

RURAL AREA  
**MANUFACTURING STUDY**

**An Assessment of Manufacturing  
in Florida's Rural Areas and the  
Opportunities for Growth and Expansion**

*Prepared by FloridaMakes for*  
Florida Department of Economic Opportunity  
June 30, 2016

**FloridaMakes**



## Preface

Manufacturing in Florida, more often than not, falls well behind industries such as tourism and healthcare in the identification of its importance to the State's economy and the standard of living of its citizens. Yet in Florida, there are an estimated 19,613 manufacturing establishments employing 342,458 or 4.1% of the State's workforce. More importantly, the average annual wages of the workforce employed in manufacturing is \$53,500, among the highest of all industries state-wide.

Within Florida, the concentration of manufacturing activity is more closely associated with major population centers such as the regions surrounding Tampa, Orlando, Jacksonville, and Miami, as examples. Yet a closer analysis of the more rural areas within the state reveals that, while these regions are less densely populated in terms of manufacturing establishments, manufacturing represents a more significant portion of local economy to these rural areas, as well as higher than state average wage levels within the industries represented.

For example, within the rural north central Florida region surrounding Tallahassee, 8.4% of region's employment is in manufacturing, producing 14% of the gross regional product, with average annual wages of \$59,308. Similarly, in the rural northwest, 7% of the region's employment is in manufacturing, producing 4.7% of the gross regional product, with average annual wages of \$55,065. And finally, in the rural south central region, while manufacturing employment only represents 2.1% of all employment, it still produces 4% of the gross regional product with average annual wages of \$75,099.

The Florida Department of Economic Opportunity (DEO) administers the Rural Economic Development Initiative (REDI) to promote economic development in Florida's rural areas. The enabling legislation creating the REDI program is contained in Florida Statutes, Title XIX - Public Business, Chapter 288.0656. Under the legislation, the DEO was authorized to recommend to the governor three Rural Areas of Opportunity (RAOs) consisting of counties and cities that under the legislation "means a rural community, or a region composed of rural communities, designated by the Governor, which has been hurt by an extraordinary economic event, severe or chronic distress, or a natural disaster or that presents a unique economic development opportunity of regional

impact.” Three RAOs have been designated and the counties and cities representing each one are presented below.

- **Northwest RAO:** Calhoun, Franklin, Gadsden, Gulf, Holmes, Jackson, Liberty, Wakulla, and Washington counties; and the City of Freeport in Walton County
- **South Central RAO:** DeSoto, Glades, Hardee, Hendry, Highlands, and Okeechobee counties; cities of Pahokee, Belle Glade, and South Bay (Palm Beach County), and Immokalee in Collier County.
- **North Central RAO:** Baker, Bradford, Columbia, Dixie, Gilchrist, Hamilton, Jefferson, Lafayette, Levy, Madison, Putnam, Suwannee, Taylor, and Union counties.

This study was prepared by FloridaMakes, the state’s manufacturing extension partnership, under a grant from the Florida Department of Economic Opportunity (DEO). The underlying thesis behind the study, consistent with the enabling REDI legislation, was to discover “a unique economic development opportunity of regional impact”; in this case rural manufacturing. The respective employment, gross regional product, and wage data for the rural regions above suggest an economic significance to the performance of manufacturing in these regions warranting further study. And as this study reveals, the percentage of high-performing and emerging firms outperforming like-industries nationally in terms of employment compound average growth rates are 63%, 81.3%, and 61% for the north central, northwest, and south central RAO’s, respectively.

The purpose of the study was to develop and identify strategies to 1) expand outreach and service delivery to rural areas of Florida and very small (<20 employees) manufacturing firms throughout the state’s less densely populated areas, and 2) address opportunities for retention and/or expansion of existing manufacturing firms in rural communities. The study is not only intended to inform the direction and strategy of FloridaMakes in its provision of technical services to Florida’s rural manufacturing sector, but also the broader ecosystem of education, training, technical and business assistance providers, both public and private, that serve these communities.

The study approach was to combine qualitative and quantitative methodologies to better understand the composition and dynamics of each respective RAO’s manufacturing sector, and to identify its current state as well as the potential areas for growth and development. Further, these studies were

used to inform discussions with key public and private stakeholders in the performance and growth of the RAO region's manufacturing sector. Finally, this combination of primary and secondary data, both qualitative and quantitative, will be used to contribute to the development of strategic and tactical plans for each region, identifying key objectives for the growth and retention of the region's manufacturing economy. Collectively, the results of these efforts inform FloridaMakes in its provision of business and assistance services to manufacturers currently underserved in Florida's Rural Areas of Opportunity (RAOs).

This edited report provides a summary of the findings from five independent subordinate studies conducted for the following purposes:

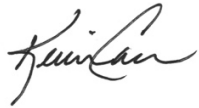
- Three in-depth regional economic profiles of each RAO to better understand the characteristics of the manufacturing sector within each. This study was conducted by IHS Economic Strategy Solutions.
- An in-depth analysis of manufacturing opportunities for growth and expansion for Florida's rural manufacturing sector in general, and for each RAO manufacturing sector individually. This study was conducted by Regionerate, LLC in partnership with Economic Models Specialist, EMSI.
- An experiential analysis conducted by Thomas Mahoney, an independent consultant, to better understand national business and technical assistance service patterns and approaches to overcoming the challenges of delivery in rural communities.

Each subordinate study is available separately upon request as a stand-alone document for specific application, as appropriate, with each defined region. All studies are informed by data analysis conducted by each group with an orientation toward each of the respective purposes outlined above.

The mission of FloridaMakes is to improve the productivity and technological performance of Florida's manufacturing industry. FloridaMakes works in partnership with the state's Regional Manufacturing Associations providing them with actionable information that will help them provide services to support and increase the economic competitiveness of all manufacturers located in their service areas. For the purposes of these studies, the manufacturing sector is defined to consist of establishments assigned to North American Industry Classification System (NAICS) codes 31, 32, and 33.



FloridaMakes wishes to thank IHS, Regionerate, EMSI, and Mr. Mahoney for the efforts put forth preparing their respective subordinate studies. In addition, FloridaMakes wishes to thank the participating staff from the Department of Economic Opportunity, CareerSource Florida, Enterprise Florida, and all of the organizations, public and private, representing Florida's three Rural Areas of Opportunity who contributed their knowledge and expertise in the preparation of this study. FloridaMakes and the Regional Manufacturing Associations look forward to providing business and technical assistance, in partnership with RAOs, to ensure the growth and expansion of the rural manufacturing sectors.

A handwritten signature in black ink, appearing to read "Kevin Carr". The signature is fluid and cursive, with a large initial "K" and a long, sweeping underline.

Kevin Carr, Chief Executive Officer

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**Phil Hopkins, Director, IHS Economics and Country Risk, IHS Global, Inc.** IHS is a leading source of information, insight and advisory services in the pivotal areas that shape today's business landscape: economics, construction, energy, chemicals, technology, logistics and transportation, healthcare, geopolitical risk, sustainability and supply chain management. Businesses and governments around the globe rely on the comprehensive content, expert independent analysis, and flexible delivery methods of IHS to make high impact decisions and develop strategies with speed and confidence. IHS combines leading industry and regional insight with stakeholder input to develop unique strategies and solutions for our clients. By uniting the world's largest private database of economic and industry information with unrivaled technical and industry expertise, IHS industry experts and economists create innovative solutions that energize the forces that shape economic interaction within economic regions.

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## **Editor**

**Kevin Carr, Chief Executive Officer, FloridaMakes** Mr. Carr led the National Institute of Standards and Technology's Hollings Manufacturing Extension Partnership (NIST MEP). Joining NIST in the first year of this experimental program, Kevin became the first NIST MEP Director, building the program from just 7 pilot states to a nationally integrated system serving manufacturers in all 50 states and Puerto Rico. Under his leadership with state and federal policymakers, Mr. Carr has worked to increase manufacturers' access to appropriate advanced manufacturing technology and resources through the federal labs and centers of excellence, and has challenged the MEP system to cultivate best practices, best-in-class services, and promote increased use of existing public and private resources to improve the

foundation and future of American manufacturing. Upon his departure from NIST in 2005 to join the private sector, Mr. Carr was recognized by Senator Hollings, the program's namesake, for his efforts in transforming the pilot program to its current national scale.

He has been recognized as a finalist for the Service to America for Business and Commerce and Harvard's Innovation in Government Award. He was awarded the U.S. Department of Commerce Gold Medal for building MEP's national system and was recently inducted into the NIST Gallery of Distinguished Scientists, Engineers and Administrators for "outstanding leadership of the Hollings Manufacturing Extension Partnership and implementing it into a model federal program with national impact on business development, innovation and job creation."

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## Overview

Competitiveness and sustainability of the manufacturing sector are essential to ensure job growth and economic prosperity in rural Florida. There is renewed national interest in manufacturing research and education. The national call for action to advance the country's leadership in manufacturing creates an opportunity for states to undertake bold initiatives in revitalization of the manufacturing sector. The State of Florida is seizing upon current opportunities from global economic trends, re-shoring, and a desire for technological advancements to support rural advanced manufacturing companies.

Industry clusters can propel a community, region, state or country to a high level of economic prosperity with steady increases in jobs, incomes and the standard of living. Companies producing similar products or utilizing a common labor pool can often obtain a competitive advantage from close proximity to one another. This competitive advantage can help cluster companies grow quickly, which in turn enlarges and strengthens clusters in a positive feedback loop. There are hundreds, perhaps thousands, of clusters both large and small of varying strengths across the U.S., not to mention the global economy. Clusters can and often do arise spontaneously, but increasingly communities and regions are realizing that much can be done by local governments and economic development organizations to nurture and grow clusters.

The first step in achieving a high level of local economic prosperity through clusters is to identify them and their characteristics, strengths and weaknesses. After this assessment, policies and programs can be enacted to support and grow key clusters. Much of what helps sustain and grow local clusters can be influenced directly or indirectly through government policies and public/private organizations. Furthermore, the initial assessment is critical to understand what clusters are most important and could benefit most from local assistance. The key is to identify those local support items and functions that are critical to fostering cluster success, and whether or not they are adequate or need improvement.

This study evaluated three rural Florida regions to determine their comparative and competitive advantages across their top industry clusters. When evaluating industries, several factors must be taken into consideration because

each factor provides a different viewpoint of industry performance and potential. Such factors include:

- Competitive (shift-share) analysis allows a deeper understanding of how an industry's performance compares to national performance. Many times, positive competitive effects are the result of unique characteristics within the region that enable an industry to outperform national trends.
- Comparative advantage (location quotient) provides an understanding of an industry cluster's concentration within a given geography.
- Emerging sectors analysis (historical and projected) informs planners and decision-makers of where rapid growth and job creation will likely occur. Many times these industries in clusters are overlooked due to their initial small size. However, knowing the historical consecutive years of rapid growth and projected future growth enables planners to better accommodate and support the cluster's growth through workforce development programs.
- Employment size and growth analysis (by jobs and by percent jobs growth) provides context of a cluster's industry-specific presence within the region. This analysis shows the degree of presence of large sectors with few large establishments and/or many establishments.
- Industry earnings per worker (EPW) is a proxy used to determine the value an industry generates per employee. Industries with high EPWs (e.g., advanced technology) tend to indicate that: (1) the occupations within the industry sector are higher quality and generate high levels of earnings for the industry; (2) the goods or services produced by the industry are high value; and/or (3) the industry is driven by large amounts of capital, which may require lower amounts of human capital.

