.7%	12.3%	10.8%
1013	Manufacturing	13,933	12,712	11,730	11,570	-17.0%	-9.0%	-1.4%
102	Service-Providing	13,976	17,986	19,452	21,318	52.5%	18.5%	9.6%
1021	Trade, Transportation, and Utilities	6,505	8,487	8,097	8,276	27.2%	-2.5%	2.2%
1022	Information	461	375	324	292	-36.7%	-22.1%	-9.9%
1023	Financial Activities	900	871	952	1,052	16.9%	20.8%	10.5%
1024	Professional and Business Services	1,682	2,739	3,099	4,057	141.2%	48.1%	30.9%
1025	Education and Health Services	1,640	1,986	2,856	2,778	69.4%	39.9%	-2.7%
1026	Leisure and Hospitality	2,041	2,465	2,968	3,409	67.0%	38.3%	14.9%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN UNION COUNTY, 2005

Manufacturing Cluster Strength: Union County, North Carolina

A closer look at the manufacturing industry in Union County reveals that the county's strengths lie in primary metals, textile product, industrial machinery, and medical equipment manufacturing. Several of these clusters are losing strength, as employment shifts to other manufacturing industries or to service industries. However, Union County is one of few counties to increase employment in textile product mills in the past two years. Emerging clusters in the county that have recently experienced strong positive growth include coating, turned products, and electronic product manufacturing. Both overall wages and manufacturing wages in the county are well below the national average, making the area competitive from a cost perspective.

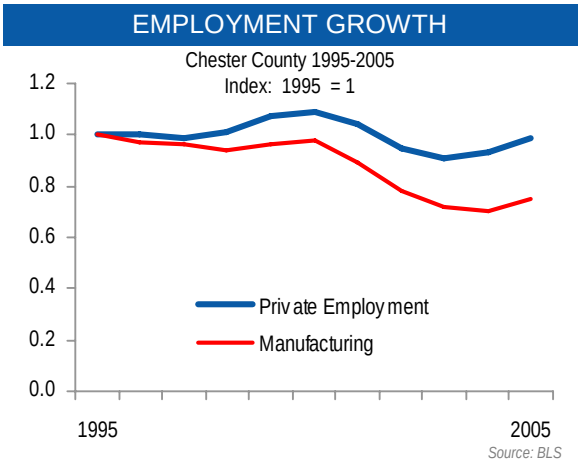
Union County, North Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	41,760	1.0	6.4%	8.1%	24.7%	$31,456	$39,617	79.4%
31-33	Mftg	11,570	2.2	-1.4%	-9.0%	-17.0%	$37,839	$48,538	78.0%
311	Food Mftg	2,061	3.7	-12.0%	-	-	$26,105	$35,127	74.3%
3116	Animal Slaughtering & Processing	1,964	10.3	-12.9%	-	-	$25,629	$28,460	90.1%
313	Textile Mills	384	4.6	-12.1%	-35.4%	-65.9%	$28,236	$33,593	84.1%
313311	Broadwoven Fabric Finishing Mills	215	18.9	-4.4%	-18.6%	-40.3%	$28,166	$33,238	84.7%
314	Textile Product Mills	529	8.2	60.8%	-	-	$26,273	$29,451	89.2%
315	Apparel Mftg	319	3.2	-15.8%	-47.1%	-71.4%	$17,681	$28,301	62.5%
321	Wood Product Mftg	970	4.6	29.2%	26.1%	39.0%	$35,187	$33,370	105.4%
322	Paper Mftg	112	0.6	-37.8%	-37.8%	-	$30,477	$50,749	60.1%
323	Printing & Related Support Activities	54	0.2	-64.2%	-69.8%	-82.2%	$29,536	$39,890	74.0%
323110	Commercial Lithographic Printing	19	0.2	11.8%	-	-	$38,404	$42,464	90.4%
323114	Quick Printing	15	0.6	36.4%	-	-	$29,900	$32,783	91.2%
324	Petroleum & Coal Products Mftg	183	4.3	-	-	-	$38,870	$83,139	46.8%
325	Chemical Mftg	256	0.8	-26.6%	-43.7%	-23.1%	$45,043	$71,009	63.4%
326	Plastics & Rubber Products Mftg	892	2.9	-7.7%	-14.3%	11.4%	$46,155	$39,321	117.4%
326199	All Other Plastics Product Mftg	242	1.9	-12.6%	-14.5%	54.1%	$42,074	$36,161	116.4%
327	Nonmetallic Mineral Product Mftg	371	1.9	-13.5%	-12.9%	-2.6%	$36,191	$43,032	84.1%
3273	Cement & Concrete Product Mftg	79	0.9	-8.1%	-	-	$44,466	$42,593	104.4%
331	Primary Metal Mftg	1,637	9.3	-	-	-	$53,771	$51,376	104.7%
332	Fabricated Metal Product Mftg	1,176	2.1	-0.8%	-31.6%	-25.2%	$37,534	$41,219	91.1%
3323	Architectural & Structural Metals Mftg	323	2.2	-2.7%	-27.3%	-15.2%	$40,602	$38,436	105.6%
332322	Sheet Metal Work Mftg	141	3.6	-5.4%	-36.8%	-23.4%	$41,653	$38,504	108.2%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mftg	262	2.0	17.5%	18.0%	57.8%	$36,732	$40,106	91.6%
3328	Coating, Engraving, Heat Treating, & Allied Activities	34	0.6	61.9%	-	-	$23,066	$36,110	63.9%
333	Machinery Mftg	671	1.5	-1.9%	28.1%	21.6%	$49,651	$50,934	97.5%
3332	Ind Machinery Mftg	283	6.1	-4.1%	52.2%	112.8%	$45,478	$56,956	79.8%
3335	Metalworking Machinery Mftg	137	1.8	17.1%	75.6%	37.0%	$42,438	$46,413	91.4%
334	Computer & Electronic Product Mftg	199	0.4	16.4%	29.2%	-	$49,868	$76,285	65.4%
335	Electrical Equip, Appliance, & Component Mftg	171	1.0	-52.9%	-74.2%	-67.3%	$35,794	$46,381	77.2%
3353	Electrical Equip Mftg	56	1.0	-75.9%	-	-	$41,034	$49,193	83.4%
336	Transportation Equip Mftg	216	0.3	-26.8%	-31.9%	-44.6%	$45,233	$56,930	79.5%
337	Furniture & Related Product Mftg	469	2.2	-7.1%	-14.3%	14.1%	$26,986	$32,568	82.9%
337110	Wood Kitchen Cabinet & Countertop Mftg	361	5.7	21.5%	-	-	$28,381	$31,587	89.8%
339	Misc Mftg	747	3.0	21.7%	28.1%	22.5%	$42,820	$43,919	97.5%
3391	Medical Equip & Supplies Mftg	656	5.7	-	-	-	$45,075	$50,700	88.9%

Source: Bureau of Labor Statistics

Chester County, South Carolina

Chester County is the second smallest county in the study area with a population of 33,700. Over the past fifteen years the county has grown by 4.9%, far below the region, state and nation. Median household income is below average, but growth has kept pace with the state and nation. Educational attainment is below the state and nation, indicating that the area may not have ready access to skilled workers. Chester County is not subject to a tight labor supply, as the unemployment rate is 9.4%. One quarter of Mecklenburg County residents are in the 25 to 44-age range, which is below the nation. Many business owners and entrepreneurs can be found in this demographic, making it critical to the economic vitality of a region. Typically, technology companies locate in regions that have 33% or more of their residents in this age group.



At a Glance

2005	Chester County	Region	South Carolina	United States
Population	33,700	2.0 m	4.2 m	296 m
Pop Growth '90-'05	4.9%	41.7%	21.3%	19.1%
Median HH Income	$35,900	$49,800	$40,900	$46,300
Growth in HH Income '90-'05	54.9%	64.5%	55.4%	54.0%
% Bachelor's Degree or higher	12.2%	27.5%	24.8%	27.7%
% of Adults age 25-44	25.6%	30.5%	27.9%	28.2%
Unemployment rate	9.4%	5.4%	6.8%	5.1%
Private Employment	9,100	821,300	1.5 m	110.2 m
Emp. Growth 95-05	-0.8%	15.8%	13.3%	13.8%
Manufacturing Emp	4,200	127,200	262,000	14.2 m
Mftg Emp. Growth 95-05	-25.1%	-32.2%	-24.5%	-17.6%

The chart above illustrates a gradual shift in manufacturing employment relative to total private employment over the past ten years. From 1995 to 2005 manufacturing employment declined by 1,400 or 25.1%, just above the U.S. but below the region and state. Overall manufacturing employment losses have been slowed by gains in nonmetallic mineral product manufacturing. Over the same period, total private employment lost 75 or 1%.

Cluster Strength: Chester County, South Carolina

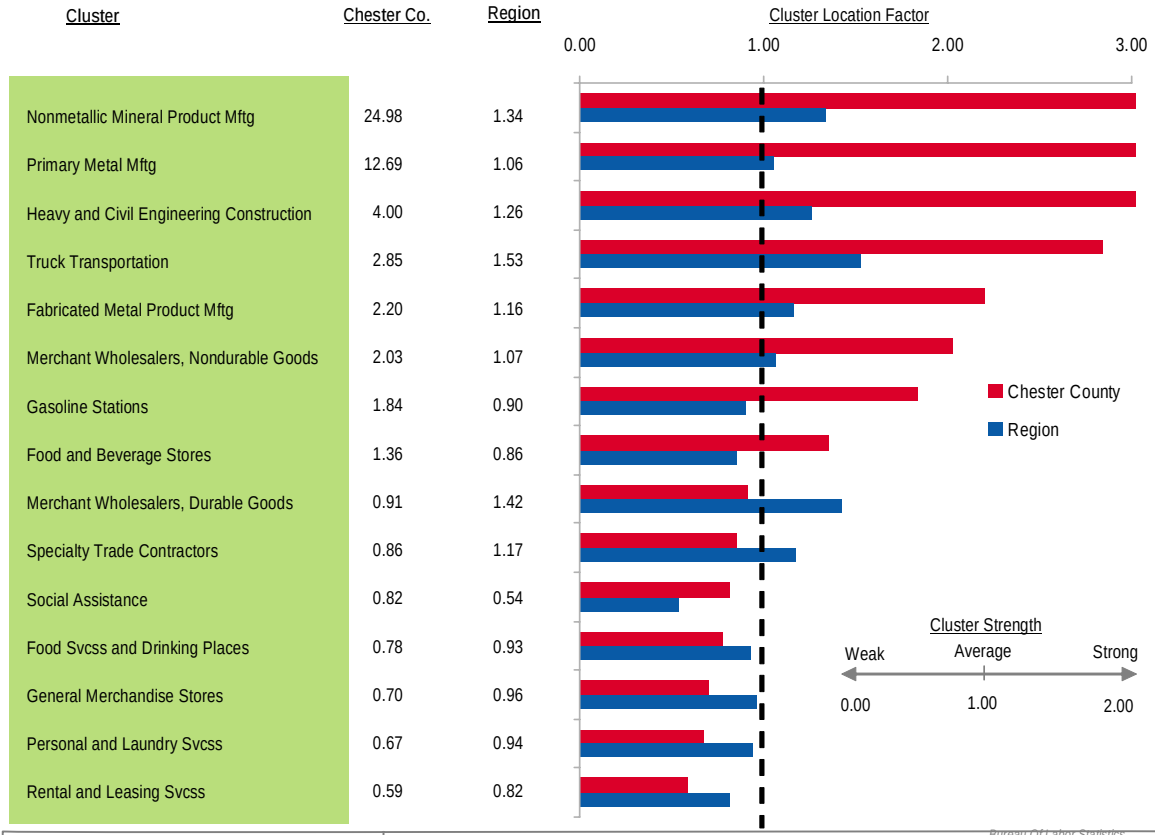
Chester County's top clusters include nonmetallic mineral product manufacturing, primary metal manufacturing, and civil engineering construction. Of the county's 15 top industry clusters, none are in professional business services or research related industries, which could make it difficult to support further growth in advanced manufacturing. Manufacturing employment has rebounded in recent years, increasing by 4.5% since 2003. Professional and business services and education and health services have increased significantly, further bolstering the service industry in the area.

Employment by Industry: Chester County, South Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	9,197	10,002	8,405	9,122	-0.8%	-8.8%	8.5%
101	Goods-Producing	6,028	6,081	4,635	4,934	-18.1%	-18.9%	6.5%
1011	Natural Resources and Mining	77	122	57	65	-15.6%	-46.7%	14.0%
1012	Construction	356	496	570	681	91.3%	37.3%	19.5%
1013	Manufacturing	5,595	5,463	4,008	4,188	-25.1%	-23.3%	4.5%
102	Service-Providing	3,169	3,922	3,770	4,187	32.1%	6.8%	11.1%
1021	Trade, Transportation, and Utilities	1,581	1,998	1,859	1,820	15.1%	-8.9%	-2.1%
1022	Information	112	117	140	139	24.1%	18.8%	-0.7%
1023	Financial Activities	213	193	240	227	6.6%	17.6%	-5.4%
1024	Professional and Business Services	277	474	310	343	23.8%	-27.6%	10.6%
1025	Education and Health Services	182	368	396	819	350.0%	122.6%	106.8%
1026	Leisure and Hospitality	654	599	647	668	2.1%	11.5%	3.2%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN CHESTER COUNTY, 2005



Manufacturing Cluster Strength: Chester County, South Carolina

Due to nondisclosure requirements within the Bureau of Labor Statistics several of Chester County's detailed manufacturing employment figures are not available.

A closer look at the manufacturing industry in Chester County reveals that the county's strengths lie in nonmetallic mineral products, fabricated metal product, and primary metal manufacturing. Unlike most of the counties in the study area, Chester County increased employment in the manufacturing industry over the past two years. Both overall wages and manufacturing wages in the county are well below the national average, making the area competitive from a cost perspective.

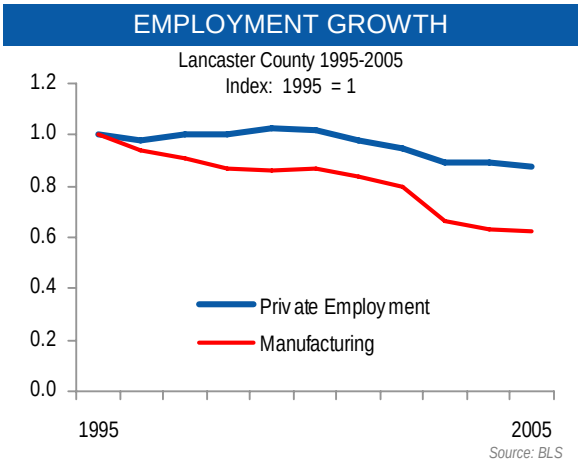
Chester County, South Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	9,122	1.0	8.5%	-8.8%	-0.8%	$31,140	$39,617	78.6%
31-33	Mftg	4,188	3.6	4.5%	-23.3%	-25.1%	$37,020	$48,538	76.3%
3133	Textile & Fabric Finishing & Fabric Coating Mills	9	1.7	-10.0%	-	-	$16,384	$34,406	47.6%
322	Paper Mftg	22	0.5	-	-	-	$24,297	$50,749	47.9%
327	Nonmetallic Mineral Product Mftg	1,040	25.0	31.0%	25.9%	132.1%	$39,548	$43,032	91.9%
3279	Other Nonmetallic Mineral Product Mftg	242	38.6	-2.4%	-	-	$54,343	$42,843	126.8%
331	Primary Metal Mftg	489	12.7	-	-	-	$41,584	$51,376	80.9%
332	Fabricated Metal Product Mftg	276	2.2	-	-	-	$31,260	$41,219	75.8%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mftg	3	0.1	-	-	-	$20,369	$40,106	50.8%

Source: Bureau of Labor Statistics

Lancaster County, South Carolina

Lancaster County is the fourth smallest county in the study area with a population of 63,600. Over the past fifteen years the county has grown by 16.6%, just below the region, state and nation. Median household income is below average, but growth has kept pace with the state and nation. Educational attainment is below the state and nation, indicating that the area may not have ready access to skilled workers. Lancaster County is not subject to a tight labor supply, as the unemployment rate is 8.5%. Just over one quarter of Lancaster County residents are in the 25 to 44-age range, which is almost on par with the nation. Many business owners and entrepreneurs can be found in this demographic, making it critical to the economic vitality of a region. Typically, technology companies locate in regions that have 33% or more of their residents in this age group.



