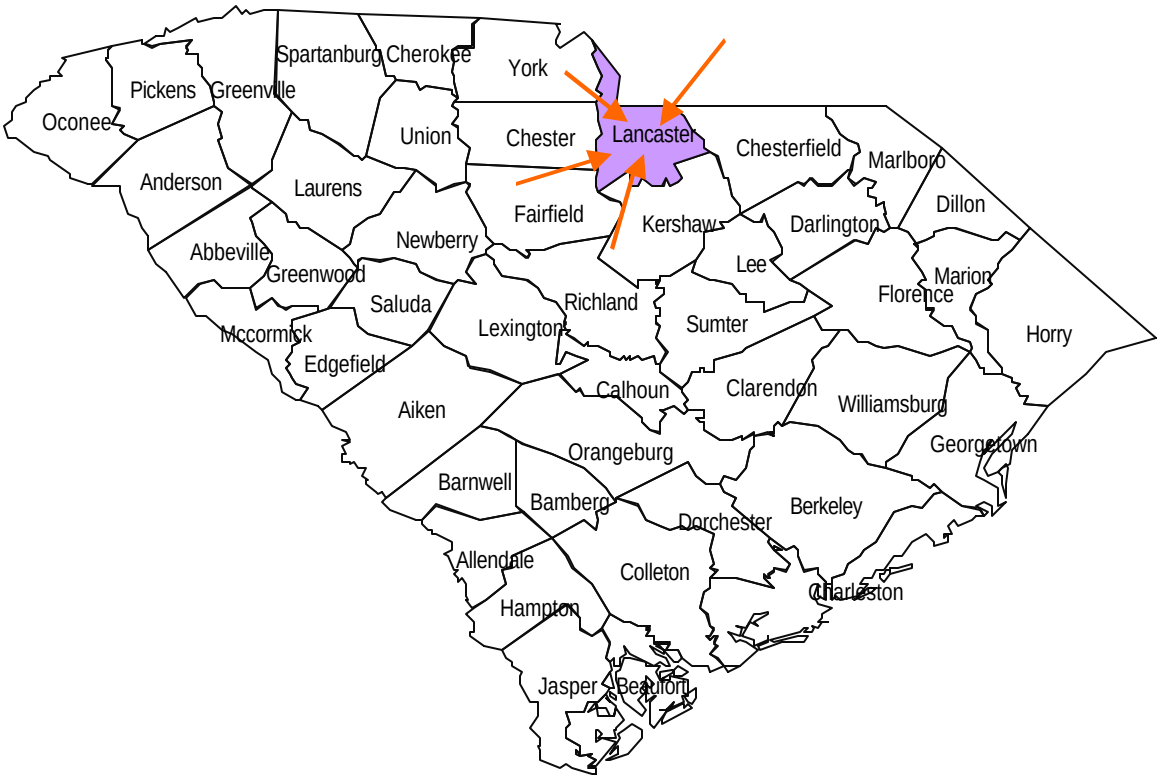
CLEMSON UNIVERSITY

Targeting Growth Opportunities For Lancaster County, 2002



REDRL Research Report 10-2002-04

by

David L. Barkley, Mark S. Henry, and Mellie Warner
Regional Economic Development Research Laboratory
Clemson University

in cooperation with

Clemson Institute for Economic and Community Development
Sandhill Research and Education Center

Clemson University Public Service Activities

Targeting Growth Opportunities in Lancaster County, 2002

REDRL Research Report 10-2002-04
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Executive Summary

I. Why Target Industries?

Industry targeting is the process of focusing industrial development programs and efforts at specific industries or clusters of related industries. An industry targeting program identifies industries for which the region offers a competitive advantage in terms of labor skills and availability, location, and availability of public services. A targeted approach enables community leaders to focus their recruitment, retention and expansion, and small business development programs rather than attempting to provide assistance for many different industry types. This tailoring of industrialization initiatives provides three advantages for the community:

- targeting permits clearer identification of specific industry requirements and needs,
- targeting enables the community to provide (for a given budget expenditure) fewer but more highly valued programs, and
- targeting reduces the amount of financial incentives (e.g., tax rebates or labor training programs) needed to encourage the industry to locate in the region.

II. Lancaster County's Industrial Targeting Goals

Lancaster County's industrial targeting project has two principal objectives:

- Identify manufacturing industries that have high potential for locating in the county.
- Identify manufacturing industries that provide attractive economic development impacts in terms of future job growth, wages paid, and contributions to the local tax base.

The targeting program for Lancaster County focuses on identifying growing manufacturing "clusters" in Lancaster County and the surrounding region (the counties of Chester, Chesterfield, Fairfield, Kershaw, York, and Mecklenburg, NC). An industry cluster is a geographically bounded collection of similar and/or related businesses that as a group create advantages for member firms and the local economy. The targeting of potential new members for existing area clusters provides the following advantages.

- The presence of an industry cluster in the area is evidence that the location is attractive to these types of manufacturers.
- The multiplier effects associated with attracting new firms to a cluster generally are greater than those resulting from noncluster firms.
- Members of industry clusters have stronger employment growth over time than firms that are not in clusters.
- Industry clusters have greater potential for new firm spin-offs than groupings of unrelated firms.

III. Identifying Growing Industry Clusters in the Regional Economy

Industry clusters in the Lancaster region were targeted at the four-digit Standard Industrial Classification (SIC) level.* Clusters with desirable characteristics are those that have a significant presence in the county, provide promising employment generation

*The SIC classification was replaced by the NAICS system in 2001. However, the ES202 data used in this study were available in both classifications.

potentials, and consider the county a relatively competitive location for production. To identify industry clusters with the desired characteristics, four screening criteria were used:

1. Five or more industry establishments were present in the region in 1999.

2. Regional industry employment was greater than 400 in 1999.

3. Industry employment in the region increased from 1988 to 1999.

4. The region was highly "specialized" in the industry compared to the nation as a whole in 1999 (Location Quotient for the industry exceeds 1.50).

The industry cluster screening methodology for the regional economy identified 23 industry clusters with high potentials for employment growth in the area. "Mature" clusters are industries that met all four of the selection criteria while emerging "clusters" are industries that attained three of the four criteria.

* Mature Clusters: Lancaster and Adjacent South Carolina Counties

  - Motor Vehicle Parts and Accessories (SIC 3714)
  - Metal Plating and Polishing (SIC 3471)
  - Miscellaneous Fabricated Wire Products (SIC 3496)
  - Machine Tools, Metal Cutting (SIC 3541)
  - Household Furnishings, NEC (SIC 2392)

* Emerging Clusters: Lancaster and Adjacent South Carolina Counties

  - Cut Stone Products (SIC 3281)
  - Signs and Advertising Specialties (SIC 3993)
  - Products of Purchased Glass (SIC 3231)
  - Fabricated Plate Work (SIC 3443)
  - Plastics Materials, Resins (SIC 2821)
  - Fabricated Rubber Products, NEC (SIC 3069)
  - Chemical Preparations, NEC (SIC 2899)
  - Converted Paper Products, NEC (SIC 2679)
  - Ball & Roller Bearings (SIC 3562)

* Mature Clusters: Mecklenburg County, North Carolina

  - Unsupported Plastics Film (SIC 3081)
  - Surgical Appliances and Supplies (SIC 3842)
  - Gray and Ductile Iron Foundries (SIC 3321)
  - Folding Paperboard Boxes (SIC 2657)

* Emerging Clusters: Mecklenburg County, North Carolina

  - Printed Circuit Boards (SIC 3672)
  - Platemaking Services (SC 2796)
  - Paper Industries Machinery (SIC 3554)
  - Power-Driven Hand Tools (SIC 3546)
  - Blankbooks & Looseleaf Binders (SIC 2782)

IV. Characteristics of Targeted Industry Clusters

The 23 industry clusters selected for the region are good prospects for industrial recruitment since the area provides a competitive advantage for these manufacturers. However, all 23 clusters are not equally attractive prospects based on the expected economic impacts on Lancaster County. Insights into the potential county-level impacts associated with successfully recruiting an additional establishment are provided by comparing four characteristics of the cluster industries.

- Employment Growth Rate. Establishments in industries with rapid national employment growth are more likely to open new plants and create new jobs than establishments in slow growth or declining industries.

- Average Establishment Size. Industries with large average establishment employment provide greater potential for immediate job generation than industries whose operations require, on average, fewer employees.

- Average Production Worker Wages. Other establishment characteristics held equal, a manufacturing plant paying high wages will provide greater local economic development impacts than a manufacturing establishment offering primarily low wage jobs.

- Industry Multipliers. The attraction of a new firm to the county may create more jobs and income for the county than those employed directly at the facility. This creation of multiple jobs is called the multiplier process, and results from rounds of local spending stimulated by the new firm and the firm's employees. Establishments with large income multiplier effects are preferred, everything else held constant, to firms that generate little additional income in the county.

Table A summarizes the potential economic impacts of the industry clusters in terms of regional income multipliers and national averages for employment growth rates, establishment sizes, and wage rates.

V. Identifying Industries for Import Substitution

An alternative industry targeting approach is to identify industries that may fill "gaps" in the regional economy, where "gaps" are goods imported by local households and by businesses. The objective of an *import substitution* program is to determine which of the imported manufactured goods might be reasonable candidates for replacement by local production. The replacement of imports with local production reduces leakages of money outside the regional economy, increases the local income and employment multipliers, and provides additional jobs for area residents.

Regional imports of manufactured goods are estimated using the regional economic modeling system IMPLAN (Impact Analysis for PLANning), an input-output model constructed for the regional economy (Mecklenburg, Lancaster, Chester, Chesterfield, Fairfield, Kershaw, and York) using data for 2000. Four criteria were used to identify industries that are good prospects for import substitution.

Table A. General Rankings of Lancaster County Clusters for Selected Economic Variables

■ = Top Third ■ = Middle Third ■ = Bottom Third

SIC	Industry	Employment Growth Rate	Mean Establishment Size	Average Wage Rate	Income Multiplier
3714	Motor Vehicle Parts & Accessories	■	■	■	■
3562	Ball & Roller Bearings	■	■	■	■
2821	Plastics Materials & Resins	■	■	■	■
3672	Printed Circuit Boards	■	■	■	■
2796	Platemaking Services	■	■	■	■
3842	Surgical Appliances & Supplies	■	■	■	■
3443	Fabricated Plate Work (Boiler Shops)	■	■	■	■
3321	Gray & Ductile Iron Foundries	■	■	■	■
3081	Unsupported Plastics Film & Sheets	■	■	■	■
3554	Paper Industries Machinery	■	■	■	■
2899	Chemical Preparations, NEC	■	■	■	■
2392	Household Furnishings, NEC	■	■	■	■
3471	Metal Plating & Polishing	■	■	■	■
3541	Machine Tools, Metal Cutting	■	■	■	■
3281	Cut Stone & Stone Products	■	■	■	■
3231	Products of Purchased Glass	■	■	■	■
2657	Folding Paperboard Boxes	■	■	■	■
3546	Power-Driven Hand Tools	■	■	■	■
3993	Signs & Advertising Specialties	■	■	■	■
2679	Converted Paper Products, NEC	■	■	■	■
2782	Blankbooks & Looseleaf Binders	■	■	■	■
3069	Fabricated Rubber Products, NEC	■	■	■	■
3496	Miscellaneous Fabricated Wire Products	■	■	■	■

- Imports are sufficient to support at Based on IMPLAN data, industry imports into the seven county region exceed $40 million per year.
- Industry output (sales) for the region is relatively large. The presence of local production indicates that the region is not at a serious disadvantage as a location for plants in that industry.
- Imports are sufficient to support at least one facility of average size.
- The prospects for industry growth in the region are favorable. Regional employment change (1988-1999), national employment change (1988-2000), and the number of buy-sell linkages with the 23 industry clusters are the indicators of potential for future industry growth.

Twenty-eight industries met selection criteria 1, 2, and 3: regional imports exceed $40 million per year, significant local production currently exists, and imports are sufficient to support at least one new industry establishment of average size. Ten of the 28 industries reported strong employment growth in the region and nation plus linkages with area industry clusters. The average wage rate, average plant size (employment), and national employment growth rate (1988-2000) for the 10 "high potential" import substitution industries are summarized in Table B.

VI. Industry Targeting Recommendations

This study has identified 30 industries that are likely targets for industrial recruitment based on recent employment growth, import substitution potential, and the attractiveness of Lancaster County and the region as locations for their production activities. Yet firms in the 30 industries have different propensities for opening new establishments in the Southeast (Table C). The most promising industries for recruiting are those that have a relatively large number of new plant openings in the Southeast in

Table B. General Rankings of Industries Selected for Import Substitution

■ = Top Third ■ = Middle Third ■ = Bottom Third

SIC	Industry	Employment Growth Rate	Mean Establishment Size	Average Wage Rate
3714	Motor Vehicle Parts & Accessories	■	■	■
3599	Industrial Machinery, NEC	■	■	■
3561/3	Pumps and Compressors	■	■	■
3499	Fabricated Metal Products, NEC	■	■	■
3444	Sheet Metal Work	■	■	■
3081/9	Miscellaneous Plastics Products	■	■	■
3442	Metal Doors	■	■	■
3443	Fabricated Plate Work (Boiler Shops)	■	■	■
3061/9	Fabricated Rubber Products, NEC	■	■	■
3272	Concrete Products	■	■	■

Table C. Establishments Started in the Southeast Since 1990, Establishment Employment was 50 or More in 2002.*

SIC	Industry	Nonmetro Location	Metro Location	Total
2392	Household Furnishings	10	11	21
2657	Folding Paperboard Boxes	2	5	7
2679	Converted Paper Products, NEC	8	18	26
2782	Blankbooks & Looseleaf Binders	4	4	8
2796	Platemaking Services	0	4	4
2821	Plastics Materials & Resins	7	14	21
2899	Chemical Preparations, NEC	4	10	14
3061/9	Fabricated Rubber Products, NEC	11	2	13
3081	Unsupported Plastics Film & Sheets	4	5	9
3089	Miscellaneous Plastics Products	60	76	136
3231	Products of Purchased Glass	7	6	13
3272	Concrete Products	4	16	20
3281	Cut Stone & Stone Products	2	4	6
3321	Gray & Ductile Iron Foundries	3	0	3
3442	Metal Doors	7	10	17
3443	Fabricated Plate Work (Boiler Shops)	6	17	23
3444	Sheet Metal Work	14	36	50
3471	Metal Plating & Polishing	3	2	5
3496	Miscellaneous Fabricated Wire Products	5	3	8
3499	Fabricated Metal Products, NEC	6	7	13
3541	Machine Tools, Metal Cutting	1	0	1
3546	Power-Driven Hand Tools	1	3	4
3554	Paper Industries Machinery	0	1	1
3561/3	Pumps and Compressors	3	5	8
3562	Ball & Roller Bearings	0	1	1
3599	Industrial Machinery, NEC	13	20	33
3672	Printed Circuit Boards	1	12	13
3714	Motor Vehicle Parts & Accessories	50	44	94
3842	Surgical Appliances & Supplies	3	6	9
3993	Signs & Advertising Specialties	6	17	23

*Southeast includes Alabama, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

Source: Harris InfoSource. July, 2002.

recent years. *Especially promising for southern Lancaster county will be industries that demonstrate a willingness to locate in nonmetropolitan counties.*

Based on the frequency of new plant openings, we recommend 17 industries for initial targeting by Lancaster County (Table D.). The ten "Preferred Target" industries generally provide the most favorable economic impacts in terms of jobs created, wages paid, and growth potential. The seven "Secondary Target" industries will likely offer less attractive wages and job creation prospects. However, these industries may be a good fit for the more rural parts of the county where employment opportunities are scarce and labor skills and experience are more limited.

VII. Company Targeting Recommendations

The identification of the "best" companies to recruit in the selected targeted industries is very problematic, as indicated by the recent collapse of some of Wall Street's "favorite" firms such as Lucent, Enron, and WorldCom. However, we can identify companies that recently located establishments in the Southeast and that have demonstrated recent employment growth. We believe these companies will be among the better prospects for establishing new plants in the Southeast in the future. The companies that located establishments in nonmetropolitan counties may be good prospects for the more rural southern part of Lancaster County. Alternatively, the companies with a metropolitan location bias may be better prospects for the more urban northern part of Lancaster County.

Table D. Recommended Target Industries for Lancaster County, South Carolina

A. Preferred Targets

Industry Clusters

- Plastic Materials and Resins (2821)
- Fabricated Plate Work (3443)
- Printed Circuit Boards (3672)
- Motor Vehicle Parts and Accessories (3714)
- Surgical Appliances and Supplies (3842)
- Household Furnishings, NEC (2392)

Import Substitution

- Miscellaneous Plastics Products (3081 and 3089)
- Sheet Metal Work (3444)
- Fabricated Metal Products, NEC (3499)
- Industrial Machinery, NEC (3599)

B. Secondary Targets

Industry Clusters

- Converted Paper Products, NEC (2679)
- Chemical Preparations, NEC (2899)
- Fabricated Rubber Products (3061 and 3069)
- Products of Purchased Glass (3231)
- Signs and Advertising Specialties (3993)

Import Substitution

- Concrete Products (3272)
- Metal Doors (3442)

Harris InfoSource is a proprietary data set of information on business establishments in the United States (location, products, employment, sales, key decision makers, website, etc.). After Lancaster County selects their industry targets, Clemson University will contract with Harris for information on specific companies within these industries. The Harris data will be provided on a CD-ROM, and Clemson University will assist Lancaster County in obtaining the desired information on the selected companies. Lancaster County may use the list of companies as prospects for their targeted industrial recruitment program. In addition, information on the current locations of establishments in the target industries provides valuable insights into the types of communities these industries prefer. That is, Lancaster County can assess its "competition" for the target industries and develop promotional materials that highlight the county's advantages.

VIII. Marketing Lancaster County

The marketing strategy for Lancaster County will vary by target industry and by whether the industry is a prospect for an industry cluster or import substitution. For members of an industry cluster, the county will want to promote the advantages of proximity to the cluster. These advantages include:

- Existence of an industry cluster in the region is evidence that Lancaster County is a good location for that industry.
- Presence of a cluster in the region ensures that the skilled and trained labor required by that industry are available.
- Specialized input and service providers locate near clusters, thus reducing the cost of acquiring these inputs.

- The cluster provides the opportunity for the exchange of information among firms regarding new markets, technologies, and production methods.

- Industry clusters encourage the development of financial markets familiar with the industry's product markets and production processes.

For the import substitution targets, the county should focus promotional materials on the size and growth of the local market for specific goods and services. In addition, the county should promote the development of locally-owned businesses in the import substitution industries. Promotional efforts include:

- Entrepreneurial and small business development programs for new firms in import substituting industries (e.g., incubators, financing, labor training, technology transfer, and marketing).

- "Buy Local" programs that encourage regional businesses to use regional suppliers when possible.

- Business retention and expansion (BR & E) programs focused on expanding the local markets of existing manufacturers.

In conclusion, a balanced industrial development program provides resources for industrial recruitment, small business development, and the retention and expansion of local firms. A community or county will have different competitive advantages for the three components of industrial development. That is, a good target for industry recruiting is not necessarily a good industry for small business development. The industries identified in this study enable the county to focus specific programs at the appropriate prospects. A targeted effort enhances the employment generation potential of the county's economic development programs, an important consideration in times of limited resources.

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I. Introduction to Industry Targeting

Industry targeting is the process of focusing industrial development programs and efforts at specific industries or clusters of related industries. Industry targeting approaches have three principal components.

- The community (county, region, or state) establishes the specific goals of its industrial development program. Examples of such goals include: diversify the industrial base, provide employment opportunities for workers displaced by recent plant closings, enhance the profitability and growth of existing firms, or increase the local property tax base.

- The community identifies the industries that provide the greatest likelihood of meeting the established industrial development goals. For example, if the goal is to provide jobs for displaced workers, then the target industries will be those with occupational mixes that closely fit the skills and experiences of the displaced workers.

- The community develops industry recruitment, retention and expansion, and small business development programs focused on the target industries.

An industry targeting program should identify industries for which the region offers a competitive advantage in terms of labor skills and availability, location (proximity to input suppliers and product markets), and availability of public services. A targeted approach enables community leaders to focus their recruitment, retention and expansion, and small business development programs rather than attempting to provide assistance for many different industry types. This tailoring of industrialization initiatives provides three advantages for the community:

- targeting permits clearer identification of specific industry requirements and needs,

- targeting enables the community to provide (for a given budget expenditure) fewer but more highly valued programs, and

- targeting reduces the amount of financial incentives (e.g., tax rebates or labor training programs) needed to encourage the industry to locate in the region.

In summary, the targeting of industrial development programs permits a region to use its limited economic development resources more efficiently.

II. Targeting Industry Clusters

An industry cluster is a geographically bounded collection of similar and/or related firms that together create competitive advantages for member firms and the local economy. One goal of the Lancaster County industry targeting program is to identify industries that are most likely to benefit from the presence of emerging or developed industry clusters in the region (Lancaster, Chester, Chesterfield, Kershaw, Fairfield, and York Counties in South Carolina and the Charlotte MSA in North Carolina).

Industry clusters generally include firms with significant *horizontal* and/or *vertical* linkages.

- *Horizontally* linked firms engage in the production of similar products (e.g., apparel firms, computer software firms, or automobile parts firms).
- *Vertically* linked firms engage in different production phases for the same product (e.g., sawmills, millwork, and cabinet manufacturers).

Firms in horizontally and vertically linked clusters may interact through purchase-sale relationships; interfirm collaboration in product development, marketing, or research; or a shared reliance on specialized services and labor markets.

A. Advantages of Targeting Industry Clusters

The targeting of industrial development programs at specific industry clusters generally will provide greater economic development benefits than those associated with

a more unfocused industrialization efforts. Four principal benefits result from the development of industry clusters in a county or region.

- Clustering Strengthens Localization Economies. The concentration of an industry at a particular location may result in significant cost savings to firms in the cluster. These cost savings are referred to as *localization economies.* Sources of potential savings include a greater availability of specialized input suppliers and business services; a larger pool of trained, specialized workers; public infrastructure investments geared to the needs of a particular industry; financial markets familiar with the industry; and an enhanced likelihood of interfirm technology and information transfers.
- Clustering Facilitates Industrial Reorganization. The transition in industrial organization from large firms engaged in mass production to small firms focused on specialty production is well documented. This change in industrial structure is attributed to increased global competition and the emergence of new production technologies (e.g., computer-aided manufacturing). Clusters are attractive locations for the small, specialized, computer-aided manufacturers for several reasons.

  (1) The adoption of new production technologies is more prominent and easily attained among firms in industry clusters.

  (2) Proximity between the more specialized firms and their input suppliers and product markets enhances the flow of goods through the production system.

  (3) Ready access to product and input markets enables firms to quickly adapt to market changes.

  (4) A concentration of firms provides the pool of skilled labor required by the computer-aided technologies.

- Clustering Encourages Networking Among Firms. Networking is cooperation among firms to take advantage of complimentaries, exploit new markets, integrate activities, or pool resources or knowledge. This

cooperation occurs more naturally and frequently within industry clusters. Surveys of firms in manufacturing networks show that networks generate significant advantages for firms through cooperation with their counterparts. Networking firms are more likely than non-networking firms to engage in collaboration and information sharing in marketing, new product development, and technological upgrading. The networking firms also report that their competitiveness and profitability are enhanced by interfirm cooperation and collaboration.