Certain target clusters will undoubtedly have more regionally integrated supply chains, leading to larger indirect job creation when industry growth occurs. Additionally, some industries contain higher-paying occupations.

Knowing the job multiplier effects for the target clusters and which industries contain higher-paying occupations will allow for further understanding of the clusters and lead to potential investment prioritization.

The data analysis opens new possibilities for regional cluster development that are not otherwise readily apparent.

# Florida's Rural Manufacturing Economy

The State of Florida has designated three Rural Areas of Opportunity (RAO) as priority regions for the Rural Economic Development Initiative (REDI). The following counties and communities have been designated as RAOs and are shown in Figure 1 below.

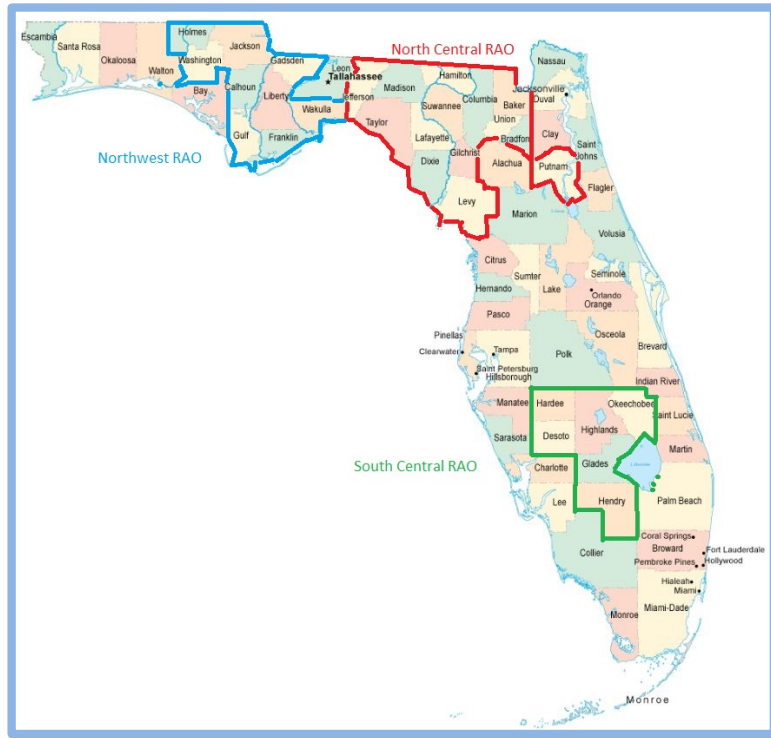


Figure 1. Rural Areas of Opportunity

**Northwest RAO** – All communities within Calhoun, Franklin, Gadsden, Gulf, Holmes, Jackson, Liberty, Wakulla, and Washington counties, and the City of Freeport in Walton County.

**North Central RAO** – All communities within Baker, Bradford, Columbia, Dixie, Gilchrist, Hamilton, Jefferson, Lafayette, Levy, Madison, Putnam, Suwannee, Taylor, and Union counties.

**South Central RAO** – All communities within DeSoto, Glades, Hardee, Hendry, Highlands, and Okeechobee counties, and the cities of Pahokee, Belle Glade, and South Bay in Palm Beach County and Immokalee in Collier County.

Manufacturing from the three rural regions identified in this study contributes nearly \$1.8 billion to Florida economic output and represents 8% of the region’s total GDP. In addition to supporting more than 16,000 jobs that pay over \$800 million in earnings, manufacturers also pay \$70 million a year in production taxes, generating a large impact on the regions they reside in.

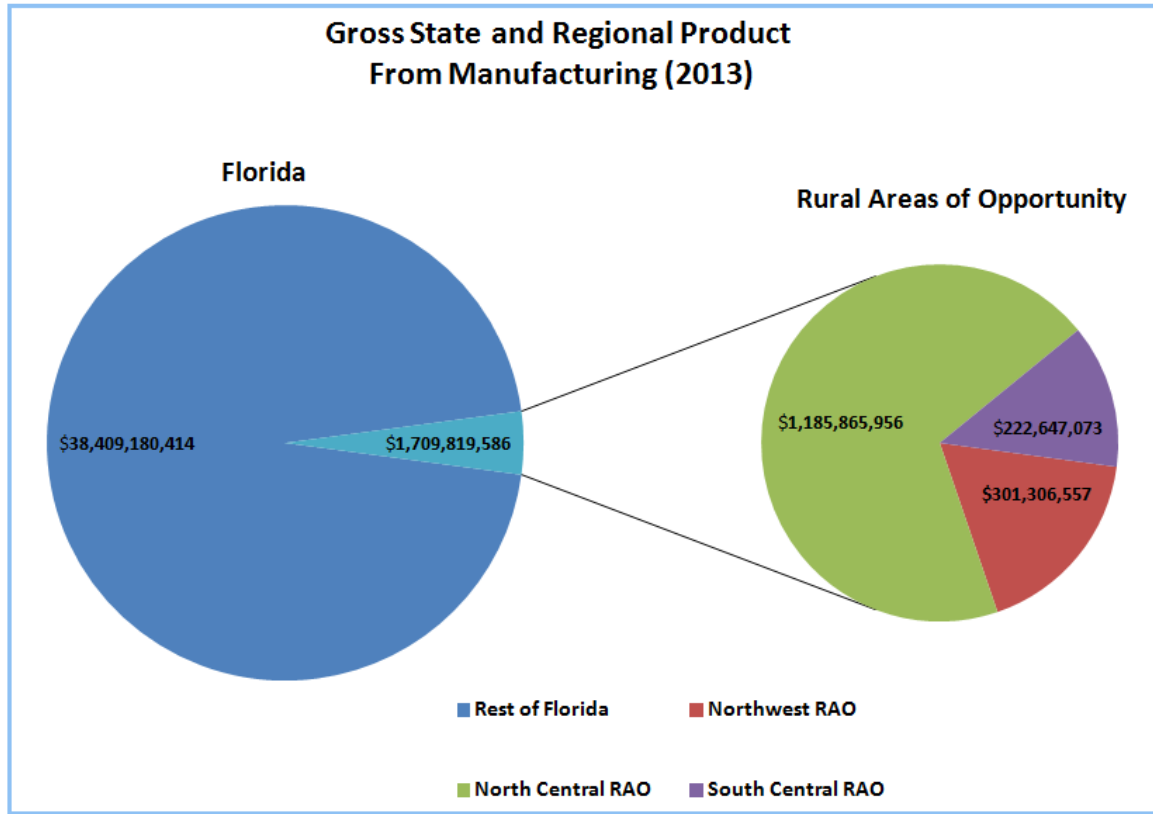


Figure 2. Gross State and RAO Manufacturing Product

As shown by Gross Regional Product, establishments and employment, the North Central region is much more industrialized than the other two rural regions. Taylor County, with nearly 17 percent of jobs in the county in manufacturing, is the only county in Florida classified as a manufacturing-based county by the U.S. Department of Agriculture.<sup>1</sup> As would be expected, the southern region has a different industrial focus from the north, with the top industries being food, chemicals, and nonmetallic mineral products (concrete and cement products). In both northern regions the wood industry is very important, along with chemicals and food.

<sup>1</sup> USDA Economic Research Service, Atlas of Rural and Small-Town America, at <http://ers.usda.gov/data/ruralAtlas/>.

Manufacturing companies purchase significant inputs from many other sectors including agricultural products and other production inputs, materials and supplies, professional services, and transportation services. And because manufacturing is a large exporter, it attracts outside dollars to the region while providing jobs and economic growth to communities.

Regional average annual compensation was \$61,000 in 2015 compared to \$78,000 nationwide. This is typical in that earnings are often lower in rural manufacturing due to labor cost differences and types of products manufactured. However, manufacturing earnings were among the highest locally compared to other industries and were almost 33% higher than average earnings in 2015.

The decade following the 2001 recession was a period of transition for Florida's rural manufacturers. From the end of 2001 to the end of 2015, regional manufacturing employment fell 27%, a loss of more than 6,000 jobs in the North Central, Northwest, and South Central regions. This downturn, combined with the fact that manufacturing makes up a larger share of rural jobs, has depressed total nonfarm employment in rural areas more than in metro areas.

However, the number of manufacturing jobs in the three regions has been relatively stable over the last five years since the recession and is projected to increase modestly in the coming decade. Recent activity has been mixed in the manufacturing industries that are important to rural areas: food; textiles and apparel; chemicals; and wood products. Producers of many food-related products have held up relatively well since the recession, showing once again that food demand for many products is resilient in economic downturns. Meanwhile, rural Florida employment in textiles, apparel, and furniture, which was already declining in the early 2000s, dropped further during the 2007-2009 recession.

Manufacturing comprises a significantly smaller proportion of jobs in the three regions than the share of manufacturing employment nationally. This is due to Florida's traditional reliance on travel and tourism, health care, and other service industries. However, manufacturing's regional presence is projected to grow slightly during the coming decade. Unlike many rural areas in other states, these rural Florida counties offer close proximity to strategic business and material resources, cost-competitive labor, and plenty of available land. In

addition, most of these counties are no more than an hour away from an airport, large city, or a college/university.

Most macro data available provide a very broad image in the regions. However, a review of the D&B database of manufacturing firms in each region sheds additional light on the size distribution and location of the manufacturing establishments.<sup>2</sup> For instance, establishments with 5 or fewer employees comprise more than 70% of the manufacturers (see Table 1). These small firms are typically difficult customers for assistance services; many small woodworking shops, for instance, are likely little more than hobbyists. With sufficient geographic concentration, however, group services are often a viable option.

On the opposite end of the scale, some of the more important industries in these regions are dominated by large manufacturing facilities. In the Northwest region, large saw mills account for much of the employment and GRP in the wood products industry. In the North Central region, the paper and chemicals industries are also concentrated in a few large facilities, many owned by large multinational corporations such as Potash and Koch Industries. Table 2 lists the five largest manufacturers in each RAO, based on D&B listings, and their percentage of total manufacturing employment in the region.

**Table 1. Manufacturing Establishments with 5 or Fewer Employees in Each Region**

Northwest RAO			North Central RAO			South Central RAO		
# of employees	# of establishments	% total	# of employees	# of establishments	% total	# of employees	# of establishments	% total
1	75	20%	1	121	20%	1	58	18%
2	118	32%	2	167	28%	2	91	28%
3	38	10%	3	62	10%	3	40	12%
4	31	8%	4	52	9%	4	22	7%
5	14	4%	5	27	5%	5	19	6%
total w/ 5 or less	276	74%	total w/ 5 or less	429	72%	total w/ 5 or less	230	71%
>5	102		>5	170		>5	95	
Total in D&B	378			599			325	

<sup>2</sup> In all 3 regions, D&B lists significantly more manufacturers than the number of establishments identified in the macro data. Possible reasons include duplicates entries and miscoding in the D&B data base and underreporting in the Census of Manufacturers.