At a Glance

2005	Lancaster County	Region	South Carolina	United States
Population	63,600	2.0 m	4.2 m	296 m
Pop Growth '90-'05	16.6%	41.7%	21.3%	19.1%
Median HH Income	$38,100	$49,800	$40,900	$46,300
Growth in HH Income '90-'05	51.2%	64.5%	55.4%	54.0%
% Bachelor's Degree or higher	12.6%	27.5%	24.8%	27.7%
% of Adults age 25-44	27.9%	30.5%	27.9%	28.2%
Unemployment rate	8.5%	5.4%	6.8%	5.1%
Private Employment	14,000	821,300	1.5 m	110.2 m
Emp. Growth 95-05	-12.5%	15.8%	13.3%	13.8%
Manufacturing Emp	4,400	127,200	262,000	14.2 m
Mftg Emp. Growth 95-05	-38.3%	-32.2%	-24.5%	-17.6%

The chart above illustrates a gradual shift in manufacturing employment relative to total private employment over the past ten years. From 1995 to 2005 manufacturing employment declined by 2,700 or 38.3%, well above the state and nation but comparable to the region. Over the same period, total private employment lost 2,000 or 12.5%. The majority of the losses occurred in goods producing industries.

Cluster Strength: Lancaster County, South Carolina

Lancaster County's top clusters include textile mills, forestry and logging, nonmetallic mineral product manufacturing, and general merchandise stores. Of the county's 15 top industry clusters, none are in research related industries, which could make it difficult to support further growth in advanced manufacturing. Manufacturing employment and overall employment have steadily declined over the past ten years, indicating that the manufacturing industry drives the county's economy. Growth in construction and education and health services has offset some of the decline in the county.

Employment by Industry: Lancaster County, South Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	16,039	16,320	14,309	14,041	-12.5%	-14.0%	-1.9%
101	Goods-Producing	7,960	7,211	5,578	5,309	-33.3%	-26.4%	-4.8%
1011	Natural Resources and Mining	122	126	92	71	-41.8%	-43.7%	-22.8%
1012	Construction	762	916	797	873	14.6%	-4.7%	9.5%
1013	Manufacturing	7,076	6,169	4,689	4,365	-38.3%	-29.2%	-6.9%
102	Service-Providing	8,079	9,109	8,731	8,732	8.1%	-4.1%	0.0%
1021	Trade, Transportation, and Utilities	3,348	3,316	2,746	2,756	-17.7%	-16.9%	0.4%
1022	Information	175	170	180	298	70.3%	75.3%	65.6%
1023	Financial Activities	876	1,066	997	899	2.6%	-15.7%	-9.8%
1024	Professional and Business Services	723	1,064	1,682	1,551	114.5%	45.8%	-7.8%
1025	Education and Health Services	1,553	1,561	1,693	1,756	13.1%	12.5%	3.7%
1026	Leisure and Hospitality	1,094	1,616	1,116	1,096	0.2%	-32.2%	-1.8%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN LANCASTER COUNTY, 2005

Manufacturing Cluster Strength: Lancaster County, South Carolina

Due to nondisclosure requirements within the Bureau of Labor Statistics several of Lancaster County's detailed manufacturing employment figures are not available.

A closer look at the manufacturing industry in Lancaster County reveals that the county's strengths lie in textile mills, nonmetallic mineral product, and fabricated metal product manufacturing. Several of the county's manufacturing clusters are losing strength, as employment is shifting to service industries. Emerging clusters in the county that have recently experienced strong positive growth include miscellaneous, and machinery manufacturing. Both overall wages and manufacturing wages in the county are well below the national average, making the area competitive from a cost perspective.

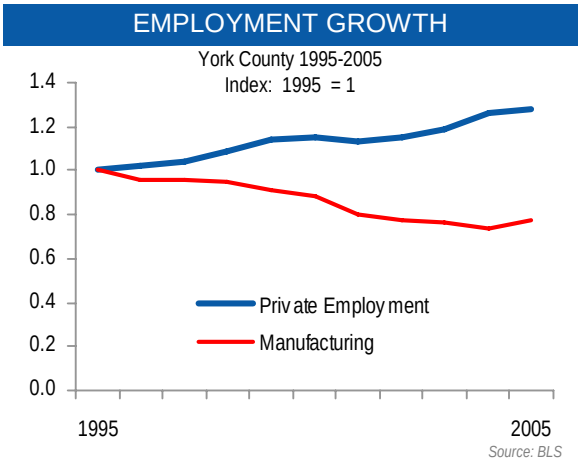
Lancaster County, South Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	14,041	1.0	-1.9%	-14.0%	-12.5%	$32,643	$39,617	82.4%
31-33	Mftg	4,365	2.4	-6.9%	-29.2%	-38.3%	$43,571	$48,538	89.8%
313	Textile Mills	1,712	61.3	-	-	-	$47,895	$33,593	142.6%
3132	Fabric Mills	788	58.9	-	-	-	$61,138	$34,666	176.4%
313210	Broadwoven Fabric Mills	241	30.0	-	-	-	$55,657	$33,581	165.7%
323	Printing & Related Support Activities	16	0.2	-36.0%	-	-	$18,575	$39,890	46.6%
327	Nonmetallic Mineral Product Mftg	135	2.1	-15.6%	-	-	$43,911	$43,032	102.0%
332	Fabricated Metal Product Mftg	225	1.2	16.0%	8.2%	52.0%	$35,554	$41,219	86.3%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mftg	36	0.8	12.5%	12.5%	-5.3%	$40,141	$40,106	100.1%
333	Machinery Mftg	102	0.7	6.3%	54.5%	292.3%	$34,688	$50,934	68.1%
337	Furniture & Related Product Mftg	25	0.3	38.9%	-	-	$19,142	$32,568	58.8%
337110	Wood Kitchen Cabinet & Countertop Mftg	12	0.6	71.4%	-	-	$16,625	$31,587	52.6%
339	Misc Mftg	212	2.6	30.1%	-	-	$43,863	$43,919	99.9%
339950	Sign Mftg	207	21.7	27.0%	-	-	$43,701	$35,730	122.3%

Source: Bureau of Labor Statistics

York County, South Carolina

York County is the third largest county in the study area with a population of 186,900. Over the past fifteen years the county has grown by 42.1%, outpacing the region, state and nation. Residents enjoy an above average median household income, with strong historical growth trends. Educational attainment is almost on par with the state and nation, indicating that the area has access to a skilled workforce. The unemployment rate is 6.6% and could create a tight labor supply should it drop any lower. 28.9% of York County residents are in the 25 to 44-age range, which is above the nation. Many business owners and entrepreneurs can be found in this demographic, making it critical to the economic vitality of a region. Typically, technology companies locate in regions that have 33% or more of their residents in this age group.



At a Glance

2005	York County	Region	South Carolina	United States
Population	186,900	2.0 m	4.2 m	296 m
Pop Growth '90-'05	42.1%	41.7%	21.3%	19.1%
Median HH Income	$48,700	$49,800	$40,900	$46,300
Growth in HH Income '90-'05	55.9%	64.5%	55.4%	54.0%
% Bachelor's Degree or higher	24.1%	27.5%	24.8%	27.7%
% of Adults age 25-44	28.9%	30.5%	27.9%	28.2%
Unemployment rate	6.6%	5.4%	6.8%	5.1%
Private Employment	56,900	821,300	1.5 m	110.2 m
Emp. Growth 95-05	28.3%	15.8%	13.3%	13.8%
Manufacturing Emp	10,200	127,200	262,000	14.2 m
Mftg Emp. Growth 95-05	-22.9%	-32.2%	-24.5%	-17.6%

The chart above illustrates a gradual shift in manufacturing employment relative to total private employment over the past ten years. From 1995 to 2005 manufacturing employment declined by 3,000 or 22.9%, just above the U.S. but well below the region and state. Overall manufacturing employment losses have been slowed by gains in transportation equipment and fabricated metal product manufacturing. Over the same period, total private employment added 12,500 or 28.3%. The majority of this growth occurred in service providing industries such as professional and business services and financial activities.

Cluster Strength: York County, South Carolina

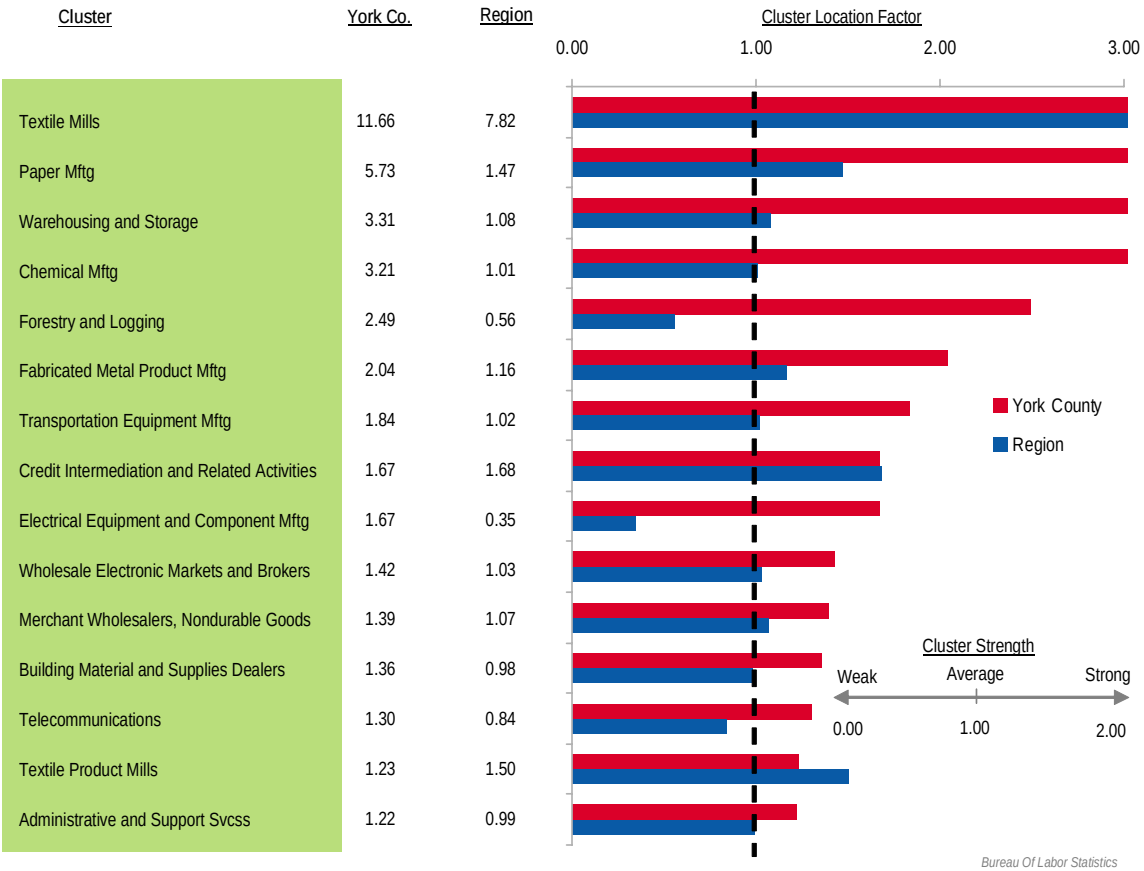
York County's top clusters include textile mills, paper manufacturing, warehousing, and chemical manufacturing. Of the county's 15 top industry clusters, none are in research related industries, which could make it difficult to support further growth in advanced manufacturing. Several of the county's strongest clusters are in the financial industry and should strengthen even more, considering historical growth trends.

Employment by Industry: York County, South Carolina

NAICS	Description	1995	2000	2003	2005	Growth 95 to 05	Growth 00 to 05	Growth 03 to 05
10	Total All Industries	44,310	51,154	52,815	56,851	28.3%	11.1%	7.6%
101	Goods-Producing	15,921	14,842	13,693	14,180	-10.9%	-4.5%	3.6%
1011	Natural Resources and Mining	150	184	244	551	267.3%	199.5%	125.8%
1012	Construction	2,548	3,068	3,461	3,434	34.8%	11.9%	-0.8%
1013	Manufacturing	13,223	11,590	9,988	10,195	-22.9%	-12.0%	2.1%
102	Service-Providing	28,390	36,312	39,122	42,671	50.3%	17.5%	9.1%
1021	Trade, Transportation, and Utilities	11,441	13,709	13,921	14,350	25.4%	4.7%	3.1%
1022	Information	603	1,355	1,488	1,430	137.1%	5.5%	-3.9%
1023	Financial Activities	1,390	1,723	2,554	3,715	167.3%	115.6%	45.5%
1024	Professional and Business Services	3,686	6,184	6,465	6,674	81.1%	7.9%	3.2%
1025	Education and Health Services	4,322	4,747	5,904	6,749	56.2%	42.2%	14.3%
1026	Leisure and Hospitality	5,587	6,914	7,095	7,982	42.9%	15.4%	12.5%

Source: Bureau of Labor Statistics

TOP 15 INDUSTRY CLUSTERS IN YORK COUNTY, 2005



Manufacturing Cluster Strength: York County, South Carolina

A closer look at the manufacturing industry in York County reveals that the county's strengths lie in primary textile mills, fabric mills, paper, and chemical manufacturing. Several of these clusters are losing strength, as employment shifts to other manufacturing industries or to service industries. However, chemical manufacturing has experienced explosive growth over the past two years. Emerging clusters in the county that have recently experienced strong positive growth include furniture, fabricated metal products, and transportation equipment manufacturing. Both overall wages and manufacturing wages in the county are below the national average, making the area competitive from a cost perspective.