- Clustering Results in Larger Local Economic Impacts. The total employment and income effects associated with attracting a new firm include the direct effects (firm employment and income) and indirect effects (employment and income changes at input suppliers for the new firm). The indirect employment and income changes generally are referred to as the multiplier effects. Programs supporting cluster development will have relatively large multiplier effects for the local economy because of strong linkages among cluster firms. That is, the total employment and income gains from recruiting (or retaining) cluster members will likely exceed those associated with non-cluster firms of similar size.

B. Disadvantages of Targeting Industry Clusters

The principal shortcoming with an industry targeting approach is the difficulty of "picking winners." A prerequisite to targeting industries is the identification of regional competitive advantage based on labor force characteristics, unique regional attributes, and proximity to input and product markets. Industrialization efforts next must identify the industries that best fit the regional competitive advantage. The industry targeting approach also must assess industry prospects for growth and potential local economic impacts. This process of "picking winners" is complicated by the volatility of the market

place - - today's “rapid growth” sectors may be “slow growth” or “declining' industries in the future.

Industry targeting is not an exact science. Industries identified through a targeting study may choose not to locate in the region. Or, firms in a targeted industry may be attracted to the region but not provide the anticipated employment and income effects. Thus the targeting of specific industries for recruitment or retention and expansion does not guarantee that the desired employment and income gains will result. *However, industry targeting does increase the probability that the region will be successful in developing an industrial base that provides characteristics desired by the community.*

III. Overview of the Lancaster County Economy

A region's prospects for employment growth, through the attraction of new firms or expansion of existing firms, is related to the region's current industrial composition. The existing industrial base will influence a region's ability to expand as the national economy grows. For example, a region whose employment is concentrated in declining national industries is not likely to grow rapidly. The current industrial base in a region also influences the characteristics of the local labor force (occupational distribution, skills availability, wage structure), the availability of specialized business and professional services, and the presence of supportive institutions (tech schools, public agencies). Regions with skilled labor and access to a variety of supportive services and institutions will be better positioned to attract new firms than areas with more limited labor skills and services.

A. Trends in Total Employment

Table 1 provides employment trends for Lancaster County and comparison regions (adjacent counties, South Carolina, and the United States) for the years 1982 through 1999. Since 1982, employment in Lancaster County grew from 22,067 to 24,924 or by 12.9 percent. During the same period, employment in the adjacent South Carolina counties crew by 45.2 percent; employment in the state expanded by 49.7 percent; and national employment grew by 42.9 percent.

Most of the growth in employment in the 1982 to 1999 period occurred after 1991. From 1982 to 1991, county employment increased from 22,067 to only 22,577, however, from 1991 to 1999, county employment increased by over 2,300 (22,577 to 24,924). Despite this acceleration of employment growth in the 1990s, the county's employment growth rate continued to lag those of the region, state, and nation (Figure 1). The employment growth rate in Lancaster County was approximately one-half the rates of the region, state, and nation for the 1990s.

The more rapid growth in employment opportunities in the 1990s is reflected in county unemployment rates (Table 2). From 1988 to 1995, unemployment rates in Lancaster County exceeded those for the state and surrounding counties. Since 1996, county unemployment rates declined to levels below those in surrounding counties. Declining unemployment rates over this period result from more jobs available in Lancaster County, county residents taking jobs in the Charlotte MSA, or unemployed residents leaving the county (out-migrating) to find work.

Table 1. Total Employment: Lancaster County, Adjacent Counties, South Carolina, and the United States, 1982-1999

Year	United States	South Carolina	Lancaster County	Adjacent S.C. Counties[a]
1982	114,557,300	1,518,124	22,067	102,051
1983	116,056,700	1,551,846	21,485	103,467
1984	121,091,100	1,631,172	22,014	108,186
1985	124,511,700	1,663,379	21,962	107,875
1986	126,981,300	1,705,972	21,859	110,273
1987	130,416,400	1,748,413	21,981	113,057
1988	134,517,900	1,820,317	22,332	119,332
1989	137,240,800	1,870,980	22,489	122,325
1990	139,426,900	1,926,375	22,801	124,802
1991	138,663,800	1,899,155	22,577	122,284
1992	139,305,100	1,912,321	22,834	124,592
1993	141,996,400	1,948,070	23,256	125,858
1994	145,571,600	1,997,798	23,474	129,860
1995	149,358,800	2,057,073	23,724	134,156
1996	152,607,200	2,101,519	23,504	136,546
1997	156,230,200	2,164,766	23,929	139,697
1998	160,241,200	2,221,877	23,997	143.277
1999	163,757,900	2,272,154	24,924	148,178

[a] South Carolina only. Includes Chester, Chesterfield, Fairfield, Kershaw and York counties.

Table 2. Unemployment Rates for Lancaster Country, Adjacent Counties, South Carolina and the United States, 1988-2001

	Region			
Year	Lancaster County	Adjacent Counties[a]	South Carolina	United States
1988	5.8%	4.5%	4.5%	5.5%
1989	5.7	5.3	4.7	5.3
1990	5.5	5.4	4.8	5.6
1991	8.4	7.5	6.3	6.8
1992	8.7	7.3	6.3	7.5
1993	9.6	8.8	7.6	6.9
1994	8.2	6.7	6.3	6.1
1995	5.8	5.4	5.1	5.6
1996	6.4	6.7	6.0	5.4
1997	5.3	5.5	4.5	4.9
1998	4.7	5.2	3.8	4.5
1999	4.2	5.5	4.5	4.2
2000	4.1	4.6	3.9	4.0
2001			5.4	4.8

[a]Adjacent South Carolina counties to Lancaster County are York, Chester, Fairfield, Kershaw, and Chesterfield in South Carolina.

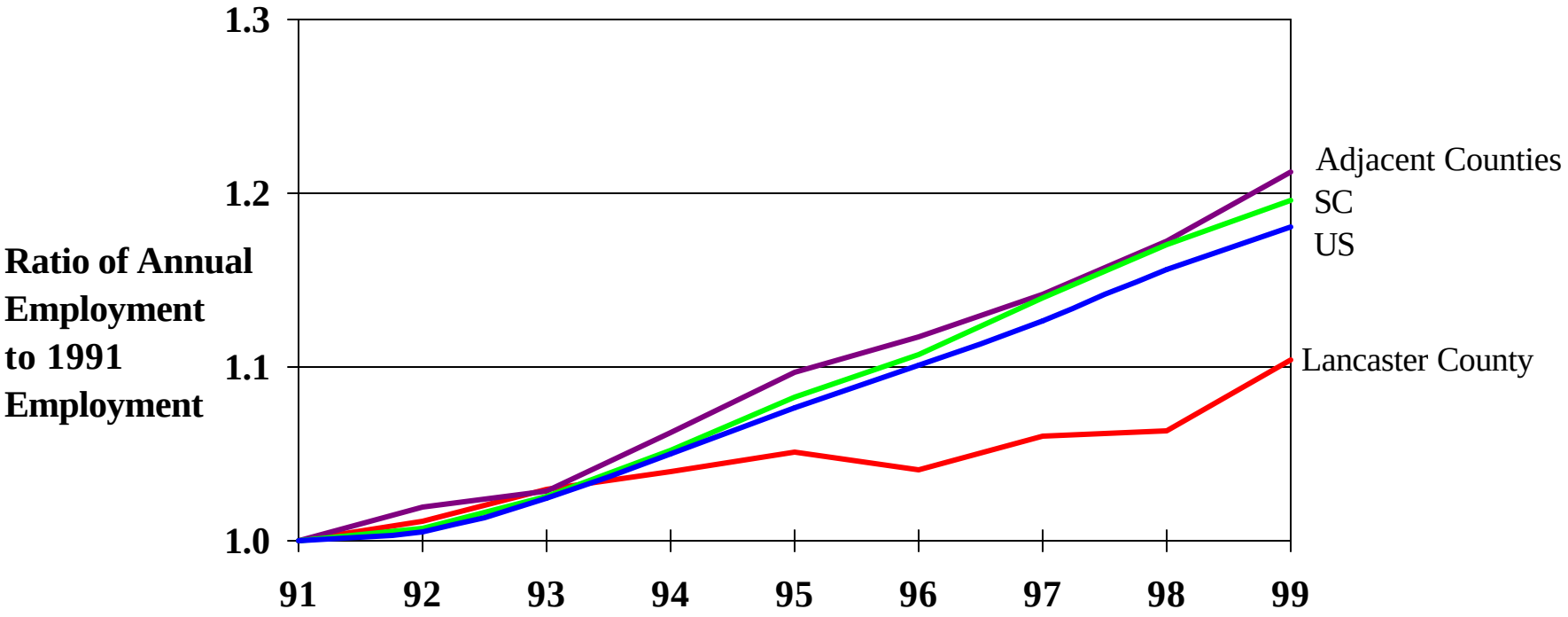

Figure 1. Employment Trends Since 1991: Lancaster County, Adjacent Counties, South Carolina, and United States

B. Employment by Major Industry Divisions

Employment levels in 1999 by major industry divisions (1 digit Standard Industrial Classifications, SIC) for Lancaster County, the adjacent counties in South Carolina (Chester, Chesterfield, Fairfield, Kershaw, and York), and the state of South Carolina are provided in Table 3. Lancaster County's non-farm employment is concentrated in manufacturing (28.2 %), retail trade (18.1 %), government (12.9%) and services (23.5 %). Lancaster County's shares of employment in retail trade and services are similar to those of the adjacent counties and of the state. However, Lancaster County is relatively over-represented in the manufacturing sector and relatively under-represented in the government sector. Over 28.0 percent of Lancaster's employment is in manufacturing compared with 22.7 percent for adjacent counties and 15.7 percent for the state. Government employment in Lancaster County is 12.9 percent of total employment as compared to 16.6 percent of total employment for the state.

Employment change by major industry division is presented in Table 4. In Lancaster County, all industry divisions added jobs from 1990 to 1999 except mining, manufacturing, and transportation and public utilities. The county's manufacturing sector lost over 1,000 jobs during this period as manufacturing employment declined from 7,882 in 1990 to 6,836 in 1999. Manufacturing employment in the adjacent counties and in the state followed a similar pattern of decline.

The county's relatively high share of manufacturing employment may dampen its ability to create new jobs in the future. For the nation as a whole, manufacturing was the only major division with employment losses for the 1990s. In general, long term national employment trends will have more favorable employment generation impacts on regions

Table 3. Distribution of Non-farm Employment by Major Industry Division: Lancaster County, Adjacent Counties, and South Carolina, 1999.

	Lancaster County		Adjacent S.C. Counties		South Carolina	
Industry	EMP 1999	% of Total	EMP 1999	% of Total	EMP 1999	% of Total
Agric., Forestry, Fisheries	155	.6%	1,318	.9%	25,357	1.1%
Mining	28	.1	149	.1	2,558	.1
Construction	1,578	6.5	9,231	6.4	154,168	6.9
Manufacturing	6,836	28.2	32,836	22.7	351,608	15.7
Trans. & Public Utilities	496	2.1	6,251	4.3	102,215	4.6
Wholesale Trade	513	2.1	6,307	4.4	85,765	3.8
Retail Trade	4,388	18.1	25,305	17.5	414,007	18.5
Finance, Ins., & RE	1,430	5.9	6,202	4.3	144,127	6.4
Service	5,692	23.5	34,256	23.7	587,254	26.2
Government	3,132	12.9	20,867	14.4	372,005	16.6
Total Non-farm	24,246	100.0	144,769	100.0	2,339,064	100.0

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data.

Table 4. Non-farm Employment Change by Major Industry Divisions: Lancaster County, Adjacent Counties, and South Carolina, 1990-1999

	Lancaster County			Adjacent S.C. Counties			South Carolina		
	EMP 1990	EMP 1999	% Change	EMP 1990	EMP 1999	% Change	EMP 1990	EMP 1999	% Change
Agric., Forestry, Fisheries	130	155	19.2%	1,138	1,318	15.8%	15,831	25,357	60.2
Mining	35	26	-25.7	385	149	-61.3	2,639	2,558	-3.1
Construction	1,419	1,578	11.2	7,166	9,231	28.8	133,808	54,166	15.2
Manufacturing	7,882	6,836	-13.3	38,775	32,836	-15.3	389,514	351,608	-9.7
Trans. & PU	521	496	-4.8	6,045	6,521	3.4	73,858	102,215	38.4
Wholesale Trade	485	513	5.8	3,206	6,307	96.7	66,371	85,765	29.2
Retail Trade	4,032	4,388	8.8	19,247	25,305	31.5	332,240	414,007	24.6
FIRE	1,003	1,430	42.6	4,539	6,202	36.6	109,145	144,127	32.1
Service	3,734	5,692	52.4	21,345	34,256	60.5	405,071	587,254	45.0
Government	2,951	3,132	6.1	16,896	20,867	23.5	361,052	372,005	3.0
Total Non-farm	22,192	24,246	9.3	121,698	144,769	19.0	1,889,529	2,239,064	18.5

Source: U. S. Department of Commerce, BEA, Regional Accounts Data.

that have relatively large shares of the more rapidly growing industries (e.g., services, retail trade, transportation and public utilities) than on areas with employment concentrated in slow growth or declining industries (e.g., agriculture and manufacturing). Yet, a number of manufacturing industries will grow rapidly as the national economy recovers. This study focuses on identifying specific manufacturing industries with strong potential for growth in Lancaster County.

C. Manufacturing Employment by Major Group

County employment shares for major manufacturing industry groups are provided in Table 5. A list of manufacturing facilities in the county, along with the facilities' employment and principal products, is provided in Appendix Table A. Relative to the United States, Lancaster County has large manufacturing employment shares in textile mill products (44.3 %), apparel and other textiles (23.0 %), and electronic equipment (16.6 %). Lancaster County is relatively under represented in industrial machinery (1.2 % vs. 11.5 % for the U.S.), printing and publishing (1.1 % vs. 8.3 % for the U.S.), fabricated metal products (1.8 % vs. 8.3 % for the U.S.), and food and kindred products (2.5 % vs. 9.2 % for the U.S.).

Tables 6, 7, and 8 provide rankings of manufacturing industries by 1998 employment and 1988 to 1999 employment change for Lancaster County, the South Carolina counties adjacent to Lancaster, and Mecklenburg County in North Carolina. The leading employers in Lancaster County in 1988 were Textiles (SIC 22), Apparel (SIC 23), Electronic Equipment (SIC 36), and Fabricated Metal (SIC 34). All four of these sectors reported job losses for the 1988 to 1999 period. In total, over 2,250 jobs were lost in the four principal manufacturing sectors. Alternatively, only 293 jobs were

Table 5. Manufacturing Employment Shares by Major Group; Lancaster County and the Untied States, 1999.

Major Group	SIC	Lancaster County % of Mfg. Employment	United States % of Mfg. Employment
Food/Kindred Products	20	2.54	9.17
Tobacco	21	0.00	.19
Textile Mill	22	44.25	2.88
Apparel/Other Textiles	23	23.00	3.43
Lumber & Wood Products	24	1.55	4.47
Furniture & Fixtures	25	.04	3.01
Paper & Allied Products	26	0.00	3.55
Printing/Publishing	27	1.06	8.35
Chemical & Allied	28	.22	5.60
Petroleum & Coal	29	.41	.69
Rubber/Miscellaneous Plastics	30	2.06	5.49
Leather	31	0.00	.38
Stone, Clay & Glass	32	2.23	3.14
Primary Metal	33	.22	3.80
Fabricated Metal	34	1.76	8.34
Industrial Machinery	35	1.24	11.46
Electronic Equipment	36	16.61	9.30
Transportation Equipment	37	.83	10.05
Instruments & Related Products	38	.24	4.57
Misc. Manufacturing	39	1.73	2.12

Table 6. Rankings of Manufacturing Industries (2-digit SIC) by 1988 Employment and 1988-1999 Employment Change, Lancaster County

Rank (1988)	Industry	SIC	1988 Employment	1999 Employment	Rank	Industry	SIC	Employment Change
1	Textile Mill	22	4,198	2,992	1	Misc. Manufacturing	39	98
2	Apparel/Other Textiles	23	1,956	1,555	2	Rubber/Misc. Plastics	30	78
3	Electronic Equipment	36	1,331	1,123	3	Lumber & Wood	24	70
4	Fabricated Metal	34	372	119	4	Food/Kindred	20	47
5	Transportation Equipment	37	173	56	5	Petroleum & Coal	29	16
6	Industrial Machinery	35	151	84	6	Instruments & Related	38	16
7	Stone, Clay, & Glass	32	142	151	7	Chemical & Allied	28	11
8	Food/Kindred	20	125	172	8	Stone, Clay, & Glass	32	9
9	Printing/Publishing	27	75	72	9	Primary Metal	33	7
10	Rubber/Misc. Plastics	30	61	139	10	Furniture & Fixtures	25	3
11	Lumber & Wood	24	35	105	11	Tobacco	21	0
12	Misc. Manufacturing	39	19	117	12	Paper & Allied	26	0
13	Petroleum & Coal	29	12	28	13	Leather	31	0
14	Primary Metal	33	8	15	14	Printing/Publishing	27	-3
15	Chemical & Allied	28	4	15	15	Industrial Machinery	35	-67
16	Tobacco	21	0	0	16	Transportation Equipment	37	-117
17	Furniture & Fixtures	25	0	3	17	Electronic Equipment	36	-208
18	Paper & Allied	26	0	0	18	Fabricated Metal	34	-253
19	Leather	31	0	0	19	Apparel/Other Textiles	23	-401
20	Instruments & Related	38	0	16	20	Textile Mill	22	-1,206

Table 7. Rankings of Manufacturing Industries (2-digit SIC) by 1988 Employment and 1988-1999 Employment Change, Adjacent Counties

Adjacent Counties									
Rank (1988)	Industry	SIC	1988 Employment	1999 Employment	Employment Change	Rank	Industry	SIC	Employment Change
1	Textile Mill	22	11,528	7,924	-3,604	1	Industrial Machinery	35	1,469
2	Apparel/Other Textiles	23	5,946	1,656	-4,290	2	Fabricated Metal	34	728
3	Chemical & Allied	28	4,805	3,671	-1,134	3	Transportation Equipment	37	711
4	Fabricated Metal	34	2,358	3,086	728	4	Stone, Clay, & Glass	32	695
5	Industrial Machinery	35	2,071	3,540	1,469	5	Printing/Publishing	27	270
6	Transportation Equipment	37	2,014	2,725	711	6	Paper & Allied	26	85
7	Rubber/Misc. Plastics	30	1,823	1,216	-607	7	Leather	31	28
8	Lumber & Wood	24	1,709	1,667	- 42	8	Electronic Equipment	36	26
9	Paper & Allied	26	1,469	1,554	85	9	Petroleum & Coal	29	6
10	Electronic Equipment	36	995	1,021	26	10	Instruments & Related	38	4
11	Printing/Publishing	27	791	1,061	270	11	Tobacco	21	0
12	Stone, Clay, & Glass	32	669	1,364	695	12	Furniture & Fixtures	25	-6
13	Food/Kindred	20	612	394	-218	13	Primary Metal	33	-25
14	Misc. Manufacturing	39	471	285	-186	14	Lumber & Wood	24	-42
15	Primary Metal	33	447	422	-25	15	Manufacturing	39	-186
16	Furniture & Fixtures	25	219	213	-6	16	Food/Kindred	20	-218
17	Petroleum & Coal	29	31	37	6	17	Rubber/Misc. Plastics	30	-607
18	Instruments & Related	38	27	31	4	18	Chemical & Allied	28	-1,134
19	Leather	31	23	51	28	19	Textile Mill	22	-3,604
20	Tobacco	21	0	0	0	20	Apparel/Other Textiles	23	-4,290

added in the four most rapidly growing manufacturing sectors: Misc. Manufacturing (SIC 39), Rubber and Plastics (SIC 30), Lumber and Wood Products (SIC 24), and Food and Kindred Products (SIC 20).

Employment in South Carolina counties adjacent to Lancaster (Table 7) also was dominated by the Textiles (SIC 22) and Apparel (SIC 23) industries, and these two sectors experienced significant job losses (7,894) in the adjacent counties from 1988 to 1999. In addition, approximately 1,100 jobs were lost in the Chemicals and Allied Products (SIC 28) sector. On the other hand, strong job growth was reported for other leading sectors in the adjacent counties (Industrial Machinery, Fabricated Metal Products, and Transportation Equipment). Thus the adjacent counties have some growing manufacturing sectors to help absorb the job losses in Textiles, Apparel, and Chemicals. However, the growing manufacturing sectors added only one job for every two and one-half jobs lost in the declining sectors.

Mecklenburg County, North Carolina (the core of the regional economy) has an economic base that differs from those of nearby South Carolina counties (Table 8). The principal manufacturing sectors in Mecklenburg County in 1988 were Industrial Machinery (SIC 35), Printing and Publishing (SIC 27), and Food and Kindred Products (SIC 20). The Industrial Machinery (SIC 35) sector in Mecklenburg County experienced significant job losses (-2,317) from 1988 to 1999 while Food and Kindred Products lost 400 jobs and Printing and Publishing added 755 jobs. The principal growth sectors among Mecklenburg's manufacturers were Electronic Equipment (SIC 36), Fabricated Metal Products (SIC 34), and Printing and Publishing (SIC 27). Manufacturers in these

sectors added over 3,500 jobs during the 1990s, indicating that the region is an attractive location for firms in these industries.

D. Ownership of Lancaster County Manufacturing Facilities

Manufacturing employment in Lancaster County is dominated by branch plants (Table 9). In 2000, over 87 percent of the county's employment was attributed to branch plants. Most of the county's branch plants were domestically owned. Only six of the county's 25 manufacturing branch plants (accounting for approximately 12 percent of the manufacturing employment) were registered as foreign-owned.

The dominance of the county's manufacturing base by branch plants reduces local employment opportunities for managerial and professional positions since such jobs generally are located at the firms' headquarters. However, the large number of branch plants in the county indicates that the area is both visible to and attractive to "outside" investors. This visibility will be beneficial in implementing an industry targeting and recruiting program.