Table 2. Five Largest Manufacturing Employers in Each Region

RAO	Company Name	Primary City	Primary County	Employees At This Location	Line Of Business	
South Central	A. Duda & Sons, Inc.	Labelle	Hendry County	150	Frozen fruits and vegetables, nsk	
South Central	Okeelanta Corporation	South Bay	PalM Beach County	200	Raw cane sugar, nsk	
South Central	Osceola Farms Co	Pahokee	PalM Beach County	329	Food preparations, nec, nsk	
South Central	Sugar Cane Growers Cooperative	Belle Glade	PalM Beach County	469	Raw cane sugar, nsk	
South Central	Plantation Botanicals Inc	Felda	Hendry County	500	Medicinals and botanicals, nsk	
				Total	1648	
				share of regional manufacturing employment		77%
North Central	Chemring Ordnance	Perry	Taylor County	240	Explosives	
North Central	Foley Cellulose LLC	Perry	Taylor County	558	Pulp mill	
North Central	Buckeye Technologies Inc.	Perry	Taylor County	680	Pulp mill	
North Central	Buckeye Technologies Inc.	Perry	Taylor County	750	Pulp mill	
North Central	White Springs Agricultural Chemicals	White Springs	Hamilton	900	Phosphates	
				Total	3128	
				share of regional manufacturing employment		29%
Northwest	Frito-Lay North America	Chipley	Washington County	187	Potato chips and similar snacks	
Northwest	Coastal Forest Resources	Havana	Gadsden County	300	Softwood veneer and plywood	
Northwest	St. Marks Powder, Inc.	Crawfordville	Wakulla County	340	Explosives	
Northwest	Coastal Plywood Company	Havana	Gadsden County	354	Hardwood veneer and plywood, nsk	
Northwest	Westpoint Home LLC	Chipley	Washington County	550	Broadwoven fabric mills, cotton	
				Total	1731	
				share of regional manufacturing employment		64%

Clearly just a few manufacturers have an inordinate impact on manufacturing employment in each region. The large manufacturers in Perry in Taylor County explain the manufacturing intensive designation for the county by the USDA. Although these firms are generally too large, with too many internal resources to benefit from FloridaMakes assistance, many of the smaller firms in communities such as Perry, Crawfordville, Havana, and Chipley could be suppliers to these large firms.

The presence of these large manufacturing operations in regions with otherwise fairly small manufacturing employment has an impact on common data analysis techniques which might otherwise inform the market assessment in these regions.

In summary, reviewing a combination of macro and micro economic data in the three regions presents a reasonably consistent picture of manufacturing activity in each region.

The North Central region is by far the most industrialized with more companies and more workers in manufacturing. Products derived from the abundant yellow pine forests in northern Florida comprise the most important industries,



including commodity products sawmills and pulp and paper mills, as well as higher value products such as trusses, millwork, and cabinets. Transport equipment, mostly boat building and servicing in the north, life rafts and airboats in the south, is also relatively important. Cement and concrete products include blocks, bricks, roof tiles, septic tanks, and other finished products that pose more manufacturing challenges than ready-mix are important in the South Central region.

More generally, each region has a high percentage of very small manufacturers, those with less than 5 employees, combined with a few fairly large facilities, especially in the northern regions. These very small firms are usually difficult sales targets for assistance services, with marketing expenses too high to justify low engagement rates. In a few geographic centers, group projects might make sense for these small firms. The remainder, a group of companies with 10-200 employees, is manageable in number, readily identifiable, and typically comprises the market sweet spot for FloridaMakes-type services. Table 3 summarizes this group of medium-sized manufacturers in each region.

Table 3. Distribution of Medium-Sized Manufacturers in Each Region

Northwest RAO			North Central RAO			South Central RAO		
# of employees	# of establishments	% total	# of employees	# of establishments	% total	# of employees	# of establishments	% total
10-20	34	9%	10-20	47	8%	10-20	25	8%
20-50	20	5%	20-50	38	6%	20-50	25	8%
50-100	7	2%	50-100	17	3%	50-100	9	3%
100-200	12	3%	100-200	15	3%	100-200	4	1%

### National MEP Service Patterns

As a relatively new Manufacturing Extension Partnership (MEP) center for the State of Florida, FloridaMakes relies on services patterns throughout the national MEP system of centers to understand both the type and level of assistance realized by sister-centers in assisting particular subsectors and firm of particular sizes. Turning to the types of services that companies in the key regional industries typically buy, quarterly surveys of MEP clients and reporting by MEP centers provides a rich supply of information on national service

patterns. The data indicates services provided by location, industry, and company size. It also identifies services that clients need, based on their survey including commodity products sawmills and pulp and paper mills, as well as answers. The results may be biased somewhat based on the services the client already received, and those services tend to be skewed toward lean manufacturing and quality systems, historically the bread and butter of MEP centers. Keeping this in mind, the pattern of services delivered nationwide and the needs identified by clients can, at a minimum, provide the basis for initial conversations with potential clients and inform the marketing message to potential clients in these regions.

Figure 3 illustrates the distribution of services delivered by MEP centers nationwide in the last five years, focusing on ten of the most prominent industries in the three regions. Only the most used services are included, with lean and quality services grouped together to ease legibility of the chart. Miscellaneous includes services such as plant layout, financial assistance, marketing, sustainability, and information technology that individually tend to be small percentages of total service delivery.

Because the wood products industry is significant in both the Northwest and North Central regions, a closer examination of the national data in this industry is worthwhile. In the three Florida regions, 87% of the firms have fewer than 50 employees. These firms, totaling more than 115, should be receptive to MEP services—nationwide, about 60% of MEP projects in this industry have been with clients with less than 50 employees. Almost half of the firms of this size in the regions, 55 firms, are in the North Central region with a particular concentration of 15 firms totaling 415 employees in Lake City, Columbia County.

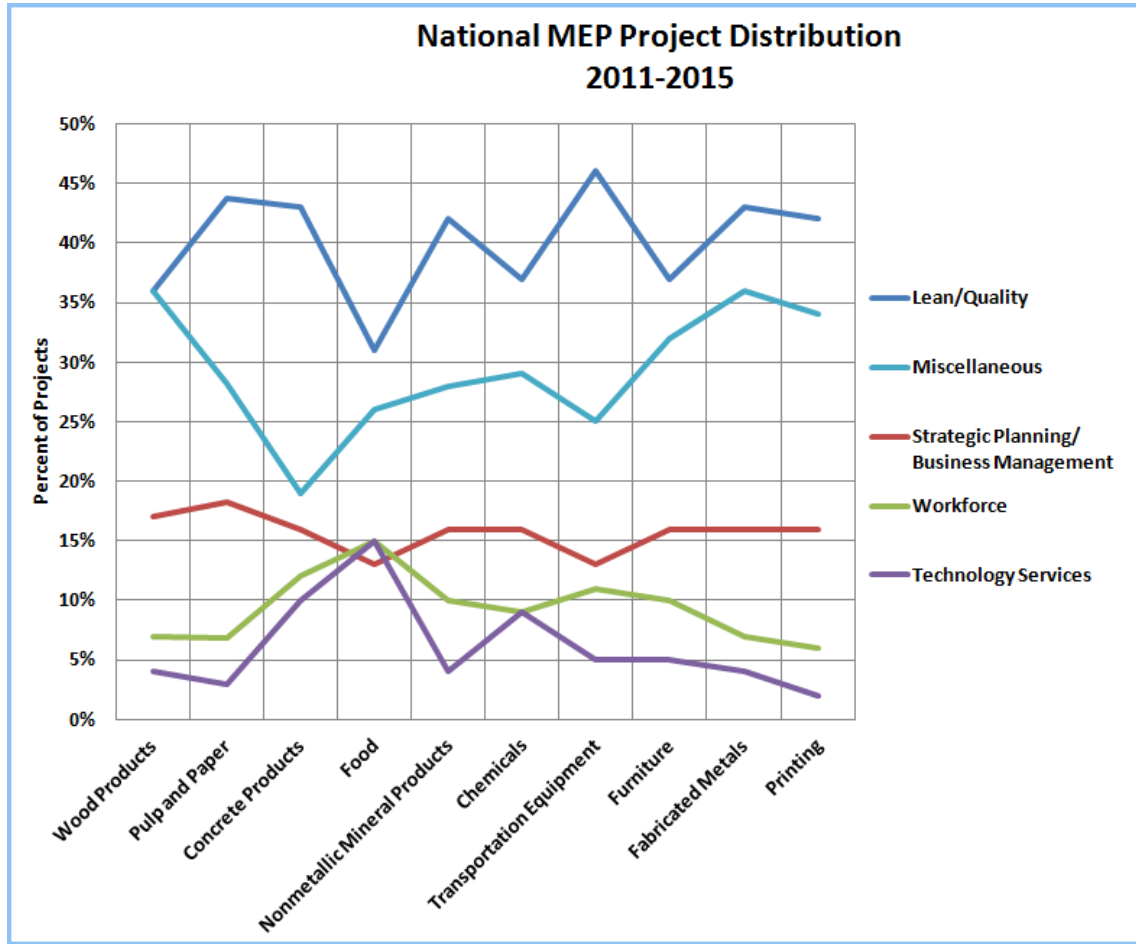


Figure 3: National MEP Service Distribution<sup>3</sup>

Nationally, MEP centers have achieved relatively low market penetration in the wood products industry, only about 3%. But a few centers have done much better. Alaska, North Dakota, Wyoming, Pennsylvania, Oklahoma, and New Mexico have all exceeded 10% market penetration in the last 10 years. Over half of their projects were in lean production and quality systems. Their sales success could provide useful lessons to FloridaMakes as it approaches companies in these regions.

Chemicals is another industry common to all three regions. Across the regions, more than 80% of the chemical firms listed in D&B have fewer than 50 employees. Nationwide, in the last five years MEP centers have worked with 10% of establishments in the industry and more than half of those clients have fewer than 50 employees. Lean and quality services, along with strategic

<sup>3</sup> Concrete Products is a subset of Nonmetallic Mineral Products. Both are included due to data availability

planning, comprise more than half the services provided nationwide. Based on this national experience, this industry should also provide opportunities for FloridaMakes in these regions.

As a final example, the cement and concrete products industry is relatively important in these regions. Nationwide, in the last five years, MEP centers have worked with just 2% of establishments in the industry, so it is not especially receptive to assistance, though two centers in rural Pennsylvania have approached 10% market penetration. Nationally, more than half of clients are below 50 employees; more than half of projects have been in lean, quality, and strategic planning, but another 12% have been in workforce training. In these 3 Florida regions, Florida Enterprise and D&B list 100 establishments, 90% of which are under 50 employees and only two of which have more than 100 employees: Lafarge in Palatka, Putnam County, and Krehling Industries in Moore Haven, Glades County. In the South Central region, there are 9 firms in Okeechobee and 5 in Sebring so there may be an opportunity for group projects in these cities.