York County, South Carolina

NAICS	Description	2005	Cluster Ratio	03 to 05	00 to 05	95 to 05	Local Avg Wage	US Avg Wage	Wage Differential
10	Total All Industries	56,851	1.0	7.6%	11.1%	28.3%	$33,245	$39,617	83.9%
31-33	Mftg	10,195	1.4	2.1%	-12.0%	-22.9%	$47,099	$48,538	97.0%
311	Food Mftg	17	0.0	-64.6%	-	-	$15,308	$35,127	43.6%
312	Beverage & Tobacco Product Mftg	41	0.4	17.1%	-	-	$36,130	$51,182	70.6%
313	Textile Mills	1,318	11.7	-21.9%	-40.9%	-62.3%	$46,686	$33,593	139.0%
313111	Yarn Spinning Mills	288	15.0	-	-	-	$28,842	$29,861	96.6%
3132	Fabric Mills	623	11.5	-22.6%	-39.2%	-61.1%	$62,556	$34,666	180.5%
313210	Broadwoven Fabric Mills	123	3.8	-76.7%	-	-	$118,103	$33,581	351.7%
314	Textile Product Mills	108	1.2	5.9%	-	-	$24,904	$29,451	84.6%
315	Apparel Mftg	30	0.2	-	-72.7%	-96.5%	$15,990	$28,301	56.5%
321	Wood Product Mftg	314	1.1	8.3%	18.0%	-9.0%	$32,993	$33,370	98.9%
3211	Sawmills & Wood Preservation	27	0.4	-22.9%	-32.5%	-41.3%	$24,392	$35,034	69.6%
3219	Other Wood Product Mftg	14	0.1	-	-	-	$27,083	$31,691	85.5%
322	Paper Mftg	1,433	5.7	-4.9%	-0.3%	-5.0%	$79,635	$50,749	156.9%
323	Printing & Related Support Activities	239	0.7	-11.8%	-29.3%	-5.5%	$37,654	$39,890	94.4%
323110	Commercial Lithographic Printing	31	0.2	-73.5%	-80.6%	-64.4%	$21,994	$42,464	51.8%
323113	Commercial Screen Printing	42	1.2	-	-	-	$33,723	$29,224	115.4%
323114	Quick Printing	31	0.9	-3.1%	-40.4%	-26.2%	$35,123	$32,783	107.1%
325	Chemical Mftg	1,449	3.2	66.9%	13.3%	-32.4%	$52,021	$71,009	73.3%
3251	Basic Chemical Mftg	165	2.1	-5.7%	-28.9%	-56.0%	$56,722	$77,864	72.8%
325132	Synthetic Organic Dye & Pigment Mftg	25	6.6	-	-	-	$48,210	$64,300	75.0%
3252	Resin, Synthetic Rubber, & Synthetic Fibers & Filaments Mftg	408	7.4	-6.0%	-	-	$72,921	$65,886	110.7%
3259	Other Chemical Product & Prep Mftg	242	4.4	13.6%	-	-	$49,755	$54,775	90.8%
326	Plastics & Rubber Products Mftg	144	0.3	-48.4%	-47.1%	-44.4%	$34,419	$39,321	87.5%
3261	Plastics Product Mftg	18	0.1	-68.4%	-	-	$30,632	$37,869	80.9%
3262	Rubber Product Mftg	192	2.2	-13.5%	-	-	$34,579	$44,761	77.3%
326299	All Other Rubber Product Mftg	171	12.2	-17.4%	-	-	$34,604	$37,235	92.9%
327	Nonmetallic Mineral Product Mftg	276	1.1	-38.7%	-50.1%	-19.1%	$38,993	$43,032	90.6%
3273	Cement & Concrete Product Mftg	124	1.0	18.1%	-	-	$44,745	$42,593	105.1%
331	Primary Metal Mftg	61	0.3	-1.6%	-	-	$34,782	$51,376	67.7%
332	Fabricated Metal Product Mftg	1,588	2.0	12.8%	20.7%	58.0%	$40,477	$41,219	98.2%
3323	Architectural & Structural Metals Mftg	171	0.8	8.2%	-17.0%	17.9%	$35,287	$38,436	91.8%
332323	Ornamental & Architectural Metal Work Mftg	16	0.8	-15.8%	-	-	$41,338	$35,493	116.5%
3327	Machine Shops; Turned Product; & Screw, & Bolt Mftg	190	1.1	2.2%	-25.8%	31.9%	$33,208	$40,106	82.8%
3328	Coating, Engraving, Heat Treating, & Allied Activities	200	2.7	48.1%	-	-	$35,792	$36,110	99.1%
333	Machinery Mftg	685	1.1	1.5%	-25.6%	28.0%	$45,522	$50,934	89.4%
3332	Ind Machinery Mftg	128	2.0	0.8%	-24.3%	60.0%	$34,706	$56,956	60.9%
333292	Textile Machinery Mftg	33	8.9	-8.3%	-50.0%	-58.8%	$23,480	$41,151	57.1%
3335	Metalworking Machinery Mftg	125	1.2	-3.1%	-50.8%	-33.2%	$52,885	$46,413	113.9%
3339	Other General Purpose Machinery Mftg	194	1.4	8.4%	-18.1%	177.1%	$60,551	$50,270	120.5%
333999	All Other Misc General Purpose Machinery Mftg	15	0.7	0.0%	-	-	$62,845	$49,260	127.6%
335	Electrical Equip, Appliance, & Component Mftg	375	1.7	1.6%	-7.9%	-19.5%	$36,699	$46,381	79.1%
336	Transportation Equip Mftg	1,678	1.8	9.1%	9.8%	45.2%	$37,569	$56,930	66.0%
337	Furniture & Related Product Mftg	74	0.3	15.6%	-42.2%	335.3%	$26,792	$32,568	82.3%
3371	Household & Institutional Furniture & Kitchen Cabinet Mftg	48	0.2	-	-	-	$29,191	$30,449	95.9%
337110	Wood Kitchen Cabinet & Countertop Mftg	31	0.4	-6.1%	-16.2%	82.4%	$31,001	$31,587	98.1%
339	Misc Mftg	223	0.7	-12.2%	-44.7%	-40.4%	$34,257	$43,919	78.0%
339950	Sign Mftg	44	1.1	51.7%	76.0%	238.5%	$24,894	$35,730	69.7%

Source: Bureau of Labor Statistics

Over the past decade, the Centralina region has successfully grown and diversified its economy. Manufacturing still remains an important part of the region's employment base, and this report aims to strengthen the competitiveness of local assets in support of existing and future manufacturers.
Macroeconomic factors such as globalization, rapid technological change, automation, and offshoring, however, present new challenges for traditional manufacturing economies like Centralina's. Successful strategies of the past may not take into account these new factors.

In this section, we first highlight the site selection factors for manufacturers that will affect Centralina's competitive position (e.g. SWOT). Then, we specifically assess and summarize Centralina's strengths and weaknesses for expanding its existing industries and attracting new industries relative to the specific needs of manufacturers. We focus on evaluating areas that are of primary importance to manufacturers, but not all factors that affect businesses. Issues such as quality of life, while important, are not uniquely important to manufacturers, nor are they top requirements for their selection in a location. In this SWOT (Strengths, Weaknesses, Opportunities, and Threats), we focus on the following top three areas of importance to manufacturers:

- Workforce & Education
- Research & Development Assets
- Business Climate & Costs

First we explore today's top site selection factors for manufacturing.

Site Selection Factors for Manufacturing

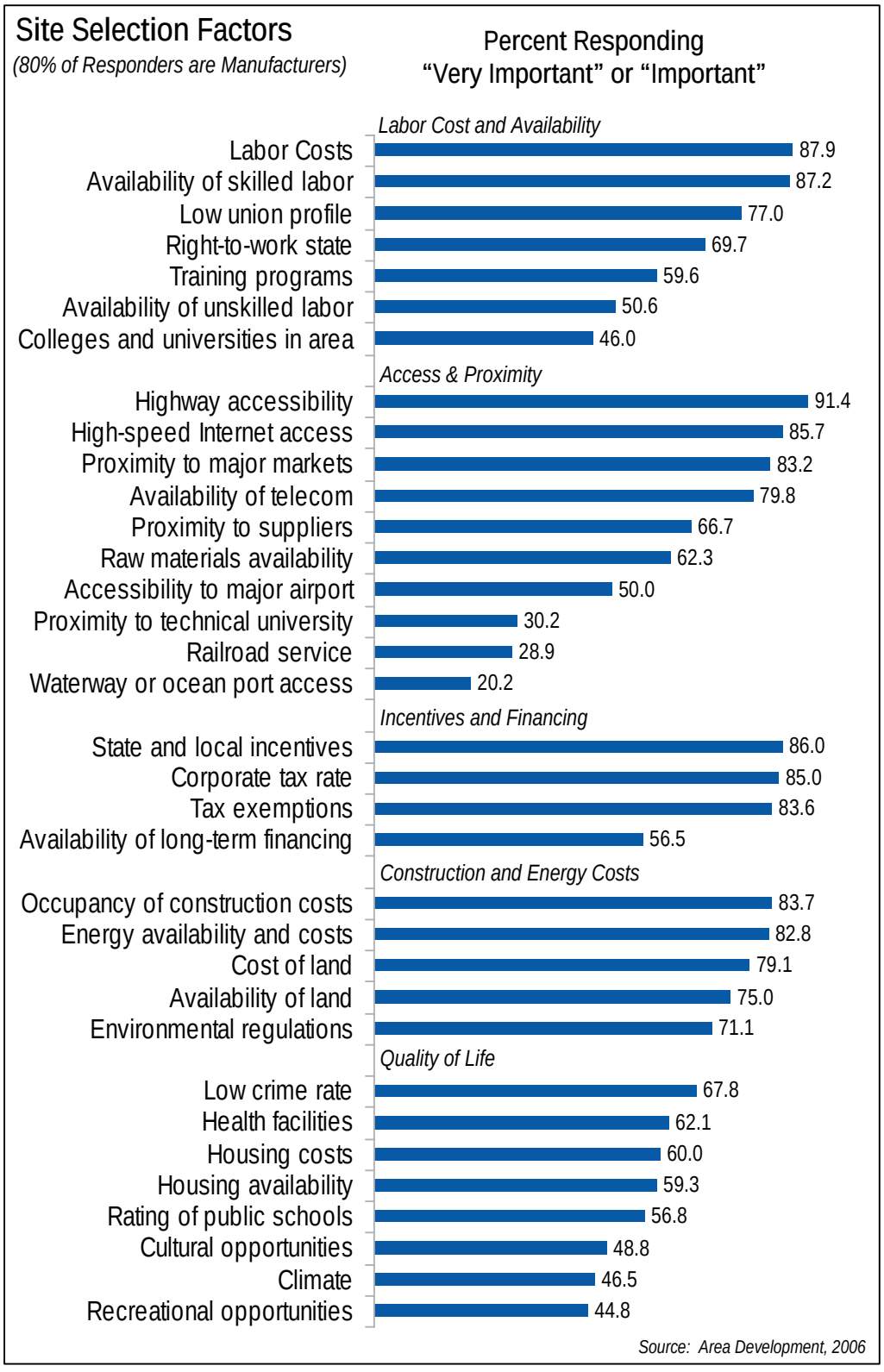
Area Development Magazine, one of the top market research organizations devoted to site selection, surveys corporate site selectors each year and asks the questions:

- What are your primary reasons for increasing the number of facilities for your company?
- What are the primary reasons that you are decreasing your number of facilities?
- And, what are the top factors that affect your site selection decisions?

These questions are important to economic developers and site selectors; and their answers shed new insight on how the global economy is changing the way manufacturers do business. Area Development received numerous responses to its 2005 survey, of which 80% were manufacturers.

With today's increasing role of just-in-time in the distribution of manufactured parts, highway accessibility ranks as on of the most important factors in site selection today (91% say "very important" or "important"). This high ranking is a large and growing contrast to traditional ports (20%) and rail (29%).

Labor costs and availability rank a close second in importance, with availability of skilled labor and costs of this skilled labor ranking about the same (87-88%). State and local incentives rank third in importance (86%), another indication that global cost pressures are forcing manufacturers to explore every option to them to increase profitability. A close fourth is Internet access (86%). This infrastructure requirement is relatively new, and the pervasiveness has made it possible to link businesses with workers, suppliers, and customers around the world. The availability of Internet access has become as important (or more) as a telephone.


Site Selection Factors
(80% of Responders are Manufacturers)
Percent Responding
"Very Important" or "Important"
Labor Cost and Availability
Labor Costs 87.9
Availability of skilled labor 87.2
Low union profile 77.0
Right-to-work state 69.7
Training programs 59.6
Availability of unskilled labor 50.6
Colleges and universities in area 46.0
Access & Proximity
Highway accessibility 91.4
High-speed Internet access 85.7
Proximity to major markets 83.2
Availability of telecom 79.8
Proximity to suppliers 66.7
Raw materials availability 62.3
Accessibility to major airport 50.0
Proximity to technical university 30.2
Railroad service 28.9
Waterway or ocean port access 20.2
Incentives and Financing
State and local incentives 86.0
Corporate tax rate 85.0
Tax exemptions 83.6
Availability of long-term financing 56.5
Construction and Energy Costs
Occupancy of construction costs 83.7
Energy availability and costs 82.8
Cost of land 79.1
Availability of land 75.0
Environmental regulations 71.1
Quality of Life
Low crime rate 67.8
Health facilities 62.1
Housing costs 60.0
Housing availability 59.3
Rating of public schools 56.8
Cultural opportunities 48.8
Climate 46.5
Recreational opportunities 44.8
Source: Area Development, 2006

Site Selection Factors,

(80% of Respondents are Manufacturers)

	Very important	Important	Minor Consideration	Of No Importance
Labor				
Availability of skilled labor	58.5	28.7	10.6	2.1
Availability of unskilled labor	16.9	33.7	36.0	13.5
Training programs	12.4	47.2	31.5	9.0
Labor Costs	37.3	50.6	8.4	3.6
Low union profile	46.0	31.0	12.6	10.3
Right-to-work state	36.0	33.7	16.9	13.5
Transportation/Telecommunications				
Highway accessibility	57.0	34.4	4.3	4.3
Railroad service	12.0	16.9	30.1	41.0
Accessibility to major airport	12.8	37.2	34.0	16.0
Waterway or ocean port accessibility	9.0	11.2	29.2	50.6
Availability of telecommunications services	37.2	42.6	11.7	8.5
Availability of high-speed Internet access	49.4	36.3	7.7	6.6
Finance				
Availability of long-term financing	29.3	27.2	26.1	17.4
Corporate tax rate	49.5	35.5	11.8	3.2
Tax exemptions	54.3	29.3	12.0	4.3
State and local incentives	54.8	31.2	10.8	3.2
Other				
Proximity to major markets	36.0	47.2	16.9	0.0
Cost of land	24.4	54.7	17.4	3.2
Availability of land	25.0	50.0	21.4	3.6
Occupancy of construction costs	30.2	53.5	14.0	2.3
Raw materials availability	26.7	35.6	27.8	10.0
Energy availabiliyt and costs	46.0	36.8	11.5	5.7
Environmental regulations	32.2	38.9	20.0	8.8
Proximity to suppliers	16.7	50.0	25.0	8.3
Prosimity to technical university	5.8	24.4	50.0	19.8
Quality-of-life factors				
Climate	4.5	42.0	35.2	18.2
Housing availability	12.8	46.5	24.4	16.3
Housing costs	18.8	41.2	23.5	16.5
Health facilities	16.1	46.0	23.0	14.9
Rating of public schools	15.9	40.9	26.1	17.0
Cultural opportunities	6.8	42.0	35.2	15.9
Recreational opportunities	6.9	37.9	40.2	14.9
Colleges anduniversities in area	9.2	36.8	35.6	18.4
Low crime rate	25.3	42.5	23.0	9.2

Source: Area Development, 2006

Several areas are showing increasing importance to manufacturers. Proximity to major markets gained the most in importance in 2005 (+10 points) due to the increasing need to be close to customers and the workforce of these major markets. Proximity to suppliers is also of increasing importance. While highway accessibility is similarly more important, access to a major airport dropped in importance in 2005. Railroad service increased in importance in 2005, but still reflects a moderate need by manufacturers (just 30 percent indicate it is important).

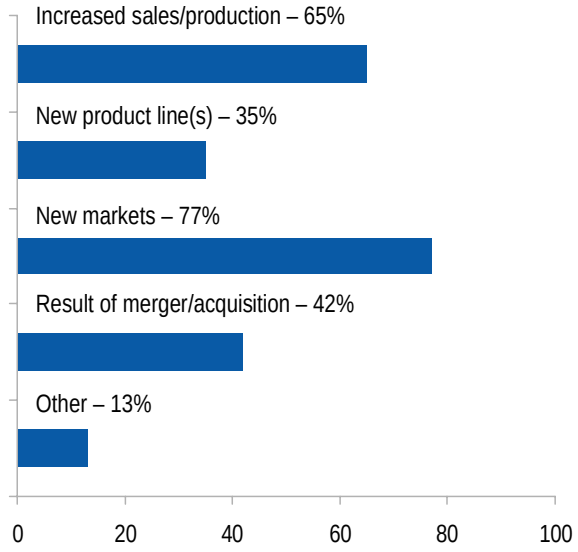
Training programs for workers are of growing importance (+9 points), a long-term trend that demonstrates the important role of workers in maintaining the competitiveness of manufacturers. The need to continue to retrain workers on new technologies in new areas means that workforce development is a core function of any successful company, whether in manufacturing or services.

Concerns over unions and right-to-work laws are of growing importance, while the availability and cost of skilled and unskilled workers proved to be less of a concern in 2005. Quality of life issues also proved to be less important in relative terms in 2005, while taxes and incentives show marginal increases and decreases over the previous year.

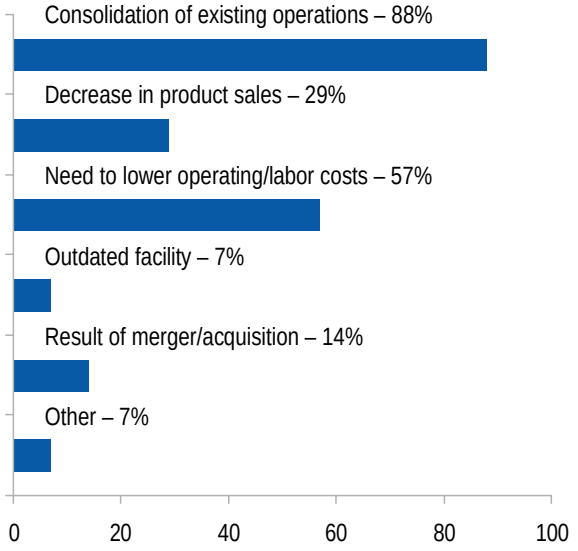
See the chart on the following page for a complete breakdown of site selection factors' biggest gainers and losers.

Expansion and closure decisions were driven by factors beyond the control of the host community. In the charts to the right, growth issues such as sales and entering new markets drove the creation of new facilities, while mergers and consolidations affected closing decisions. The need for lowing costs was cited by 57% of respondents as the reason for closing a facility. As a low cost location, the Carolinas will continue to benefit from consolidations and the search for lower costs in the U.S.