E. Occupational and Educational Characteristics of Lancaster County Residents

Lancaster County competes with nearby South Carolina and North Carolina counties for new manufacturing plants. For many manufacturing establishments, the quality of the local labor force is an important determinant in the plant location decision. Table 10 compares the labor forces of Lancaster County, the State of South Carolina, and the United States in terms of occupational distribution. The labor force characteristics of Lancaster and the State are relatively similar with a few notable exceptions (Figure 2). Relative to the State average, Lancaster County's labor force has a high proportion of

Table 8. Rankings of Manufacturing Industries (2-digit SIC) by 1988 Employment and 1988-1999 Employment Change, Mecklenburg County, North Carolina

Rank (1988)	Industry	SIC	Mecklenburg 1988 Employment	Mecklenburg 1999 Employment	Mecklenburg Employment Change	Rank	Industry	SIC	Employment Change
1	Industrial Machinery	35	10,745	8,428	-2,317	1	Electronic Equipment	36	2,000
2	Printing/Publishing	27	6,296	7,051	755	2	Fabricated Metal	34	801
3	Food/Kindred	20	5,654	5,254	-400	3	Printing/Publishing	27	755
4	Chemical & Allied	28	4,959	3,797	-1162	4	Misc. Manufacturing	39	449
5	Rubber/Misc. Plastics	30	4,193	4,079	-114	5	Paper & Allied	26	353
6	Textile Mill	22	3,944	2,555	-1,389	6	Lumber & Wood	24	335
7	Fabricated Metal	34	3,028	3,829	801	7	Leather	31	83
8	Paper & Allied	26	2,463	2,816	353	8	Tobacco	21	0
9	Apparel/Other Textiles	23	2,059	759	-1,300	9	Petroleum & Coal	29	-7
10	Instruments & Related	38	1,482	1,023	-459	10	Primary Metal	33	-59
11	Transportation Equipment	37	1,462	580	-882	11	Rubber/Misc. Plastics	30	-114
12	Stone, Clay, & Glass	32	1,292	1,141	-151	12	Stone, Clay, & Glass	32	-151
13	Electronic Equipment	36	1,194	3,194	2,000	13	Food/Kindred	20	-400
14	Primary Metal	33	1,071	1,012	-59	14	Furniture & Fixtures	25	-406
15	Furniture & Fixtures	25	820	414	-406	15	Instruments & Related	38	-459
16	Misc. Manufacturing	39	513	962	449	16	Transportation Equipment	37	-882
17	Lumber & Wood	24	347	682	335	17	Chemical & Allied	28	-1,162
18	Petroleum & Coal	29	35	28	-7	18	Apparel/Other Textiles	23	-1,300
19	Leather	31	30	113	83	19	Textile Mill	22	-1,389
20	Tobacco	21	0	0	0	20	Industrial Machinery	35	-2,317

Table 9. Ownership Characteristics of Manufacturing Plants, Lancaster County, 2000.

	Foreign Owned	Domestic	Locally Owned	Branch
Number of Establishments	6	46	27	25
% of Total Establishments	11.5%	88.5%	51.9%	48.1%
Employment	408	5854	770	5492
% of Total Employment	6.5%	93.5%	12.3%	87.7%

Source: South Carolina Industrial Directory.

Table 10. Occupational Distribution, Employed Persons 16 Years and Older, Lancaster County, South Carolina and United States, 1990

	Percent of Area Labor Force		
Occupation	Lancaster County	South Carolina	United States
Executive, Administrative, and Managerial	6.8%	10.2%	12.3%
Professional Specialty	7.8	11.9	14.1
Technicians and Related Support	3.2	3.4	3.7
Sales	9.1	11.4	11.8
Administrative Support and Clerical	13.7	13.7	16.3
Service	8.6	12.6	13.2
Farming, Forestry and Fishing	1.4	2.1	2.5
Precision Production, Craft, and Repair	17.2	13.8	11.3
Machine Operators, Assemblers, and Inspectors	21.6	12.3	6.8
Transportation and Material Moving	3.8	4.1	4.1
Handlers, Helpers and Laborers	6.9	4.6	3.9

Source: Bureau of Census, American FactFinder, Table P078.

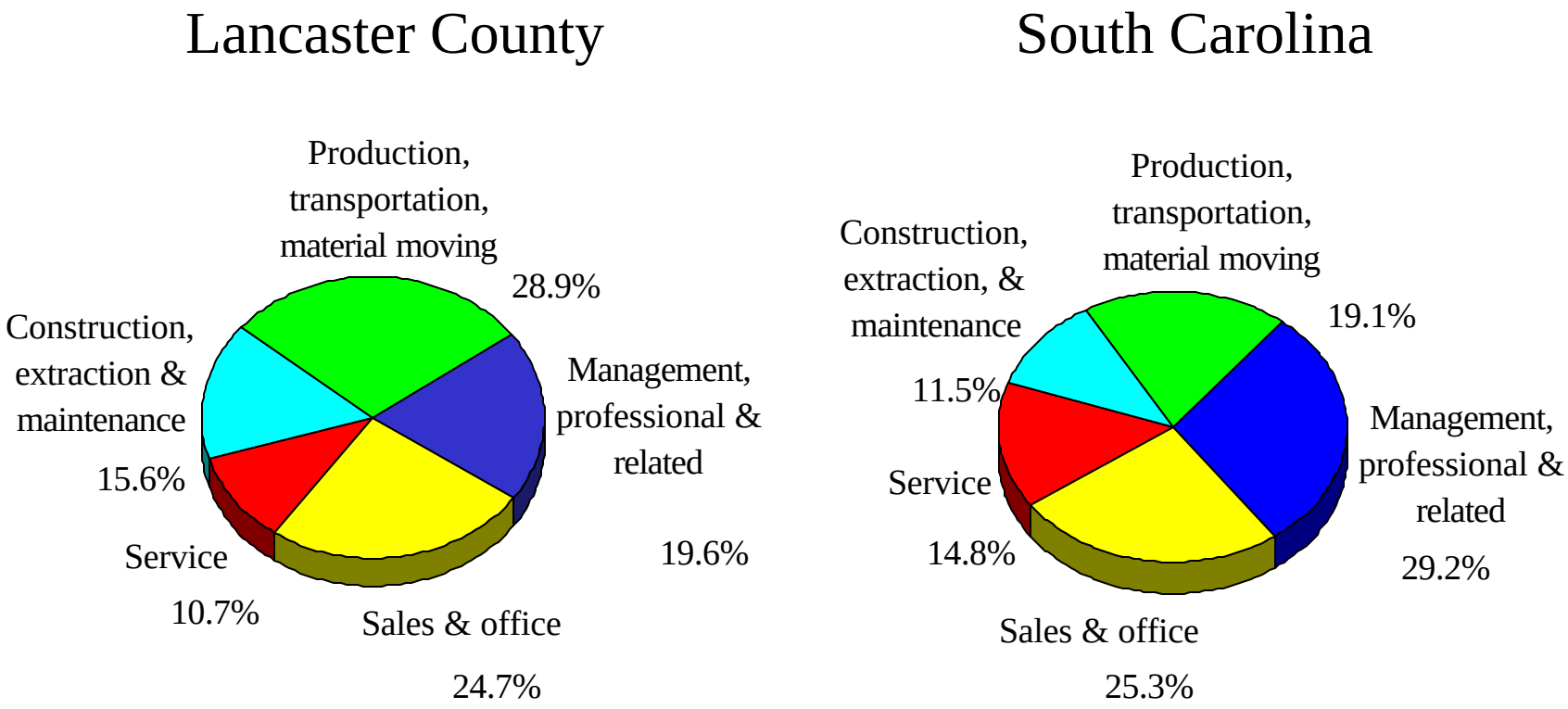

Figure 2. Occupational Distribution of Non-farm Employment, Lancaster County and South Carolina, 2000 (2000 Census)

employees in production (28.9%) and construction and maintenance (15.6%). Alternatively, Lancaster County has a relatively low proportion of employment in management and professional occupations (19.6 %). As noted previously, the relative absence of management and professional occupations may reflect the dominance of branch plants in the county.

The educational attainment of Lancaster County workers is marginally less than the State average (Figure 3). Lancaster County has proportionately more workers with high school diplomas or less (65.8 % vs. 53.7 %) and proportionately fewer in the labor force with bachelor degrees or higher (10.2 % vs. 20.4 %). In sum, Lancaster County's work force is more "blue collar," less "white collar," and less well educated than the State average. These educational and occupational differences will restrict the focus of an industry development program to manufacturers with labor requirements similar to that available in Lancaster County. In the long run, improvements in educational attainment levels and worker occupational experiences will permit the county to broaden their industrial development program to include industries with higher education and skill requirements.

F. Sources and Growth of County Income

In 2000, Lancaster County reported a per capita income of $20,765, placing the county 22 among the 46 South Carolina counties (Figure 4). Lancaster County's per capita income was approximately 87 percent of the state average ($20,765 versus $24,000) and 70 percent of the national average ($20,765 vs. $29,469). In addition, the income gap between Lancaster County and the state and nation have become wider over

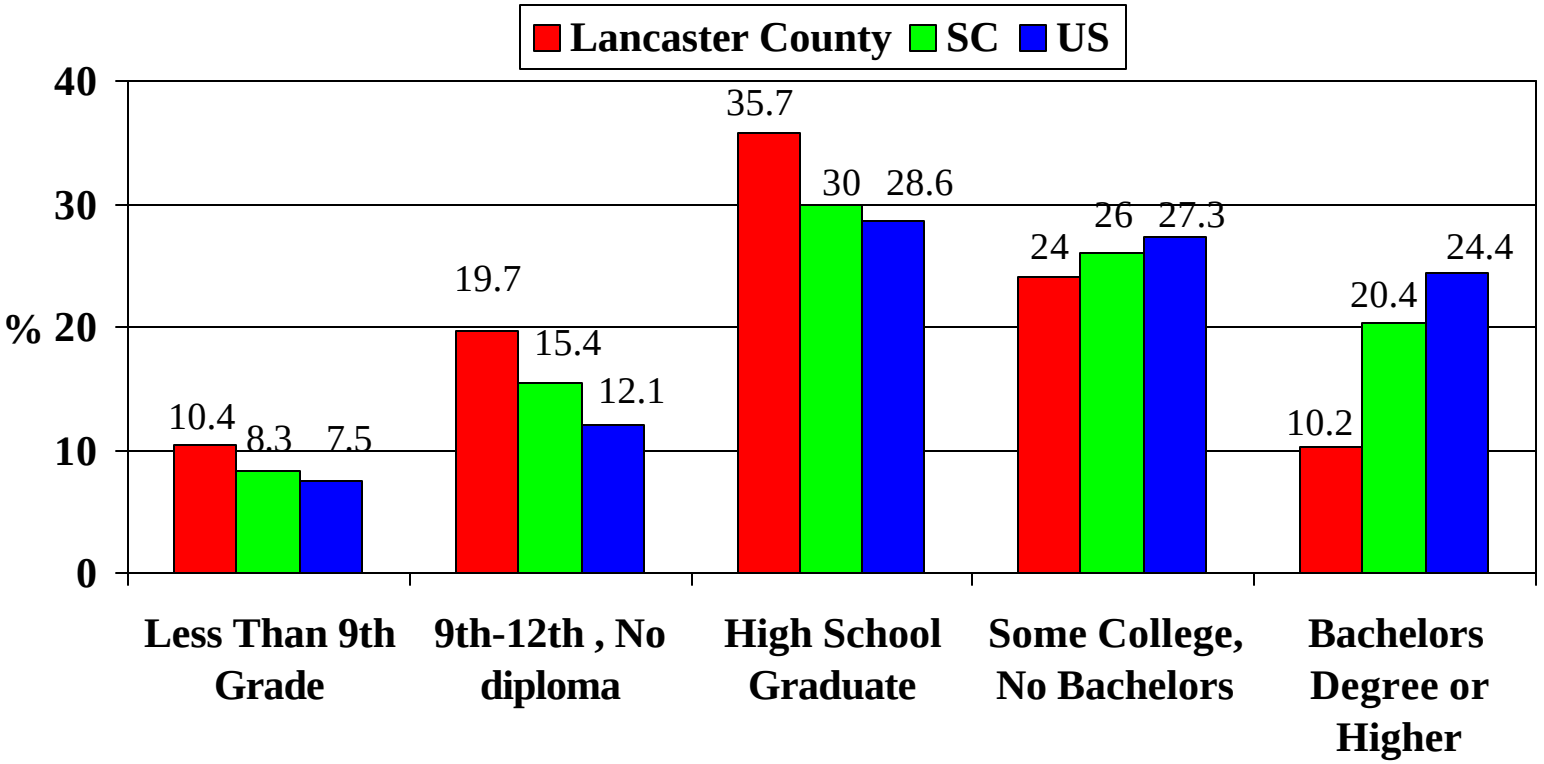

Figure 3. Educational Attainment Distribution, Persons 25 and Older, Lancaster County, South Carolina, and the United States, 2000 (2000 Census)

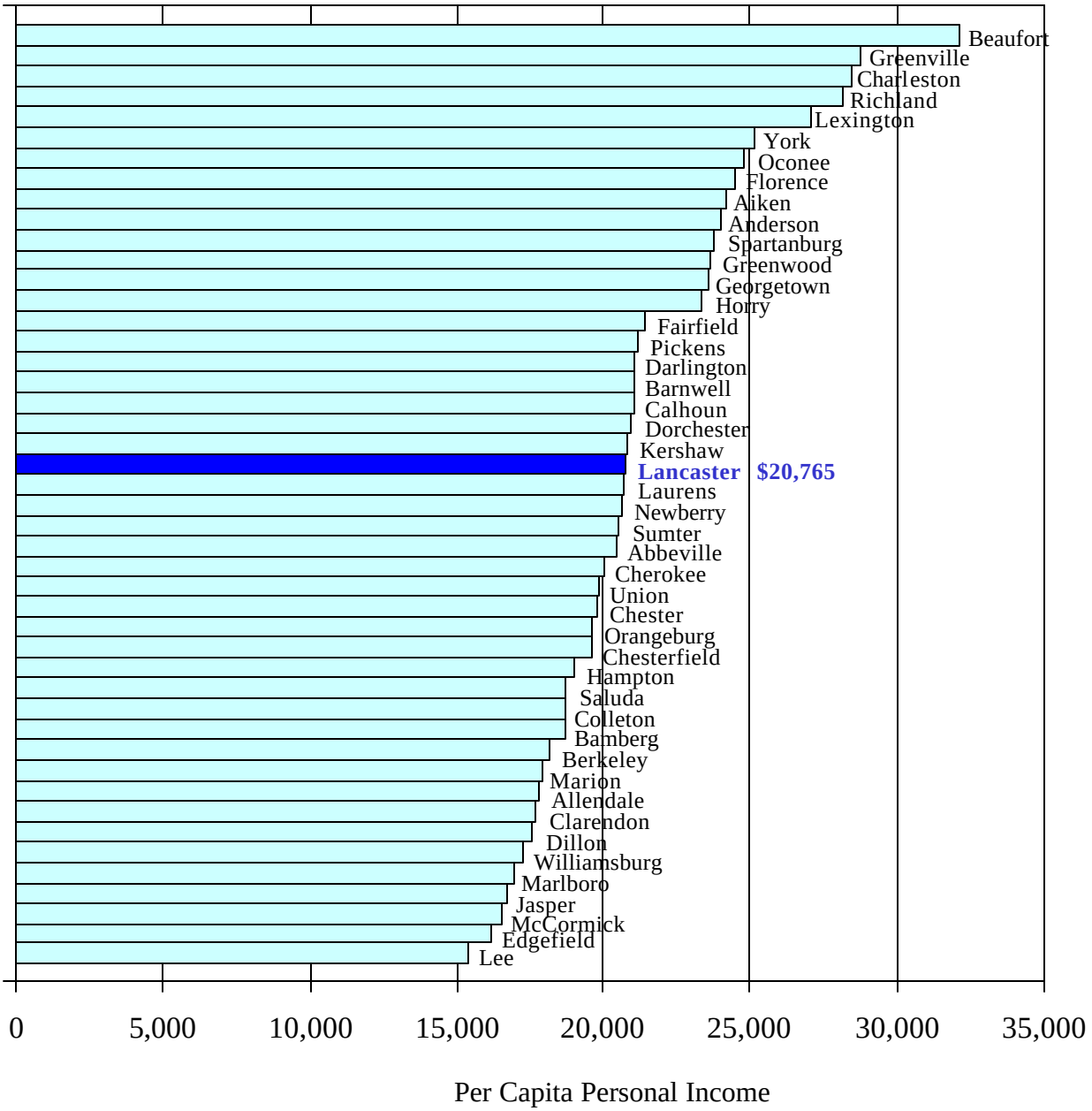

Figure 4. Per Capita Personal Income in Lancaster County vs. Other South Carolina Counties, 2000

time. From 1969 to 2000, per capita income grew less rapidly in Lancaster County than in South Carolina or the United States (see Figure 5).

Lancaster County also differs slightly from the state and nation in terms of sources of personal income (Figure 6). The county receives a greater share of its income from transfer payments (19.9%) and a smaller share from salary and wages (57.1%) than the state and nation. The large share of income from transfer payments indicates that a relatively large number of county residents are not fully participating in the labor force (i.e., retired, unemployed, part-time). One goal of the industry targeting program will be to identify industries that can take advantage of the county's underemployed labor.

IV. Identifying High Potential - - High Impact Industries for Targeting

The objective of the Lancaster County industry targeting project is two fold:

- Identify manufacturing industries that have high potential for locating in the county.
- Identify manufacturing industries that provide attractive economic development impacts in terms of future job growth, wages paid, and contributions to the local tax base.

The targeting methodology focuses on identifying expanding industry clusters in Lancaster County and the surrounding area. The targeting of potential new members for existing area industry clusters provides the following advantages.

- The presence of an industry cluster in the area is evidence that the location is attractive to these types of manufacturers.
- The multiplier effects associated with attracting new firms to a cluster generally are greater than those resulting from noncluster firms.
- Members of industry clusters have stronger employment growth over time than firms that are not in clusters.
- Industry clusters have greater potential for new firm spin-offs than groupings of unrelated firms.

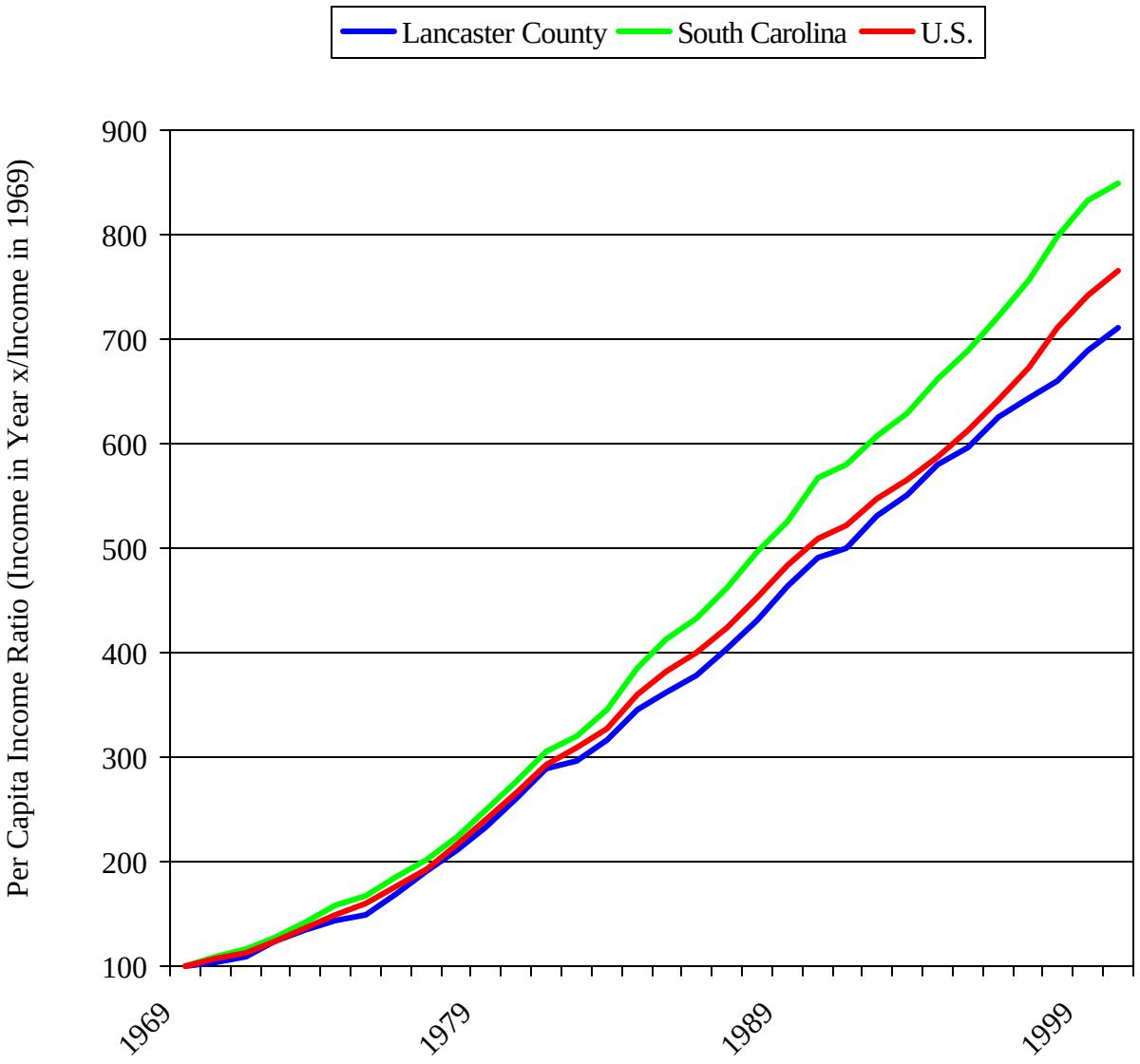

Figure 5. Trends in Per Capita Income, Lancaster County, South Carolina, and U.S., 1969-2000
Index (1969=100)

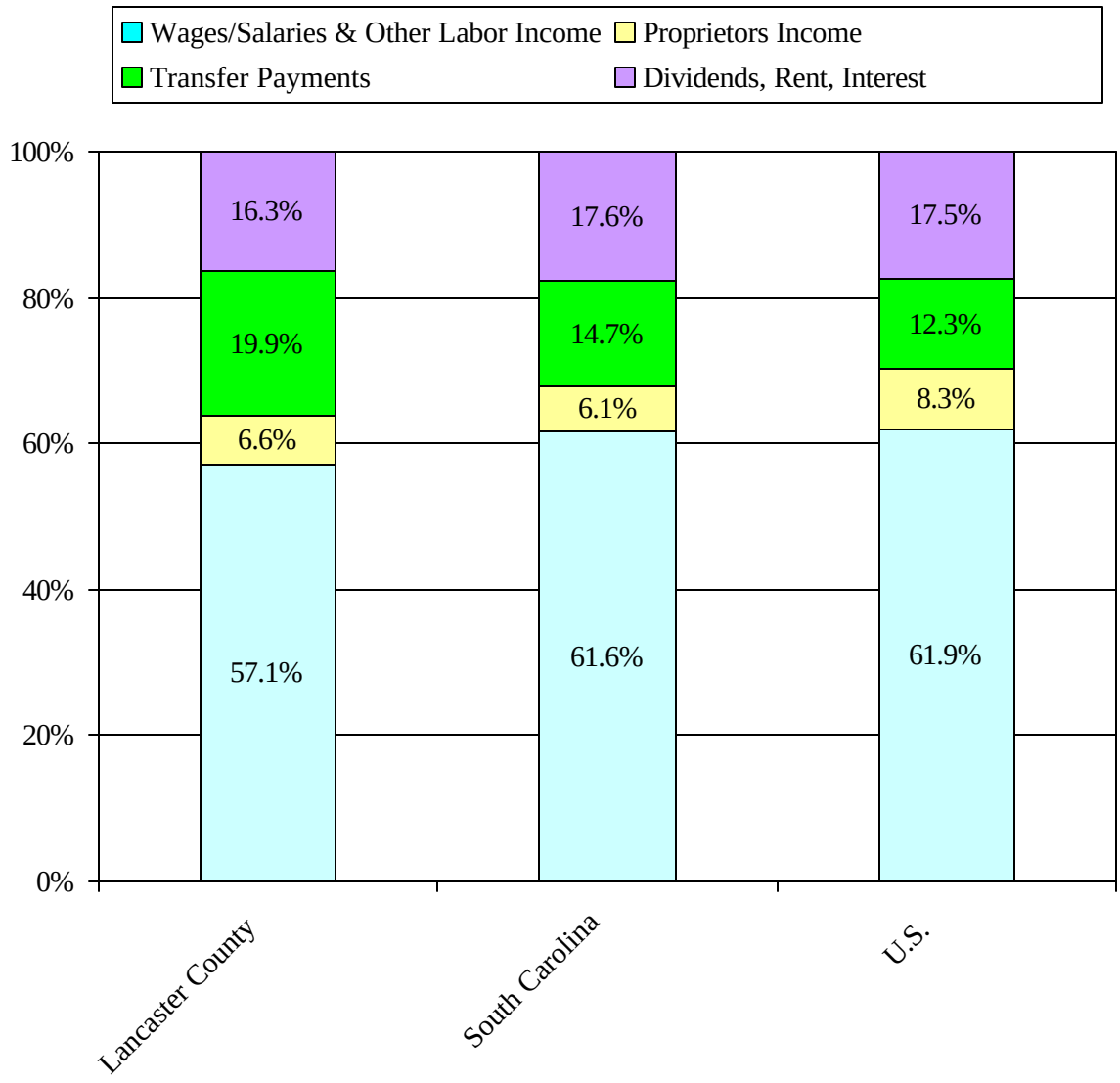

Figure 6. Division of Personal Income, Lancaster County, South Carolina, and U.S., 2000

The remainder of this section provides the methods, data, and findings of our targeting approach. First, we outline the selection criteria used to identify prospective clusters. Next, we rank the clusters on the basis of potential local economic development impacts. Finally, we use IMPLAN input-output data to identify manufacturers with strong input or product market linkages to the cluster firms.