### Challenges Facing Manufacturers

The quarterly surveys of MEP clients give these companies an opportunity to identify challenges facing them as they pursue future success. Figure 4 illustrates challenges identified by companies in the ten most dominant industries in the three regions; the pattern is fairly consistent. Almost all want to reduce costs and improve; a majority is looking for growth opportunities and many are interested in innovation. These challenges are all closely tied to typical MEP services in lean production, quality systems, and growth. Employee recruitment and retention is also a significant challenge for many, an area in which many MEPs partner with local community and vocational colleges to address. The other challenges identified in the quarterly surveys are less critical in these industries, although the growth opportunities created by sustainable business practices may not be fully recognized by survey respondents.

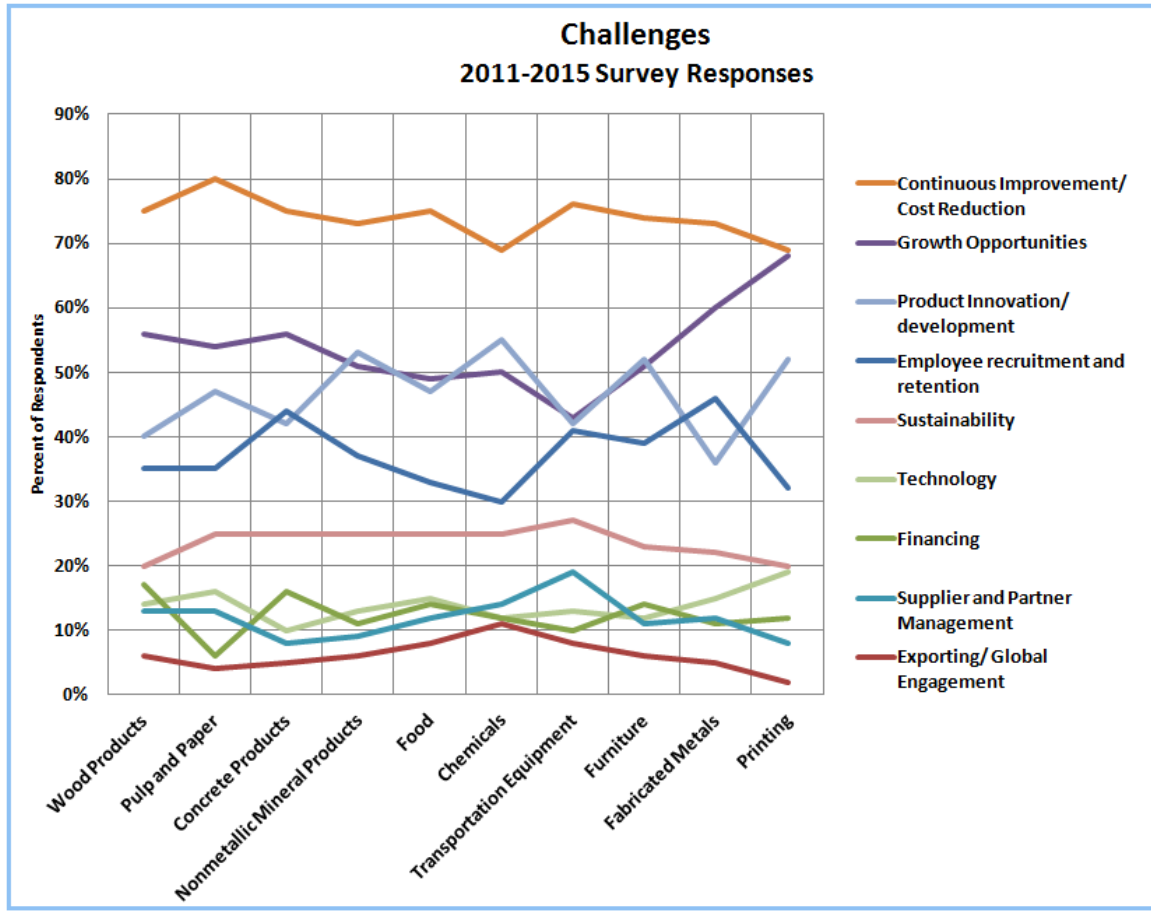


Figure 4. Business Challenges in 10 Large Regional Industries

These responses can only serve as guides for the types of challenges faced by companies in these three rural regions. Clustered by 3-digit NAICS codes, the national responses in transportation equipment, for instance, might not coincide with the challenges facing boat builders in Northwest Florida or a liferaft manufacturer in South Central Florida.

Similarly, challenges facing firms in rural areas may have a different priority. Employee recruitment is likely more difficult in regions with smaller populations and therefore even more important than these national surveys indicate. Overall, however, it is likely that the manufacturers in these three RAOs confront similar challenges to those nationally and that the menu of services offered by FloridaMakes is well placed to respond to these challenges.

# Economic Profile of the Northwest Rural Area of Opportunity

The nine counties of the NWRAO are located in the following RMAs, metropolitan statistical areas (MSAs), and micropolitan statistical areas:

- **Northwest Florida Manufacturing Council (NWFMC):** Calhoun, Franklin, Gulf, Holmes, Jackson, Liberty, and Washington counties
- **Capital Region Manufacturers Association (CRMA):** Gadsden and Wakulla counties
- **Tallahassee-Bainbridge MSA:** Gadsden and Wakulla counties
- **Panama City MSA:** Gulf County

## Characteristics of the Regional Economy

Figure 5 shows the nine counties that compose the NWRAO and presents major locational and transportation infrastructure such as interstate highways and rail lines. The NWRAO extends on the south from the shore of the Gulf of Mexico north to the border with Alabama and Georgia.

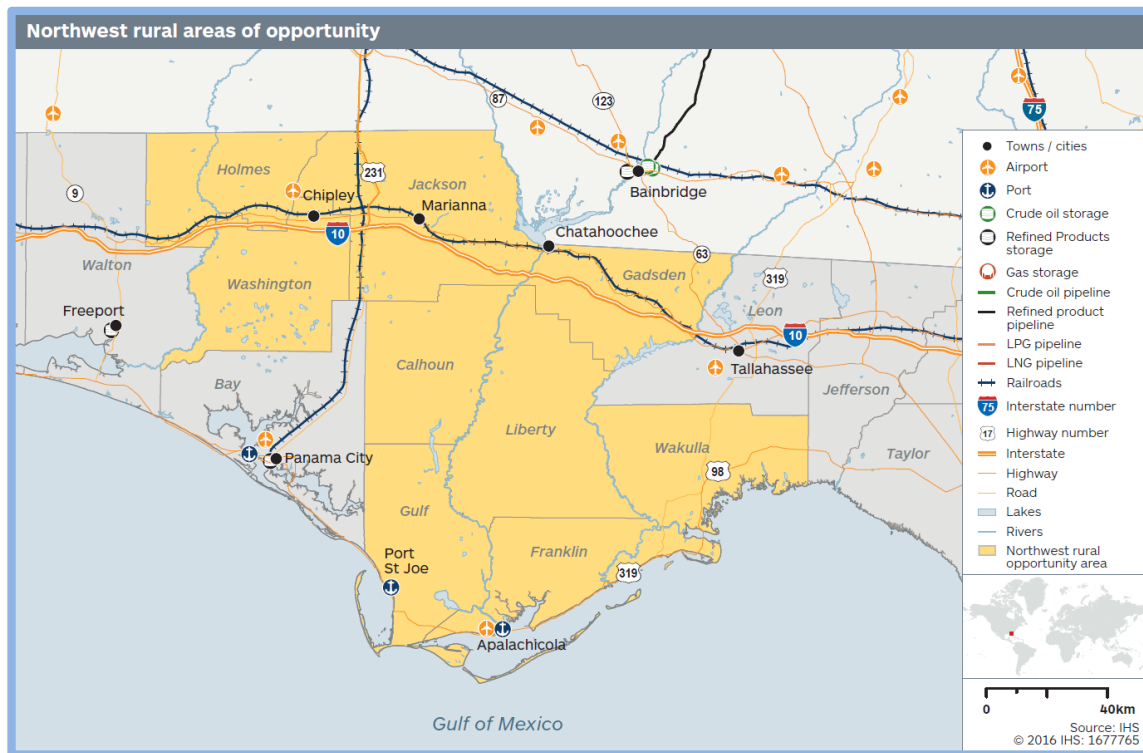


Figure 5. Northwest Regional Areas of Opportunity Map

The region is very well served by major highways as Interstate 10 passes in an east-west direction across its entire width and by major rail lines. The NWRAO contains two urban concentrations as three of the counties are located in MSAs as noted. Florida's capital, Tallahassee, is located just to the east of the NWRAO in Leon County. Florida State University (FSU) is also located in Tallahassee in Leon County; it was classified by the Carnegie Foundation in 2015 as "doctoral universities: highest research activity."<sup>4</sup> The University of Florida in Gainesville also received the same classification from the Carnegie Foundation in 2015. The NWRAO's proximity to a major research and development (R&D) university is a potentially significant locational advantage to the counties in the NWRAO in terms of access to a skilled labor pool, results from R&D programs, and facilities and resources promoting innovation. There is a small port in Panama City in Bay County located immediately to the south of the NWRAO; in 2014, Panama City ranked 102<sup>nd</sup> out of the 150 largest ports in the United States based on tonnage handled.<sup>5</sup> However, the center of the NWRAO is located about 150 miles east of the Port of Mobile, a major complex that ranked 9th in 2014 based on tonnage handled.

### Population

It is estimated that the 2015 population in the NWRAO's counties is 226,366 persons, or 1.1% of the state of Florida. Reflecting the rural character of the NWRAO, population density was 40.4 persons per square land mile, one-ninth of the Florida density of 369.5 persons per square mile, with approximately 75% of the total population located in unincorporated areas. The largest city in the NWRAO is Marianna in Jackson County, with an estimated 2015 population of 7,727 persons.<sup>6</sup> The accompanying table presents population estimates for 2015 by county.

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<sup>4</sup> "Classifications of Institutions of Higher Learning – Basic Classification," Carnegie Foundation, <http://carnegieclassifications.iu.edu/lookup/standard.php#>, 2016.

<sup>5</sup> US Army Corps of Engineers Navigation Data Center, Waterborne Commerce Statistics Center, <http://www.navigationdatacenter.us/wcsc/porttons14.html>, retrieved 29 May 2016.

<sup>6</sup> Florida Office of Demographic and Economic Research.

Table 4. Population Estimates by County

Northwest RAO population				
County	Land area in 2010 (sq. miles)	2015 population	% in unincorporated areas	% in incorporated areas
Calhoun	567	14,549	79	21
Franklin	535	11,840	57	43
Gadsden	516	48,315	62	38
Gulf	564	16,346	65	35
Holmes	479	19,902	80	20
Jackson	918	50,458	65	35
Liberty	836	8,698	89	11
Wakulla	606	31,283	98	2
Washington	583	24,975	80	20
<b>Total</b>	5604	226,366	75	25

Note: Accessed April 2016.