Primary reasons for increasing number of facilities:



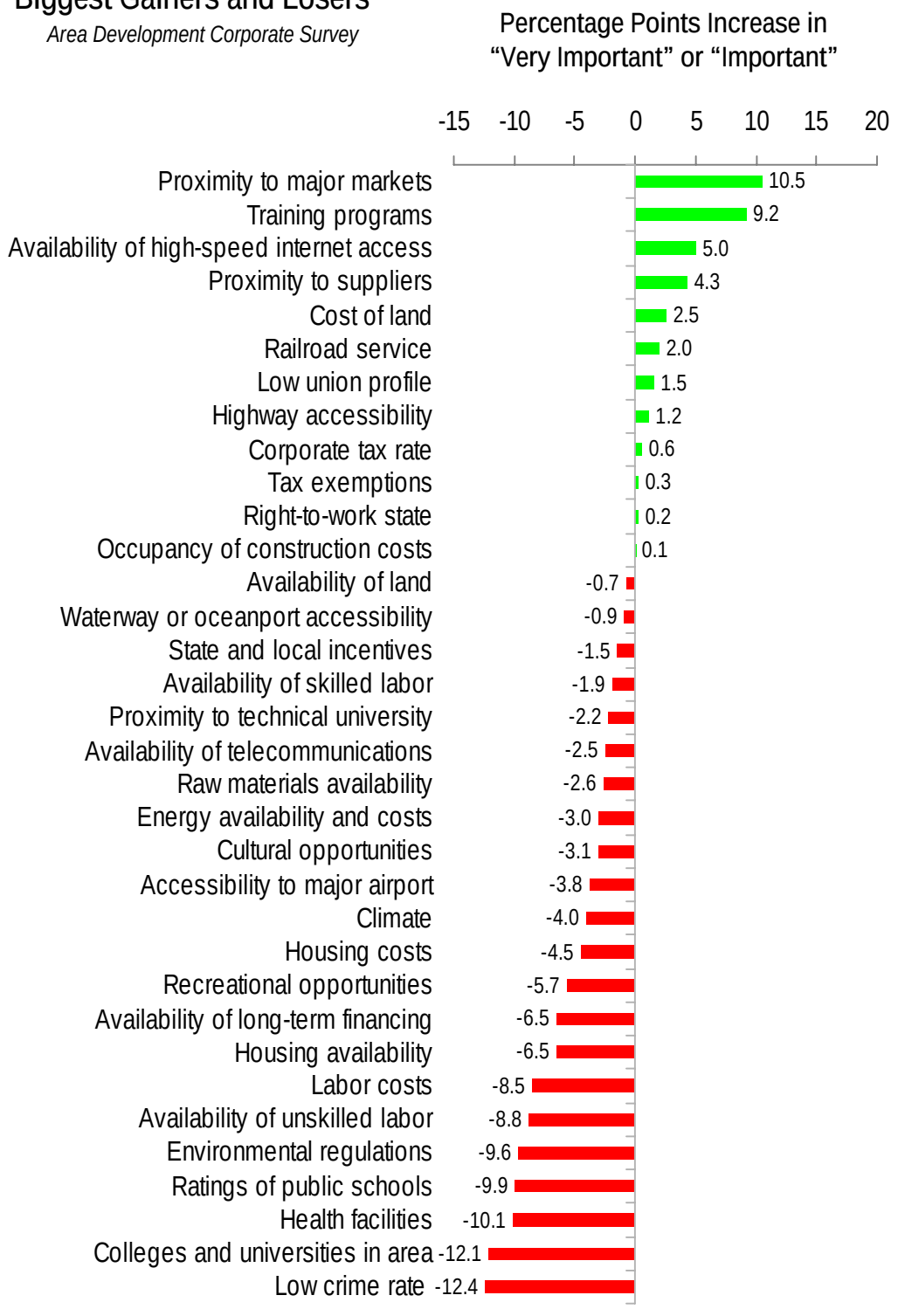
Primary reasons for decreasing number of facilities:



Source: Area Development, 2006

Biggest Gainers and Losers

Area Development Corporate Survey



Source: Area Development, 2006

Workforce & Education SWOT

Today's Requirements:

Access to a pool of highly educated, talented, and technically skilled workers is vital to any global company. In nearly all site location studies, labor constitutes one of the most — if not the most — important criterion of the study. The term "labor" incorporates a broad range of primary factors used to determine labor conditions, including but not limited to availability, quality, productivity, labor relations, and trainability.

Manufacturers seek workers who are smart and trainable. To attain world-class levels of quality and productivity, manufacturers seek intangible qualities such as attention to detail, work ethic, adaptability to change and quality consciousness. These qualities are difficult to impart on workforces in some cultures and communities.

Today's Requirements:

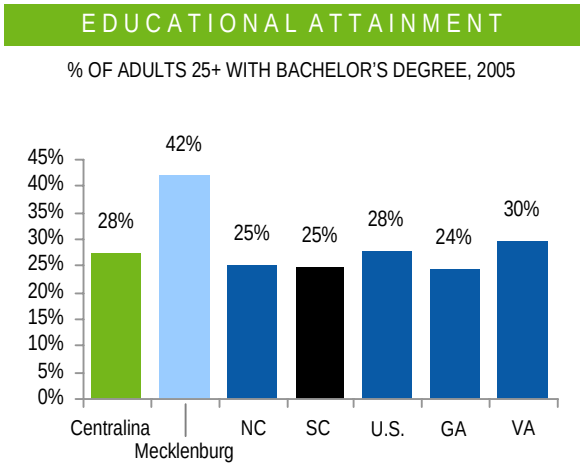
- *Flexibility*
- *Willingness to learn*
- *Quality-oriented*
- *Computer capable*
- *Drug free*
- *Problem solvers*
- *Team leaders*
- *Punctual*
- *Low absenteeism*
- *Strong work ethic*

To generate a sustainable talent pool, a community should have access to technical graduates from nearby universities and technical colleges. The community should provide an environment that will help attract and retain technical talent to reduce labor costs for companies. Quality K-12 graduates are increasingly important so that remedial training is not required by companies. Effective workforce development programs are important to help companies reduce ramp-up times for new hires and increase productivity while controlling training costs. Immigration can be a useful tool for companies to find talent for difficult to fill technical positions.

In summary, if a company expands, will it be able to hire enough skilled workers at competitive wages? If not, a company faces costly recruitment, relocation, and training expenses. It may be forced to outsource certain functions and eventually relocate.

Workforce Competitiveness in Centralina:

As described in the Assessment report, the **educational achievement of the Centralina workforce varies by county and age group**. About 28% of adults have a bachelor's degree throughout the region, with the highest concentration in Mecklenburg County, with 42% of adults having a bachelor's degree or higher. Regional educational attainment levels are above the national average in most categories, but there is significant disparity of educational attainment levels within the twelve counties.



Source: Census, DDR

Workforce availability at the right skills level has been an ongoing concern. During Duke Energy's *Carolinas Competitiveness Forum* in 2004, regional leaders stated that one of the primary barriers for manufacturing growth in the Carolinas is educational training and workforce skills development, and that many high school graduates do not have the basic skills to prepare them for the workplace. During interviews, manufacturers repeatedly complained about the lack of workers with "ready-to-hire" skills, and that many don't pass drug or background checks. Turnover at manufacturers is always higher than average. For these reasons, many manufacturers rely heavily on recruiting workers from far outside the region who are willing to commit to a job and plant their roots locally.

The **community college system** in North Carolina is an excellent asset in improving the education levels of Centralina workers. The community college system is recognized nationally as superior in its class, and local businesses and residents recognize the central role that the colleges play. The Centralina region has a community college campus in almost every county. Several have manufacturing-oriented institutes or programs:

North Carolina universities are delivering a respectable number of technical graduates in support of the established and growing technology and manufacturing industries of the state.

The major workforce training assets for Centralina's manufacturers are several local community colleges that provide two-year degrees relevant to the advanced materials industry. In addition, the Gaston College East Campus and Textile Technology Center is the only school in the state dedicated solely to teaching textile technology. Several departments at the University of North Carolina-Charlotte have active research projects that support this sector with a focus on sensors based on novel materials, including nanomaterials. Several community colleges in the region provide two-year degrees relevant to the automotive and motorsports industries. In addition, Belmont Abbey and UNC-Charlotte offer programs in motorsports management and automotive engineering, respectively. The community colleges are also well equipped to serve the workforce training needs of the industrial machining segment.

Colleges in Centralina

Institution	County
South Piedmont Community College	Anson
Cabarrus College of Health Sciences	Cabarrus
Rowan-Cabarrus Community College	Cabarrus
Gaston College	Gaston
Belmont Abbey College	Gaston
Mitchell Community College	Iredell
Central Piedmont Community College	Mecklenburg
King's College	Mecklenburg
Davidson College	Mecklenburg
Johnson C. Smith University	Mecklenburg
Queens University of Charlotte	Mecklenburg
University of North Carolina at Charlotte	Mecklenburg
Rowan-Cabarrus Community College	Rowan
Catawba College	Rowan
Livingstone College	Rowan
Stanly Community College	Stanly
Pfeiffer University	Stanly
Wingate University	Union
York Technical College	Chester
University of South Carolina - Lancaster	Lancaster
York Technical College	Lancaster
Clinton Junior College	York
Limestone College	York
Winthrop University	York
York Technical College	York

One bright spot is the new Bioinformatics program at UNC-Charlotte (UNCC), as well as new biotechnology courses offered at Davidson and Gaston Community College. In addition, a few community colleges in the area are participating in the North Carolina Biomanufacturing Training and Education programs. The Departments of Electrical and Computer Engineering and Physics and Optical Science at UNC-Charlotte, including the Center for Optoelectronics and Optical Communications, could support the further development in the medical device arena.

Gaston College's Regional Emergency Services Training Center provides hands-on training for first responders in firefighting and rescue; firefighting courses are also offered at Central Piedmont and UNC-Charlotte.

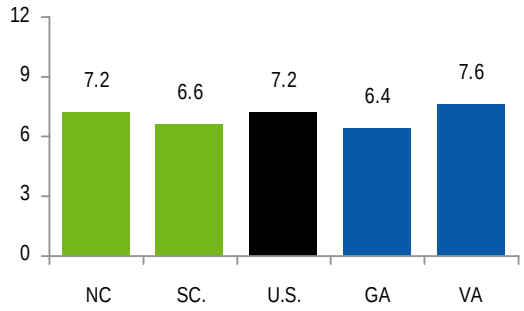
In addition to these specialized resources, UNCC's College of Engineering has three relevant centers (Lean Logistics and Engineered Systems, Optoelectronics and Optical Communications, Precision Metrology); the College of Information Technology has two (Charlotte Visualization Center and Laboratory of Information Integration, Security and Privacy), and the Department of Chemistry has one (Regional Analytical Chemistry Laboratory).

On the whole, the Centralina region has a variety of training assets directly linked to the advanced manufacturing industry clusters as described above.

As a result of the many training assets in the state, North Carolina has 7.2 technical students per capita (10,000s), versus 6.6 in neighboring South Carolina and 7.2 for the U.S. overall. The recruitment of graduates from across the country has been easy for the Centralina region. Charlotte consistently ranks high within the region and U.S. as a place young professionals enjoy to live and work.

TECHNICAL EDUCATION

SCIENCE & ENGINEERING BACHELOR'S DEGREES PER 10,000 POPULATION, 2002

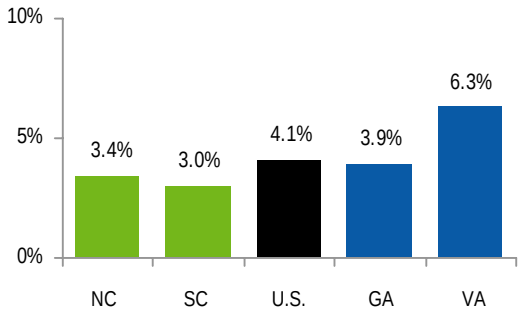


Source: NSF

Despite a well-established biotechnology sector in the Raleigh-Durham area, and biotechnology companies growing in Winston-Salem and Charlotte, both still lag in number of technology workers employed. Just 3.4% of all workers can be considered technical (e.g. science or engineering), versus 4.1% for the U.S. and a regional high of 6.3% for Virginia (primarily due to Fairfax County's telecommunications economy). North Carolina ranks higher than South Carolina for percent of workers that are technology-related. The Charlotte MSA has about 4% of its workers in technical occupations.

TECHNICAL WORKFORCE

PERCENTAGE OF WORKFORCE EMPLOYED IN SCIENCE AND ENGINEERING OCCUPATIONS, 2002



Source: BLS

The Centralina region is well positioned for the further development of an advanced manufacturing industry through the training of existing manufacturing employees for advanced manufacturing jobs. Ongoing opportunity exists to transition the current workforce and industry firms to advanced manufacturing techniques and technologies that are required to compete in today's global economy. The process of training the workforce for advanced manufacturing jobs will be further helped along by the tremendous effort of the public sector in the area, including local universities and colleges, workforce training providers, and economic development officials. As outlined in this section, the quantity of workforce training programs that is now being offered at local schools has significantly increased. Moreover, the quantity of workforce training programs that caters specifically to advanced manufacturing jobs has also significantly increased.

Research & Innovation SWOT

Today's Requirements:

For most dynamic technology regions in the U.S. today, research universities play a major role. Today's research often is tomorrow's new technologies and products. Partnerships between universities, local and state government, and growing technology companies and manufacturers have proved to be a highly productive combination. Together, these entities work to solve technical problems that make companies more competitive, commercialize much of the research already found in today's companies and universities, and train a workforce that can productively executive on a new process or knowledge base.

Today's Requirements:

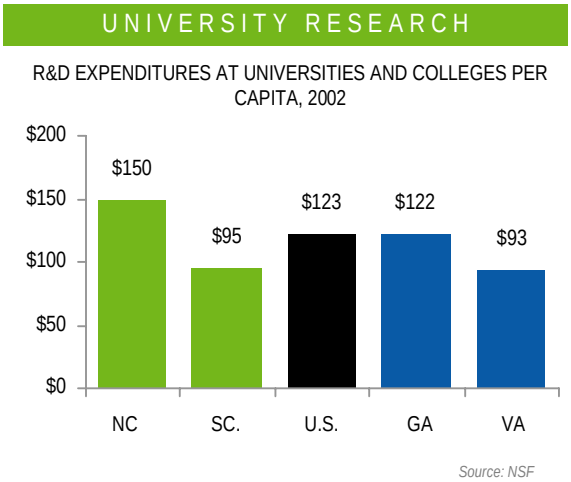
- *University research programs with good state funding*
- *Commercialization focus*
- *Public-private partnerships*
- *Venture capitalists*
- *Scientist entrepreneurs*
- *Research graduates*
- *University-based "brand" around research*

Transforming innovative ideas and research into products requires a new kind of "entrepreneurial" infrastructure. An entrepreneurial infrastructure develops and nurtures entrepreneurs by allowing them to network with each other and to link them to mentors. These connections formed help to transform ideas for products into functioning business plans and start-up companies. As the businesses grow, they require capital to hire new employees, develop prototypes and launch products to market. Venture capital firms often provide this capital to startups. Finally, after a few like firms are established, an industry cluster forms. Once at a critical mass, a cluster will attract outside companies while accelerating growth of existing firms and suppliers. Graduates of research universities play an important role in staffing and growing these new technology companies.

Maintaining an attractive and productive research climate is crucial to a region's economic success in implementing an advanced manufacturing industry. Entrepreneurship is an important component to research, as the commercialization of technology is what creates revenue and jobs in a local economy. Estimates show that 80 percent of future job growth will be among small businesses. Local and regional organizations involved in research and entrepreneurial support are an important component to the vitality of a region.

Research Competitiveness in Centralina:

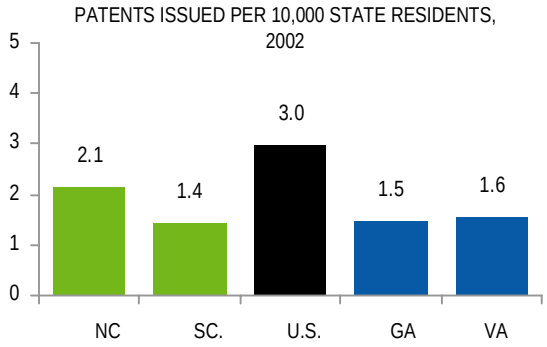
Centralina has some significant assets in research, but generally lags other major metros in the U.S. North Carolina's research rankings are high, but primarily due to the heavy concentration of universities in the Raleigh-Durham metro. North Carolina spends $150 per capita in the state on university research programs, significantly higher than neighboring South Carolina, and about 20% more than the U.S. per capita average.