A. Selection Criteria and Results: Lancaster County

Selection Criteria. Industry clusters in Lancaster County were targeted at the four-digit SIC level. A list of the four-digit SIC codes is provided in Appendix Table B. To identify industry clusters with desired characteristics, four screening criteria were used:

1. Three or more establishments in Lancaster County in 1999.
2. County industry employment was greater than 200 in 1999.
3. Industry employment in Lancaster County increased from 1988 to 1999.
4. An industry specialization index--the Location Quotient (LQ)--for Lancaster County exceeded 1.50 in 1999 or the LQ increased from 1988 to 1999.

Screening criteria 1, 2, and 3 identify four-digit SIC manufacturing industries that had a significant presence in the County in 1999 and promising employment generation potential (based on 1988 to 1999 employment growth rates). The "Location Quotient" criteria are used to identify industries for which Lancaster County has exhibited a competitive advantage in attracting or developing. The Location Quotient (LQ) measure is calculated as follows.

Location Quotient

$$\textit{Industry Location Quotient} = \left(\frac{\dfrac{\textit{Area Four-digit SIC Industry Employment in Year t}}{\textit{Total Area Employment in Year t}}}{\dfrac{\textit{U.S. Four-digit SIC Industry Employment in Year t}}{\textit{Total U.S. Employment in Year t}}} \right)$$

A location quotient (LQ) greater than one implies that the area (Lancaster County or the multi-county region) is "specialized" in that industry compared to the nation as a whole. That is, the county or region has been, over time, relatively successful in attracting or nurturing employment in a specific industry. An increase in an industry's LQ from 1988 to 1999 indicates that the industry has become more important to the local economy compared to the average county in the U.S. Thus, a high and increasing LQ implies the region has a competitive advantage in maintaining and attracting employment in that industry. Alternatively, a LQ less than one indicates that the area has a relatively small share of the industry's employment compared to the average county in the U.S. (see Table 11 for an example of a LQ calculation).

Selection Results: Lancaster County. The data used for identifying industry clusters in Lancaster County are summarized in Table 12. For each of the 60 four-digit SIC industries present in Lancaster County in 1988 or 1999, Table 12 provides the employment growth rate, number of employees in 1988 and 1999, number of establishments in 1999, and location quotients for 1988 and 1999.

Only one industry (four-digit SIC) met the cluster screening criteria and was identified as a local manufacturing cluster with potential for future growth in Lancaster County. The identified industry cluster is SIC 2221, Broadwoven Fabric Mills, Manmade Fiber and Silk. In Lancaster County, this industry had 10 establishments and

Table 11. Example of Calculation of Location Quotient for SIC 3993, Signs and Advertising Specialties.

*A. Employment Data, 1999**

Lancaster County employment, SIC 3993	117
Lancaster County private employment, total	16,600
U.S. employment, SIC 3993	79,654
U.S. private employment, total	110,064,900

B. Calculation of Location Quotient

$$LQ = \frac{\text{SIC 3993, Lancaster}}{\text{Total private employment, Lancaster}} \Big/ \frac{\text{SIC 3993, U.S.}}{\text{Total private employment, U.S.}}$$

$$LQ = \frac{\frac{117}{16{,}600}}{\frac{79{,}654}{110{,}064{,}900}} = \frac{.0070}{.00072} = 9.379$$

* ES202 employment data, 1999.

Table 12. Measures of Regional Competitiveness, Lancaster County, 1988 and 1999

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
2026	12	15	25.0	1	0.88	1.63
2048	12	0	-100.0	0	1.49	0.00
2075	89	126	41.6	1	63.50	85.71
2086	12	15	25.0	1	0.59	1.02
2099	0	15	*	1	0.00	1.29
2211	0	3	*	1	0.00	0.32
2221	1456	1641	12.7	10	92.13	194.12
2241	0	3	*	1	0.00	1.02
2251	0	307	*	1	0.00	142.13
2262	2742	1031	-62.4	1	714.29	412.58
2295	0	3	*	1	0.00	1.89
2299	0	3	*	1	0.00	1.30
2321	245	167	-31.8	2	19.23	44.54
2322	0	4	*	1	0.00	3.33
2331	0	3	*	1	0.00	1.32
2369	143	0	-100.0	0	22.95	0.00
2392	1568	1280	-18.4	2	172.16	154.45
2396	0	25	*	2	0.00	2.64
2399	0	76	*	1	0.00	16.78
2411	32	99	209.4	10	2.06	8.61
2431	1	0	-100.0	0	0.05	0.00
2434	1	6	500.0	1	0.08	0.39
2448	1	0	-100.0	0	0.19	0.00
2521	0	3	*	1	0.00	0.57
2711	32	46	43.8	2	0.38	0.69
2721	0	2	*	2	0.00	0.09
2741	0	3	*	1	0.00	0.21
2752	22	4	-81.8	4	0.35	0.07
2759	0	18	*	2	0.00	0.71
2789	21	0	-100.0	0	4.16	0.00
2865	4	0	-100.0	0	0.76	0.00
2892	0	3	*	1	0.00	2.75
2899	0	13	*	1	0.00	2.24
2992	12	28	133.3	1	6.49	14.39
3083	61	139	127.9	1	17.15	32.10
3231	0	3	*	1	0.00	0.30
3251	15	122	713.3	1	4.77	55.91
3272	15	0	-100.0	0	1.17	0.00
3273	111	26	-76.6	2	6.17	1.41
3312	4	0	-100.0	0	0.11	0.00
3315	0	3	*	1	0.00	1.12

Table 12. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
3321	4	13	225.0	1	0.26	1.11
3441	372	0	-100.0	0	27.01	0.00
3449	0	110	*	1	0.00	47.47
3469	0	3	*	1	0.00	0.22
3496	0	4	*	1	0.00	0.47
3498	0	3	*	1	0.00	0.61
3532	0	1	*	1	0.00	0.46
3542	4	7	75.0	1	1.21	2.54
3544	14	1	-92.9	1	0.53	0.04
3552	71	41	-42.3	3	19.34	21.33
3569	0	1	*	1	0.00	0.16
3599	62	32	-48.4	6	1.58	0.72
3625	333	209	-37.2	2	27.18	25.13
3692	998	914	-8.4	1	420.83	367.60
3714	0	56	*	2	0.00	0.68
3732	173	0	-100.0	0	13.61	0.00
3825	0	13	*	1	0.00	1.25
3842	0	4	*	1	0.00	0.27
3993	19	117	515.8	5	1.75	9.74

employed over 1,500 workers in 1999. Industry employment growth in the county from 1988 to 1999 was 12.7 percent on 185 jobs.

The growth of employment in Broadwoven Fabric Mills for Manmade Fibers in Lancaster County is counter to the national trend. For the nation as a whole, employment in SIC 2221 declined 37 percent from 1988 to 2000. Thus, future attempts to increase employment in this industry cluster may be difficult due to the marked long-term decline of this sector.

B. Selection Criteria and Results: Regional Economy

Large and expanding industry clusters in counties adjacent to Lancaster County (York, Chester, Fairfield, Kershaw, and Chesterfield) also may be promising manufacturing industries for Lancaster. The presence of an industry cluster in the multi-county region indicates that the area provides locational characteristics that are attractive to members of these industries. In addition, the availability of area clusters provides advantages to new cluster firms in terms of proximity to product markets and input suppliers, labor familiar with the industry's production process, and the availability of specialized business services.

Selection Criteria. Industry clusters in the multi-county region were targeted at the four-digit SIC level. The screening criteria used to identify promising manufacturing clusters were:

1. Five or more establishments in the region in the region in 1999.
2. Regional industry employment was greater than 400 in 1999.
3. Industry employment in the region increased from 1988 to 1999.
4. Industry Location Quotient (LQ) for the region exceeded 1.50 in 1999 and increased from 1988 to 1999.

Selection Results. Table 13 provides the data used to identify regional industry clusters that met the four selection criteria. *Eight four-digit industry clusters in the region were selected as promising manufacturing sectors based on industry size, employment growth, and regional competitive advantage.* These industries are listed in Table 14 in order of their national employment growth rate for 1988 to 1999. Six of the eight clusters were in manufacturing industries that exhibited positive U.S. employment change for the period 1988 to 1999, while two of the region's clusters were in industries whose employment declined nationally from 1988 to 1999.

Table 14 also includes a listing of ten industries under the category of "Emerging Clusters." Emerging clusters are industries that miss the screening criteria with respect to cluster size (employment or establishment numbers), but the industry still exhibits a significant enough presence in the region to warrant attention. All emerging clusters had 1999 location quotients greater than 1.50 and positive 1988 to 1999 regional employment growth. Four of the emerging clusters were in industries that exhibited positive national employment change for 1988 to 1999, and six emerging clusters were in industries with declining national employment.

C. Selection Criteria and Results: Mecklenburg County, North Carolina

Lancaster County is part of the Charlotte, NC regional economy, and manufacturing plants may find an attractive location because of the presence of an industry cluster in nearby Charlotte. For the purpose of this study, we focus on the presence of industry clusters in Mecklenburg County, NC, the economic core of the Charlotte metropolitan area.

Table 13. Measures of Regional Competitiveness, Lancaster and Adjacent Counties, 1988 and 1999

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
2011	38	5	-86.8	1	0.24	0.03
2013	4	25	525.0	3	0.04	0.24
2015	29	3	-89.7	1	0.15	0.01
2022	0	4	*	1	0.00	0.09
2023	63	83	31.7	1	3.61	5.21
2026	12	15	25.0	1	0.14	0.24
2035	4	0	-100.0	0	0.15	0.00
2038	5	1	-80.0	1	0.11	0.02
2048	41	34	-17.1	1	0.81	0.87
2075	89	126	41.6	1	10.09	12.76
2082	0	3	*	1	0.00	0.09
2084	55	0	-100.0	0	2.94	0.00
2086	275	204	-25.8	3	2.14	2.06
2097	25	43	72.0	2	3.42	5.32
2098	98	0	-100.0	0	10.35	0.00
2099	0	19	*	2	0.00	0.24
2211	2002	1203	-39.9	9	17.52	19.35
2221	6148	5125	-16.6	25	61.80	90.25
2241	289	114	-60.6	4	10.99	5.74
2251	90	326	262.2	2	2.31	22.47
2252	12	0	-100.0	0	0.29	0.00
2253	12	25	108.3	3	0.16	0.77
2257	497	427	-14.1	8	17.43	22.41
2258	3	57	1800.0	1	0.15	3.66
2259	16	130	712.5	6	3.76	43.06
2261	68	433	536.8	11	2.57	15.23
2262	4161	1364	-67.2	3	172.18	81.25
2269	5	0	-100.0	0	0.31	0.00
2273	0	1	*	1	0.00	0.01
2281	1528	1103	-27.8	6	16.12	18.58
2282	94	0	-100.0	0	5.28	0.00
2295	0	9	*	3	0.00	0.84
2296	615	505	-17.9	1	100.82	79.88
2297	5	0	-100.0	0	0.53	0.00
2298	56	0	-100.0	0	5.87	0.00
2299	127	92	-27.6	4	5.65	5.92
2321	2378	327	-86.2	5	29.64	12.98
2322	5	50	900.0	2	0.17	6.19
2326	0	139	*	1	0.00	5.39
2331	195	3	-98.5	1	4.01	0.20

Table 13. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
2335	341	111	-67.4	1	3.89	3.96
2337	4	0	-100.0	0	0.09	0.00
2339	589	224	-62.0	7	2.82	1.72
2369	1442	20	-98.6	1	36.77	2.44
2384	439	89	-79.7	1	54.06	92.37
2387	3	0	-100.0	0	0.26	0.00
2389	0	2	*	1	0.00	0.14
2391	218	1	-99.5	1	7.72	0.05
2392	1736	1907	9.9	8	30.28	34.26
2393	5	4	-20.0	1	0.49	0.45
2394	65	27	-58.5	1	3.17	1.25
2395	345	140	-59.4	3	20.29	9.04
2396	104	79	-24.0	4	2.22	1.24
2397	15	0	-100.0	0	3.71	0.00
2399	15	87	480.0	2	0.42	2.86
2411	517	526	1.7	100	5.28	6.81
2421	642	238	-62.9	4	3.45	1.65
2426	108	0	-100.0	0	2.72	0.00
2431	116	34	-70.7	6	0.93	0.27
2434	6	33	450.0	4	0.07	0.32
2435	134	91	-32.1	3	5.03	2.94
2439	0	326	*	2	0.00	6.78
2448	13	246	1792.3	4	0.39	5.22
2449	27	0	-100.0	0	3.15	0.00
2452	0	72	*	1	0.00	2.85
2491	3	31	933.3	4	0.21	2.36
2493	13	170	1207.7	2	0.74	7.80
2499	164	7	-95.7	2	2.32	0.14
2511	12	6	-50.0	1	0.08	0.05
2512	0	3	*	2	0.00	0.03
2514	190	0	-100.0	0	6.27	0.00
2515	12	0	-100.0	0	0.36	0.00
2521	0	6	*	2	0.00	0.17
2522	0	198	*	1	0.00	4.53
2531	2	2	0.0	1	0.06	0.04
2541	2	0	-100.0	0	0.04	0.00
2599	0	2	*	1	0.00	0.12
2611	26	32	23.1	1	1.57	2.44
2631	0	30	*	1	0.00	0.65
2653	395	88	-77.7	2	3.14	0.64
2655	1001	216	-78.4	3	55.28	14.55

Table 13. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
2657	0	4	*	1	0.00	0.09
2676	0	753	*	1	0.00	22.71
2679	47	430	814.9	3	1.01	14.57
2711	452	279	-38.3	10	0.86	0.63
2721	4	8	100.0	4	0.03	0.05
2731	8	12	50.0	2	0.09	0.14
2732	0	5	*	1	0.00	0.13
2741	46	14	-69.6	4	0.53	0.15
2752	222	133	-40.1	27	0.56	0.35
2754	0	26	*	1	0.00	1.28
2759	76	127	67.1	8	0.39	0.75
2761	2	349	17350.0	1	0.04	8.01
2789	21	3	-85.7	1	0.66	0.10
2791	4	0	-100.0	0	0.10	0.00
2796	31	176	467.7	4	1.08	5.89
2813	79	64	-19.0	2	3.28	2.68
2816	0	4	*	1	0.00	0.35
2819	86	8	-90.7	1	0.84	0.15
2821	182	236	29.7	3	1.98	2.97
2823	1597	978	-38.8	1	112.80	72.88
2824	2350	1663	-29.2	1	31.81	39.26
2833	3	0	-100.0	0	0.14	0.00
2842	3	0	-100.0	0	0.07	0.00
2843	50	3	-94.0	1	6.65	0.37
2844	0	15	*	2	0.00	0.20
2851	54	0	-100.0	0	0.76	0.00
2865	39	226	479.5	2	1.18	10.82
2869	342	151	-55.8	3	2.77	1.56
2874	4	0	-100.0	0	0.33	0.00
2875	2	46	2200.0	2	0.18	4.84
2892	0	3	*	1	0.00	0.41
2893	0	153	*	3	0.00	8.96
2899	21	138	557.1	6	0.42	3.54
2951	0	3	*	1	0.00	0.19
2952	31	32	3.2	2	1.94	2.27
2992	12	31	158.3	2	1.03	2.37
3052	256	229	-10.5	1	9.20	7.33
3053	0	3	*	1	0.00	0.07
3061	213	438	105.6	3	3.75	7.49
3069	94	205	118.1	4	1.53	4.02
3081	3	51	1600.0	1	0.05	0.79

Table 13. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
3083	61	139	127.9	1	2.72	4.78
3085	551	160	-71.0	2	17.15	4.15
3089	706	130	-81.6	7	1.70	0.28
3111	23	0	-100.0	0	1.50	0.00
3171	0	51	*	1	0.00	15.84
3211	0	8	*	1	0.00	0.50
3229	20	190	850.0	2	0.41	4.24
3231	183	346	89.1	4	3.02	5.17
3251	15	122	713.3	1	0.76	8.32
3271	14	8	-42.9	1	0.60	0.37
3272	28	31	10.7	2	0.35	0.36
3273	364	414	13.7	14	3.22	3.35
3281	35	140	300.0	5	2.29	7.15
3291	131	81	-38.2	2	5.37	4.38
3296	20	174	770.0	2	0.68	7.23
3312	169	117	-30.8	3	0.72	0.76
3315	0	3	*	1	0.00	0.17
3316	0	2	*	1	0.00	0.10
3321	4	13	225.0	1	0.04	0.17
3357	255	278	9.0	2	3.00	3.50
3363	10	11	10.0	1	0.37	0.27
3365	12	11	-8.3	2	0.36	0.41
3398	0	1	*	1	0.00	0.05
3399	5	2	-60.0	1	0.37	0.25
3411	287	160	-44.3	1	6.04	5.53
3423	574	685	19.3	2	12.99	18.22
3429	0	88	*	1	0.00	1.38
3441	449	12	-97.3	3	5.18	0.13
3442	246	503	104.5	2	2.92	5.61
3443	161	187	16.1	6	1.43	1.83
3444	41	25	-39.0	4	0.40	0.19
3446	8	29	262.5	2	0.22	0.75
3448	5	7	40.0	1	0.17	0.20
3449	34	138	305.9	2	1.72	8.87
3451	7	0	-100.0	0	0.13	0.00
3452	0	51	*	3	0.00	0.96
3462	0	17	*	1	0.00	0.56
3469	0	3	*	1	0.00	0.03
3471	47	395	740.4	5	0.54	4.40
3479	7	5	-28.6	1	0.15	0.08
3494	688	46	-93.3	2	22.30	2.06

Table 13. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
3496	153	747	388.2	5	2.51	13.00
3497	0	80	*	1	0.00	19.40
3498	0	6	*	2	0.00	0.18
3499	22	22	0.0	2	0.43	0.28
3523	0	3	*	1	0.00	0.04
3524	3	0	-100.0	0	0.10	0.00
3531	9	6	-33.3	2	0.10	0.06
3545	3	21	600.0	2	0.05	0.42
3546	0	5	*	1	0.00	0.25
3552	383	271	-29.2	13	16.58	20.99
3554	0	15	*	1	0.00	0.83
3559	2	76	3700.0	2	0.03	0.93
3561	165	0	-100.0	0	5.52	0.00
3562	870	1951	124.3	3	18.31	47.53
3563	0	10	*	1	0.00	0.40
3564	0	3	*	1	0.00	0.08
3565	0	13	*	2	0.00	0.53
3569	0	32	*	5	0.00	0.77
3571	6	13	116.7	1	0.02	0.07
3581	0	3	*	1	0.00	0.37
3589	120	124	3.3	3	3.12	2.64
3596	0	8	*	1	0.00	1.43
3599	202	377	86.6	45	0.82	1.26
3612	0	3	*	1	0.00	0.08
3613	0	302	*	2	0.00	6.28
3621	0	154	*	2	0.00	2.17
3625	333	212	-36.3	3	4.32	3.79
3639	13	299	2200.0	1	0.87	22.92
3643	551	0	-100.0	0	6.26	0.00
3644	87	135	55.2	2	4.88	7.18
3647	0	3	*	1	0.00	0.15
3648	0	110	*	1	0.00	7.36
3663	0	2	*	1	0.00	0.02
3672	0	7	*	2	0.00	0.05
3674	315	0	-100.0	0	1.08	0.00
3679	29	0	-100.0	0	0.18	0.00
3692	998	914	-8.4	1	66.85	54.72
3699	0	3	*	1	0.00	0.11
3711	1361	1194	-12.3	3	3.43	3.33
3713	24	0	-100.0	0	0.50	0.00
3714	553	1572	184.3	9	1.25	2.82

Table 13. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
3715	2	0	-100.0	0	0.06	0.00
3721	0	1	*	1	0.00	0.00
3732	248	10	-96.0	2	3.10	0.14
3799	0	5	*	2	0.00	0.15
3823	0	16	*	1	0.00	0.22
3825	0	13	*	1	0.00	0.19
3827	21	0	-100.0	0	1.04	0.00
3841	0	16	*	1	0.00	0.14
3842	6	4	-33.3	1	0.06	0.04
3914	43	31	-27.9	1	5.09	6.25
3944	43	0	-100.0	0	0.95	0.00
3949	76	151	98.7	1	1.17	2.07
3953	167	16	-90.4	1	15.23	1.71
3955	0	3	*	1	0.00	0.60
3961	43	0	-100.0	1	1.78	0.00
3965	0	19	*	1	0.00	1.98
3991	43	0	-100.0	0	2.88	0.00
3993	68	126	85.3	8	1.00	1.56
3999	5	56	1020.0	2	0.08	0.82

Table 14. Industry Clusters in Lancaster County and Adjacent Counties

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I. Lancaster County

A. Negative U.S. Employment Change, 1988-1999

1. 2221	Broad woven Fabrics, Manmade
1999 Employment	1641
1999 Establishments	10
U.S. Employment Change Rank	393 (-37%)

II. Lancaster and Adjacent Counties

A. Positive U.S. Employment Change, 1988-1999

1. 3714	Motor Vehicle Parts & Accessories
1999 Employment	1572
1999 Establishments	9
U.S. Employment Change Rank	39 (+38%)
2. 3273	Ready Mix Concrete
1999 Employment	414
1999 Establishments	14
U.S. Employment Change Rank	92 (+20%)
3. 2261	Finishing Plants, Cotton
1999 Employment	433
1999 Establishments	11
U.S. Employment Change Rank	98 (+18%)
4. 3471	Metal Plating and Polishing
1999 Employment	395
1999 Establishments	5
U.S. Employment Change Rank	119 (+13%)
5. 2392	Household Furnishings, NEC
1999 Employment	1907
1999 Establishments	8
U.S. Employment Change Rank	152 (+7%)
6. 3496	Misc. Fabricated Wire Products
1999 Employment	747
1999 Establishments	5
U.S. Employment Change Rank	173 (+4%)

Table 14. (continued)

B. Negative U.S. Employment Change 1988-1999

1. 2411	Logging
1999 Employment	526
1999 Establishments	100
U.S. Employment Change Rank	284 (-13%)
2. 3541	Machine Tools, Metal Cutting
1999 Employment	630
1999 Establishments	5
U.S. Employment Change Rank	305 (-17%)

III. Lancaster and Adjacent Counties: Emerging Clusters

A. Positive U.S. Employment Change, 1988-1999

1. 2448	Wood Pallets
1999 Employment	246
1999 Establishments	4
U.S. Establishments	18 (+54%)
2. 3281	Cut Stone and Stone Products
1999 Employment	140
1999 Establishments	5
U.S. Employment Change Rank	34 (+41%)
3. 3993	Signs and Advertising Specialties
1999 Employment	126
1999 Establishments	8
U.S. Employment Change Rank	54 (+30%)
4. 3231	Products of Purchased Glass
1999 Employment	346
1999 Establishments	4
U.S. Employment Change Rank	82 (+22%)

B. Negative U.S. Employment Change, 1988-1999

1. 3443	Fabricated Plate Work
1999 Employment	187
1999 Establishments	6
U.S. Employment Change Rank	204 (-1%)

Table 14. (continued)

2. 2821	Plastics Materials and Resins
1999 Employment	236
1999 Establishments	3
U.S. Employment Change Rank	227 (-5%)
3. 3562	Ball and Roller Bearings
1999 Employment	1951
1999 Establishments	3
U.S. Employment Change Rank	231 (-5%)
4. 3069	Fabricated Rubber Products, NEC
1999 Employment	205
1999 Establishments	4
U.S. Employment Change Rank	254 (-9%)
5. 2899	Chemical Preparations, NEC
1999 Employment	138
1999 Establishments	6
U.S. Employment Change Rank	291 (-14%)
6. 2679	Converted Paper Products, NEC
1999 Employment	430
1999 Establishments	3
U.S. Employment Change Rank	369 (-30%)

Selection Criteria. Industry clusters in Mecklenburg County were targeted at the four-digit SIC level. The screening criteria used to identify mature and emerging industry clusters were:

1. Four or more establishments in Mecklenburg County in 1999.
2. County industry employment exceeded 500 in 1999.
3. Industry employment in Mecklenburg County increased from 1988 to 1999.
4. The industry specialization index (Location Quotient) exceeded 1.50 in 1999 and the LQ increased from 1988 to 1999.