Source: US Census

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### Unemployment rate

The April 2016, not seasonally adjusted (NSA) unemployment rate for the NWRAO was 4.9%, above the Florida and US rates of 4.5% and 4.7%, respectively. The year-on-year (y/y) difference from April 2015 to April 2016 was a decline of 0.7 percentage point, same as the statewide change during the same time period. Gadsden County had the highest unemployment rate within the RAO at 5.9% and Wakulla County the lowest at 3.9%. Both the NWRAO and Florida experienced slightly larger y/y declines in their NSA unemployment rates than the United States during the last year. The NWRAO's unemployment rate has been consistently lower than the statewide rate through 2011; since then, it has been, on average, 0.3 percentage point higher.

### Labor force

The NWRAO labor force consisted of 83,900 workers in April 2016, a y/y contraction of 1,000 workers, or 1.2%. While total employment declined y/y, the drop in the number of unemployed persons was even higher, leading to the reduction in the unemployment rate. The NWRAO labor force experienced a more significant contraction annually between 2014 and 2015, shrinking 1.8%, or 1,500 workers. Between March and April 2016, the NWRAO labor force declined marginally by under 200 workers. Florida's labor force rose 0.6% between April 2015 and April 2016, compared with 1.2% for the United



States. Both Florida and the nation have had decreases in unemployment levels, combined with increases in the labor force, during the last year.

After a large labor-force drop between 2009 and 2010, the NWRAO labor force has continued to decline slowly during the past five years to the point where it is 16.7% lower than the peak reached in summer 2009. The key finding from the labor-force analysis is that the labor market in the NWRAO is a little looser than either the state or US levels as shown by its slightly higher unemployment rate, even as the size of its labor force has been gradually falling. However, we note that the NWRAO's unemployment rate is at or close to the level considered to be full employment, so there may be demands in some key occupations that are putting upward pressure on wages.

### Economic structure

Employment by major economic sector (according to two-digit NAICS codes) is presented in table 5 in descending order by number of jobs. It is estimated that there were 2,868 jobs in the NWRAO's manufacturing sector (as defined by NAICS codes 31-33) in 2015. Between 2000 and 2015, employment increases were greatest in the healthcare and social assistance, construction, and administrative and waste management services sector; they were almost completely offset by declines in the manufacturing, retail trade, and local government sectors. Employment declined by 1,357 and 2,193 jobs, respectively, in the goods-producing and government sectors, while it rose by 2,193 jobs in the private, services-providing sectors. Total employment in the NWRAO declined very slowly at an average annual rate of 0.1% during the period.

Table 5. NWRAO 2015 Employment by Major Economic Sector

NWRAO 2015 employment by major economic sector				
Industry	Number of jobs	Share	LQ	CAGR 2000–15
92 State government	10,379	17.0%	4.82	-0.5%
92 Local government	7,717	12.7%	128	-10%
44–45 Retail trade	6,576	10.8%	100	-1.1%
23 Construction	6,327	10.4%	2.37	15%
62 Healthcare & social assistance	6,122	10.0%	0.78	2.0%
11 Agriculture, forestry, fishing	5,384	8.8%	3.83	-0.5%
72 Accommodation & food service	4,143	6.8%	0.76	0.6%
<b>31–33 Manufacturing</b>	<b>2,868</b>	<b>4.7%</b>	<b>0.56</b>	<b>-3.5%</b>
56 Administrative & waste services	2,346	3.8%	0.64	4.6%
54 Professional & technical service	1,365	2.2%	0.38	4.9%
48–49 Transportation & warehousing	1,318	2.2%	0.66	1.7%
42 Wholesale trade	1,284	2.1%	0.52	2.3%
81 Other services, excluding public	1,204	2.0%	0.51	0.4%
52 Finance & insurance	893	1.5%	0.36	-1.7%
92 Federal government	856	1.4%	0.74	-1.6%
53 Real estate, rental, & leasing	536	0.9%	0.61	1.7%
71 Arts, entertainment, & recreation	402	0.7%	0.44	-0.2%
51 Information	379	0.6%	0.33	-3.2%
22 Utilities	372	0.6%	1.60	-2.1%
61 Educational services	335	0.5%	0.23	4.9%
21 Mining	126	0.2%	0.38	-5.8%
55 Management of companies & enterprise	23	0.0%	0.03	-7.9%
<b>Total industries</b>	<b>60,955</b>	<b>100%</b>		<b>-0.1%</b>

Source: IHS Business Market Insights database

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The share of the NWRAO’s total 2015 employment in manufacturing was 4.7%, well below the US figure of 8.4%, but above the Florida share of 4.1%. The NWRAO’s below-average share of 2015 manufacturing employment is reflected in its location quotient (LQ) of 0.56<sup>7</sup> compared with the share of US employment in manufacturing; by contrast, it was 1.15 using Florida’s share of employment in manufacturing.

Of the 22 major sectors, 6 have employment LQs greater than or equal to one compared with the national industry average concentrations. State government (NAICS 92) and the agriculture, forestry, and fishing sector (NAICS

<sup>7</sup> A LQ score greater than 1.0 indicates that a regional economy has a higher share of its total employment in an individual economic sector than the sector’s share of total US employment.

11) have particularly high LQs of more than 3.00; the latter figures speak to the rural nature of the region. Construction (NAICS 23), utilities (NAICS 22), and local government (NAICS 92) sectors had LQs of 2.37, 1.60, and 1.28, respectively. Compared with the state, the NWRAO has higher industry concentrations in mining (NAICS 21) and manufacturing (NAICS 31-33).

### Agricultural sector

Typical of rural counties, agriculture is a major contributor to the economy of the NWRAO and has a significant effect on land-use patterns and development densities. The major characteristics of the NWRAO's agricultural sector in 2012 are summarized below.

- Total number of farms is 3,292 occupying approximately 572,000 acres, about 6.9% of the Florida total.
- Average farm size of 184 acres compared with the statewide average of 200 acres.
- Total value of \$212 million of agricultural products, comprising \$168 million for crops, including nursery and greenhouse products, and \$44 million in livestock, poultry, and their products; the value of agricultural commodities produced was about 2.5% of the statewide total.
- Average market value of agricultural products sold per farm of \$65,200, 40% of the statewide figure of \$161,300.

The current economic contribution of the agricultural sector to the NWRAO's economy was measured using data from IHS's proprietary Business Market Insights (BMI) database. By comparison, these farm sectors represented only 1% of Florida's overall employment in the same year. Of the agricultural, forestry, and fishing aggregate sector (NAICS 11), 86% of the NWRAO's employment in the aggregate sector is animal and crop production. Based on the IHS BMI, the combined animal and crop production sales in the NWRAO were more than \$932 million in 2015, a 5% compound annual growth rate (CAGR) between 2000 and 2015, higher than Florida's growth.

### Structure diversity

To evaluate the diversity of the NWRAO region's industrial structure, IHS calculated the Hachman Index, which compares a regional economy's distribution of economic activity by sector, in this case employment, with that of the US economy. With the Hachman Index<sup>8</sup>, the maximum value is 1.00, or, in other words, the closer the region's Hachman Index value is to 1.00, the

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<sup>8</sup> Calculate two-digit LQs by NAICS sector weighted by employment shares and then invert the result.

more similar that region's economic structure is to the US economy. For the NWRAO region, the Hachman Index was 0.637, lower than the Florida value of 0.941. Since regional economies, especially smaller rural ones, are usually less diverse than larger state economies or the United States overall, the NWRAO region's low Hachman score is expected.

The NWRAO's low manufacturing share and lack of structure diversity indicate that there is room to grow its manufacturing sector. Ways to enhance the manufacturing sector's economic contribution to the NWRAO include 1) identifying gaps in manufacturing supply chains such that key inputs needed can be made in the region rather than imported (i.e., import substitution) and 2) expanding the value of exports produced by its manufacturing subsectors. There are two types of exports: 1) domestic–manufactured goods made in the NWRAO that are sold outside it to other Florida counties or to other US states and 2) foreign–manufacturing goods sold to foreign countries. Regional manufacturers seeking to expand their exports should take maximum advantage of their proximity to ports along the Gulf of Mexico.

As manufacturing companies increase the volume and value of their domestic and foreign exports, they will bring income back into the region, benefitting workers and households. At the same time, as production rises, they will increase their demand for inputs made by local suppliers, some of which will come from other local manufacturing firms. As the round-by-round increases in demand are transmitted through the backward linkages, they will also generate further increases in regional economic activity in all sectors through the indirect multiplier effect.

## Characteristics of the Manufacturing Sector

To provide a more accurate picture of the NWRAO's manufacturing industry, the following sections provide data on manufacturing subsectors' growth, structure, diversity, and risk ratings. We conclude with a shift-share analysis to get a more detailed perspective on regional manufacturing competitiveness at the four-digit NAICS level.

### Industry growth

As shown in Table 6 which presents employment growth rates in the manufacturing sector, between 2000 and 2015, employment declined in some of the major three-digit manufacturing subsectors such as textile mills, textile

product mills, printing, chemicals, fabricated metals, machinery, and furniture. In contrast, employment rose in the food, wood, and nonmetallic minerals subsectors. The NWRAO's annual rate of decline in manufacturing employment between 2000 and 2015 was 3.5%, greater than the Florida and US annual rates of decline of 2.3%.

Among the region's largest subsectors, employment in furniture and machinery fell 14.3% and 10.7%, respectively, each year between 2000 and 2015, far larger than the rates for Florida and the United States of less than 2.0%. Employment in the 2 textile sectors also fell at annual rates of more than 10% during the analysis period. By contrast, employment grew in the wood products and food subsectors and fell only marginally in fabricated metals. One of the features of rural counties is that a few subsectors often account for a high share of manufacturing employment because they have less structure diversity. In 2015, the NWRAO had 8 three-digit subsectors with fewer than 25, or with zero employees. That same year, the eight largest three-digit NAICS subsectors accounted for 90% of the NWRAO's employment in manufacturing.

Table 6. Growth Rates in the Manufacturing Sector: Employment

Growth rates in the manufacturing sector: Employment					
	2000	2015	LQ 2015	CAGR	Rank
311 Food	153	172	0.29	0.8%	3
312 Beverage & tobacco products		37	0.43		
313 Textile mills	169	33	0.71	-10.3%	13
314 Textile product mills	982	180	4.02	-10.7%	15
315 Apparel	136		0.00		
316 Leather & allied products	12	4	0.36	-7.1%	11
321 Wood products	772	1,175	7.97	2.8%	2
322 Paper	30		0.00		
323 Support activities—printing	472	111	0.63	-9.2%	12
324 Petroleum & coal	18	8	0.18	-5.3%	10
325 Chemical	493	448	1.40	-0.6%	6
326 Plastics & rubber products	22	21	0.08	-0.3%	5
327 Nonmetallic mineral	118	125	0.80	0.4%	4
331 Primary metal			0.00		
332 Fabricated metal products	332	246	0.43	-2.0%	7
333 Machinery	510	94	0.22	-10.7%	14
334 Computer & electronic products	215	115	0.28	-4.1%	9
335 Electrical equipment & appliance			0.00		
336 Transportation equipment	25	18	0.03	-2.2%	8
337 Furniture & related products	415	41	0.27	-14.3%	16
339 Miscellaneous	11	40	0.17	9.0%	1
<b>Total manufacturing</b>	<b>4,885</b>	<b>2,868</b>	<b>0.56</b>	<b>3.5%</b>	
<b>Total in durable manufacturing</b>	<b>2,398</b>	<b>1,854</b>	<b>0.57</b>	<b>-1.7%</b>	
<b>Total in nondurable manufacturing</b>	<b>2,487</b>	<b>1,014</b>	<b>0.53</b>	<b>-5.8%</b>	
<b>Total industries</b>	<b>61,648</b>	<b>60,955</b>		<b>-0.1%</b>	

Note: CAGR is compound annual growth rate; LQ is location quotient.