Source: NSF

PRIVATE RESEARCH

Research at universities and companies has delivered a good number of patents in the state. Overall, the state generates 2.1 patents per capita (10,000s), primarily due to the work done in the Raleigh-Durham region. South Carolina produces fewer, at 1.4 per 10,000 residents.



Source: U.S. Patent And Trademark Office

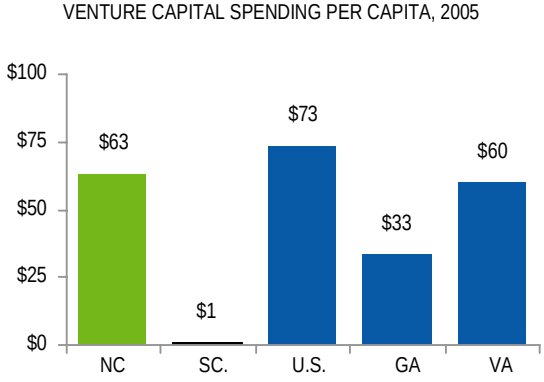
Patent activity in the Centralina region is relatively robust with a total of 154 patents issued in 2005 where at least one inventor listed Charlotte, NC as their address. These patents are strongly clustered in several relevant sectors, including optoelectronics, advanced materials, industrial machinery, automotive, computer hardware and software, and life sciences. Table 1 shows the relative strength of each field in terms of patents issued.

Table 1. Patents Issued in 2005 to Charlotte Inventors

	Number	Percent of Total
Industrial machinery	23	15
Advanced materials	22	14.3
Optoelectronics	21	13.6
Automotive	20	13
Computer hardware & software	18	11.7
Life sciences	11	7
Other	39	25.3
Total	154	100

VENTURE CAPITAL

Additionally, access to capital is an important part of growing research-based businesses. Area companies often report trouble finding funding sources, particularly in their early stages of development. North Carolina ranks reasonably well for venture capital, drawing in over $500 million in new investments in 2005, a 60% increase over 2004. While Virginia enjoyed a similar growth (65%, both South Carolina and Georgia saw significant drops in their venture capital investments in 2005. The U.S. saw a modest increase of 3%.

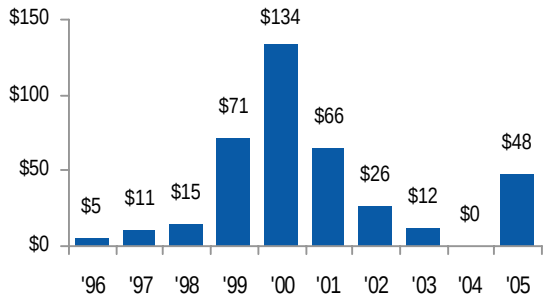


Source: Venture Economics

Venture capital availability in Centralina improved dramatically in 2005. In the 9th Congressional District in North Carolina, investments totaled $48 million in 2005 after no investments occurred in 2004. At its peak in 2000, $134 investments occurred. Centralina counties in South Carolina have not registered venture capital investments.

VENTURE CAPITAL

CONGRESSIONAL DISTRICT 9, NORTH CAROLINA



Source: Venture Economics

The Centralina region has a variety of innovation assets directly linked to the advanced manufacturing industry. On the whole, however, it has a less robust R&D sector than many other regions of its size. With only one university in the region, University of North Carolina-Charlotte, the total research budget is growing steadily, but is still modest. A review of the 2005 sponsored research projects at UNCC shows a total of $31.7 million, with almost 67% coming from the federal government. The two most significant federal sponsors are the National Science Foundation with almost $5 million (15.4% of total 2005 sponsored research) and the Department of Education with $4.7 million. As shown in Table 2, this represents a considerable increase since 2001. However, UNCC R&D expenditures still rank quite low. Based on 2003 figures, UNCC ranked 251st among all universities. For comparison value, UNC-Chapel Hill ranked 29th, NC State ranked 45th, UNC-Wilmington ranked 249th, and East Carolina ranked 252nd.

Table 2. UNC-Charlotte Technology Transfer Activity 2001-2004

UNC-Charlotte	2001	2002	2003	2004
Total Sponsored Research Expenditures ($millions)	12.3	15.3	17.6	24.7
Invention Disclosures Rec'd	36	48	69	70
New Patent Filings	28	40	42	47
Licenses/Options Executed	4	7	8	4
Adjusted Gross Licensing Income	$46,815	$74,500	$11,500	$77,300
Patents Issued	6	0	7	6
Start-up Cos. Formed	6	4	4	2

Source: Association of University Technology Managers (AUTM) Annual Surveys from FY 2001-2004

On the other hand, Table 1 also shows that UNCC has generated significant technology transfer activity on this modest R&D base. When compared to other universities, and normalized on a per $1 million in R&D basis, UNCC ranks 2nd in number of start-ups formed, 2nd in number of inventions disclosed, 3rd in number of patent applications, and 4th in number of licenses issued.

Further, the number of patents issued at UNCC continues to increase. A check of the number of patents issued to UNCC in calendar year 2005 shows 9, an increase from the 7 and 6 respectively reported for 2003 and 2004 to AUTM.

Many of the advanced manufacturing industries are strongly supported by the local universities, colleges, and community colleges, as well as by some local nonprofit research organizations. Table 3 shows how the assets map onto the various target industries:

Table 3. Innovation Assets and Target Industries

	Advanced Materials	Automotive & Motorsports	Biotechnology & Bioinformatics	Industrial Machinery	Homeland Security & Defense
UNC-Charlotte	X	X	X	X	X
Polymers	X		X		
Motorsports concentration		X			
Lean Logistics					X
Center for Precision Metrology		X			X
Center for Optoelectronics	X				X
Visualization Center					X
Information Security					X
Bioinformatics			X		
Other 4-year Colleges		X	X		
Belmont		X			
Davidson			X		
NC Community Colleges	X	X	X	X	X
SC Community Colleges	X	X	X	X	
Other Assets	X	X	X		
Polymer Processing Center	X		X		
Automotive Resources		X			

We profile each of the following research centers here:

UNC Charlotte

The University of North Carolina-Charlotte has a number of centers that are important for the future of the advanced manufacturing community in the Centralina region. We identified the following as valuable assets:

1. UNC Charlotte's College of Engineering
   - Motorsports and Automotive Engineering concentration – The program is a special concentration in motorsports engineering offered as part of the Bachelor of Science degree in mechanical engineering. On-site equipment includes chassis dyno, shock dyno, engine dyno, scales, and Pi/CDS Data Acquisition. The program and facilities focus on vehicle dynamics, aerodynamics, and instrumentation.
   - Lean Logistics and Engineered Systems
     - Offers courses to industry on lean manufacturing and supply chain management.
   - Optoelectronics and Optical Communications

- Conducts research in optical devices and materials, enabling the development of better sensors. Is linked to most of the defense companies in the area, including General Dynamics, Northrop Grumman, and Digital Optics.

- Precision Metrology
  - Conducts research in nanomanufacturing with tolerances on the order of ten parts per million. Includes a Dimensional Metrology Laboratory with equipment for machinery and measurement of parts. Nationally recognized program that concentrates on intelligent manufacturing, precise machinery measurements, metrology instrumentation, nanotechnology, and subatomic measurement.
  - Home of world's premier university Metrology Lab
  - 1,500-square-foot facility in precisely controlled environment, and meets industry clean room requirements
  - Wide variety of high-end measurement instruments
  - Traditional dimensional metrology and controlled coordinate measuring machines
  - Surface Metrology Lab measures 2- and 3-dimensional surface finish and form.
  - Provides measurement services to local industry
- Faculty leaders from various science-based backgrounds focus on competitive programs that further local industry needs using practical and experimental applications.
  - The mechanical engineering and engineering science department and the physical and optical science department attract research dollars around topics of sensors based on novel materials (Professor Hocken, Center for Precision Metrology) and materials analysis (Science Center)
  - The electrical and computer engineering department has attracted SBIR money from the U.S. Department of Energy for work in novel nanomaterials for sensors (Professors Stokes and Fiddy, Center for Optoelectronics).
  - The chemistry department seems very well integrated into the local advanced materials industry through its research contracts with several of the major companies (Professor Ogle).

2. UNC Charlotte's College of Information Technology
   - Charlotte Visualization Center
     - A Regional Visualization and Analytics Center for the National Visualization and Analytics Center located at Pacific Northwest National Labs and funded by DHS. The Center focuses on visual and analytical reasoning methods for intelligence analysis and decision-making.
   - Laboratory of Information Integration, Security and Privacy, an NSF Information Security and Assurance Center
     - A center designated by the NSA as a Center of Academic Excellence in information assurance education. The Center educates students in information integration, security, and privacy, which is in line with the current DHS focus on cyber security.
   - Center for Bioinformatics
     - Ph.D.-granting bioinformatics program to be located in a $35M, 70,000-square-foot bioinformatics building under construction on the Charlotte Research Institute campus.

3. UNC Charlotte's Department of Chemistry
    - Regional Analytical Chemistry Laboratory (RAChel)
        - The RAChel staff provides analytical and technical consulting services to industry using the lab's nuclear magnetic resonance spectrometer, chromatograph/mass spectrometer, and equipment for the separation/isolation of organic and inorganic compounds. Could support the development of chemical sensor products for homeland security.

Other 4-Year Colleges

Belmont Abbey College is starting a 4-year motorsports management program (essentially a business management degree with motorsports concentration). The program will begin in Fall 2006.

Davidson College has NSF-funded biotechnology courses for undergraduates.

North Carolina Community Colleges

The Gaston College East Campus and Textile Technology Center is the only school in the state dedicated solely to teaching textile technology. The current mission is to develop a world-class workforce for the textile industry in North Carolina and to support the textile industry by identifying problems confronting the industry and assisting the industry in solving them, garnering support from the textile industry for the work of the center, and serving as a statewide center of excellence that serves all components of the textile industry.

Gaston College's Regional Emergency Services Training Center provides hands on training in the first responder areas of firefighting and rescue operations. This resource could be used as a test location for, or feedback on, first responder products.

Central Piedmont Community College, Gaston Community College, Mitchell Community College, Rowan-Cabarrus Community College, Southern Piedmont Community College, and Stanly Community College provide 2-year degrees that are relevant to the automotive and motorsports, industrial machinery, and advanced materials clusters.

Gaston, Iredell, and Lincoln counties, for example, have been named as either direct or indirect recipients of BioNetwork training grants that are awarded to academic institutions by the North Carolina Community College System.

South Carolina Community Colleges

York Technical College offers 2-year degrees that are relevant to the automotive and motorsports, industrial machinery, and advanced materials clusters.

The South Carolina Technical College System offers the Center for Accelerated Technology Training (CATT) that supports training in biomanufacturing.

Other Resources

A major asset for the advanced materials cluster is the Polymers Center of Excellence (PCE) (*www.polymers-center.org)*. Established by the NC legislature in 1994, the PCE, formerly known as the Polymers Extension Program, was developed to support the growing numbers of NC companies that manufacture products from plastics and rubber for various industries including automotive, furniture, medical, etc.

These other assets support the automotive and motorsports industry.

- NASCAR R&D Facility – This state-of-the-art facility is located in Concord and owned by NASCAR. The facility focuses on research and testing of safety devices. It also conducts aero-matching tests, so that race vehicles from different manufacturers have similar aerodynamic characteristics.
- NASCAR Technical Institute – Run by UTI for NASCAR, the institute combines an automotive technology program with a NASCAR-specific motorsports program to provide practical training and skill education for potential crewmembers. Many of the graduates choose to go into the automotive industry if they decide not to pursue the motorsports career path.
- Racetracks – The region offers access to numerous large paved tracks. Lowe's Motor Speedway in Charlotte is the closest. Within a short driving distance are raceways in Hickory, Concord, North Wilkesboro, Rockingham, and Darlington.
- Wind Tunnels – Two major wind tunnel facilities are located in the region. Located in Mooresville, the Aerodyne full-scale wind tunnel operates 24 hours a day, 7 days a week to support NASCAR teams' development, testing, and verification. The Penske Technology Group (formerly Auto Research Center) in Mooresville operates a 40% scale open jet/rolling road wind tunnel for testing of scaled-down racing vehicles. Penske also has a seven-post chassis dynamics rig for performance testing.

In addition, the Industrial Extension Service (IES) provides educational and technical assistance to businesses and industries across the state of North Carolina in support of economic development. IES works one-on-one with small and medium size businesses to help them stay competitive, while saving jobs and increasing profits. IES aims to help their clients stay abreast of the latest technologies and best practices, which ultimately increase efficiency, productivity, quality, and profits.

IES was established in 1955 and is headquartered out of North Carolina State University with field offices in Greenville and Plymouth, NC. IES works closely with East Carolina University's faculty, staff, and students to provide many resources for manufacturers in eastern North Carolina. They also partner with several other universities and community colleges throughout North Carolina to provide statewide coverage of services.

Some of the services provided by IES include:

- Business solutions
- On-site, peak performance training
- Environmental, safety, and health management
- Information on industrial and solar energy
- Training on becoming a lean enterprise
- Networking and referral opportunities

Business Climate SWOT

Today's Requirements:

As barriers to industries fall and competition increases, the spread of globalizing forces has clearly increased competition for all manufacturers. Increased competition shrinks profit margins forcing companies to take extensive measures to reduce costs. Areas with high business costs eventually force employers to more cost competitive environments. The southern shift toward the manufacturing belt, increased outsourcing and movement of operations offshore are an indication of the importance of labor costs. Low value added, labor-intensive jobs such as textile manufacturing have largely moved offshore in search of lower wages. Some software companies have left California for Nevada to escape high taxes, utility costs and excessive government regulations. Typically, more advanced industries and intensive value-added ones are more willing to overlook these higher costs in exchange for highly skilled and productive labor.

Today's Requirements:

- *Low tax cost*
- *High depreciation for equipment*
- *Sales apportionment formulas that favor manufacturing*
- *Competitive cost of labor*
- *Variety of incentives, include tax reduction and cash for training and research programs*
- *Low union activity*
- *Low cost, available sites*
- *Good high-speed internet connectivity*

Corporate site selection is increasingly affected by tax environments, and more than ever, companies seek predictability and avoidance of risk in their tax burden. Tax systems can have widely varying impacts on companies according to their type of operation. Low property tax environments favor companies that are capital intensive or with large inventories such as distribution facilities. High personal income taxes generally penalize companies where a majority of their costs are in labor. Income tax apportionment formulas can also vary widely from company to company. States with triple-factor-sales formulas for corporate income heavily favor companies that export a majority of their product out of the state (primarily manufacturers).

Incentives work to alleviate disparities in tax systems across states. While many times, they are the "icing on the cake" for deals, manufacturers have placed incentives in a much higher level of importance and include them as part of any initial site search. For new industries such as nanotechnology, biotechnology, and fuel cells, a virtual "incentives arms race" has occurred among states and communities. A primary goal of incentives is to remedy a prejudiced tax system (using tax credits to reduce a high corporate income tax rate). Now, incentives are becoming more cash-based, where state and local governments commit funds to invest in infrastructure, workforce training grants, research programs, or free land and buildings in order to win large projects and make a marketing statement to the world. Communities have come to understand the strategic importance of some industries on their future economy, and these communities are doing much to attract them.

Wages account for a large percentage of labor costs for a company, but other factors such as recruitment, retention, skills training, benefits and turnover are increasingly important in tight labor markets. Unionization also contributes to higher cost. Most tech companies abhor unions, but union power is on the decline nationwide. Supply and demand for workers also affects wage rates.

In addition, costs of utilities, developable sites, and telecommunications play a large role in site selection and are examined in this section.

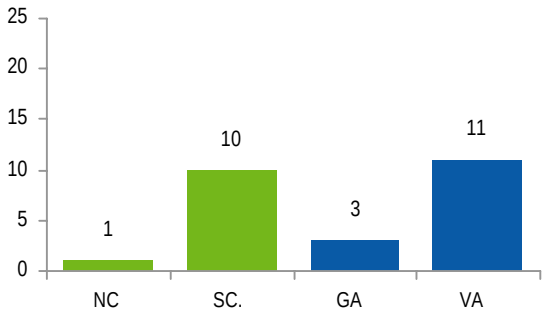
Business Climate Competitiveness in Centralina:

The Centralina region is often recognized as a "pro-business" community by Fortune magazine. Accolades such as these are important, but a more in-depth analysis reveals that although local property taxes are relatively low in North Carolina, the state's personal and corporate income tax rates are generally higher than neighboring South Carolina. Low property tax rates and high corporate income tax rates are generally representative of an economy based in capital-intensive manufacturing. Without considering the effect of incentives, the region's tax burden should still be considered attractive to target industries.