Mature industry clusters met all four criteria while emerging clusters met criteria No. 3 and No. 4 but did not meet the selected employment and/or establishment levels. The Mecklenburg County data for industry employment, establishments, and location quotients are presented in Table 15. The identified mature industry clusters are presented in Table 16, and the emerging clusters are provided in Table 17.

Selection Results: Mecklenburg County. Twelve manufacturing industries (four-digit SIC) met the screening criteria for classification as mature clusters, led by Printed Circuit Boards (SIC 3672), Miscellaneous Publishing (SIC 2741), and Bottled and Canned Drinks (SIC 2086). The mature clusters were divided evenly between industries with positive national growth (3672, 2741, 3081, 2653, 2843, 3842) and industrial sectors that lost jobs between 1988 and 1999 (3443, 3321, 2869, 2086, 2657, 2824). Eight industries were identified as emerging clusters in Mecklenburg County. Only two of the emerging clusters (2796 and 2273) were in industries that reported national employment growth for the period 1988 to 1999.

Table 15. Measures of Regional Competitiveness, Mecklenburg County, NC, 1988 and 1999

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
2011	0	3	*	1	0.00	0.01
2013	22	50	127.3	3	0.08	0.12
2024	176	0	-100.0	0	2.17	0.00
2026	223	3	-98.7	1	0.81	0.01
2033	0	3	*	1	0.00	0.01
2035	13	45	246.2	3	0.16	0.54
2041	59	71	20.3	3	0.73	0.94
2045	0	28	*	3	0.00	0.47
2046	0	4	*	1	0.00	0.11
2047	3	4	33.3	1	0.07	0.05
2048	87	1	-98.9	1	0.54	0.01
2051	576	673	16.8	3	1.02	1.14
2052	2778	2097	-24.5	3	16.95	10.67
2064	0	3	*	1	0.00	0.02
2066	30	2	-93.3	1	0.58	0.04
2079	136	62	-54.4	1	3.46	2.02
2082	0	2	*	1	0.00	0.02
2086	773	1314	70.0	7	1.89	3.32
2087	4	3	-25.0	3	0.07	0.04
2096	38	821	2060.5	3	0.33	6.50
2097	1	12	1100.0	1	0.04	0.37
2098	0	12	*	1	0.00	0.43
2099	735	42	-94.3	3	3.72	0.13
2211	598	73	-87.8	2	1.64	0.29
2221	0	56	*	2	0.00	0.25
2241	58	5	-91.4	2	0.69	0.06
2251	926	413	-55.4	3	7.43	7.14
2253	188	89	-52.7	2	0.77	0.69
2257	403	78	-80.6	5	4.42	1.03
2258	37	0	-100.0	0	0.57	0.00
2259	0	3	*	1	0.00	0.25
2261	128	99	-22.7	7	1.52	0.87
2262	36	42	16.7	2	0.47	0.63
2269	21	60	185.7	4	0.41	1.12
2273	351	446	27.1	3	1.67	1.67
2281	194	161	-17.0	6	0.64	0.68
2282	9	6	-33.3	2	0.16	0.09
2284	4	513	12725.0	4	0.16	20.36
2295	9	8	-11.1	2	0.24	0.19
2297	138	90	-34.8	2	4.62	1.50
2299	844	413	-51.1	7	11.75	6.67

Table 15. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
2311	2	0	-100.0	0	0.01	0.00
2321	158	31	-80.4	2	0.62	0.31
2322	0	3	*	1	0.00	0.09
2323	0	5	*	1	0.00	0.32
2325	67	3	-95.5	1	0.21	0.02
2329	241	0	-100.0	0	1.25	0.00
2339	55	0	-100.0	0	0.08	0.00
2341	2	3	50.0	1	0.01	0.05
2342	35	6	-82.9	1	0.69	0.22
2361	195	0	-100.0	0	2.42	0.00
2369	4	3	-25.0	1	0.03	0.09
2384	0	1	*	1	0.00	0.26
2389	0	32	*	2	0.00	0.54
2391	270	108	-60.0	4	2.99	1.41
2392	712	270	-62.1	7	3.89	1.22
2393	73	1	-98.6	1	2.23	0.03
2394	71	99	39.4	6	1.08	1.15
2395	87	45	-48.3	5	1.60	0.73
2396	38	148	289.5	7	0.25	0.58
2399	50	0	-100.0	0	0.44	0.00
2411	0	50	*	2	0.00	0.16
2426	3	0	-100.0	0	0.02	0.00
2431	141	312	121.3	21	0.35	0.62
2434	50	47	-6.0	10	0.19	0.11
2448	35	142	305.7	5	0.33	0.76
2452	1	50	4900.0	2	0.01	0.50
2491	22	29	31.8	2	0.48	0.55
2493	0	3	*	1	0.00	0.03
2499	95	51	-46.3	2	0.42	0.26
+2511	120	6	-95.0	2	0.24	0.01
2512	53	35	-34.0	2	0.15	0.09
2514	199	4	-98.0	1	2.06	0.05
2515	56	143	155.4	3	0.53	0.96
2519	0	6	*	2	0.00	0.20
2521	9	31	244.4	4	0.07	0.22
2522	3	0	-100.0	0	0.02	0.00
2531	3	8	166.7	2	0.03	0.04
2541	169	153	-9.5	7	1.09	0.72
2542	111	13	-88.3	3	0.91	0.08
2591	69	16	-76.8	2	0.86	0.15
2599	28	0	-100.0	0	0.61	0.00

Table 15. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
2611	6	10	66.7	4	0.11	0.19
2621	45	3	-93.3	1	0.07	0.01
2631	273	158	-42.1	4	1.45	0.85
2652	104	0	-100.0	0	3.04	0.00
2653	839	1270	51.4	13	2.09	2.33
2655	62	165	166.1	4	1.07	2.79
2657	827	824	-0.4	11	4.47	4.61
2671	0	40	*	1	0.00	0.40
2672	211	114	-46.0	5	1.40	0.61
2673	26	22	-15.4	2	0.22	0.13
2675	1	0	-100.0	0	0.02	0.00
2677	48	101	110.4	1	0.49	1.05
2678	21	101	381.0	1	0.73	3.50
2679	1	7	600.0	1	0.01	0.06
2711	1394	1664	19.4	20	0.83	0.94
2721	129	544	321.7	20	0.28	0.92
2731	21	7	-66.7	6	0.07	0.02
2732	474	10	-97.9	3	4.42	0.06
2741	612	1370	123.9	31	2.22	3.56
2752	1754	1857	5.9	82	1.39	1.24
2754	6	96	1500.0	6	0.12	1.19
2759	1022	613	-40.0	59	1.63	0.91
2761	432	252	-41.7	5	2.46	1.45
2782	146	236	61.6	4	0.88	1.93
2789	26	59	126.9	4	0.26	0.51
2791	95	25	-73.7	6	0.75	0.35
2796	184	318	72.8	8	2.01	2.67
2813	57	31	-45.6	3	0.74	0.33
2819	10	88	780.0	5	0.03	0.42
2821	235	154	-34.5	3	0.80	0.49
2822	616	0	-100.0	0	11.37	0.00
2823	670	1	-99.9	1	14.82	0.02
2824	616	722	17.2	4	2.61	4.28
2833	0	20	*	1	0.00	0.18
2834	54	145	168.5	1	0.08	0.15
2835	0	24	*	1	0.00	0.35
2836	4	0	-100.0	0	0.10	0.00
2841	51	21	-58.8	3	0.33	0.12
2842	212	63	-70.3	7	1.63	0.48
2843	555	802	44.5	12	23.13	24.98
2844	25	0	-100.0	0	0.10	0.00

Table 15. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
2851	146	340	132.9	2	0.65	1.62
2865	348	339	-2.6	2	3.29	4.07
2869	358	599	67.3	4	0.91	1.55
2875	0	3	*	1	0.00	0.08
2879	25	5	-80.0	1	0.33	0.05
2891	40	35	-12.5	3	0.45	0.32
2893	295	265	-10.2	9	6.04	3.89
2899	642	139	-78.3	5	4.04	0.90
2951	0	28	*	0	0.00	0.44
2952	25	0	-100.0	0	0.49	0.00
2992	10	0	-100.0	0	0.27	0.00
3011	1943	1557	-19.9	2	6.50	4.86
3021	30	0	-100.0	0	0.72	0.00
3052	378	265	-29.9	3	4.25	2.13
3053	45	107	137.8	2	0.39	0.60
3069	252	336	33.3	8	1.28	1.65
3081	314	825	162.7	7	1.68	3.19
3082	29	12	-58.6	1	0.28	0.11
3083	187	41	-78.1	2	2.62	0.35
3084	79	152	92.4	2	1.49	1.73
3085	73	150	105.5	1	0.71	0.98
3086	304	209	-31.3	3	1.69	0.80
3087	0	2	*	1	0.00	0.02
3088	0	3	*	1	0.00	0.03
3089	559	419	-25.0	16	0.42	0.23
3111	10	28	180.0	0	0.20	0.64
3149	0	28	*	0	0.00	1.45
3199	20	56	180.0	0	0.62	1.23
3211	6	8	33.3	2	0.10	0.12
3221	39	0	-100.0	0	0.25	0.00
3231	22	14	-36.4	3	0.11	0.05
3269	6	26	333.3	3	0.13	0.55
3271	360	301	-16.4	2	4.82	3.47
3272	269	281	4.5	7	1.04	0.82
3273	328	391	19.2	12	0.91	0.79
3275	19	23	21.1	1	0.37	0.40
3281	13	8	-38.5	2	0.27	0.10
3291	187	68	-63.6	3	2.40	0.92
3292	9	3	-66.7	1	0.29	0.41
3296	0	3	*	1	0.00	0.03
3299	33	15	-54.5	3	1.16	0.38

Table 15. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
3312	235	276	17.4	3	0.31	0.45
3321	546	571	4.6	4	1.80	1.82
3325	0	5	*	2	0.00	0.05
3341	0	2	*	1	0.00	0.03
3353	0	9	*	1	0.00	0.10
3354	0	9	*	1	0.00	0.06
3356	82	0	-100.0	0	1.50	0.00
3357	82	98	19.5	2	0.30	0.31
3365	19	15	-21.1	3	0.18	0.14
3366	0	1	*	1	0.00	0.03
3369	0	1	*	1	0.00	0.04
*398	101	24	-76.2	2	1.88	0.31
3399	7	0	-100.0	0	0.16	0.00
3411	0	3	*	1	0.00	0.03
3412	74	72	-2.7	2	1.95	2.53
3421	0	10	*	1	0.00	0.21
3423	0	43	*	2	0.00	0.29
3429	172	22	-87.2	4	0.59	0.09
3432	12	41	241.7	2	0.12	0.42
3433	364	352	-3.3	2	5.14	4.42
3441	395	351	-11.1	9	1.43	0.96
3442	147	318	116.3	2	0.55	0.89
3443	200	538	169.0	10	0.55	1.32
3444	97	244	151.5	16	0.30	0.47
3446	128	60	-53.1	5	1.12	0.39
3448	1	6	500.0	2	0.01	0.04
3449	157	115	-26.8	3	2.48	1.85
3451	89	72	-19.1	2	0.51	0.33
3452	4	3	-25.0	1	0.02	0.01
3462	15	22	46.7	2	0.13	0.18
3465	76	6	-92.1	2	0.21	0.01
3469	221	310	40.3	10	0.79	0.86
3471	74	137	85.1	10	0.27	0.38
3479	278	148	-46.8	7	1.81	0.62
3484	2	0	-100.0	0	0.04	0.00
3491	115	3	-97.4	1	1.27	0.03
3492	5	62	1140.0	3	0.05	0.41
3493	0	3	*	1	0.00	0.15
3494	1	252	25100.0	2	0.01	2.82
3495	17	94	452.9	3	0.35	1.64
3496	286	165	-42.3	3	1.47	0.72

Table 15. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
3498	58	3	-94.8	1	0.67	0.02
3499	41	375	814.6	6	0.25	1.20
3511	887	366	-58.7	1	10.18	3.58
3523	5	104	1980.0	3	0.02	0.37
3524	5	0	-100.0	0	0.05	0.00
3531	90	116	28.9	5	0.30	0.31
3534	19	152	700.0	1	0.41	3.63
3535	50	262	424.0	4	0.41	1.64
3537	22	152	590.9	1	0.23	1.19
3541	13	334	2469.2	3	0.07	2.02
3542	0	82	*	3	0.00	1.11
3543	6	6	*	2	0.17	0.19
3544	112	229	104.5	10	0.21	0.36
3545	110	132	20.0	6	0.55	0.66
3546	15	308	1953.3	3	0.19	3.82
3548	0	88	*	3	0.00	1.19
3549	1	89	8800.0	4	0.06	1.73
3552	957	791	-17.3	20	12.97	15.37
3554	213	382	79.3	7	3.33	5.31
3555	4	124	3000.0	3	0.05	1.40
3556	0	3	*	2	0.00	0.03
3559	100	163	63.0	10	0.45	0.50
3562	0	3	*	1	0.00	0.02
3563	9	361	3911.1	2	0.11	3.65
3564	180	341	89.4	13	1.62	2.34
3565	199	181	-9.0	5	2.76	1.84
3566	248	161	-35.1	3	4.55	2.45
3567	9	7	-22.2	2	0.15	0.09
3568	173	199	15.0	5	2.67	2.47
3569	363	298	-17.9	4	2.75	1.81
3571	386	29	-92.5	4	0.35	0.04
3572	18	78	333.3	1	0.16	0.47
3575	0	2	*	1	0.00	0.02
3577	5787	2053	-64.5	5	27.33	7.63
3579	0	9	*	1	0.00	0.10
3582	0	3	*	1	0.00	0.15
3585	183	311	69.9	8	0.40	0.52
3589	47	94	100.0	5	0.38	0.50
3592	13	21	61.5	2	0.12	0.22
3593	13	21	61.5	2	0.19	0.27
3594	29	0	-100.0	0	0.26	0.00

Table 15. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
3596	13	0	-100.0	0	0.54	0.00
3599	466	372	-20.2	45	0.59	0.31
3612	110	1	-99.1	1	0.58	0.01
3613	1	70	6900.0	4	0.01	0.37
3621	98	0	-100.0	0	0.30	0.00
3624	0	33	*	1	0.00	0.84
3625	239	49	-79.5	7	0.97	0.22
3629	0	66	*	1	0.00	1.18
3631	0	1	*	1	0.00	0.01
3643	0	4	*	1	0.00	0.02
3644	10	12	20.0	1	0.18	0.16
3645	28	6	-78.6	2	0.29	0.07
3646	21	12	-42.9	1	0.29	0.10
3648	0	4	*	1	0.00	0.07
3652	42	92	119.0	2	0.54	0.86
3661	20	5	-75.0	1	0.04	0.01
3663	8	98	1125.0	5	0.02	0.21
3669	2	11	450.0	1	0.03	0.08
3672	5	2221	44320.0	4	0.02	3.92
3674	2	0	-100.0	0	0.00	0.00
3677	1	0	-100.0	0	0.01	0.00
3679	592	493	-16.7	4	1.15	0.77
3694	14	1	-92.9	1	0.06	0.00
3699	2	16	700.0	2	0.01	0.15
3711	356	47	-86.8	6	0.28	0.03
3713	99	122	23.2	3	0.65	0.62
3714	471	200	-57.5	13	0.33	0.09
3715	344	0	-100.0	0	3.12	0.00
3724	1	3	200.0	1	0.00	0.01
3728	46	146	217.4	2	0.08	0.28
3731	1	0	-100.0	0	0.00	0.00
3732	13	48	269.2	6	0.05	0.17
3799	131	14	-89.3	2	2.53	0.11
3812	47	0	-100.0	0	0.04	0.00
3822	53	26	-50.9	1	0.31	0.17
3823	8	45	462.5	8	0.04	0.16
3824	13	12	-7.7	3	0.31	0.25
3825	53	46	-13.2	5	0.14	0.16
3827	0	9	*	1	0.00	0.08
3829	0	17	*	1	0.00	0.11
3841	97	18	-81.4	3	0.27	0.04

Table 15. Continued

SIC	Employment 1988	Employment 1999	1988-1999 Growth (%)	Establishments 1999	Location Quotient 1988	Location Quotient 1999
3842	119	602	405.9	11	0.39	1.52
3843	344	121	-64.8	2	6.81	1.90
3844	161	0	-100.0	0	4.27	0.00
3845	0	3	*	1	0.00	0.02
3851	22	42	90.9	1	0.16	0.31
3861	95	82	-13.7	6	0.24	0.29
3873	471	0	-100.0	0	11.45	0.00
3915	0	8	*	2	0.00	0.34
3931	18	16	-11.1	2	0.39	0.23
3942	7	60	757.1	2	0.37	3.19
3949	33	24	-27.3	5	0.16	0.08
3952	0	3	*	1	0.00	0.10
3953	103	210	103.9	4	2.94	5.62
3955	21	0	-100.0	0	0.70	0.00
3965	118	211	78.8	1	2.59	5.53
3993	164	252	53.7	15	0.75	0.78
3999	48	178	270.8	7	0.24	0.66

Table 16. Industry Clusters in Mecklenburg County, NC

A. Positive U.S. Employment Change, 1988-1999

1. 3672	Printed Circuit Boards
1999 Employment	2221
1999 Establishments	4
U.S. Employment Change Rank	14 (+62%)
2. 2741	Miscellaneous Publishing
1999 Employment	1370
1999 Establishments	31
U.S. Employment Change Rank	77 (+23%)
3. 3081	Unsupported Plastics Film & Sheet
1999 Employment	825
1999 Establishments	7
U.S. Employment Change Rank	81 (+22%)
4 2653	Corrugated & Solid Fiber Boxes
1999 Employment	1270
1999 Establishments	13
U.S. Employment Change Rank	93 (+19%)
5. 2843	Surface Active Agents
1999 Employment	802
1999 Establishments	12
U.S. Employment Change Rank	99 (+18%)
6. 3842	Surgical Appliances & Supplies
1999 Employment	602
1999 Establishments	11
U.S. Employment Change Rank	122 (+13%)

B. Negative U.S. Employment Change 1988-1999

1. 3443	Fabricated Plate Work
1999 Employment	538
1999 Establishments	10
U.S. Employment Change Rank	204 (-1%)
2. 3321	Gray & Ductile Iron Foundries
1999 Employment	571
1999 Establishments	4
U.S. Employment Change Rank	256 (-9%)

Table 16. (Continued)

3. 2869	Industrial Organic Chemicals, NEC
1999 Employment	599
1999 Establishments	4
U.S. Employment Change Rank	290 (-14%)
4. 2086	Bottled & Canned Soft Drinks
1999 Employment	1314
1999 Establishments	7
U.S. Employment Change Rank	296 (-15%)
5. 2657	Folding Paperboard Boxes
1999 Employment	824
1999 Establishments	11
U.S. Employment Change Rank	294 (-15%)
6. 2824	Organic Fibers, Noncellulosic
1999 Employment	722
1999 Establishments	4
U.S. Employment Change Rank	391 (-37%)

Table 17. Emerging Industry Clusters in Mecklenburg County, NC

A. Positive U.S.. Employment Change, 1988-1999

1. 2796	Platemaking Services
1999 Employment	318
1999 Establishments	8
U.S. Employment Change Rank	115 (+14%)
2 2273	Carpets & Rugs
1999 Employment	446
1999 Establishments	3
U.S. Employment Change Rank	127 (+12%)

B. Negative U.S. Employment Change, 1988-1999

1. 3554	Paper Industries Machinery
1999 Employment	382
1999 Establishments	7
U.S. Employment Change Rank	206 (-1%)
2. 2096	Potato Chips & Snacks
1999 Employment	821
1999 Establishments	3
U.S. Employment Change Rank	222 (-4%)
3. 3562	Ball & Roller Bearings
1999 Employment	341
1999 Establishments	13
U.S. Employment Change Rank	231 (-5%)
4. 3069	Fabricated Rubber Products, NEC
1999 Employment	336
1999 Establishments	8
U.S. Employment Change Rank	254 (-9%)
5. 3546	Power-Driven Handtools
1999 Employment	308
1999 Establishments	3
U.S. Employment Change Rank	269 (-11%)
6. 2782	Blankbooks & Looseleaf Binders
1999 Employment	236
1999 Establishments	4
U.S. Employment Change Rank	385 (-35%)

D. Summary of Clusters Identification

The screening methodology for Lancaster County, adjacent counties, and Mecklenburg County identified 19 "mature" industry clusters and 16 "emerging" clusters with high potentials for employment growth in the area. Thirty-five industries exceed the number than can be targeted by a focused industrial development program. Thus, the number of industry clusters was reduced further through the application of three additional screening criterion

(1) Industry clusters in the Textiles (SIC 22) or Apparel (SIC 23) industries were eliminated because Lancaster County is a well known center of textile and apparel production, and the promotion of Lancaster County as a "good location" for firms in these industries is unnecessary. In addition, since over 60 percent of the county's employment is in textile and apparel manufacturing, a focus on other manufacturers would help diversify the county's industrial base. Four industries were eliminated by this screen (2261: Finishing Plants, Cotton; 2221: Broadwoven Fabrics, Manmade; 2392: Household Furnishings, NEC; and 2273: Carpets and Rugs).