Source: IHS Business Market Insights

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### Durables and nondurables

Additional insight into a region's manufacturing sector can be obtained by analyzing the durable and nondurable sectors. Durables, or hard goods, are defined as those that are not totally consumed during their immediate or first use (i.e., provide use during an extended period of time, usually with a useful life of at least three years, and thus do not have to be purchased often). By contrast, nondurables, or soft or consumable goods, are immediately and totally consumed when initially used, have a useful life of fewer than three years, and need to be purchased frequently. Approximately 64.6% and 35.4%

of the NWRAO's manufacturing employment in 2015 was in the durable and nondurable sectors, respectively, similar to the respective Florida shares of 67.9% and 32.1%. The high share of durable employment in the NWRAO is due to the wood and fabricated metals sectors that account for 49.6% of total manufacturing employment.

### Output and productivity

It is also necessary to consider output by sector and productivity (output per worker) to get a comprehensive picture of an individual subsector's contribution to a region's manufacturing sector. A capital-intensive (i.e., high levels and values of structures and equipment per worker) sector such as petroleum refining, chemicals, or primary metals may not employ a lot of workers (i.e., have high levels of output per worker), but could generate substantial increases in regional economic contributions through either the backward linkages (i.e., the purchase of large amounts of inputs from suppliers located in the region) or through the forward linkages (i.e., the products made are purchased by other firms in the region that use them to make other types of goods or services). Because of technological advances and capital expenditures, growth rates in gross output and productivity usually differ significantly from, and exceed, employment growth rates.

Table 7. Growth Rates in the Manufacturing Sector: Output

Sector	Output (millions of \$)			
	2000	2015	CAGR	Rank
311 Food	33.2	84.8	6.4%	3
312 Beverage & tobacco products		17.9		
313 Textile mills	20.7	8.8	-5.5%	13
314 Textile product mills	115.2	32.4	-8.1%	15
315 Apparel	12.1			
316 Leather & allied products	12	0.8	-2.9%	12
321 Wood products	99.8	264.6	6.7%	2
322 Paper	5.4			
323 Support activities—printing	49.0	20.1	-5.8%	14
324 Petroleum & coal	6.3	8.5	2.0%	9
325 Chemical	126.8	229.1	4.0%	6
326 Plastics & rubber products	3.2	6.8	5.2%	4
327 Nonmetallic mineral	17.1	35.2	4.9%	5
331 Primary metal				
332 Fabricated metal products	38.6	53.7	2.2%	8
333 Machinery	30.2	35.9	12%	10
334 Computer & electronic products	27.5	21.0	-1.8%	11
335 Electrical equip. & appliance				
336 Transportation equipment	4.6	7.3	3.1%	7
337 Furniture & related products	36.8	7.5	-10.1%	16
339 Miscellaneous	14	9.7	13.8%	1
<b>Total manufacturing</b>	<b>629.0</b>	<b>844.2</b>	<b>2.0%</b>	
<b>Durable manufacturing</b>	<b>256.0</b>	<b>435.0</b>	<b>3.6%</b>	
<b>Nondurable manufacturing</b>	<b>373.1</b>	<b>409.2</b>	<b>0.6%</b>	
<b>Total industries</b>	<b>5,845.4</b>	<b>9,528.3</b>	<b>3.3%</b>	

Note: CAGR is compound annual growth rate.

Source: IHS Business Market Insights

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Six major subsectors had positive growth rates in output between 2000 and 2015: wood products, food, nonmetallic minerals, chemicals, fabricated metals, and machinery. By contrast, the level of annual output fell in five important subsectors: textile mills, textile product mills, printing, computer and electronic products, and furniture. Output growth rates varied in the remaining 10 subsectors that make small contributions to the NWRAO's economy.



Continuing with the durable and nondurable analysis, output per worker in durable manufacturing sectors in the United States in 2015 was \$375,043 compared with \$619,325 in nondurable sectors. The nondurable sectors' level is greater because of the very high level of productivity in the petroleum refining and chemical sectors. As noted in the table, output in the NWRAO's durable sectors grew at an annual rate of 3.6% between 2000 and 2015, compared with only 0.6% annually in nondurable sectors.

Table 8 presents growth in productivity, or output per worker, by the three-digit subsector between 2000 and 2015. The table shows clearly that the level of annual output per worker varies widely, from under \$200,000 in the two textile sectors, printing, and furniture, to more than \$400,000 in food, beverage and tobacco, transportation equipment, and chemicals. Petroleum is an outlier with a very high level of annual output per worker since a modern refinery is highly automated, requiring a relatively small number of workers to process a large volume of crude oil.

The output-per-worker figures presented in the table also show direct increases in manufacturing employment that would be generated by an increase in output. For example, sectors such as food and beverage and tobacco with almost \$500,000 of output per worker will produce 2.0 direct new jobs per each additional \$1 million in output, while fabricated metals and wood products will generate about 4.5 direct new jobs. In attempting to maximize the direct increase in the NWRAO's manufacturing employment, regional economic development organizations should focus on those sectors listed with the lowest levels of worker productivity, and vice versa. In doing so, these organizations should consider that not all manufacturing jobs are equal—they differ widely based on their annual wage levels. As a result, they must consider the prevailing annual wage levels in the manufacturing subsectors they want to promote, which are a function of the types of occupations required, which in turn are determined by the types of manufacturing activities to be performed. Prevailing annual wage levels by manufacturing subsector are discussed below.

Table 8. Growth Rates in the Manufacturing Sector: Productivity

Sector	Output per worker			
	2000	2015	CAGR	Rank
311 Food	\$ 217,063	\$ 493,020	5.6%	3
312 Beverage & tobacco products		\$ 482,577		
313 Textile mills	\$ 122,402	\$ 266,567	5.3%	6
314 Textile product mills	\$ 117,263	\$ 179,951	2.9%	15
315 Apparel	\$ 88,646	\$ -		
316 Leather & allied products	\$ 100,793	\$ 194,286	4.5%	10
321 Wood products	\$ 129,275	\$ 225,220	3.8%	14
322 Paper	\$ 178,470	\$ -		
323 Support activities—printing	\$ 103,912	\$ 181,437	3.8%	13
324 Petroleum & coal	\$ 351,962	\$ 1,064,920	7.7%	2
325 Chemical	\$ 257,266	\$ 511,440	4.7%	8
326 Plastics & rubber products	\$ 145,611	\$ 325,924	5.5%	4
327 Nonmetallic mineral	\$ 144,848	\$ 281,822	4.5%	9
331 Primary metal	\$ -	\$ -		
332 Fabricated metal products	\$ 116,387	\$ 218,197	4.3%	12
333 Machinery	\$ 59,118	\$ 381,669	13.2%	1
334 Computer & electronic products	\$ 127,705	\$ 182,921	2.4%	16
335 Electrical equipment & appliance	\$ -	\$ -		
336 Transportation equipment	\$ 183,645	\$ 405,724	5.4%	5
337 Furniture & related products	\$ 88,729	\$ 183,249	5.0%	7
339 Miscellaneous	\$ 127,034	\$ 242,253	4.4%	11
<b>Total manufacturing</b>	<b>\$ 128,769</b>	<b>\$ 294,353</b>	<b>5.7%</b>	
<b>Total industries</b>	<b>\$ 106,735</b>	<b>\$ 234,605</b>	<b>5.4%</b>	
<b>Nondurable manufacturing</b>	<b>\$ 150,014</b>	<b>\$ 403,598</b>	<b>6.8%</b>	
<b>Total industries</b>	<b>\$ 94,819</b>	<b>\$ 156,316</b>	<b>3.4%</b>	

Note: CAGR is compound annual growth rate.

Source: IHS Business Market Insights

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### Establishment size

The structure of the NWRAO's manufacturing sector was analyzed based on the distribution of establishments by employment size range by subsector. In 2015, there were 149 manufacturing establishments with payroll in the NWRAO, 92% of which had fewer than 50 workers. Small manufacturing establishments were especially concentrated in the fabricated metals, wood

products, and food subsectors. The average manufacturing establishment in the region in 2015 had just below 20 employees on its payroll.

The distribution of establishments by employment size is significant in that different types of economic development strategies and services are required for small firms than for large ones. SMEs, including all of those in the NWRAO, are more vulnerable to changes in the business cycle, fluctuations in interest and currency rates, and regulatory changes. They also may have more difficulty accessing capital and be less able to provide worker training. The RMAs need to be able to offer a broader range of services and support to SMEs than to larger manufacturing firms.

**Table 9. Distribution of Manufacturing Establishments by Employment Size, 2015**

Distribution of manufacturing establishments by employment size, 2015										
Sector	1-4 employees	5-9 employees	10-19 employees	20-49 employees	50-99 employees	100-249 employees	250-499 employees	500-999 employees	1,000+ employees	Totals by sector
31 Food	6	1	2	-	-	1	-	-	-	10
32 Beverages & tobacco	1	-	-	1	-	-	-	-	-	2
33 Textile mills	2	-	-	2	-	-	-	-	-	4
34 Textile mill products	3	1	-	-	-	1	-	-	-	5
35 Apparel	-	-	-	-	-	-	-	-	-	-
36 Leather	2	-	-	-	-	-	-	-	-	2
322 Paper	-	-	-	-	-	-	-	-	-	-
323 Support activities—printing	4	2	-	-	-	1	-	-	-	7
324 Petroleum & coal	1	1	-	1	-	-	-	-	-	3
325 Chemicals	4	1	1	-	-	-	1	-	-	7
326 Plastics & rubber	4	2	-	-	-	-	-	-	-	6
<b>Total nondurable</b>	<b>27</b>	<b>8</b>	<b>3</b>	<b>4</b>	<b>-</b>	<b>3</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>46</b>
321 Wood products	8	3	2	4	1	4	1	-	-	23
327 Nonmetallic minerals	2	2	2	4	-	-	-	-	-	10
331 Primary metals	-	-	-	-	-	-	-	-	-	-
332 Fabricated metal products	11	3	4	-	-	1	-	-	-	22
333 Machinery	3	4	1	2	-	-	-	-	-	10
334 Computers & electronics	2	3	-	-	-	1	-	-	-	6
335 Electrical equipment & appliances	-	-	-	-	-	-	-	-	-	-
336 Transportation equipment	3	1	1	1	-	-	-	-	-	6
337 Furniture and related products	3	4	-	2	-	-	-	-	-	9
339 Miscellaneous	12	4	1	-	-	-	-	-	-	17
<b>Total durable</b>	<b>47</b>	<b>24</b>	<b>11</b>	<b>13</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>103</b>
<b>Total by size</b>	<b>74</b>	<b>32</b>	<b>14</b>	<b>17</b>	<b>1</b>	<b>9</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>149</b>

Source: IHS Business Market Insights © 2016 IHS

### Largest manufacturing employers

The region’s largest employers, by local employment, are shown in the accompanying table. Business research firm Hoover’s Inc. uses a different methodology than the BMI database, which is based primarily on County Business Patterns, in estimating employment per establishment. There can also be differences in assigning an establishment to a NAICS code based on the type of business activity performed there. As a result, the distribution of large establishments in the accompanying table by NAICS code may differ from the

NAICS code of the largest employers. Compiling an accurate list of largest employers by NAICS code is a challenging task for the reasons already noted, because conditions keep changing and accurate data about the number of workers at an individual establishment are often hard to get, in part because they are proprietary. To ensure maximum accuracy, lists of top employers should be reviewed by local economic development officials who have the most current knowledge of their economies.