The region benefits from the many positive rankings of the state of North Carolina and South Carolina. The state of North Carolina has ranked Number 1 in Site Selection's poll of states in four out the past five years in Business Climate. South Carolina consistent ranks well. Much of this positive ranking is the continued success of the state in recruiting companies, including manufacturers.

BUSINESS CLIMATE

STATE RANKINGS, 2005

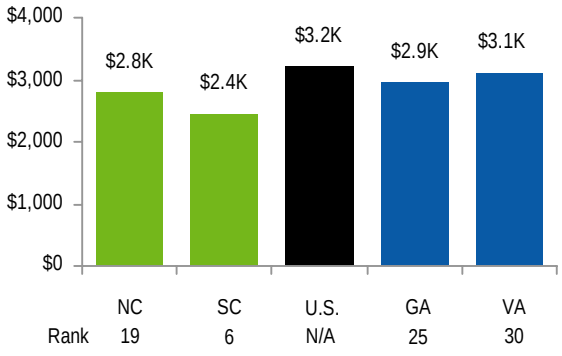


Source: Site Selection Magazine

STATE TAX BURDEN

TOTAL TAX COLLECTIONS PER CAPITA, 2002

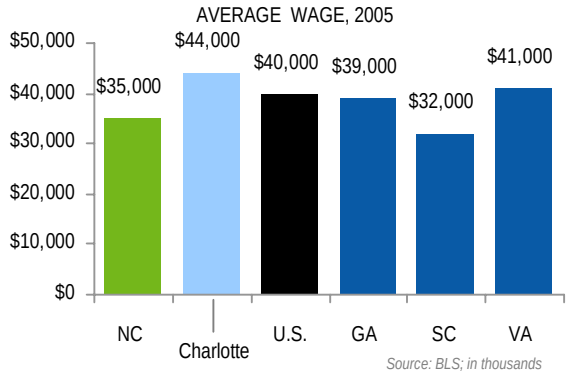
The Carolinas are perceived as a low-tax environment, and the research supports this view. North Carolina and South Carolina enjoy below average tax costs per capita as shown by the chart to the right. At $2800 and $2400 in total tax costs per person, North Carolina and South Carolina are 12% and 25% lower in overall tax burden than the U.S. Neighboring Georgia and Virginia are only slightly lower.



Source: Census

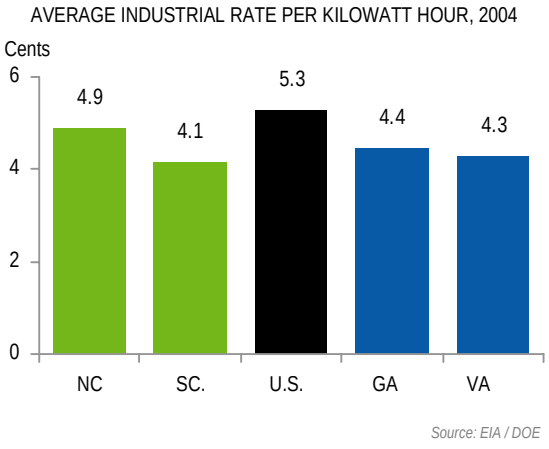
North Carolina's wage competitiveness has been heralded by publications and industries across the U.S. While Charlotte has an above average wage due to the high-paying professional and financial services industries, Centralina's average wage is more in line with the state's. Both North and South Carolina have below average wages, much lower than the U.S. average of $40,000.

WAGE COMPENSATON



Cost of doing business for manufacturers is greatly affected by the cost of electricity. North Carolina is generally viewed as competitive with its electric rates, but data shows that the price difference with the U.S. average is not significant. South Carolina has lower electric prices than North Carolina. Neighboring Georgia and Virginia have low prices, even lower than North Carolina's.

ELECTRIC RATES



North Carolina and South Carolina enjoy low land costs and low costs of construction. The high availability of developed sites in industrial parks, ready-to-occupy buildings, and developable sites makes the Carolinas a natural choice for large footprint manufacturers. Incentives also increase the competitiveness of real estate in the Carolinas. Furthermore, the cost of constructing buildings in North and South Carolina is lower than the U.S. average by 25%.

The excellent availability of highways within Centralina further improves the availability of sites for development. Workers are able to commute to their job without suffering significant congestion. Interstate connections to major markets in the Midwest, South, and East coast make Centralina an ideal location for warehousing and distribution.

Introduction

The Centralina region has a wealth of advanced manufacturers in a wide variety of industries. This section of the Environmental Scan is intended to describe these manufacturers in the context of their industries and to identify the region's innovation assets already available to assist them.

AngelouEconomics and RTI started with the clusters identified by the Centralina Council of Governments in their Request for Proposal: biotechnology and bioinformatics, automotive and motorsports, textiles, and security and defense. We added advanced materials and industrial machinery after a review of our research. Optoelectronics, an industry identified by AngelouEconomics, but not specifically called out by the Centralina Council of Governments, is covered in the advanced materials section.

In this report, we find that the Advanced Materials cluster is particularly robust, with a full range of bulk chemical producers, finished materials processors, and component/product manufacturers serving the aerospace, automotive, industrial/energy, medical, and textile/furniture industries. Growth opportunities in the advanced materials industry include metal matrix composites, automotive parts, non-wovens, and electronics.

Automotive and Motorsports is a major cluster for the Centralina region, with a focus on automobile parts and stock-car racing. The automotive sector is feeling the effects of globalization, with some parts manufacturing going offshore, but foreign auto companies increasingly manufacture in the United States. Advanced manufacturing and logistics techniques such as kanban, lean manufacturing, and just-in-time delivery, as well as tight cost and quality controls, are prerequisites for survival. The strong and diverse representation of automotive parts manufacturers in the region provides critical parts to the automotive, motorsports, heavy truck, and trailer manufacturers. Over 400 companies in the region provide a variety of suppliers to the motorsports industry, including testing facilities, specialty components, equipment suppliers, and support services.

In contrast, the biotechnology and bioinformatics industry is less developed in the region. A limited number of manufacturers of health-related substances, including a generic pharmaceutical maker and several neutraceutical or food additive companies, are located in the region. In addition, a few small start-up drug discovery and development firms are starting to appear, as are a few start-up medical device firms.

In the Centralina region, the industrial machinery category is very diverse and well represented. Continued slow growth across the category is predicted, but some sectors in the region are seeing double-digit growth.

Again, the community colleges are well equipped to serve the workforce training needs of this segment. In addition, the Center for Precision Metrology at UNCC—a nationally recognized program that concentrates on intelligent manufacturing, precise machinery measurements, and nanotechnology—is well equipped to support this cluster. The Center for Optoelectronics and Optical Communications is also an important asset.

The last sector we examined is security and defense. The majority of companies in the region sell products and services directly to the Department of Defense. They provide construction and facility maintenance or supply materials such as gas and chemicals to defense facilities. The main products sold from regional companies are aircraft parts and supplies and test, measurement, and sensor equipment.

Methodology

We performed this work using a number of different methods. First, we ascertained the companies in the region that are involved in advanced manufacturing. Using a previously developed list, we augmented our search in published databases using North American Industry Classification Systems (NAICS) codes in the target clusters.

This inventory of local assets was augmented with a marketing analysis to characterize the potential markets for the various clusters. This analysis included the following:

- Size of projected market opportunities
- Strength of existing R&D base
- Prospects for job creation, cluster recruitment, new venture creation, and rural economic development

We used existing market studies, existing industry roadmaps, technical needs/gaps, government research programs, federal and industry research priorities, and science and technology forecasts to determine growth opportunities in the technology area(s).

Second, we looked at existing R&D and manufacturing resources already available in the region. We reviewed each local university and community college, as well as appropriate nonprofits, industries, and government laboratories (as applicable). Strengths in R&D and manufacturing are listed below:

- Research funding amounts, key researchers
- Volume of invention disclosures, key innovators
- Technology transfer successes
- Scientific recognition (stature, awards, etc.)
- Unique facilities
- Representation across multiple organizations (academic, corporate, etc.)
- Organizational priorities

This research was augmented with primary interviews of senior research administrators and local industry. The purpose of the interviews was to capture data not otherwise available from secondary resources.

Advanced Materials

Industry Overview

The Advanced Materials industry cluster includes nearly all durable goods industries. Notable exclusions from this cluster include food production, tobacco, lumber, paper, pharmaceuticals, and those manufacturers that produce materials for the building industries, such as roofing materials and cement. These excluded industries can be found within other industry clusters where there exists a significant supply chain or dependence among related industries.

Advanced Materials is a capital-intensive industry, and firms generally locate near their end-users. The bulk raw materials suppliers are those organizations that make feedstock for the processor companies. Feedstock may include bulk chemicals or metal material, ceramic powder, non-woven bulk material, textile fibers, etc. The finished materials processors generally manufacture useful material with the raw materials. For example, the polymers processors may use chemical feedstock from the bulk raw materials producers to make a useful polymer, such as thermoplastic, for the component/products manufacturers, or the textile processors may use raw material fibers to make yarn. The finished materials supply the component manufactures. An example of a component would be optical cable that is made with carbon ceramic filament wire and polymer casings from the processors. Finally, the components are provided for the end user industries for assembly into a final product. Some companies may operate in multiple categories.

Each of the Advanced Materials segments described above is represented in the Centralina region. The region's strongest representation includes the polymers processors, metals processors, and automotive end users.

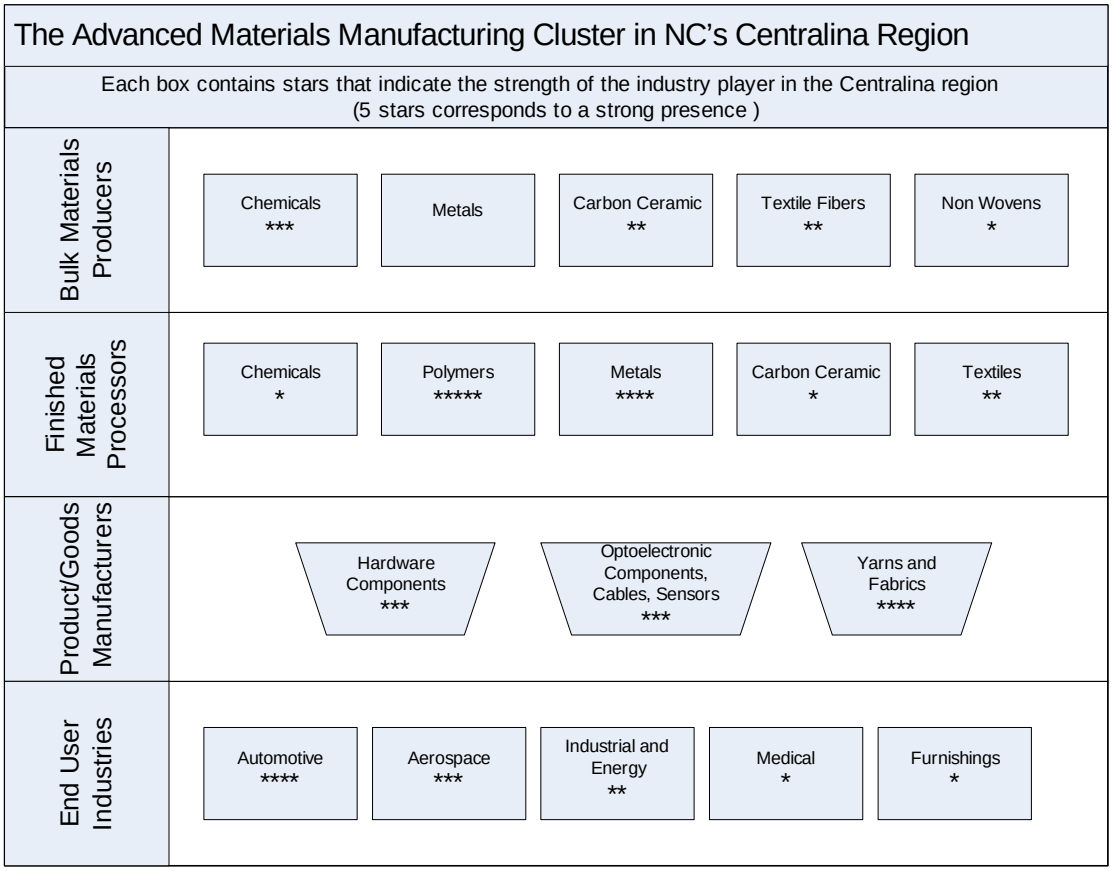
In the Centralina region, the Advanced Materials industry cluster consists of:

- Bulk raw materials producers
- Finished materials processors
- Component/product manufacturers
- End-user industries

Centralina's advanced materials organizations generally serve five end-user industries: aerospace, automotive, industrial/energy, medical, and textile/furniture. The cluster members can be organized into four basic groups as shown in Figure 4.1 shown on the next page.

A sampling of the companies in each segment is listed in Appendix A.

Figure 4.1 Advanced Materials Cluster



Industry Trends

Industry projections indicate consistent but moderate growth across the industry, with niche opportunity areas in high-value-added Advanced Manufacturing sectors within the industry. Profitability in the Advanced Materials industry is driven primarily by the price of raw materials (feedstock) and energy. In recent years, the plastics sector has particularly been battered by both high raw material costs and rising energy prices, making it difficult to sell products above costs. However, despite these factors, there has been some growth as a result of strong sales to China (plastics sales to China in 2003 totaled $640M, e.g.)

Growth opportunities within the Advanced Materials industry include the following:

1. Metal Matrix Composites (MMCs): MMCs combine the properties of metals and ceramics to achieve parts with higher stiffness and wear resistance with lower density. MMCs cost more to produce so they are most useful for high-value-added applications such as light vehicle drive shafts and engine and brake components. The market remains healthy due to growth in the following sub-segments:
    - Aerospace
    - Automotive
    - Thermal management
    - Industrial Applications
    - Consumer Produce

    MMCs offer a potential growth opportunity for Centralina at the intersection of the region's strong representation in Advanced Materials manufacturing and end-user industries that are most interested in MMCs.
2. Automotive:
    - Parts: The market for advanced materials used in automotive vehicles is expected to grow 5.4% through 2006, when advanced materials are expected to account for 27% of the total weight of the vehicle market.
    - "In mold decorations" describes auto parts that are plastic-coated in the mold, thereby eliminating the need for paint, and for building and maintaining paint plants. Some projections suggest that an all-plastic-coated car will be available by 2010.
3. Non-wovens: These highly engineered textiles serve automotive, aerospace, and textile industry needs and represent the only textile sector that is experiencing growth.
4. Electronics: Evermore demanding performance requirement for electronic equipment is expected to drive growth in Advanced Materials.

Regional Assets

The Polymers Center of Excellence (PCE) (www.polymers-center.org) is a major asset for the Advanced Materials cluster. Established by the NC legislature in 1994, the PCE, formerly known as the Polymers Extension Program, was developed to support the growing numbers of NC companies that manufacture products from plastics and rubber for various industries, including automotive, furniture, and medical.

PCE provides in-plant engineering outreach assistance, education, training, process and product development, and engineering reference services to these companies. PCE also offers classroom, video-streamed, and hands-on courses that cover basic technical and manufacturing subjects for this industry. PCE is a partner with the Society of Plastics Industry (SPI) and has a state-of-the-art polymers processing and testing lab at the University Research Park in Charlotte.

The mission and offerings of the PCE align with and seem to satisfy the advanced manufacturing needs of the polymers sector of the Advanced Materials industry cluster.

Mission: To provide local expertise that will enable local plastics firms to reduce costs, increase productivity, expand market share, and shorten time to market.

PCE services offered include:

- Specialized training for companies that purchase, process, design, develop, or manufacture products using plastics or rubber, including those listed below:
  - Extrusion/compounding
  - Injection molding
  - Process troubleshooting
  - Materials testing
  - Design engineering
- Workforce training offered on-site or at the Center, designed to provide timely, cost-effective technical support tailored to local companies' needs
- Sponsored seminars for topics important to the plastics industry

Several community and technical colleges in the region provide 2-year degrees that are relevant to the advanced materials category. Those schools include Central Piedmont Community College, Gaston Community College, Mitchell Community College, Rowan-Cabarrus Community College, Southern Piedmont Community College, Stanly Community College, and York Technical College. The relevant courses offered are listed below.