(2) Industry clusters dependent on proximity to natural resources were eliminated because the location choices of firms in these sectors are relatively unaffected by local industrial development efforts. The Logging (SIC 2411) and Wood Pallets (SIC 2248) industries were dropped because of this criterion.

(3) The presence of an industry cluster in neighboring counties may provide opportunities for developing or expanding activity in Lancaster County in that industry as a result of the availability of external economies. Alternatively, a nearby industry may create competition for local businesses if the cluster members and local businesses serve the same regional market. Evidence of competition by nearby clusters is (a) industry employment losses in Lancaster County in an industry with a growing cluster in adjacent counties, or (b) industry employment losses in the region (Lancaster plus adjacent South Carolina counties) in an industry with a growing cluster in Mecklenburg County. Table 18 provides the 1988 to 1999 employment change in Lancaster and adjacent counties for the 35 clusters. Evidence of competition by nearby industry clusters was available for Ready Mix Concrete (SIC 3273), Miscellaneous Publishing (SIC 2741), Corrugated Boxes (SIC 2653), Surface Active Agents (SIC 2843), Industrial Organic Chemicals (SIC 2869), Bottled and Canned Drinks (SIC 2086), Organic Fibers (SIC 2824), and Potato Chips and Snacks (SIC 2096). These eight

Table 18. Selected Industry Clusters and 1988 to 1999 Employment Change in Lancaster and Adjacent S. C. Counties

Industry Cluster	Employment Change, 1988-1999	
	Lancaster County	Lancaster & Adjacent S.C. Counties
I. Lancaster & Adjacent Counties: Mature Clusters		
1. 3714: Motor Vehicle Parts & Accessories	0 to 56	
* 2. 3273: Ready Mix Concrete	111 to 26	
* 3. 2261: Finishing Plants, Cotton	NA	
4. 3471: Metal Plating and Polishing	NA	
* 5. 2392: Household Furnishings, NEC	1568 to 1280	
6. 3496: Misc. Fabricated Wire Products	0 to 4	
* 7. 2411: Logging	32 to 99	
8. 3541: Machine Tools, Metal Cutting	NA	
II. Lancaster & Adjacent Counties: Emerging Clusters		
* 1. 2248: Wood Pallets	1 to 0	
* 2. 3281: Cut Stone Products	NA	
3. 3993: Signs and Adv. Specialties	19 to 117	
4. 3231: Products of Purchased Glass	0 to 3	
5. 3443: Fabricated Plate Work[a]	NA	
6. 2821: Plastics Materials, Resins	NA	
7. 3069: Fabricated Rubber Products, NEC[a]	NA	
8. 2899: Chemical Preparations, NEC	0 to 13	
9. 2679: Converted Paper Products, NEC	NA	
10. 3562: Ball & Roller Bearings[a]	NA	
III. Mecklenburg: Mature Clusters		
1. 3672: Printed Circuit Boards	NA	0 to 7
* 2. 2741: Miscellaneous Publishing	0 to 3	46 to 14
3. 3081: Unsupported Plastics Film	NA	3 to 51
* 4. 2653: Corrugated & Solid Fiber Boxes	NA	395 to 88
5. 2843: Surface Active Agents	NA	50 to 3
6. 3842: Surgical Appliances & Supplies	0 to 4	6 to 4
7. 3321: Gray and Ductile Iron Foundries	4 to 13	4 to 13
* 8. 2869: Industrial Organic Chemicals	NA	342 to 151
* 9. 2086: Bottled & Canned Soft Drinks	12 to 15	275 to 203
10. 2657: Folding Paperboard Boxes	NA	0 to 4
*11. 2824: Organic Fibers, Noncellulosic	NA	2350 to 1663
IV. Mecklenburg: Emerging Clusters		
1. 2796: Platemaking Services	NA	31 to 176
* 2. 2273: Carpets & Rugs	NA	0 to 1
3. 3554: Paper Industries Machinery	NA	0 to 15
* 4. 2096: Potato Chips & Snacks	NA	275 to 204
5. 3546: Power-Driven Hand Tools	NA	0 to 5
6. 2782: Blank Books & Looseleaf Binders	NA	NA

[a] The industry cluster also is included among the Mecklenburg County Mature or Emerging Clusters.

industries were eliminated as potential candidates for industrial targeting for Lancaster County.

In summary, the screening methodology for Lancaster and adjacent counties and for Mecklenburg County identified 22 industry clusters with high potential for employment growth in Lancaster County. The identified mature and emerging clusters are:

* Mature Clusters: Lancaster and Adjacent South Carolina Counties

  - Motor Vehicle Parts and Accessories (SIC 3714)
  - Metal Plating and Polishing (SIC 3471)
  - Miscellaneous Fabricated Wire Products (SIC 3496)
  - Machine Tools, Metal Cutting (SIC 3541)

* Emerging Clusters: Lancaster and Adjacent South Carolina Counties

  - Cut Stone Products (SIC 3281)
  - Signs and Advertising Specialties (SIC 3993)
  - Products of Purchased Glass (SIC 3231)
  - Fabricated Plate Work (SIC 3443)
  - Plastics Materials, Resins (SIC 2821)
  - Fabricated Rubber Products, NEC (SIC 3069)
  - Chemical Preparations, NEC (SIC 2899)
  - Converted Paper Products, NEC (SIC 2679)
  - Ball & Roller Bearings (SIC 3562)

* Mature Clusters: Mecklenburg County, North Carolina

  - Unsupported Plastics Film (SIC 3081)
  - Surgical Appliances and Supplies (SIC 3842)
  - Gray and Ductile Iron Foundries (SIC 3321)
  - Folding Paperboard Boxes (SIC 2657)

* Emerging Clusters: Mecklenburg County, North Carolina

  - Printed Circuit Boards (SIC 3672)
  - Platemaking Services (SC 2796)
  - Paper Industries Machinery (SIC 3554)
  - Power-Driven Hand Tools (SIC 3546)
  - Blankbooks & Looseleaf Binders (SIC 2782)

The above four-digit SIC groupings contain a variety of products within each SIC. A listing of product types within each four-digit SIC is provided in Appendix C.

V. Characteristics of Target Clusters

The 22 industry clusters identified for the Region and Mecklenburg County are good prospects for industrial recruitment since the area appears to provide a competitive advantage for these manufacturers. However, all 22 clusters may not be equally attractive prospects based on the expected economic and fiscal impacts on Lancaster County. Insights into the potential local-level impacts associated with successfully recruiting an additional establishment are provided by comparing the establishment characteristics of cluster industries.

A. Employment Growth Rate.

Establishments in industries with rapid employment growth are more likely to expand and create new jobs more rapidly than establishments in slow growth or declining industries. The 1988 to 1999 national employment growth rates of the 22 industries are provided in Table 19. Among the 22 target industries, *rapid employment growth* occurred in printed circuit boards (62 %); cut stone products (41 %); motor vehicle parts and accessories (38 %); products of purchased glass (22 %); and unsupported plastics film (22 %). Alternatively, 12 of the target industries reported *declining national employment* from 1988 to 1999. Employment declines were especially large for the targeted industries in the paper products sector: blankbooks and looseleaf binders (-35 %); converted paper products (-30 %); and folding paperboard boxes (-15 %).

Table 19. U.S. Employment Change for Selected Industries, 1988 to 1999

SIC	Industry	1988 to 1999 Employment Change
3672	Printed Circuit Boards	+62%
3281	Cut Stone and Stone Products	+41%
3714	Motor Vehicle Parts & Accessories	+38%
3993	Signs and Advertising Specialties	+30%
3231	Products of Purchased Glass	+22%
3081	Unsupported Plastics Film	+22%
2796	Platemaking Services	+14%
3471	Metal Plating and Polishing	+13%
3842	Surgical Appliances & Supplies	+13%
3496	Miscellaneous Fabricated Wire Products	+4%
3443	Fabricated Plate Work (Boiler Shops)	-1%
3554	Paper Industries Machinery	-1%
2821	Plastics Materials & Resins	-5%
3562	Ball and Roller Bearings	-5%
3069	Fabricated Rubber Products, NEC	-9%
3321	Gray & Ductile Iron Foundries	-9%
3546	Power-Driven Hand Tools	-11%
2899	Chemical Preparations, NEC	-14%
3541	Machine Tools, Metal Cutting	-17%
2657	Folding Paperboard Boxes	-15%
2679	Converted Paper Products, NEC	-30%
2782	Blankbooks & Looseleaf Binders	-35%

Source: ES202 Data

Table 20. Average Establishment Size for U.S. Manufacturers for the Selected Industry Clusters, 1997

SIC	Industry	Average Establishment Size (# of employees)
3562	Ball & Roller Bearings	199
3321	Gray & Ductile Iron Foundries	123
2821	Plastics Material & Resins	116
3714	Motor Vehicle Parts & Accessories	115
2657	Folding Paperboard Boxes	87
3546	Power-Driven Hand Tools	78
3541	Machine Tools, Metal Cutting	74
3842	Surgical Appliances & Supplies	68
3081	Unsupported Plastics Film & Sheets	66
2679	Converted Paper Products, NEC	62
2782	Blankbooks & Looseleaf Binders	55
2899	Chemical Preparations, NEC	53
3672	Printed Circuit Boards	52
3554	Paper Industries Machinery	50
3443	Fabricated Plate Work (Boiler Shops)	43
3496	Miscellaneous Fabricated Wire Products	41
3231	Products of Purchased Glass	37
3069	Fabricated Rubber Products, NEC	35
3471	Metal Plating & Polishing	22
2796	Platemaking Services	16
3993	Signs & Advertising Specialties	15
3281	Cut Stone & Stone Products	13

Source: 1997 U.S. Census of Manufacturers.

B. Average Establishment Size.

The 1997 average employment of U.S. establishments in the 22 target industries is provided in Table 20. Industries with large average establishment employment provide greater potential for immediate job generation than industries whose operations require, on average, fewer employees. Average establishment employment among the 22 target industries ranged from 13 to 199.

Industries with the largest average employment per establishment included: ball and roller bearings (199); gray iron foundries (123); plastics materials & resins (116); and motor vehicle parts and accessories (115). *Industries that provide, on average, relatively few jobs per establishment are:* plate making services (16); signs and advertising specialties (15); and cut stone and stone products (13).

C. Average Production Worker Wages.

Other establishment characteristics held equal, a manufacturing plant paying high wages will provide greater local economic development impacts than a manufacturing establishment offering primarily low wage jobs. Table 21 provides the U.S. average hourly wages for production workers for the 22 target industries.

High wage industries include plastics materials and resins ($21.50); motor vehicle parts and accessories ($17.20); chemical preparations, NEC ($19.00); machine tools for metal cutting ($17.80); and paper industries machinery ($17.60). *The low wage industries* include fabricated rubber products, NEC ($11.10); metal plating & polishing ($11.40); signs and advertising specialties ($11.70); and printed circuit boards ($11.80).

The reader should note that Table 21 provides the average wages for four-digit industry groupings, and much wage diversity may be present within the grouping. For

Table 21. Average U.S. Hourly Wages for Production Workers for Selected Industries, 1997

SIC	Industry	Average Hourly Wage ($)
2821	Plastics Materials & Resins	$21.50
2899	Chemical Preparations, NEC	19.00
3541	Machine Tools, Metal Cutting	17.80
3554	Paper industries Machinery	17.60
2796	Platemaking Services	17.40
3714	Motor Vehicle Parts & Accessories	17.20
3562	Ball & Roller Bearings	16.40
3321	Gray & Ductile Iron Foundries	16.20
3081	Unsupported Plastics Film & Sheets	14.30
3842	Surgical Appliances & Supplies	13.80
2657	Folding Paperboard Boxes	13.60
3443	Fabricated Plate Work (Boiler Shops)	13.50
2679	Converted Paper Products, NEC	13.40
2782	Blankbooks & Looseleaf Binders	13.30
3546	Power-Driven Hand Tools	13.10
3231	Products of Purchased Glass	12.80
3281	Cut Stone & Stone Products	12.20
3496	Miscellaneous Fabricated Wire Products	11.80
3672	Printed Circuit Boards	11.80
3993	Signs & Advertising Specialties	11.70
3471	Metal Plating & Polishing	11.40
3069	Fabricated Rubber Products, NEC	11.10

example, average wages in motor vehicles parts industry (3714) ranged from $12.70/hour for body manufacturing to $21.50/hour for the manufacturing of transmission and power train parts (Table 22). Similarly, average wages in the Fabricated Rubber Products industry (SIC 3069) are less the $11.00/hour for Sporting and Athletic Goods, but more than $20.00/hour for Resilient Floor Covering. Thus, information on industry average wage is just a first approximation of the potential wage and income impacts of attracting a new facility. Detailed information on industry wage structure should be collected as the industry targeting process becomes more specific.

D. Inter-Regional Linkages

The local economic impact of a new manufacturing establishment is not limited to the income and employment generated at the facility. New manufacturing plants have backward and forward linkages that lead to the generation of jobs and income in other sectors of the local economy.

- *Backward Linkages:* Manufacturers purchase inputs and services from other area firms. These input and service purchasers stimulate employment and income growth in these supplying firms.

- *Forward Linkages:* Employees of manufacturing establishments spend their salaries and wages in the local economy. Employee purchases of goods and services stimulate employment and income growth in the local consumer goods and services sectors.

The impact a manufacturing establishment has on the local economy will vary according to the magnitude of the firm's backward and forward linkages. Insights into potential inter-regional linkages for the 22 target manufacturing industries are provided by comparisons of industry multipliers, identification of principal input suppliers, and estimations of potentials for import substitution.

Table 22. Examples of Wage Variation Within a Four-Digit Industry, Motor Vehicle Parts (3714) and Fabricated Rubber Products (3069)

SIC	Industry	Average Hourly Wage ($)
3714	**Motor Vehicle Parts**	
	Motor Vehicle Body Manufacturing	$12.70
	Gasoline Engine & Engine Parts	19.70
	Other Motor Vehicle Electronic Equipment	15.80
	Steering and Suspension Components	21.10
	Brake System Manufacturing	15.10
	Transmission & Power Train Parts	21.50
	All Other Motor Vehicle Parts	14.30
3069	***Fabricated Rubber Products***	
	Narrow Fabric Mills & Schiffli Embroidery	$ 8.90
	Other Apparel Accessories	8.50
	Surgical Appliances & Supplies	12.50
	Sporting & Athletic Goods	10.60
	Resilient Floor Covering	20.60
	Game, Toy, & Children Vehicles	10.50

Source: 1997 Economic Census of Manufacturers

Industry Multipliers. The attraction of a new firm to the county may create more jobs for the county than those employed directly at the facility. This creation of multiple jobs is called the multiplier process, and results from rounds of spending stimulated by the new firm. When the new manufacturer purchases inputs locally, the local supplying firms hire additional employees. And when employees at the new manufacturing facility spend their paychecks, local merchants hire more employees. As these new employees at input suppliers and retail establishments spend their paychecks, additional employment and income is stimulated. And the process continues. The end result of all these rounds of spending is that the cumulative increase is larger than the initial boost to the economy.

The exact size of this cumulative effect on local income and employment cannot be determined without specifics concerning the spending patterns of the firm and its employees. However, these impacts may be estimated using multipliers derived from input-output tables. A *multiplier* is simply a number by which the initial change (in employment, income, or sales) is multiplied in order to estimate the total change.

Estimating Income Multipliers. The income multiplier provides the change in total regional income associated with each dollar change in income generated by the new firm. The income multiplier is estimated as follows:

$$\text{Local Income Multiplier} = \frac{\text{Direct + Indirect + Induced Income Generated in the Local Economy}}{\text{Direct Income Generated by New Firm}}$$

where:

- direct income = income earned by employees of the new firm plus local rent, interest, and profits paid by the new firm.
- indirect income = amount of income generated by local businesses supplying inputs to the new firm

- induced income = sum of local income generated in all subsequent rounds of spending income induced by local spending by employees of the new firm and its suppliers plus the additional spending by new employees of local merchants catering to these individuals.

The sum of the *Direct*, *Indirect*, and *Induced* effects equals the *Total* effect. The *Total* effect is an estimate of all the new income created in the region (at the new business, suppliers to the business, and local merchants) as a result of the initial change in final demand sales by the firm. The *Total* effect assumes sufficient time has passed for all the rounds of spending to occur.

Differences by Industry. Local income multipliers differ among industries because each industry has different input demands and different tendencies to purchase and hire locally. Factors contributing to industry differences (other things being equal) are summarized below.

- *Multipliers will be higher in industries which rely heavily on local inputs.* The purchase of inputs from local sources returns money to the community for later rounds of spending. Branch plants often have low multipliers because purchasing decisions are established by headquarters located outside the region. Also, many high tech firms have low multipliers because of the need to purchase inputs from numerous locations.

- *Multipliers will be higher in industries which hire locally.* Workers from other communities tend to spend less locally than resident employees. These leakages will be high and immediate as the in-commuters in the work force take their paychecks home for spending.

- *Multiplier effects will be higher over the long-run in industries with growth potential.* Growing industries are more likely to reinvest profits locally to accommodate expansion. These new investments to expand plant and machinery will augment the long-run impact of the businesses.

- *Multipliers will be higher in companies that are locally owned*. The profits of hometown businesses are more likely to remain in the community than the net revenues of branch plants. Locally-owned plants are also more likely to purchase inputs from area merchants.

Cluster Industry Multipliers. Income multipliers for the 22 cluster industries are provided in Table 23. All multipliers were estimated for Lancaster County using IMPLAN. Appendix D provides the IMPLAN estimates for direct, indirect, and induced effects and multipliers for income, employment, and value-added for all IMPLAN industry sectors represented in Lancaster County.

Income multipliers differed relatively little among the 22 cluster industries. The largest multiplier values were approximately 1.45 (e.g., surgical appliances and services, metal plating and polishing, and motor vehicle parts) while the smallest multiplier values were around 1.25 (e.g., power-driven hand tools, folding paperboard boxes, and miscellaneous fabricated wire products). In addition, the multipliers for the 22 cluster industries are relatively low. Low multipliers for manufacturers in Lancaster County may be attributable to:

(1) The industry has weak buy-sell relationships with other county firms, i.e., many of the industry's inputs come from outside the county and/or the industry's output is sold outside the county. Weak buy-sell relationships are typical of counties near large metro areas since business may acquire many inputs from suppliers in nearby metro counties.

(2) The industry has a labor intensive production process and direct effects are large relative to indirect and induced effects.

In summary, the anticipated multiplier effects of the 22 cluster industries are relatively small and similar. As such, we recommend that little weight be given to industry differences in likely multiplier effects.

Table 23. Income Multipliers for Lancaster County for the 22 Cluster Industries, 2002

SIC	IMPLAN Sector Used	Industry	Multiplier (IMPLAN)
3471	288*	Metal Plating and Polishing	1.46
3842	408	Surgical Appliances & Supplies	1.46
3443	288*	Fabricated Plate Work (Boiler Shops)	1.46
3714	386	Motor Vehicle Parts & Accessories	1.42
3672	359*	Printed Circuit Boards	1.41
3562	331*	Ball & Roller Bearings	1.39
2899	209	Chemical Preparations, NEC	1.37
2821	209*	Plastics, Materials, & Resins	1.37
2796	178*	Platemaking Services	1.32
3281	233*	Cut Stone & Stone Products	1.32
3069	220*	Fabricated Rubber Products, NEC	1.31
3081	220	Unsupported Plastics Film	1.31
3231	220*	Products of Purchased Glass	1.30
3554	338*	Paper Industries Machinery	1.30
3993	429	Signs & Advertising Specialties	1.27
3321	259	Gray & Ductile Iron Foundries	1.27
2657	164	Folding Paperboard Boxes	1.27
2679	164*	Converted Paper Products, NEC	1.27
2782	164*	Blankbooks & Looseleaf Binders	1.27
3541	319*	Machine Tools, Metal Cutting	1.26
3496	304	Misc. Fabricated Wire Products	1.22
3546	321*	Power-Driven Hand Tools	1.21

*The IMPLAN sector for this SIC was not available in Lancaster County. The IMPLAN sector listed (denoted with a *) is the industry in Lancaster County that most closely resembles the missing SIC industry. We are assuming that the missing industry and the "similar" industry will have similar multiplier effects.

Cautionary Note. Information on an industry's income multiplier should be used in conjunction with earlier information on prospective industry establishment size. All other establishment characteristics held equal, an establishment with a large income multiplier is preferred to one with a small multiplier. However, the community economic development impacts of a small establishment (small direct effect) with a large multiplier may be very similar to a large establishment (large direct effect) with a small multiplier.

VI. Index of Industry Characteristics

Unweighted Index. Comparisons among industry characteristics are complicated by the fact that an industry may Arate@ high on one characteristic and Arate@ low on another. For example, establishments in the printed circuit boards industry (SIC 3672) have experienced relatively rapid employment growth but pay relatively low wages to production workers. Thus the attraction of a printed circuit boards facility to Lancaster County will provide promising employment growth potential, but the jobs would pay lower wages than those of many other target industries. On the other hand, an establishment in the motor vehicle parts and accessories industry (SIC 3741) provides, on average, rapid job growth and high wages. Thus, from a community development standpoint, adding a motor vehicle parts plant would be preferred to the attraction of a printed circuit boards facility (everything else held equal).

A ranking of the 22 cluster industries based on the four industry characteristics is provided through the calculation of an index. This index is estimated as follows:

1. The national averages for industry establishment characteristics (growth rate, mean plant size, mean wage rate, income multiplier) are standardized. That is, the 22 values for each characteristic are treated as observations from a standard normal distribution (a distribution with a mean of 0.0 and standard deviation of 1.0). Standardization of characteristic data permits reliable comparisons across characteristics

that have different measures (for example, employment vs. wages vs. multiplier effects).

2. The actual value for the characteristic is replaced by its corresponding standardized value. This standardized value is the number of standard deviations above (+) or below (-) the mean for the 22 industries (see Table 24). Standardized values near 0.0 reflect actual values near the average for the 22 industries. Negative standardized values reflect below average actual values and positive standardized values represent above average actual values. The larger the standardized value (+ or -) the further above or below the characteristic mean. For example, a standardized value of +1.00 or higher places the industry in approximately the top 15 percent of the 22 industries, while a value of -1.00 or lower places the industry in the bottom 15 percent. Or, an alternative perspective is that the middle 50 percent of the industries will have standardized values between approximately -.70 and +.70.

3. The standardized values for the four industry characteristics are summed for each industry, and this value is reported in the last column of Table 25. This sum represents an unweighted sum, that is, each of the four industry characteristics is given equal weight in construction of the index.

Table 24 provides the unweighted rankings of the 22 industry clusters based on employment growth rate, plant size, income multiplier, and wage rate for production worker. *The industry clusters with the most favorable economic development impacts include:* motor vehicle parts and accessories (4.64); ball and roller bearings (4.10); plastics materials and resins (3.73); printed circuit boards (2.17); and surgical appliances (1.85). *The industries that provide least favorite impacts are:* blankbooks and looseleaf binders (-3.10); miscellaneous fabricated wire products, nec (-2.73); fabricated rubber products, nec (-2.73); converted paper products, nec (-2.70); and power driven hand tools (-2.42).