Even with the qualifications presented previously, the list of largest manufacturing employers generally aligns closely with current employment by the three-digit NAICS sector as evidenced by the firms in the wood, lumber, and paper products; chemicals; food; machinery; and fabricated metals sectors. An IHS analysis suggests that the large number of employees for WestPoint Home, Inc., a textile manufacturer, likely includes both the Shipley plant and a nearby outlet center.

**Table 10. Fifteen Largest Manufacturing Employers**

Fifteen largest manufacturing employers				
Company name	County	Local employment	Primary NAICS code	Primary industry
Westpoint Home, LLC	Washington	550	313210	Textile
St. Marks Powder, Inc.	Wakulla	340	325999	Chemical
Frito-Lay North America, Inc.	Washington	187	311919	Snack foods
General Dynamics	Wakulla	185	332993	Fabricated metal products
Prison Rehabilitative Industries	Calhoun	141	323111	Commercial printing
Georgia-Pacific, LLC	Liberty	130	321999	Wood products
Spanish Trail Lumber Company, LLC	Jackson	126	321113	Lumber & plywood products
Residential Elevators, Inc.	Wakulla	115	333921	Machinery
Rex Lumber, LLC	Jackson	115	321114	Lumber & plywood products
North Florida Lumber Co., Inc.	Liberty	110	321113	Lumber & plywood products
Taunton Truss, Inc.	Gulf	85	322211	Converted paper products
Attwood Corporation	Jackson	55	332510	Fabricated metal products
Oldcastle Precast, Inc.	Jackson	50	327390	Cement & concrete products
Water Street Seafood, Inc.	Franklin	50	311710	Seafood processing
Flowers Bakeries, LLC	Calhoun	47	311812	Bakery products

Note: Data downloaded 16 May 2016.

Source: Hoover's Inc.

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### Structure diversity

The Hachman Index<sup>9</sup> was used to estimate the structure diversity of the NWRAO's manufacturing sector based on four-digit NAICS employment, with LQs based on employment in the manufacturing sector. As expected, because of its rural character and small manufacturing sector, the NWRAO's Hachman Index in 2015 was a very low 0.058 compared with the statewide figure of 0.702. The result is consistent with the finding that its manufacturing activity occurs in a small number of sectors. We note that the NWRAO's manufacturing sector diversity index is substantially lower than the figures of 0.133 for the North Central RAO and 0.085 for the South Central RAO.

### Advanced manufacturing

The NWRAO had 705 jobs in advanced manufacturing sectors as defined by the US Bureau of Labor Statistics (BLS) and the Brookings Institution<sup>10</sup>, constituting 24.6% of its total manufacturing employment in 2015 and less than half of the Florida and US shares of 49.8% and 46.8%, respectively. Advanced manufacturing employment was concentrated in two sub-sectors: 3259-Other Chemicals and 3344-Semiconductors. It is in the advanced sub-sectors that we should expect the greatest innovation to occur (i.e., have higher patent rates), and they boast higher growth rates in productivity, require more highly skilled workers, and pay higher wages than other manufacturing sectors. Advanced manufacturing sectors are usually defined using two criteria:

- High levels of spending for R&D, including high intensity (i.e., above-average shares of R&D spending as a percent of sales) and high levels per worker
- The share of employment in STEM occupations

The BLS study also considered industries that use advanced manufacturing processes and that produced high-technology goods. Both the Brookings and BLS studies identified advanced and high-technology NAICS sectors at the four-digit level across the entire economy; for the purposes of this profile, we

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<sup>9</sup> See Footnote 8.

<sup>10</sup> The definition of advanced manufacturing subsectors comes from two sources: 1. Daniel E. Hecker, "High-Technology Employment: A NAICS-based Update," *Monthly Labor Review*, July 2005. (Hecker is an economist in the Office of Occupational Statistics and Employment Projections, BLS) and 2. Mark Muro, et al., "America's Advanced Industries: What They Are, Where They Are, and Why They Matter," Brookings Advanced Industries Project, February 2015. Both studies identified high-technology and advanced sectors across the entire economy at the four-digit NAICS level; we defined advanced manufacturing to consist of all the manufacturing subsectors that were identified in either study. The result was that 37 of the total 86 four-digit NAICS manufacturing subsectors were defined as advanced manufacturing subsectors.

considered only the individual sectors that were part of the manufacturing sector.

### **Shift-share analysis**

A shift-share analysis was conducted to examine the performance of the four-digit manufacturing subsectors in the NWRAO based on changes in employment between 2000 and 2015. Shift-share analysis is an analytical technique used to decompose changes in a variable, such as employment or income, which occurred in a regional economy during a historical period. It compares the performance of an individual economic sector over time within the regional economy of interest with that same sector's performance in a larger reference economy, usually the United States, during the same time period. Shift-share analysis is based on the theory that an individual sector's performance in a regional economy over time is due to four effects:

- **National:** the share of growth in the larger reference economy that was captured by the region;
- **Industry mix:** the shares of high-growth and low-growth sectors in the region and how they changed over time;
- **Competitive:** the extent to which an individual economic sector in the region outperformed or underperformed the same sector at the level of the reference economy during the analysis period. The United States is the reference economy for the shift-share analysis presented in this profile; and
- **Allocation:** the extent to which a region has above-average shares of economic activity in those sectors where it has a competitive advantage.

Stated another way, shift-share analysis enables an analyst to determine how much of the change in a variable, such as employment, in an individual economic sector over time was due to growth in the US economy and how much was attributable to characteristics of the regional economy such as competitive advantages or disadvantages and the distribution of economic activity into competitive and noncompetitive sectors.

Employment is the variable most often used in a shift-share analysis because it is the most widely available, the most current, and is published at the detailed NAICS level. For this study, using employment data at the four-digit NAICS code level (86 subsectors) from the IHS BMI database, each subsector with 10 or more employees was classified into one of four types based on its performance.

- **Type A:** the sector's 2015 employment LQ is greater than 1.0, and its employment CAGR during the analysis period was greater than the sector's employment CAGR for the United States during the same period;
- **Type B:** the sector's 2015 LQ is less than 1.0, but its employment CAGR was greater than the sector's employment CAGR for the United States during the same period;
- **Type C:** the sector's 2015 LQ is greater than 1.0, but its employment CAGR was less than the sector's employment CAGR for the United States during the same period; and
- **Type D:** the sector's 2015 LQ is less than 1.0, and its employment CAGR during the analysis period was less than the sector's employment CAGR for the United States during the same period.

In a shift-share analysis, an individual subsector in a region can “outperform” the same subsector in the United States during the same period of analysis by having either 1) an annual rate of growth in employment higher than the US rate or 2) an annual rate of decline less than the US rate. An “underperforming” subsector would have the reverse of these two trends.

The highest-performing A and B subsectors in the NWRAO with substantial current levels of employment included:

- Sawmills and wood preservation
- Other chemical products and preparation
- Veneer, plywood, and engineering wood products
- Architectural and structural metals
- Cement and concrete products
- Semiconductors and other electronic components
- Beverages

The detailed results of the shift-share analysis are presented in Table 11. The A and B sectors listed in the table accounted for a very high share of 81.3% of total manufacturing employment in 2015. By contrast, our shift-share analysis for the state of Florida showed that A and B sectors accounted for 44.4% of total manufacturing employment in 2015. The high share of sectors classified as A and B in a rural region is not surprising because of the low level of structure diversity in manufacturing sectors where a few large subsectors that outperformed the United States, as defined previously, can make a difference.

As shown in the table, we identified only one traditionally important legacy subsector in the NWRAO that had an above-average share of economic activity (i.e., was a C sector) but, for a variety of reasons, underperformed the United States, textile furnishing mills; this is likely the WestPoint Home Shipley plant. Finally, we identified seven D sectors that have low relative importance in the region (i.e., their 2015 employment LQs are less than 1.0) and that underperformed the same sectors at the US level during the analysis period.

The results of the shift-share analysis can be used for developing strategies in the following manner:

- Analyze the economic sectors classified as either A or B, since they are the highest performers, to identify the competitive advantages in the region that drive their performance. The B sectors should receive special attention because, while they currently account for below-average shares of economic activity, this is where the emerging sectors are likely to be found. The economic development objective is then to turn B sectors into A sectors.
- Identify the names of individual firms in each A and B sector and analyze them to determine why they are high performers. It is essential to determine the extent to which their high performances are due to 1) firm-level factors such as excellent management, efficient operations, competitive prices, superior product quality, etc. and 2) regional competitive advantages such as lower cost of doing business, high quality of labor, proximity to markets and/or suppliers, lower tax rates, excellent transportation networks, favorable regulatory environment, etc.
- Analyze the C sectors and identify the factors that affect their competitiveness; they constitute traditional centers of manufacturing activity, so helping them remain profitable also maintains manufacturing employment.
- Identify clusters of subsectors with similar needs that also interact with one another through buying and selling relationships.
- Identify those regional competitive advantages that apply across all manufacturing subsectors and those that are uniquely important to a few specialized subsectors.
- Identify those regional competitive advantages where local actions can make a difference (i.e., increasing the supply of skilled workers needed by the advanced manufacturing sectors).



- Begin to develop strategies and programs that maintain and enhance the regional competitive advantage in the targeted sectors.

Based on our experience in other studies, it is always valuable to have economic development professionals with detailed knowledge of the regional economy to review the list of subsectors assigned to each of the four shift-share types. Ideally, the distribution of subsectors by type should generally confirm the understanding of their regional economic composition (i.e., the subsectors expected to be classified as A or B sectors actually appear there).