Industrial Technologies	Engineering Technologies
Industrial Systems Tech (3)	Computer Engineering (3)
Industrial Mgmt (3)	Electrical Engineering (3)
Machinery Technology (6)	Electronics Engineering (6)
	Industrial Engineering (2)
	Manufacturing Engineering (2)
	Mechanical Engineering (7)

The only school in the state dedicated solely to teaching textile technology is the Gaston College East Campus and Textile Technology Center (http://www.gaston.edu/community/eastcampus.htm). The Center was formed in 2005 after the transfer of The North Carolina Center for Applied Textile Technology to Gaston College. The current mission is to develop a world-class workforce for the textile industry in North Carolina and to support the textile industry by 1) identifying problems confronting the industry and assisting in solving them, 2) garnering support from the textile industry for the work of the center, and 3) serving as a statewide center of excellence that serves all components of the textile industry. To accomplish this mission, the Center does new and sample product development, product testing, training, and consulting. Six on-site laboratories are stocked with modern textile equipment donated by area companies. Among these are a "mini-manufacturing site" yarn production lab, a knitting and weaving lab, a dyeing and finishing mini-plant, and labs for chemical and physical testing. Participants also visit nearby Parkdale Mills, one of the most highly automated textile facilities around.

UNC-Charlotte is the leading resource among the 4-year colleges and universities in the region. Particular centers at UNC-Charlotte that have active research projects in the area of advanced materials include the following:

- The mechanical engineering and engineering science department and the physical and optical science department attract research dollars for sensors based on novel materials (Professor Hocken, Center for Precision Metrology) and materials analysis (Science Center).
- The electrical and computer engineering department has attracted Small Business Innovation Research (SBIR) money from the U.S. Department of Energy for work in innovative nanomaterials for sensors (Professors Stokes and Fiddy, Center for Optoelectronics).
- The chemistry department seems very well integrated into the local Advanced Materials Industry through its research contracts with several of the major companies (Professor Ogle).

Advanced Manufacturing Needs

The Polymer Processing Center meets the needs for this niche sector of Advanced Materials, and polymer processing is by far the dominant sector.

To determine needs among the companies in the Centralina region, we spoke with a random selection of companies. We targeted presidents, manufacturing and operations directors, and, if an R&D center was present, the R&D director.

In general, it should be noted that textile manufacturers are now considered to have the most efficient manufacturing methods, as a result of extreme struggles to remain competitive.

AngelouEconomics and RTI attempted to contact 11 companies. To date, six interviews have been completed. The feedback from the companies was as follows:

- More polymer education should be built into the chemistry and chemical engineering curriculum. In Centralina, 50% of chemistry grads are hired into the polymer industry, but only 10% of the curriculum is focused on polymers.
- Community colleges are good for teaching, but not training. There is a need for hands-on teaching with a practicing technician.
- Most Advanced Materials manufacturing degrees should include an increasing focus on electronics to support the industry's transition from mechanical to electrical controls.
- Community colleges that have a progressive industry coordinator position (an agent charged with visiting companies on a regular basis) are very helpful in providing workforce skills to keep our manufacturing processes competitive.
- Many companies express frustration with lack of basic work skills of high school graduates in the state—problem-solving skills and teamwork skills are missing.
- One company, Commscope, has designed several lean training (Toyota processes) classes with the local community college. These classes are very effective and having them on-site or at the nearby community college has saved money.

Automotive and Motorsports

Industry Trends

Automobile and Automobile Parts Manufacturing

North American production of automobiles is projected to grow slightly in the coming years from 15.7 million units in 2005 to 16.7 million in 2011. However, the nameplates on those vehicles are the cause of some concern for the original equipment manufacturers (OEMs) and their suppliers. The "Big 3" North American manufacturers (Ford, General Motors, and DaimlerChrysler) are losing ground to foreign competitors, primarily from Japan and Korea. Foreign manufacturers such as Toyota, Nissan, and Hyundai are increasingly moving assembly and manufacturing operations into the United States. Meanwhile, to maintain costs, the North American manufacturers are sending more parts manufacturing offshore.

A sign of the times: The 2006 Toyota Sienna minivan has 90% U.S. content, while the American icon 2006 Ford Mustang only 65%. The combination creates an interesting dynamic for Tier 1 and Tier 2 suppliers such as those present in the Centralina region. While sales to the Big 3 declined due to lower production volumes and offshoring, the opportunity to sell to foreign manufacturers setting up shop in the United States is increasing.

What this means for automobile parts manufacturers in Centralina and other regions is that they must re-compete to get the foreign parts business. Advanced manufacturing and logistics techniques such as kanban, lean manufacturing, and just-in-time delivery, as well as tight control on costs and quality, are pre-requisites to enter this field. While many firms may be somewhat attuned to these methods from supplying the Big 3, in general, the Japanese and Koreans will have higher expectations.

Motorsports Industry

Motorsports is one of the fastest growing spectator sports in the world, and the Centralina region is known as the center of the stock-car racing universe. Between the high percentage of race teams headquartered in the state, several well-known venues, and significant technical and supplier resource bases to support the industry, North Carolina overall is well positioned as a leader in the motorsports industry. The impact to the state has been estimated at over $5 billion annually.

North Carolina is home to over 80% of Nextel Cup, 70% of Busch Series, and 55% of Craftsman Truck Series teams, with the majority of these teams located in the Centralina region. Stock-car sanctioning body NASCAR has a significant corporate presence in the region. Also, the NASCAR research and development center and the corporate headquarters of the Craftsman Truck, Busch, and Nextel Cup Series are located in the area. NASCAR also recently announced that Charlotte will be the home of the new NASCAR Hall of Fame. Over 400 companies in the Centralina region support the motorsports industry in some fashion. This includes operations such as marketing, public relations, specialty parts production, and testing equipment and facilities.

Regional Assets

Centralina is blessed with a strong and diverse representation of automotive parts manufacturers. From plastic components and interior systems, to engines, transmissions, and suspension systems, Centralina has a wide range of companies supplying critical parts to the automobile, motorsports, heavy truck, and trailer manufacturing industries. A sampling of representative companies is listed in Appendix A.

As previously mentioned, the region houses over 400 companies that provide a variety of support to the motorsports industry. From marketing and PR companies, to testing facilities, to specialty components, racing teams located in the region do not have to look far to find equipment and other support services. Leading parts suppliers and specialty manufacturers are also shown in Appendix A.

Several community and technical colleges in the region provide 2-year degrees that are relevant to the automotive and motorsports industries. Those schools include Central Piedmont Community College, Gaston Community College, Mitchell Community College, Rowan-Cabarrus Community College, Southern Piedmont Community College, Stanly Community College, and York Technical College.

Highlights of some of the programs are included below:

- Central Piedmont Community College in-lab projects performed on full-scale industrial equipment typically used in local industry
- Cooperative work experience with local employers (for course credit) encouraged for practical instruction
- Local Machinery Technology programs offer coursework that includes extensive hands-on experience with computer-aided design (CAD), robotics, and CNC Graphics
- Programming in both 2-D and 3-D applications, in addition to the basics in machinery and CNC programming

The community colleges in the Centralina region offer a comprehensive range of 2-year programs that teach skills desired in the automotive and motorsports industries. From the base trades of machinery and welding to more advanced degrees that combine mechanical and electronic know-how, the region offers relevant workforce training. There are also two programs designed specifically for the automotive industry. A sampling of the programs and number of regional locations offering them is listed below.

Industrial Technologies	Engineering Technologies	Transport System Technologies
Industrial Systems Tech (3)	Architecture (2)	Autobody Repair (4)
Industrial Mgmt (3)	Civil Engineering (2)	Automotive Systems Technology (4)
Machinery Technology (6)	Computer Engineering (3)	
Mechanical Drafting (3)	Electrical Engineering (3)	
Welding (6)	Electronics Engineering (6)	

Two of the ten 4-year schools in the region have programs tailored to the automotive and motorsports industries.

Belmont Abbey College is starting a 4-year Motorsports Management program (essentially a business management degree with motorsports concentration). The program will begin in Fall 2006. (http://www.belmontabbeycollege.edu/academics/programs/majors/businessManagement/motor-sports-management.aspx)

UNC-Charlotte offers a multidisciplinary program in Motorsports and Automotive Engineering (http://www.mees.uncc.edu/motorsprt/programs.htm). The program is a special concentration in motorsports engineering offered as part of the Bachelor of Science degree in mechanical engineering. Over 160 engineering degrees with this concentration have been awarded at UNCC through 2002. On-site equipment includes chassis dynamometer, shock dynamometer, engine dynamometer, scales, and Pi/CDS Data Acquisition. The program and facilities focus on vehicle dynamics, aerodynamics, and instrumentation.

Part of the attraction of the Centralina region for race teams is the numerous facilities in the region that support extensive research, development, and testing of race vehicles. A brief summary of these unique facilities is as follows:

- NASCAR Research and Development Facility – This state of the art facility is located in Concord and owned by NASCAR. The facility focuses on research and testing of safety devices. It also conducts aero matching tests, so that race vehicles from different manufacturers have similar aerodynamic characteristics.
- NASCAR Technical Institute – Run by UTI for NASCAR, the institute combines an automotive technology program with a NASCAR-specific motorsports program to provide practical training and skill education for potential crewmembers. Many of the graduates go into the automotive industry if they do not pursue the motorsports route.
- Racetracks – The region offers access to numerous large paved tracks. Lowe's Motor Speedway in Charlotte is the closest. Within a short driving distance are raceways in Hickory, Concord, North Wilkesboro, Rockingham, and Darlington.
- Wind Tunnels – Two major wind tunnel facilities are located in the region. Located in Mooresville, the Aerodyne full-scale wind tunnel operates 24 hours a day, 7 days a week to support NASCAR teams' development, testing, and verification. The Penske Technology Group (formerly Auto Research Center) in Mooresville operates a 40% scale open jet/rolling road wind tunnel for testing of scaled-down racing vehicles. Penske also has a seven-post chassis dynamics rig for performance testing.

Despite the extensive list of facilities, many in the region are concerned that North Carolina needs to continue investing in technology and facilities to support the motorsports industry. Both Virginia and South Carolina are adding testing and research facilities to lure motorsports business in their direction. The North Carolina motorsports industry study conducted by the North Carolina Motorsports Association in October 2004 recommended that a separate study of technology needs for race teams be conducted.

Advanced Manufacturing Needs

While the region offers a strong variety of training in skill sets ranging from machinery and welding to electrical and mechanical engineering, there appear to be gaps in the types of training offered when compared to the size and demand for workers in the automotive and motorsports industries.

Table 4.1 outlines curriculum-related needs that can be added to the local community colleges to strengthen advanced manufacturing skill sets for the automotive and motorsports industries in Centralina. The suggested programs are available in other regions of the state and would likely add to the strength of the workforce for the Centralina region.

Table 4.1 Curriculum Needs for Automotive and Motorsports Workforce

Program Strengths	Programs to Consider
Industrial Technologies	
Industrial Systems Tech (3)	Manufacturing Technology (1)
Industrial Mgmt (3)	Mfg Tech / Tool & Die (0)
Machinery Technology (6)	Mfg Tech / Composites (0)
Mechanical Drafting (3)	Mfg Tech / Integrated Operations (0)
Welding (6)	Mfg Tech / Plastics (0)
Engineering Technologies	
Architecture (2)	Electronics Eng / Instrumentation (0)
Civil Engineering (2)	Electronics Eng / Microelectronics (0)
Computer Engineering (3)	Material Sciences (1.5)
Electrical Engineering (3)	
Electronics Engineering (6)	
Industrial Engineering (2)	
Manufacturing Engineering (3)	
Mechanical Engineering (7)	
Transport System Technologies	
Autobody Repair (4)	AST / Race Car Performance (0)
Automotive Systems Technology (4)	Heavy Equipment & Transport Tech (1)
	HE / Agricultural (0)
	HE / Construction Equipment (0)
	Motorsports Management Technology (1)

To determine needs among the companies in the Centralina region, AngelouEconomics spoke with a random selection of companies. We targeted presidents, manufacturing and operations directors, and if an R&D center was present, the R&D director.

We attempted to contact eight companies. To date, one interview has been completed. The feedback from the companies was as follows:

- Local center would be helpful if seen as center for expertise in different materials, metallurgy, and advanced manufacturing techniques.
- Some companies tend to rely on supplier base for know-how on materials and manufacturing techniques.
- Good to have working relationship with supplier, but can be somewhat constraining on new ideas.
- Local center could also address need to train staff (engineering and production management) in new techniques.

Biotechnology and Bioinformatics

Industry Trends

Bioinformatics

Bioinformatics can be defined as the development and application of computational tools to extract knowledge from complex biological data. On a national level, "pure-play" bioinformatics companies have fallen out of favor with investors and have undergone tremendous consolidation. The discipline of bioinformatics and the associated skill sets, however, continue to hold great relevance to biotechnology and pharmaceutical industries. The Centralina region lacks companies specializing in bioinformatics.

Biomanufacturing

Biomanufacturing uses living cells to produce medicines, vaccines, diagnostics, enzymes, amino acids, veterinary medicines, and related products.

We did not identify any biomanufacturing companies in the Centralina region. However, Alpharma loosely qualifies as a biomanufacturer not only due to its generics and animal feed business, but also due to the company's use of fermentation to produce antimicrobial substances.

Other pharmaceuticals and nutritional products

AngelouEconomics and RTI identified a limited number of other manufacturers of health-related substances, in addition to Alpharma, American Bio Labs and Daily Manufacturing is another example of a neutraceutical or food additive company. Alpharma's NC manufacturing facilities (now owned by Actavis, Inc.) make ointments, creams, and suppositories, while American Bio Labs and the family-owned Daily Manufacturing make and distribute vitamins and other nutritional supplements, typically considered low-value products relative to pharmaceuticals.

In addition, there are start-up drug discovery and development firms like Soymeds, Chelsea Pharmaceuticals, and ParinGenix. These small companies focus on discovering and clinically testing new pharmaceuticals and are unlikely to possess significant in-house manufacturing capabilities. As a result, manufacturing is likely to be outsourced to other firms. Chelsea's and ParinGenix's lead compounds are not biologicals (protein- or peptide-based therapeutics), and while Soymeds' product—vegetables genetically modified to contain edible vaccines—would constitute a protein therapeutic, the company's production capabilities would not likely include standard biomanufacturing capabilities such as microbial fermentation.

Medical devices

The Centralina region is also home to several medical device firms, including high-tech start-up firms like Saebo, Hepatosys, and Aveolus. These companies operate in a market space different from biotechnology and drug therapies but do produce biomedical and life science products. Their manufacturing capabilities would not be related to biomanufacturing, but rather device and polymers manufacturing.

At the national level, medical devices and equipment makers currently enjoy a favorable market environment. A 2004 study by the Freedonia group reported a total market size of $75 billion for medical devices and supplies and $85.7 billion for medical equipment. See Table 4.2 for details on each segment. In 2006, First Research estimated the U.S. market alone to be $50 billion for medical devices and supplies.

Table 4.2 Medical Devices and Supplies Market Segments

Medical and surgical instruments	• 32% share (2002) • 6.8% annual growth 1997-2002 to $23.1B; forecast 7.2% 2002-2007 to $32.8B. • Includes stents, coronary implants, IV products, catheters, syringes, hypodermic needles, anesthesia apparatus, blood transfusion equip., and surgical clamps. 2007 gains driven by drug-eluting stents.
Surgical appliances and supplies	• 24% share (2002) • 7.3% annual growth 1997-2002 to $20.9B; 7.8% annual growth 2002-2007 to $30.4B. • Includes surgical dressings, sutures, ortho. devices and implants, and prosthetics.
Electromedical/ Electrotherapeutic Products	• 17% share (2002) • 10.3% annual growth 1997-2002 to $14.6B; 10.9% annual growth 2002-2007 (fastest growing segment) to $24.5B. • Mostly diagnostics, diagnostic imaging, pacemakers, hearing aids, EKGs, defibrillators. Growth to 2007 fueled by AEDs and cardiac rhythm management.
Other	• 32% share (2002) • 7.3% annual growth 1997-2002 to $27B; 6.7% annual growth 2002-2007 to $37.3B. • Includes ophthalmic goods, dental equipment and supplies, irradiation apparatus, laboratory and optical instrument, hospital beds, OR tables, etc. 2007 growth driven by ophthalmic goods and dental equip/supplies for older people as well as cosmetic purposes.

Source: Freedonia, *Freedonia Focus on Medical Equipment*, Jan. 2004.