The reader should note that the index rankings reflect the relative potential impacts of only the 22 selected industry clusters. All 22 industries were selected as good candidates for industrial recruitment based on the presence of a growing industry cluster in Lancaster County or the Region. However, the rankings indicate that some of the 22

Table 24. Standardized Distributions of Industry Characteristics (Employment Growth Rate, Mean Establishment Size, Mean Wage Rate, Employment Multiplier), Lancaster County Clusters

SIC	Industry	Employment Growth Rate	Mean Establishment Size	Average Wage Rate	Income Multiplier	Sum of Indices
3714	Motor Vehicle Parts & Accessories	1.38	1.16	0.92	1.18	4.64
3562	Ball & Roller Bearings	-0.41	3.08	0.64	0.79	4.10
2821	Plastics Material & Resins	-0.41	1.18	2.43	0.53	3.73
3672	Printed Circuit Boards	2.39	-0.29	-0.98	1.05	2.17
3842	Surgical Appliances & Supplies	0.33	0.08	-0.28	1.70	1.85
2899	Chemical Preparations, NEC	-0.79	-0.26	1.55	0.53	1.03
3443	Fabricated Plate Work (Boiler Shops)	-0.24	-0.49	-0.38	1.70	0.58
3321	Gray & Ductile Iron Foundries	-0.58	1.34	0.57	-0.77	0.56
3081	Unsupported Plastics Film & Sheets	0.72	0.03	-0.10	-0.25	0.40
2796	Platemaking Services	0.38	-1.11	0.99	-0.12	0.14
3554	Paper Industries Machinery	-0.24	-0.33	1.06	-0.38	0.10
3471	Metal Plating & Polishing	0.34	- 0.97	-1.12	1.70	-0.05
3541	Machine Tools, Metal Cutting	-0.91	0.22	1.13	-0.90	-0.47
3281	Cut Stone & Stone Products	1.51	- 1.18	-0.84	-0.12	-0.63
3231	Products of Purchased Glass	0.72	-0.63	-0.63	-0.38	-0.92
2657	Folding Paperboard Boxes	-0.83	0.51	-0.35	-0.77	-1.43
3993	Signs & Advertising Specialties	1.05	-1.14	-1.01	-0.77	-1.87
3546	Power-Driven Hand Tools	-0.66	0.31	-0.52	-1.55	-2.42
2679	Converted Paper Products, NEC	-1.46	-0.06	-0.42	-0.77	-2.70
3069	Fabricated Rubber Products, NEC	-0.58	-0.68	-1.22	-0.25	-2.73
3496	Miscellaneous Fabricated Wire Products	-0.04	-0.54	-0.98	-1.42	-2.97
2782	Blankbooks & Looseleaf Binders	-1.67	-0.22	-0.45	-0.77	-3.10

industries may be Amore desirable@ than others based on potential economic impacts on the host region.

Weighted Index. The index results presented in Table 24 treat the four industry characteristics as equally important to the local economy. However, Lancaster County can give different levels of importance to the industry characteristics and then calculate new "weighted" indices. For example, a weighted index is provided with the standardized values for wage rate and employment growth multiplied by 2.00 while the values for income multiplier and plant size remain unchanged. Results of the weighted index are presented in Table 25. The weighted index rankings are very similar to the unweighted rankings provided in Table 24. The top six industries remain unchanged with plastics material and resins (SIC 2821) attaining a higher ranking under the weighted index while ball and roller bearings (SIC 3562) fell one place among the top six industries. In addition, platemaking services (2796), plastics film (3081) and paper industries machinery (3554) moved up the rankings two places. The bottom of the weighted rankings continued to be dominated by industry clusters in paper products (2782, 2679, 2657) plus the relatively low-skill, low-wage industries such as signs (3993), cut stone products (3281), and power tools (3546).

In summary, the rankings are relatively insensitive to changes in the weights. This is not unexpected since the higher ranked industries generally have above average values for the selected characteristics (i.e., positive standardized index values) and the lower ranked industries generally have negative standardized index values. Thus, the use of weights on the characteristics just magnifies the "above" and "below" average characteristics of the industry.

Table 25. Weighted Standardized Distributions of Industry Characteristics (Employment Growth Rate, Mean Establishment Size, Mean Wage Rate, Employment Multiplier), Lancaster County Clusters

SIC	Industry	Employment Growth Rate	Mean Establishment Size	Average Wage Rate	Income Multiplier	Sum of Weighted Indices
3714	Motor Vehicle Parts & Accessories	2.76	1.16	1.84	1.18	6.94
2821	Plastics Material & Resins	-.82	1.18	4.86	0.53	5.75
3562	Ball & Roller Bearings	-.82	3.08	1.28	0.79	4.33
3672	Printed Circuit Boards	4.78	-0.29	-1.96	1.05	3.58
3842	Surgical Appliances & Supplies	.66	0.08	-.56	1.70	1.88
2899	Chemical Preparations, NEC	-1.58	-0.26	3.10	0.53	1.76
2796	Platemaking Services	.76	-1.11	1.98	-0.12	1.51
3081	Unsupported Plastics Film & Sheets	1.42	0.03	-.20	-0.25	1.00
3554	Paper Industries Machinery	-.48	-0.33	2.12	-0.38	.93
3321	Gray & Ductile Iron Foundries	-1.16	1.34	1.14	-0.77	.55
3281	Cut Stone & Stone Products	3.02	- 1.18	-1.68	-0.12	.04
3443	Fabricated Plate Work (Boiler Shops)	-.48	-0.49	-.76	1.70	-.03
3541	Machine Tools, Metal Cutting	-1.82	0.22	2.26	-0.90	-.24
3231	Products of Purchased Glass	1.44	-0.63	-1.26	-0.38	-.83
3471	Metal Plating & Polishing	.68	- 0.97	-2.24	1.70	-.83
2657	Folding Paperboard Boxes	-1.66	0.51	-.70	-0.77	-2.62
3993	Signs & Advertising Specialties	2.10	-1.14	-2.02	-0.77	-2.93
3546	Power-Driven Hand Tools	-1.32	0.31	-1.04	-1.55	-3.60
3496	Miscellaneous Fabricated Wire Products	-.08	-0.54	-1.96	-1.42	-4.00
3069	Fabricated Rubber Products, NEC	-1.16	-0.68	-2.44	-0.25	-4.53
2679	Converted Paper Products, NEC	-2.92	-0.06	-.84	-0.77	-4.59
2782	Blankbooks & Looseleaf Binders	-3.34	-0.22	-.90	-0.77	-5.23

VII. Cluster Linkages to Other Industries

Manufacturing industries supplying inputs to or purchasing outputs from the 22 cluster industries may be good candidates for industry targeting and recruiting. Industries linked to the cluster industries may find Lancaster County a competitive location if proximity to input suppliers and product markets is desired. Such proximity is especially valued by: (1) manufacturers using Ajust-in-time@ inventory replacement, or (2) firms producing specialized goods in small-batch production runs.

The IMPLAN database was used to identify the top five inputs suppliers and top five product markets for the 22 industry clusters (refer to Appendix E). Manufacturing industries with five or more input or product market linkages to the 22 cluster industries were identified as industries that may find Lancaster County an attractive location if the 22 cluster industries continue to develop in the region (see Table 26). The manufacturers with the strongest buy-sell relationships to cluster industries include: miscellaneous plastics products (SIC 3080); blast furnaces (SIC 3320); plastics materials and resins (SIC 2821); cyclic organic crudes and intermediates (SIC 2865 and 2869); motor vehicle parts and accessories (SIC 3714); industrial machines, nec (SIC 3599); paper mills (SIC 2620); and paperboard boxes and containers (SIC 2650). Plastics materials, paperboard boxes, miscellaneous plastics products, and motor vehicle parts also were identified as four of the 22 high potential industry clusters. Cluster industries with strong buy-sell relationships with other local industries should be especially well positioned for future growth.

The recruitment of manufacturers with strong buy-sell linkages to the 22 cluster industries may be a second phase of a targeted industrial development strategy.

Table 26. Frequency of Industries (Four Digit SIC) Listed as Principal Input Supplier or Principal Product Market for Cluster Industries

SIC	SIC Name	Principal Input Supplier	Principal Product Market	Input & Product
2013	Sausages/Prepared Meats	0	1	1
2077	Animal & Marine Fats & Oils	1	0	1
2086	Bottled & Canned Soft Drinks & Carb. Waters	0	3	3
2110	Cigarettes	0	1	1
2210	Broadwoven Fabric Mills & Finishes*	2	0	2
2297	Nonwoven Fabrics	1	0	1
2410	Logging Camps & Logging Contractors	0	1	1
2448	Wood Pallets & Skids	2	0	2
2451	Mobile Homes	0	1	1
2515	Mattresses/Bedsprings	0	1	1
2530	Public Building Furniture	0	1	1
2620	Paper Mills, except Building Paper	3	2	5
2630	Paperboard Mills	3	1	4
2650	Paperboard Containers & Boxes	5	2	7
2672	Paper Coated and Laminated NEC	0	1	1
2673	Bags, Plastic	0	1	1
2675	Die-cut Paper & Board	0	1	1
2676	Sanitary Paper Products	0	2	2
2679	Converted Paper Products NEC	1	1	2
2710	Newspapers	0	1	1
2720	Periodicals	1	1	2
2731	Book Publishing	0	1	1
2732	Book Printing	0	1	1
2740	Miscellaneous Publishing	1	0	1
2750	Commercial Printing	0	3	3
2782	Blankbooks & Looseleaf Binders	1	1	2
2789	Bookbinding & Related	1	1	2
2791	Typesetting	0	1	1
2796	Platemaking	1	1	2
2819	Inorganic Chemicals NEC.	2	0	2
2821	Plastics Materials & Resins	3	3	6
2822	Synthetic Rubber	1	0	1
2830	Drugs	0	3	3
2843	Surface Active Agents	1	1	2
2844	Toilet Preparations	0	2	2
2850	Paints & Allied Products	0	1	1
2865	Cyclic Crudes, Intermediates & Org Dies/Pig	5	1	6
2891	Adhesives & Sealants	2	0	2
2893	Printing Ink	1	0	1
2899	Chemical Preparations, NEC	1	0	1
2910	Petroleum Refining	1	0	1
3060	Fabricated Rubber Products NEC	1	1	2

Table 26 (cont).

SIC	SIC Name	Principal Input Supplier	Principal Product Market	Input & Product
3080	Miscellaneous Plastics	10	5	15
3210	Glass & Glass Products	2	1	3
3272	Concrete Products, NEC	0	1	1
3273	Ready Mixed Concrete	0	1	1
3275	Gypsum Products	1	1	2
3280	Cut Stone & Stone Products	1	1	2
3291	Abrasive Products	1	0	1
3312	Blast Furnaces & Steel Mills	9	1	10
3320	Iron & Steel Foundries	3	0	3
3353	Aluminum Rolling & Drawing	1	0	1
3356	Nonferrous Rolling & Drawing	1	0	1
3357	Nonferrous Wire Drawing & Insulating	1	2	3
3363	Aluminum Foundries	2	0	2
3398	Metal Heat Treating	1	1	2
3423	Hand & Edge Tools, NEC	1	0	1
3429	Hardware NEC	0	1	1
3441	Fabricated Structural Metal	1	1	2
3443	Fabricated Plate Work (Boiler Shop)	1	1	2
3444	Sheet Metal Work	1	0	1
3450	Screw Machine Products & Bolts	1	2	3
3462	Iron & Steel Forgings	1	0	1
3465	Automotive Stampings	1	0	1
3471	Plating & Polishing	2	0	2
3479	Metal Coating & Allied Services	4	0	4
3491	Industrial & Fluid Valves	0	1	1
3495	Miscellaneous Fabricated Wire Products	1	1	2
3519	Internal Combustion Engines NEC	0	2	2
3523	Farm Machinery & Equipment	0	2	2
3524	Lawn & Garden Equipment	0	1	1
3531	Construction Machinery & Equipment	0	4	4
3541	Machine Tools, Metal Cutting Types	0	1	1
3544	Special Dies and Tools & Accessories	0	1	1
3546	Power Driven Hand Tools	0	1	1
3548	Welding Apparatus	0	1	1
3554	Paper Industries Machinery	0	1	1
3559	Special Industry Machinery NEC	0	1	1
3561	Pumps & Compressors	0	2	2
3562	Ball & Roller Bearings	1	1	2
3566	Power Transmission Equipment	2	0	2
3571	Electronic Computers	0	1	1
3585	Refrigeration & Heating Equipment	0	1	1
3589	Service Industry Machines NEC	0	1	1
3599	Industrial Machines NEC	7	1	8

Table 26 (cont).

SIC	SIC Name	Principal Input Supplier	Principal Product Market	Input & Product
3625	Relays & Industrial Controls	4	0	4
3661	Telephone & Telegraph Apparatus	0	1	1
3663	Radio & TV Communication Equipment	0	1	1
3671	Electronic Tubes	0	1	1
3672	Printed Circuit Boards	0	0	0
3674	Semiconductors & Related Device	1	1	2
3675	Electronic Components NEC	1	2	3
3711	Motor Vehicles	0	5	5
3714	Motor Vehicle Parts & Accessories	1	6	7
3715	Truck Trailers	0	1	1
3721	Aircraft	0	1	1
3799	Transportation Equipment	0	1	1
3812	Search & Navigation Equipment	0	1	1
3841	Surgical & Medical Instruments	0	1	1
3842	Surgical Appliances & Supplies	1	1	2
3860	Photographic Equipment & Supplies	1	0	1
3949	Sporting & Athletic Goods	0	1	1
3993	Signs & Advertising Displays	1	1	2

* SICs highlighted in grey represent IMPLAN codes that have several SICs associated. Only the first SIC listed is indicated here. SICs included in each category highlighted are as follows:
2210=2210 (Broadwoven Fabric Mill, Cotton), 2220 (Broadwoven Fabric Mills, Manmade Fiber & Silk), 2230 (Broadwoven Fabric Mills, Wool), 2261 (Finishers of Broadwoven Fabrics of Cotton), 2262 (Finishers of Broadwoven Fabrics of Manmade Fiber & Silk)
2865=2865 (Cyclic Organic Crudes & Intermediates, and Organic Pigments & Dyes) , 2869 (Industrial Organic Chemicals, NEC)
3210=3210 (Flat Glass), 3229 (Pressed & Blown Glass & Glassware, NEC), 3230 (Glass Products, Made of Purchased Glass)
3353=3353 (Aluminum Sheet, Plate & Foil), 3354 (Aluminum Extruded Products), 3355 (Aluminum Rolling & Drawing)
3363=3363 (Aluminum Die-Castings), 3365 (Aluminum Foundries)
3491=3491 (Industrial Valves), 3492 (Fluid Power Valves & Hose Fittings)
3495=3495 (Wire Springs), 3496 (Miscellaneous Fabricated Wire Products)
3544=3544 (Special Dies & Tools, Die Sets, Jigs & Fixtures, and Industrial Molds), 3545 (Cutting Tools, Machine Tool Accessories, & Machinists' Precision Measuring Devices)
3561=3561 (Pumps & Pumping Equipment), 3563 (Air & Gas Compressors)
3566=3566 (Speed Changers, Industrial High-Speed Drives, & Gears), 3568 (Mechanical Power Transmission Equipment)
3675=3675 (Electronic Capacitors), 3676 (Electronic Resistors), 3677 (Electronic Coils, Transformers, and Other Inductors), 3678 (Electronic Connectors), 3679 (Electronic Components, NEC)

Additional development of the identified industry clusters should be the initial focus of the county's industrial development program. Expansion of existing industry clusters will make the area a more attractive location for linked manufacturers, and thus, reduce the efforts/incentives required to attract establishments in the linked industries.

VIII. Summary of Industry Cluster Targeting Results

A. Rating the Industries

The objective of this report is to identify for Lancaster County promising manufacturing industries (at the four-digit SIC level) for a targeted industrial development program. Promising manufacturing industries were defined as those industries that met three principal criteria:

- a cluster of firms in the industry was present in Lancaster County or the surrounding region (Chester, Chesterfield, Fairfield, Kershaw, York and Mecklenburg Counties) in 1999.
- the industry exhibited employment growth in Lancaster County or the region from 1988 to 1999.
- Lancaster County or the region were competitive locations for the industries based on Location Quotient analysis.

Twenty-two 4-digit SIC manufacturing industries were selected based on the above criteria (refer to Table 27). All 22 industry clusters are promising targets for industrial recruitment based on recent employment growth and the attractiveness of Lancaster County and the region as locations for their production activities. However, establishments in the 22 industries will provide different economic impacts for Lancaster County. Table 27 summarizes the potential economic impacts of the industry clusters in terms of local income multiplier and national averages for employment growth rates,

Table 27. General Rankings of Lancaster County Clusters for Selected Economic Variables

■ = Top Third ■ = Middle Third ■ = Bottom Third

SIC	Industry	Employment Growth Rate	Mean Establishment Size	Average Wage Rate	Income Multiplier
3714	Motor Vehicle Parts & Accessories	■	■	■	■
3562	Ball & Roller Bearings	■	■	■	■
2821	Plastics Materials & Resins	■	■	■	■
3672	Printed Circuit Boards	■	■	■	■
2796	Platemaking Services	■	■	■	■
3842	Surgical Appliances & Supplies	■	■	■	■
3443	Fabricated Plate Work (Boiler Shops)	■	■	■	■
3321	Gray & Ductile Iron Foundries	■	■	■	■
3081	Unsupported Plastics Film & Sheets	■	■	■	■
3554	Paper Industries Machinery	■	■	■	■
2899	Chemical Preparations, NEC	■	■	■	■
3471	Metal Plating & Polishing	■	■	■	■
3541	Machine Tools, Metal Cutting	■	■	■	■
3281	Cut Stone & Stone Products	■	■	■	■
3231	Products of Purchased Glass	■	■	■	■
2657	Folding Paperboard Boxes	■	■	■	■
3546	Power-Driven Hand Tools	■	■	■	■
3993	Signs & Advertising Specialties	■	■	■	■
2679	Converted Paper Products, NEC	■	■	■	■
2782	Blankbooks & Looseleaf Binders	■	■	■	■
3069	Fabricated Rubber Products, NEC	■	■	■	■
3496	Miscellaneous Fabricated Wire Products	■	■	■	■

establishment sizes, and wage rates. The manufacturing clusters with the most favorable potential economic impacts include:

- motor vehicle parts and accessories (3714)
- ball and roller bearings (3562)
- plastics materials and resins (2821)

The remaining 19 industry clusters provide a more mixed picture with respect to their potential economic impacts on Lancaster County. Fifteen of these industries rank relatively high in one or more of the characteristics' categories but average or below in one or more of the remaining categories. For example, industry clusters in rapidly growing national sectors include:

- cut stone and stone products (3821)
- signs and advertising specialties (3993)
- platemaking services (2796)
- products of purchased glass (3231)
- printed circuit boards (3672)

Industry clusters with relatively high national averages for wages per employee include:

- platemaking services (2796)
- paper industries' machinery (3554)
- chemical preparations, nec (2899)
- machine tools, metal cutting (3541)

And industry clusters with relatively high potentials for creating jobs due to large average plant size (employment) are:

- gray & ductile iron foundaries (3321)
- machine tools, metal cutting (3541)

- folding paperboard boxes (2657)
- power-driven hand tools (3546)

The above industry clusters present Lancaster County with potential trade-offs in terms of economic and fiscal impacts. Some local economic and fiscal impacts will be strong while others will be less significant.

Finally, four of the 22 industry clusters had average or below average rankings for all the estimated measures of potential economic impacts. Industries with the relatively least favorable economic impacts on Lancaster County include:

- converted paper products, nec (2679)
- blank books & looseleaf binders (2782)
- fabricated rubber products (3069)
- miscellaneous fabricated wire products (3496)

Information on potential local economic impacts associated with a new establishment may be used by local economic development agencies as they consider the advisability of providing infrastructure investments and financial inducements for prospective firms. Infrastructure investments and financial inducements are costs associated with attracting and accommodating a new establishment. High costs for such investments and inducements may be justified if the potential economic benefits attributable to the establishment also are significant. Alternatively, if the potential economic impacts associated with a prospective establishment are expected to be relatively low, then the costs of investment and inducement activities should be reduced to insure that the benefits provided by the new plant exceed the costs.

IX. Import Substitution

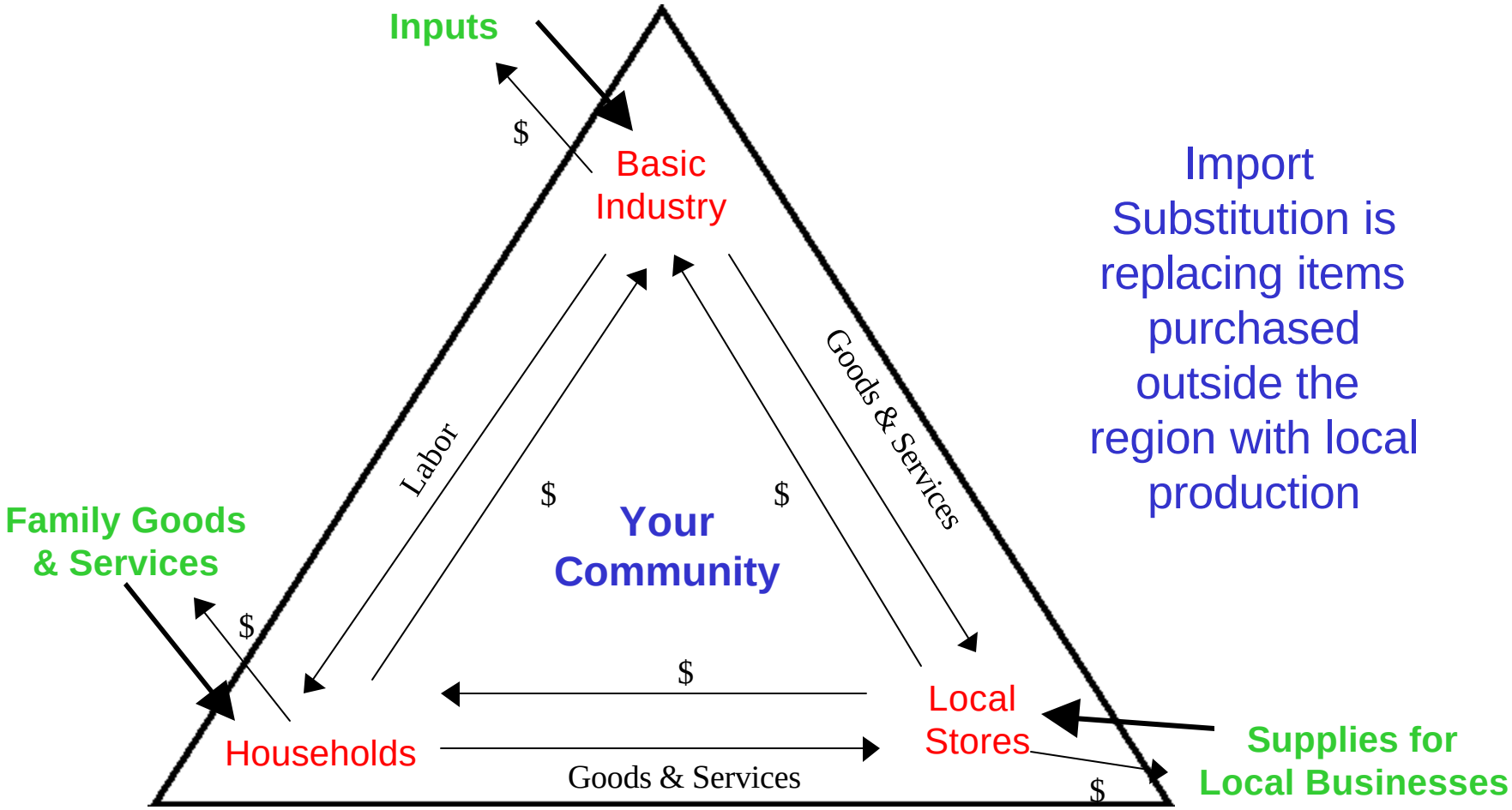
The industry cluster approach to industry targeting identifies manufacturing industries with good potential for future growth based on data indicating that an industry cluster has developed in the region, and as a result, the region is a low-cost location for other establishments in the cluster's industries. An alternative industry targeting approach is to identify industries that may fill "gaps" in the regional economy, where "gaps" are goods used by local households and businesses that are produced outside the local economy (refer to Figure 7). Imports of goods and services into a region exist because:

- the region does not have the natural resources required for production (e.g., copper mining, avocados)
- regional markets or demand are insufficient to justify a local facility (e.g., soft drink bottling plant)
- the region is a relatively high cost location for production due to labor availability and quality, location with respect to inputs and markets, and/or availability of public and private infrastructure and services.