Regional Assets

While the Centralina region's biotechnology and bioinformatics industry is relatively thin, the area's emerging public innovation assets could facilitate growth of local biotechnology and drug development enterprises in the future.

Most notably, UNCC has created a Ph.D.-granting bioinformatics program (http://www.coit.uncc.edu/bioinformatics/site/index.cfm) to be located in a $35M, 70,000-square-foot Bioinformatics Building under construction on the Charlotte Research Institute Campus. While only staffed with two or three full-time faculty at the moment, the interdepartmental program will add three additional faculty members and expects to be in a position to spin out its first new venture within the next year. The company would likely be engaged in developing new microarray technology, including microarray research tools and associated software offered to the life science research community. In addition to serving as a source of new biotechnology companies, the program will train students with skill sets highly marketable to new biotechnology companies emerging in the region, including potential members of the proposed Kannapolis research park.

Related innovation assets in the area include Davidson's National Science Foundation (NSF)-funded biotechnology courses for undergraduates (http://www.bio.davidson.edu/Courses/genomics/genomics.html).

Gaston Community College received a grant for $173,626 in September from the Duke Power Community College Grant Program for offering courses in bioinformatics, biotechnology, and molecular biology.

In addition to the public assets supporting broad biotechnology training noted above, Centralina also possess a limited level of innovation assets in the form of specialized biomanufacturing grants and training programs at local community colleges. Gaston, Iredell, and Lincoln counties, for instance, have been named as either direct or indirect recipients of BioNetwork training grants that are awarded to academic institutions by the North Carolina Community College System. The graduates of these community college programs will typically find employment with biomanufacturing companies in the greater Research Triangle area, but could join new ventures in the Charlotte region, including the Kannapolis development. The grants listed below are available to all NC counties for biomanufacturing training.

- NC Biomanufacturing Training and Education Center (BTEC) – Through partnerships with community colleges, BTEC's distance education and on-site programs will train up to 2,000 to 3,000 students and prospective employees per year for the state's biomanufacturing industry. (http://www.ncsu.edu/BulletinOnline/06_05/btec.htm)
- Golden LEAF – Economic Catalyst grants can be used to assist community colleges with the delivery of new training programs. In the last cycle, Cleveland Community College won a grant for bioinformatics and specialized biotechnology training for the Charlotte region. (http://goldenleaf.org/ecgrants.html

Similarly, in the South Carolina portion of the Centralina Region, the South Carolina Technical College System offers the Center for Accelerated Technology Training (CATT) that supports training in biomanufacturing as well as other industries. This is similar to the workforce training programs offered through the North Carolina Community College System.

Among the innovation assets that could support medical devices currently found in the Centralina region are the Departments of Electrical and Computer Engineering, and Physics and Optical Science at UNC-Charlotte. Also included is the Center for Optoelectronics and Optical Communications. The region already possesses a substantial manufacturing capacity in polymer production, including injection molding, for medical devices and other industry (see discussion in Advanced Materials section). Companies such as Moll Industries act as custom or contract manufacturers to a diversified array of clients, including medical device companies. When serving regulated medical device clients, these manufacturers must conduct operations in specialized facilities permitting clean environments. Most of the skill sets for manufacturing injection-molded components of medical devices will typically be highly comparable to the skills employed in polymer manufacturing for other industries. Innovation assets such as the Polymers Center for Excellence should therefore be regarded as a supportive asset for medical device manufacturers.

Industrial Machinery

Industry Trends

The industrial machinery category is nothing if not diverse. From construction equipment, to food processing machinery, to lithography machines, this category is a catch-all that provides an excellent indicator on the vitality of the U.S. economy. Traditionally, this category includes construction machinery; air-conditioning, refrigeration, and heating equipment; agricultural equipment; mining, oil, and gas field machinery; paper industries machinery; printing trades machinery; food processing machinery; packaging machinery; and textile machinery.

Table 4.3 indicates that each of the segments in this category are significant industries on their own, being measured in billions of dollars in revenue and tens of thousands of employees. Also, each has a sizable presence in the southeastern U.S. with double-digit percentages of firms in each of the segments.

Table 4.3 Industrial Machinery Market Segments

Manufacturing Segment	Annual Revenue ($million)	Employment	# of Firms	% Firms in SE U.S.
Agricultural equipment	$27,683	73,320	1,238	19.3
Construction equipment	$26,068	67,471	725	18.3
Rubber and plastics machinery	$3,070	14,507	501	13.8
Heating, ventilation, & air conditioning and commercial refrigeration equipment	$33,758	145,037	1,448	23
Metalworking machinery	$24,596	166,859	8,395	11.4
Other industrial machinery (paper & food processing, printing, semiconductor)	$23,822	125,420	3,460	19

The general prediction from industry observers indicates continued slow growth across the category. For example, according to the most recent Quarterly Industrial Outlook published by the Manufacturers Alliance/MAPI, 20 of the 27 industries tracked are continuing to experience steady growth as exhibited by new orders and increased levels of production.

The top industry performers are experiencing year-over-year double-digit growth. Examples include mining and oil and gas field machinery (32%); ventilation, heating, air conditioning, and commercial refrigeration equipment (28%); communications equipment (26%); material-handling equipment (23%); oil and gas well drilling (20%); electronic computers (19%); navigational, measuring, electro-medical, and control instruments (18%); aerospace product and parts (15%); and electrical equipment (11%).

Manufacturing industrial production overall grew 3.9% in 2005. MAPI predicts growth of 3.6% in 2006 and 2.3% growth in 2007.

Regional Assets

Each of the industrial machinery segments described above (with the exception of mining and oil and gas field machinery) are well-represented in the Centralina region. The area is fortunate to have a well-balanced assortment of companies from across the industrial manufacturing category. HVAC equipment, construction and mining equipment, textile machinery, printing and paper processing equipment, and plastics and packaging equipment manufacturers are represented in the region.

A sampling of the companies in each segment is listed in Appendix A.

Several community and technical colleges in the region provide 2-year degrees that are relevant to the industrial machinery category. Those schools include Central Piedmont Community College, Gaston Community College, Mitchell Community College, Rowan-Cabarrus Community College, Southern Piedmont Community College, Stanly Community College, and York Technical College.

Highlights of some of the programs:

- Central Piedmont Community College includes in-lab projects performed on full-scale industrial equipment typically used in local industry
- Cooperative work experience with local employers (for course credit) encouraged for practical instruction
- Local machinery technology programs offer coursework that includes extensive hands-on experience with CAD, robotics, CNC Graphics
- Programming in both 2-D and 3-D applications, in addition to the basics in machinery and CNC programming

The community colleges in the Centralina region offer a comprehensive range of 2-year programs that teach skills appropriate for the industrial machinery category. From the base trades of machinery and welding, to more advanced degrees that combine mechanical and electronic know-how, the region offers relevant workforce training. A sampling of the programs and number of regional locations offering them are listed below.

Industrial Technologies	Engineering Technologies
Industrial Systems Tech (3)	Computer Engineering (3)
Industrial Mgmt (3)	Electrical Engineering (3)
Machinery Technology (6)	Electronics Engineering (6)
Mechanical Drafting (3)	Industrial Engineering (2)
Welding (6)	Manufacturing Engineering (3)
	Mechanical Engineering (7)

The leading resource among the 4-year colleges and universities in the region is UNC-Charlotte. In addition to strong engineering programs that generate design and engineering talent, two particular centers at UNC-Charlotte are appropriate for the industrial manufacturing category:

1. Center for Precision Metrology (http://www.cpm.uncc.edu/)
    - Nationally recognized program that concentrates on intelligent manufacturing, precise machinery measurements, metrology instrumentation, nanotechnology, and subatomic measurement

- Home of world's premier university Metrology Lab
- 1,500-square-foot facility in precisely controlled environment and meets industry clean room requirements
- Wide variety of high-end measurement instruments
- Traditional dimensional metrology and controlled coordinate-measuring machines
- Surface Metrology Lab measures 2- and 3-dimensional surface finish and form
- Provides measurement services to local industry
- Faculty leaders from various science-based backgrounds focus on competitive programs that further local industry needs using practical and experimental applications

2. Center for Optoelectronics and Optical Communications at Charlotte Research Institute (CRI) (http://opticscenter.uncc.edu/)
   - Research areas include optoelectronics and optical device fabrication, optical metrology, optical communication infrastructure, and optical imaging.

Advanced Manufacturing Needs

While the region offers a strong variety of training in skill sets ranging from machinery and welding to electrical and mechanical engineering, there appear to be gaps in the types of training offered that would meet the diverse needs within the industrial manufacturing industry.

Table 4.4 outlines curriculum-related needs that can be added to the local community colleges to strengthen advanced manufacturing skill sets for the industrial machinery cluster in Centralina. The suggested programs are available in other regions of the state and would likely add to the strength of the workforce for the Centralina region.

Table 4.4 Curriculum Needs for Centralina Industrial Machinery Workforce

Program Strengths	Programs to Consider
Industrial Technologies	
Industrial Systems Tech (3)	Manufacturing Technology (1)
Industrial Mgmt (3)	Mfg Tech / Tool & Die (0)
Machinery Technology (6)	Mfg Tech / Composites (0)
Mechanical Drafting (3)	Mfg Tech / Integrated Operations (0)
Welding (6)	Mfg Tech / Plastics (0)
Engineering Technologies	
Computer Engineering (3)	Electronics Eng / Instrumentation (0)
Electrical Engineering (3)	Electronics Eng / Microelectronics (0)
Electronics Engineering (6)	Material Sciences (1.5)
Industrial Engineering (2)	
Manufacturing Engineering (3)	
Mechanical Engineering (7)	
Transport System Technologies	
Automotive Systems Technology (4)	Heavy Equipment & Transport Tech
	HE / Agricultural (0)
	HE / Construction Equipment (0)

To determine needs among the companies in the Centralina region, we spoke with a random selection of companies. We targeted presidents, manufacturing and operations directors, and if an R&D center was present, the R&D director.

AngelouEconomics and RTI attempted to contact 15 companies. To date, two interviews have been completed. The feedback from the companies was as follows:

- Needs are more evident in workforce and skills than in desire for integrating advanced manufacturing techniques.
- Workforce-related needs: Want reliable workforce with higher educational levels to conduct complex assembly work.
- Happy with graduates from community colleges, but want those with trades to stay in those positions (vs. try to move up chain of command quickly).
- Companies contacted either feel too busy, don't see need to change, or have other resources (corporate expertise) to turn to for advanced manufacturing techniques and know-how.
- Green manufacturing not a large concern or driver of change at this point.

Security and Defense

Industry Trends

The homeland security and defense market is estimated to be as high as $1,150 billion worldwide. The main driver of the U.S. Security and Defense industry is in government spending from the Department of Homeland Security (DHS) and the Department of Defense (DoD). DHS purchases products and services to aid in border protection, weapons detection and mitigation, and disaster response. DoD expenditures from the $84 billion procurement budget include the purchase of weapons and vehicle platforms to support the current military activities in Iraq and Afghanistan. DHS provides grants to state and local governments for the purchase of first responder and security-related products. DHS also provides R&D funds to industry and academia through its extramural R&D division, the Homeland Security Advanced Research Projects Agency (HSARPA). DoD provides similar funds through the Defense Advanced Research Projects Agency (DARPA) and the individual defense agency research laboratories. Sales of security services and products to private industry and citizens are also included in this market.

The current technology focus for DHS is in chemical, biological, radiological, and explosive weapons detection and in information technology infrastructure security. Sensors, sensor networks, encryption algorithms, and cyber security software all support these technology focus areas.

While overall DHS funding is slated to increase by 6.6% to $35.4 billion in FY 2007, R&D funding fell for the first time by 10.3% to $1.1 billion. Within the R&D portfolio, the only funding increases occurred in interoperable communications, cyber security, and radiological and nuclear countermeasures. According to Frost and Sullivan, expectations are that the homeland security budget will continue to decrease in coming years.

Out of the total $505 billion DoD budget, proposed R&D funds rose by 2.2% to $74.1 billion for FY 2007. Development, as opposed to research, is emphasized in the budget, with the majority of the increase in funds going toward weapons development.

Regional Assets

The majority of companies in the region selling products and services directly to the DoD provide construction and facility maintenance or supply materials such as gas and chemicals to defense facilities. The main products sold from regional companies to the military are aircraft parts and supplies; and test, measurement, and sensor equipment. Large companies Goodrich, Curtiss-Wright Controls, and the Armament and Technical Products division of General Dynamics provide a base of defense-related activity for the region.

Companies listed in Appendix A have all had contracts directly with the DoD.

Gaston College's Regional Emergency Services Training Center provides hands-on training in the first responder areas of firefighting and rescue operations. This resource could be used as a test location for, or feedback on, first responder products. Additionally, firefighting courses are offered at Central Piedmont Community College and UNCC.

UNCC's College of Engineering and College of Information Technology have established research centers to focus technology development in specific areas. Centers that are relevant to the current technology focus of Security and Defense are outlined below.

1. UNC Charlotte's College of Engineering:
    - Lean Logistics and Engineered Systems (http://www.coe.uncc.edu/mem/CLLES-home.html)
        - Offers courses to industry on lean manufacturing and supply chain management.
    - Optoelectronics and Optical Communications
        - Conducts research in optical devices and materials, enabling the development of better sensors. Is linked to most of the defense companies in the area, including General Dynamics, Northrop Grumman, and Digital Optics.
    - Precision Metrology
        - Conducts research in nanomanufacturing with tolerances on the order of ten parts per million. Includes a Dimensional Metrology Laboratory with equipment for machinery and measurement of parts.
2. UNC Charlotte's College of Information Technology
    - Charlotte Visualization Center (http://www.viscenter.uncc.edu/)
        - A Regional Visualization and Analytics Center for the National Visualization and Analytics Center located at Pacific Northwest National Labs and funded by DHS. The Center focuses on visual and analytical reasoning methods for intelligence analysis and decision-making.
    - Laboratory of Information Integration, Security and Privacy, an NSF Information Security and Assurance Center (http://www.sis.uncc.edu/LIISP/)
        - A Center designated by the NSA as a Center of Academic Excellence in information assurance education. The Center educates students in information integration, security, and privacy, which is in line with the current DHS focus on cyber security.
3. UNC Charlotte's Department of Chemistry
    - Regional Analytical Chemistry Laboratory (RAChel) (http://rachelab.uncc.edu/)
        - The RAChel staff provides analytical and technical consulting services to industry using the lab's nuclear magnetic resonance spectrometer, chromatograph/mass spectrometer, and equipment for the separation/isolation of organic and inorganic compounds. Could support the development of chemical sensor products for homeland security.

R&D in start-up companies and small businesses provides another avenue to impact the technology growth of the region. Below is a list of organizations that were funded through SBIR grants from the DoD and DHS:

- DoD SBIRs
  - 3D Informatics (intelligent control of semiconductor mfg process)
  - Albany Instruments (crack detection)
  - Digital Optics Corp (optics)
  - Dot Metrics Technologies (green LED)
  - Higher Power Engineering (remote battery disconnect)
  - Insitutec, Inc. (fast steering mirrors)
  - Pneumafil Corp. (ultra-quiet commercial off-the-shelf [COTS] enclosure)
  - Providence Holdings (corrosion detection beneath surfaces)
  - Rf Nitro Communications, Inc (space-qualified GaN)
  - Talon Logic Corp. (trusted circuits technology)
  - United Protective Technologies, LLC (sensor film on rotary wing aircraft)
- HSARPA SBIRs
  - None

Also, UNCC won a research contract for a design and test methodology for mixed signal microsystems.

Advanced Manufacturing Needs

To determine needs among the companies in the Centralina region, we spoke with a random selection of companies. We targeted presidents, manufacturing and operations directors, and if an R&D center was present, the R&D director.

We attempted to contact six companies. To date, two interviews have been completed. The feedback from the companies was as follows:

- UNC Charlotte's Center for Precision Metrology meets one company's technology research needs.
- Most manufacturing jobs are outsourced to job shops in the area, with the exception of highly skilled microscale machinery. Because there are no job shops in North Carolina that can do this precision machinery, it is done in house. A need exists for a precision microscale machinery job shop.
- Lean manufacturing processes will be a concern when this company grows its own in house machinery capabilities. A company on site at the Charlotte Research Institute called Op Source works with companies to create optimized process plans.
- Lean manufacturing is currently being applied at the larger company, but they are always looking to increase productivity.

AngelouEconomics

2801 Via Fortuna,
Suite 430
Austin, TX 78746

PH: 512-225-9322
FAX: 512-225-9283

www.angeloueconomics.com