The objective of an *import substitution* program is to determine which of the imported goods and services might be reasonable candidates for replacement by local production. The replacement of imports with local production reduces leakages of money outside the regional economy, increases the local income and employment multipliers, and provides additional jobs for area residents.

The identification of target industries for import substitution is helpful for economic development programs focusing on industrial recruitment, entrepreneurial and small business development, and business retention and expansion. For example, large gaps or imports in the economy may indicate opportunities to attract new branch plants.

Figure 7. Import Leakages from Local Economy



Source: La Dee Homm, et al. "Blueprints for Your Community's Future: A Targeted Economic Development Approach." Department of Agricultural Economics, Oklahoma State University.

Smaller gaps may identify opportunities for new business development (serving the local market) or identify local prospects for expansion based on networking and stronger linkages between area businesses (e.g., "buy local" programs).

A. Desirability Criteria

Regional imports of manufactured goods are estimated using the regional economic modeling system IMPLAN (Impact analysis for PLANning), an input-output model constructed for the regional economy (Mecklenburg, Lancaster, Chester, Chesterfield, Fairfield, Kershaw, and York) using data for 2000. The model accounts for 374 manufacturing industries and commodities. Four criteria were used to identify industries that are good prospects for import substitution.

(1) Based on IMPLAN data, industry imports into the seven county region exceed $40 million per year (refer to Appendix Table F).

(2) Industry output (sales) for the region is relatively large. The presence of local production indicates that the region is not at a serious disadvantage as a location for plants in that industry. Alternatively, no local production (e.g., wines or roasted coffee) may indicate that the region is not a reasonable location for the activity due to natural resource requirements or other competitive disadvantages.

(3) Imports are sufficient to support at least one facility of average size. That is, if the average plant size in terms of sales for industry x is $50 million, then area imports must exceed $50 million to support one or more new plants. Alternatively, total imports divided by average plant size provides an estimate of the number of new local establishments, by industry, the area economy could support based on import substitution. We hypothesize that a region's probability of attracting or starting a new establishment is directly related to the number of establishments required to fill the import gap (see Table 28).

(4) The prospects for industry growth in the region are favorable. Regional employment change (1988-1999), national employment change (1988-2000), and the number of buy-sell linkages with the 22 industry clusters will be used as indicators of potential for future industry growth. We hypothesize that the better prospects for targeting will have exhibited positive regional and national employment growth and numerous linkages to the region's industry clusters (Table 29).

Table 28. Sales and Import Estimates for Industries with Good Potential for Import Substitution

Industry	Estimated Regional Output ($millions)	Estimated Regional Imports ($ millions)	Average Sales per Establishment ($ millions)	Establishments Needed to Fill Imports*
Sawmills (2421)	$25 m	$123 m	$ 4 m	30
Paperboard Mills (2630)	70	126	94	1
Paper Coating & Laminating (2671/72)	24	80	20	4
Commercial Printing (2750)	364	168	2	84
Paints & Allied Products (2851)	130	90	13	6
Cyclic Crudes & Intermediates (2865, 69)	687	310	128	2
Drugs (2833-36)	63	233	53	4
Tires & Inner Tubes (3011)	321	100	91	1
Fabricated Rubber Products, NEC (3061, 69)	82	71	6	11
Miscellaneous Plastics (3081-89)	407	539	8	67
Concrete Products (3272)	47	53	3	17
Blast Furnaces (3312)	302	302	122	2
Drawing & Insulating Nonferrous Wire (3357)	69	85	38	2
Metal Cans (3411)	52	58	44	1
Fabricated Structural Metal (3441)	55	66	5	13
Metal Doors (3442)	55	52	7	7
Fabricated Plate Work (3443)	51	41	6	6
Sheet Metal Work (3444)	32	73	4	18
Fabricated Metal Products, NEC (3499)	52	50	6	8
Machine Tools, Metal Cutting (3541)	59	48	13	3
Pumps & Compressors (3561, 63)	98	79	15	4
Ball and Roller Bearings (3562)	202	45	33	1
Computer Storage Devices (3572)	122	123	72	1
Computer Peripherals (3577)	954	693	29	23
Industrial Machines, NEC (3599)	61	108	3	36
Motors & Generators (3621)	35	58	17	3
Wiring Devices (3643, 44)	33	55	9	6
Motor Vehicle Parts (3714)	284	141	27	5

*Establishments needed to fill imports equals regional imports divided by average sales per establishment.

Table 29. Growth Potential Measures for Industries Targeted for Import Substitution

Industry	National Employment Change (1988-2001)	Regional Employment Change (1988-1999)	Links with 22 Regional Clusters
Sawmills (2421)	–	–	0
Paperboard Mills (2630)	–	–	4
Paper Coating & Laminating (2671/72)	+	–	1
Commercial Printing (2750)	+	–	3
Paints & Allied Products (2851)	–	+	1
Cyclic Crudes & Intermediates (2865, 69)	–	+	6
Drugs (2833-36)	+	+	3
Tires & Inner Tubes (3011)	–	–	0
Fabricated Rubber Products, NEC (3061, 69)	+	+	2
Miscellaneous Plastics (3081-89)	+	–	15
Concrete Products (3272)	+	+	1
Blast Furnaces (3312)	–	–	10
Drawing & Insulating Nonferrous Wire (3357)	+	+	3
Metal Cans (3411)	–	–	0
Fabricated Structural Metal (3441)	+	–	2
Metal Doors (3442)	+	+	0
Fabricated Plate Work (3443)	0	+	2
Sheet Metal Work (3444)	+	+	1
Fabricated Metal Products, NEC (3499)	+	+	1
Machine Tools, Metal Cutting (3541)	–	+	1
Pumps & Compressors (3561, 63)	+	+	2
Ball and Roller Bearings (3562)	–	+	2
Computer Storage Devices (3562)	+	+	0
Computer Peripherals (3577)	+	–	0
Industrial Machines, NEC (3599)	+	+	8
Motors & Generators (3621)	–	+	0
Wiring Devices (3643, 44)	–	–	0
Motor Vehicle Parts (3714)	+	+	7

B. Targets for Import Substitution

Twenty-eight industries met selection criteria 1, 2, and 3: regional imports exceed $40 million per year, significant local production currently exists, and imports are sufficient to support at least one new industry establishment of average size (refer to Table 28). Criteria (4) focuses on industries with good potential for future employment growth as indicated by employment growth in the nation and region since 1988 and numerous buy-sell linkages with regional industry clusters (see Table 29). Ten of the 28 industries reported strong employment growth in the region and nation plus linkages with area industry clusters (Table 30). The ten "high potential" industries for import substitution include two industries previously identified as good candidates for industry cluster development (3714: Auto Parts, and 3443: Fabricated Plate Work). A third cluster industry (SIC 3081) is part of SIC 3080-89. The remaining industries are not developed to the extent necessary to be identified as a regional cluster. A description of the import substitution industries is provided in Appendix G.

The average wage rate, average plant size (employment), and national employment growth rate (1988-2000) for the 10 "high potential" industries are provided in Table 30. These measures are industry averages and, as noted previously, much variability in wages, plant size, and employment growth potential may exist within an industry. The industry with the greatest potential economic impacts on Lancaster County is motor vehicle parts and accessories (3714). This sector rates above average in all three economic impact categories (Table 31). Two industries selected for import substitution rate high in two of the three economic impact categories (3599: Industrial Machinery, NEC; 3561/3: Pumps and Compressors). The remaining seven industries provide a more

Table 30. Characteristics of Industries with "Best" Potential for Growth Through Import Substitution

Industry	National Employment Growth Rate, 1988-2000	Average Hourly Wage	Average Plant Size (Employment)
*Motor Vehicle Parts & Accessories (3714)	+38%	$17.20	115
Industrial Machinery, NEC (3599)	+33%	14.27	21
Pumps and Compressors (3561/63)	+9%	15.30	76
Fabricated Metal Products, NEC (3499)	+67%	12.89	43
Miscellaneous Plastic Products (3081-89)	+23%	11.65	53
*Fabricated Platework (3443)	-1%	13.53	43
Metal Doors (3442)	+17%	10.42	53
Sheet Metal Work (3444)	+41%	12.79	31
Fabricated Rubber Products (3061, 69)	+13%	11.51	38
Concrete Products (3272)	+17%	12.20	24

*Industry also identified as one of the 22 mature and emerging industry clusters.

Table 31. General Rankings of Industries Selected for Import Substitution

■ = Top Third ■ = Middle Third ■ = Bottom Third

SIC	Industry	Employment Growth Rate	Mean Establishment Size	Average Wage Rate
3714	Motor Vehicle Parts & Accessories	■	■	■
3599	Industrial Machinery, NEC	■	■	■
3561/3	Pumps and Compressors	■	■	■
3499	Fabricated Metal Products, NEC	■	■	■
3444	Sheet Metal Work	■	■	■
3081/9	Miscellaneous Plastics Products	■	■	■
3442	Metal Doors	■	■	■
3443	Fabricated Plate Work (Boiler Shops)	■	■	■
3061/9	Fabricated Rubber Products, NEC	■	■	■
3272	Concrete Products	■	■	■

mixed economic impact potential, i.e., average or above average rankings for one measure and below average rankings for others. The selection among these industries will depend on (1) the importance Lancaster County places on the specific industry characteristics (employment growth potential, plant size, wage rate) and (2) the desired location for the new manufacturing establishment (e.g., the northern, more urban part of the county versus the more rural locations in southern Lancaster County).

X. Recommended Industries for Targeting

This study identified 22 high potential industry clusters and 10 high potential import substitution industries. Two industries (3714: Auto Parts and 3443: Fabricated Plate Work) were included on both lists, thus a total of 30 industries were identified using the industry cluster and import substitution targeting approaches. Among the 30 target industries, the most likely prospects to recruit may be the industries that have demonstrated the greatest propensity for opening new plants in the Southeast.

Table 32 provides the number of establishments opened in the 8 states of the Southeast (AL, GA, KY, MS, NC, SC, TN, VA) since January 1, 1990. This table includes only plants still in existence and whose employment was 50 or greater in 2001. We recommend that the county's industrial recruitment program focus on the industries with the greatest number of plant openings (e.g., auto parts with 94 new plants or plastics products with 136 new plants). The industries with relatively few new plants in the Southeast will be better prospects for small business development and retention and expansion programs. In summary, we recommend that Lancaster County focus its initial targeting program on the following seventeen industries. The ten *primary targets* provide

Table 32. Establishments Started in the Southeast Since 1990, Establishment Employment was 50 or More in 2002.*

SIC	Industry	Nonmetro Location	Metro Location	Total
2657	Folding Paperboard Boxes	2	5	7
2679	Converted Paper Products, NEC	8	18	26
2782	Blankbooks & Looseleaf Binders	4	4	8
2796	Platemaking Services	0	4	4
2821	Plastics Materials & Resins	7	14	21
2899	Chemical Preparations, NEC	4	10	14
3061/9	Fabricated Rubber Products, NEC	11	2	13
3081	Unsupported Plastics Film & Sheets	4	5	9
3089	Miscellaneous Plastics Products	60	76	136
3231	Products of Purchased Glass	7	6	13
3272	Concrete Products	4	16	20
3281	Cut Stone & Stone Products	2	4	6
3321	Gray & Ductile Iron Foundries	3	0	3
3442	Metal Doors	7	10	17
3443	Fabricated Plate Work (Boiler Shops)	6	17	23
3444	Sheet Metal Work	14	36	50
3471	Metal Plating & Polishing	3	2	5
3496	Miscellaneous Fabricated Wire Products	5	3	8
3499	Fabricated Metal Products, NEC	6	7	13
3541	Machine Tools, Metal Cutting	1	0	1
3546	Power-Driven Hand Tools	1	3	4
3554	Paper Industries Machinery	0	1	1
3561/3	Pumps and Compressors	3	5	8
3562	Ball & Roller Bearings	0	1	1
3599	Industrial Machinery, NEC	13	20	33
3672	Printed Circuit Boards	1	12	13
3714	Motor Vehicle Parts & Accessories	50	44	94
3842	Surgical Appliances & Supplies	3	6	9
3993	Signs & Advertising Specialties	6	17	23

*Southeast includes Alabama, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia.

Source: Harris InfoSource, July, 2002.

the most favorable potential local economic impacts in terms of job creation, wages, and multiplier effects. However, the seven *secondary target industries* may be reasonable prospects for parts of the county where labor is less skilled and jobs are scarce.

A. Preferred Targets

Industry Clusters

(1) Motor Vehicle Parts and Accessories (3714)

- significant presence in the region (22 establishments, 1,570 employees)
- large average plant size (115 employees)
- high average wages
- rapid national employment growth
- 94 new plants in Southeast since1990

(2) Surgical Appliances & Supplies (3842)

- significant presence in the region (12 establishments, 600 employees)
- medium average plant size (68 employees)
- medium average wages
- rapid national employment growth
- 9 new plants in Southeast since 1990

(3) Unsupported Plastics Film and Sheets (3081)

- significant presence in region (8 establishments, 876 employees)
- medium average plant size (66 employees)
- median average wages
- moderate national employment growth
- 9 new plants in Southeast since 1990

(4) Printed Circuit Boards (3672)

- moderate presence in S.C. Upstate (4 establishments, 2,200 employees)
- medium average plant size (52 employees)
- below average wages
- rapid national employment growth
- 13 new plants in Southeast since 1990

(5) Fabricated Plate Work (3443)

- 16 establishments and 725 employees in region
- medium average wages paid
- medium average plant size (43 employees)
- positive national employment change
- 23 new plants in Southeast since 1990

(6) Plastic Materials and Resins (2821)

- 6 establishments and 390 employees in region
- large average plant size (116 employees)
- high average wages
- national employment declined slightly
- 21 new plants in Southeast since 1990

Import Substitution

(1) Industrial Machinery, NEC (3599)

- 36 establishments required to fill regional imports
- rapid national employment growth
- high industry average wage rate
- small average plant size
- 8 links to regional clusters
- 33 new establishments in Southeast since 1990

(2) Sheet Metal Work (3444)

- 18 establishments required to fill regional imports
- rapid national employment growth
- median industry average wage rate
- small average plant size
- 1 link to regional clusters
- 50 new establishments in Southeast since 1990

(3) Miscellaneous Plastics Products, NEC (3089)

- 67 establishments required to fill regional imports
- average national employment growth
- large average plant size
- below average industry wage rate
- 15 links to regional clusters
- 136 new establishments in Southeast since 1990

(4) Fabricated Metal Products, NEC (3499)

- 8 establishments required to fill regional imports
- rapid national employment growth
- average plant size
- median industry average wage rate
- 1 link to regional clusters
- 13 new establishments in Southeast since 1990

B. Secondary Targets

Industry Clusters

(1) Converted Paper Products, NEC (2679)

- regional presence is 4 establishments, 440 employees
- medium average plant size (62 employees)
- medium industry wage rate

- declining national employment
- 26 new plants in Southeast since 1990

(2) Chemical Preparations, NEC (2899)

- regional presence is 6 establishments, 138 employees
- medium average plant size (53 employees)
- above average industry wages
- declining national employment
- 14 new plants in Southeast since 1990

(3) Fabricated Rubber Products, (3061/3069)

- regional presence is 15 establishments, 979 employees
- below average plant size (35 employees)
- below average industry wage rate
- below average national employment growth
- 13 new establishments in Southeast since 1990

(4) Products of Purchased Glass (3231)

- regional presence is 7 establishments, 350 employees
- below average plant size (37 employees)
- below average industry wage rate
- above average national employment growth
- 13 new establishments in Southeast since 1990

(5) Signs and Advertising Specialties (3993)

- regional presence is 23 establishments, 378 employees
- rapid national employment growth
- small average plant size (15 employees)
- below average wage rate
- 23 new establishments in Southeast since 1990

Import Substitution

(1) Concrete Products (3272)

- 17 establishments required to fill regional imports
- above average national employment growth
- small average plant size (24 employees)
- below average industry wage rate
- 20 new establishments in Southeast since 1990

(2) Metal Doors (3442)

- 7 establishments required to fill regional imports
- above average national employment growth
- average establishment size (52 employees)
- below average wage rate
- 17 new establishments in Southeast since 1990

The reader should note that some of the target industries exhibit a bias for locating in urban areas while other industries preferred rural locations. For example, manufacturers of printed circuit boards (3672) opened 12 plants in Southeastern metro areas and only one plant in nonmetro counties since 1990. Alternatively, the manufacturers of fabricated rubber products (3061/9) started eleven nonmetro and two metro establishments since 1990. Manufacturers with a metro location preference will be good targets for the more urban northern part of Lancaster County while industries with a nonmetro location bias will be good prospects for the more rural, southern part of the county.

C. Local Suggestions for Targeting

Lancaster County officials requested that we investigate four additional manufacturing industries as possible candidates for industry targeting: curtains and drapes (2391); household furnishings (2392); women's hosiery (2251); and hosiery, NEC (2252). The characteristics (local plants and employment, growth rate, wage rate, etc.) for the four industries are summarized below.

(1) Women's Hosiery (2251)

- 5 establishments in region in 1999
- employment change in Lancaster and adjacent SC counties, 1988-1999 , was an increase from 90 to 326.
- employment change in Mecklenburg County, 1988 to 1999, was a decrease from 926 to 413
- U.S. percentage employment change, 1988 to 2000, was –59.0 percent
- average establishment size = 88 employees
- average production worker hourly wage = $9.40

(2) Hosiery, NEC (2252)

- 0 establishments in region in 1999
- employment change in Lancaster and adjacent SC counties, 1988 to 1999 was 12 to 0
- no establishments and no employment change in Mecklenburg County
- U.S. percentage employment change, 1988 to 2000, was –8.0 percent
- average establishment size = 84 employees
- average production worker hourly wage = $9.00

(3) Curtains and Drapes (2391)

- 5 establishments in the region in 1999
- employment change in Lancaster and adjacent SC counties, 1988 to 1999, was a decrease from 218 to 1.

- employment change in Mecklenburg County, 1988 to 1999, was a decrease from 270 to 108
- U.S. percentage employment change, 1988 to 2000, was –25 percent
- average establishment size = 12 employees
- average production worker hourly wage = $7.70

(4) Household Furnishings (2392)

- 8 establishments in the region in 1999
- employment change in Lancaster and adjacent SC counties, 1988 to 1999 was an increase from 1,736 to 1,907
- employment change in Mecklenburg County, 1988 to 1999, was a decrease from 712 to 270
- U. S. percentage change in employment, 1988 to 2000 was + 7 percent
- average industry establishment size = 39 employees
- average production worker hourly wage = $9.10

The most promising of the above four industries for a regional industry cluster is Household Furnishings (SIC 2392). This industry was identified earlier (see Table 14 on page 41) as a mature industry cluster in the Lancaster plus adjacent counties region. The Household Furnishings industry was not included in the final list of target industries because the region already is recognized as a good location and, as such, additional marketing of the region to the industry is unnecessary. However, household furnishings (2392) will be included in the group of "preferred targets" because of its significant presence in the region and growing national employment.

The remaining three industries (curtains/drapes, women's hosiery, and other hosiery) are much less promising industry targets. The industries have experienced negative employment growth from 1988 to 2000, and the wage rates of production

workers in these industries are relatively low. These industries fit best under "secondary targets" for industry cluster development.

D. Prospective Companies for Targeting

The identification of the "best" companies to recruit in the selected targeted industries is very problematic, as indicated by the recent collapse of some of Wall Street's "favorite" firms such as Lucent, Enron, and WorldCom. However, we can identify companies that: (1) recently located establishments in the Southeast, and (2) have demonstrated recent employment growth. We believe these companies will be among the better prospects for establishing new plants in the Southeast in the future. The companies that located establishments in nonmetropolitan counties may be good prospects for the more rural southern part of Lancaster County. Alternatively, the companies with a metropolitan location bias may be better prospects for the more urban northern part of Lancaster County.

Harris InfoSource is a proprietary data set of information on business establishments in the United States (location, products, employment, sales, key decision makers, website, etc.). After Lancaster County selects their industry targets, Clemson University will contract with Harris for information on specific companies within these industries. The Harris data will be provided on a CD-ROM, and Clemson University will assist Lancaster County in obtaining the desired information on the selected companies. Lancaster County may use the list of companies as prospects for their targeted industrial recruitment program. In addition, information on the current locations of establishments in the target industries provides valuable insights into the types of communities these

industries prefer. That is, Lancaster County can assess its "competition" for the target industries and develop promotional materials that highlight the county's advantages.

XI. Marketing Lancaster County

The marketing strategy for Lancaster County will vary by target industry and by whether the industry is a prospect for an industry cluster or import substitution. *For members of an industry cluster*, the county will want to promote the advantages of proximity to the cluster. These advantages include:

- Existence of an industry cluster in the region is evidence that Lancaster County is a good location for that industry.
- Presence of a cluster in the region ensures that the skilled and trained labor required by that industry are available.
- Specialized input and service providers locate near clusters, thus reducing the cost of acquiring these inputs.
- The cluster provides the opportunity for the exchange of information among firms regarding new markets, technologies, and production methods.
- Industry clusters encourage the development of financial markets familiar with the industry's product markets and production processes.

For the import substitution targets, the county should focus promotional materials on the size and growth of the local market for specific goods and services. In addition, the county should promote the development of locally-owned businesses in the import substitution industries. Promotional efforts include:

- Entrepreneurial and small business development programs for new firms in import substituting industries (e.g., incubators, financing, labor training, technology transfer, and marketing).
- "Buy Local" programs that encourage regional businesses to use regional suppliers when possible.

- Business retention and expansion (BR & E) programs focused on expanding the local markets of existing manufacturers.

In conclusion, a balanced industrial development program provides resources for industrial recruitment, small business development, and the retention and expansion of local firms. A community or county will have different competitive advantages for the three components of industrial development. That is, a good target for industry recruiting is not necessarily a good industry for small business development. The industries identified in this study enable the county to focus specific programs at the appropriate prospects. A targeted effort enhances the employment generation potential of the county's economic development programs, an important consideration in times of limited resources.

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