**Table 11. Results of NWRAO Shift-Share Analysis**

Shift-share analysis of the Northwest RAO manufacturing sector						
NAICS sector	Description	Allocation code	2015 employ.	2015 LQ	% of private-sector employment in 2015	Employment CAGR 2000–15
3211	Sawmills and wood preservation	A	627	22.77	159	3.4%
3259	Other chemical products and preparation	A	434	16.6	110	-0.46%
3212	Veneer, plywood, and engineered wood products	A	433	19.80	110	0.84%
3323	Architectural and structural metals	A	194	1.72	0.49	-0.98%
3117	Seafood product preparation and packaging	A	147	13.99	0.37	114%
3273	Cement and concrete products	A	109	1.91	0.28	159%
3219	Other wood products	A	88	1.22	0.22	14.87%
3133	Textile and fabric finishing and fabric coating mills	A	29	2.62	0.07	25.17%
3344	<b>Semiconductor and other electronic components</b>	B	115	0.98	0.29	-3.87%
3121	<b>Beverage</b>	B	37	0.57	0.09	27.22%
3399	<b>Other miscellaneous</b>	B	29	0.33	0.07	16.33%
3336	<b>Engine, turbine, and power transmission equipment</b>	B	28	0.82	0.07	24.88%
3261	<b>Plastics products</b>	B	21	0.12	0.05	-0.31%
3362	<b>Motor vehicle body and trailer</b>	B	15	0.28	0.04	19.79%
3334	<b>Ventilation, heating, air-conditioning, and commercial refrigeration equipment</b>	B	14	0.34	0.04	19.24%
3391	<b>Medical equipment and supplies</b>	B	11	0.11	0.03	2.15%
3141	Textile furnishings mills	C	178	10.56	0.45	-10.7%
3231	<b>Printing and related support activities</b>	D	109	0.76	0.28	-9.31%
3327	<b>Machine shops; turned product; and screw, nut, and bolt</b>	D	43	0.34	0.11	-4.94%
3371	<b>Household and institutional furniture</b>	D	38	0.52	0.10	-14.73%
3339	<b>Other general purpose machinery</b>	D	37	0.42	0.09	-3.28%
3335	<b>Metalworking machinery</b>	D	15	0.25	0.04	-7.71%
3116	<b>Animal slaughtering and processing</b>	D	14	0.09	0.04	-1.29%
3279	<b>Other nonmetallic mineral products</b>	D	11	0.43	0.03	-4.22%

Note: The analysis considers only sectors with 10 or more employees in 2015.  
Source: IHS Business Market Insights © 2016 IHS

## Manufacturing wages

As shown in Table 12, approximately 57.8% of all production workers in Florida were employed in the manufacturing sector in 2015, followed by 23.3% of all architects and engineers, so the two occupations are useful in evaluating the relative level of manufacturing occupation wages in the NWRAO. The annual median wage for workers in the production and architecture and engineering occupations was 88.4% and 78.1%, respectively, of statewide levels. The table further shows that the NWRAO's median annual wages were generally between 75% and 90% of statewide levels in 2015 for all seven of the major occupational categories, giving it a significant competitive advantage in labor costs for manufacturing, other things being equal (e.g., labor skills and competencies, education levels, productivity, etc.).

Table 12. Employment and Wage Levels in Manufacturing Occupations

Employment and wage levels in manufacturing occupations, 2015					
Major occupational category	Employment in all sectors in region	% of occupation working in mfg. in Florida	Median annual wage in region	% of Florida median wage	% of US median wage
11-0000 Management	690	5.7	74,820	75.4	75.9
17-0000 Architecture and engineering	350	23.3	52,030	78.1	67.6
41-0000 Sales and related	2,900	1.1	21,500	87.1	94.3
43-0000 Office and administrative support	4,050	2.6	27,550	91.1	88.5
49-0000 Installation, maintenance, and repair	1,170	4.3	33,660	89.4	87.3
51-0000 Production	990	57.8	25,550	88.4	79.2
53-0000 Transportation and material moving	2,080	4.9	24,270	91.6	80.7

Note 1: The major occupational categories listed above accounted for 89% of total 2015 employment in Florida's manufacturing sector.

Note 2: Data in columns 2 and 4 are for the Northwest Florida nonmetropolitan area.

Source: Bureau of Labor Statistics, March 2016, Occupational Employment Statistics

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IHS estimated total annual wage payments for an individual company in selected manufacturing subsectors using the US distribution of detailed occupational employment by the four-digit NAICS code. The analysis used 2015 annual wage rates for the Northwest Florida nonmetropolitan area since it is representative of labor-market conditions in the NWRAO. The purpose of the analysis was to compare the total annual wage cost for a manufacturing company located in the region with the cost if it paid average annual US wages for the same occupational mix, keeping total employment the same. The analysis showed that total annual wage costs for a manufacturing firm in the NWRAO range between 20% and 25% lower than in the United States when using the same distribution of occupations and are about 15% lower than for

Florida. These differences indicate that the NWRAO should encourage growth in manufacturing subsectors that pay above-average wages such as advanced and durable manufacturing.

### Pattern of export commodity flows

FloridaMakes was interested in determining the spatial characteristics of the commodities produced in and exported from the three RAOs and where the agricultural and manufacturing commodities produced in the NWRAO are sold—what percent are sold in other Florida counties and what percent are sent to other US states. IHS used its proprietary Transearch database to perform this analysis. From this it estimated the tonnage and value in 2014 of both agricultural and manufacturing commodities by the four-digit NAICS code produced in the counties constituting the NWRAO that were exported by truck.

**Table 13. Destination of Exports from NWRAO by Truck - 2014**

Destination of exports from the Northwest Rural Areas of Opportunity by truck in 2014

Commodity	To Florida		To other US states		To Canada and Mexico		Total by commodity (thousands of short tons)
	Amount (thousands of short tons)	% of commodity total	Amount (thousands of short tons)	% of commodity total	Amount (thousands of short tons)	% of commodity total	
111 Crop production	48.1	21.4	17.8	76.3	5.2	2.3	225.1
112 Animal production and aquaculture	8.1	17.1	39.5	82.9	-	0.0	47.6
113 Forestry and logging	144.2	33.0	292.3	67.0	-	0.0	436.5
114 Fishing, hunting, and trapping	0.1	24.0	0.4	75.7	0.0	0.3	0.5
311 Food manufacturing	15.3	31.5	30.4	62.6	2.9	5.9	48.6
312 Beverage and tobacco products manufacturing	12.3	36.1	21.6	63.6	0.1	0.3	34.0
313 Textile mills	1.8	40.9	2.4	55.3	0.2	3.8	4.3
314 Textile product mills	5.8	52.7	5.2	46.7	0.1	0.6	11.1
316 Leather and allied products manufacturing	0.1	59.1	0.1	40.9	-	0.0	0.1
321 Wood products manufacturing	192.4	46.1	218.8	52.5	5.9	1.4	417.1
323 Printing and related support activities	1.4	30.8	3.2	69.2	-	0.0	4.6
324 Petroleum and coal products manufacturing	13.5	34.6	25.6	65.4	-	0.0	39.1
325 Chemical manufacturing	28.9	29.1	70.4	70.8	0.2	0.2	99.5
326 Plastics and rubber products manufacturing	0.5	40.6	0.6	52.9	0.1	6.5	1.1
327 Nonmetallic mineral products manufacturing	223.4	61.1	142.4	38.9	-	0.0	365.8
332 Fabricated metal products manufacturing	3.0	36.0	5.3	63.7	0.0	0.3	8.4
333 Machinery manufacturing	2.8	41.8	3.7	56.8	0.1	1.5	6.6
334 Computer and electronic products manufacturing	1.7	30.6	3.9	69.4	-	0.0	5.7
336 Transportation equipment manufacturing	0.3	11.6	2.2	84.5	0.1	3.9	2.6
337 Furniture and related products manufacturing	1.6	46.5	1.8	53.5	-	0.0	3.4
339 Miscellaneous manufacturing	0.8	38.0	1.3	62.0	-	0.0	2.1
<b>Total by destination</b>	<b>706.3</b>	<b>40.0</b>	<b>1042.8</b>	<b>59.1</b>	<b>14.7</b>	<b>0.8</b>	<b>1763.7</b>

Note: The Northwest Rural Areas of Opportunity consist of the following Florida counties: Calhoun, Franklin, Gadsden, Gulf, Holmes, Jackson, Liberty, Wakulla, and Washington.

Source: IHS, 2016, Transearch database

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Table 13 provides a summary of the market area served by exports from the NWRAO at the three-digit NAICS code level. The table shows that 40.0% of the weight of commodities produced in the NWRAO in 2014 was sent by truck to other locations in Florida compared with 59.1% that was sent to other US states. The in-state shares varied for major exported commodities, from just

more than 61.0% for nonmetallic minerals down to 46.1% for wood products and 33.0% for forestry and logging. Only a very small amount of commodities were sent by truck to Canada and Mexico.

Not surprisingly, based on the structure of the NWRAO's economy, the five largest commodity exports by weight to all destinations were forestry and logging, wood products, nonmetallic minerals, crops, and chemicals, which accounted for 87.5% of the total.

Figure 6 provides a map showing the major destinations by state of commodities exported by truck out of the NWRAO. The top-10 destination states, based on the weight of commodities shipped, are shown in gray. The heavy flow of commodities to adjacent Georgia and Alabama, which combined received 56.6% of exports as shown in Appendix A (*Flow of commodities sent by truck from the NWRAO to other US states in 2014*), and lesser flows to the Great Lakes states are clear. Appendix B (*Destination of exports from the NWRAO to Other Florida counties*) provides additional detail on the amount of commodities sent by truck from the NWRAO to US states other than Florida. The information presented in Appendix A can be disaggregated by commodity type upon request.

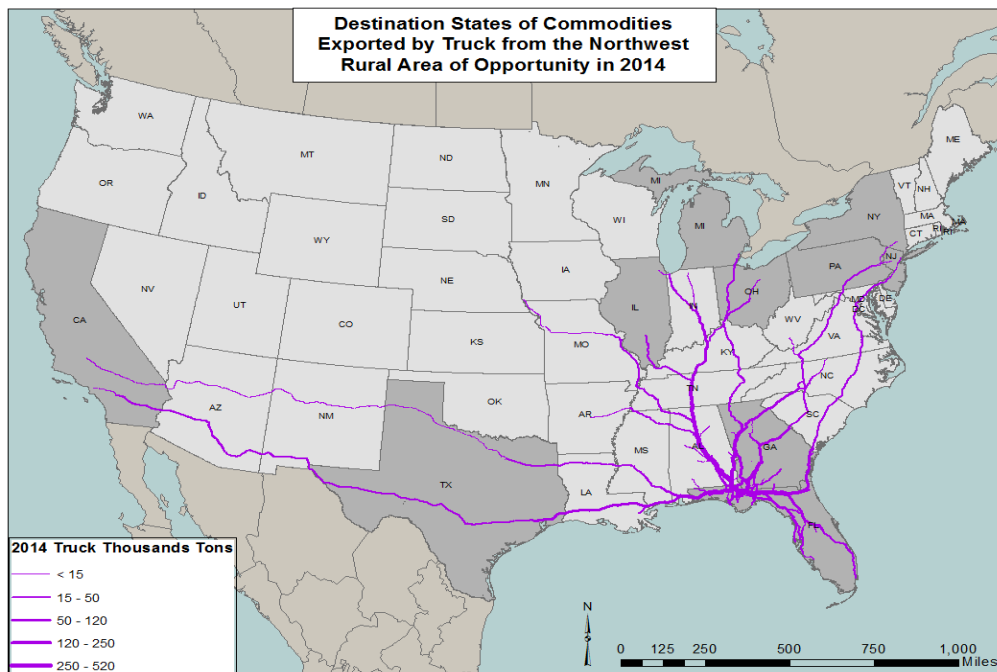
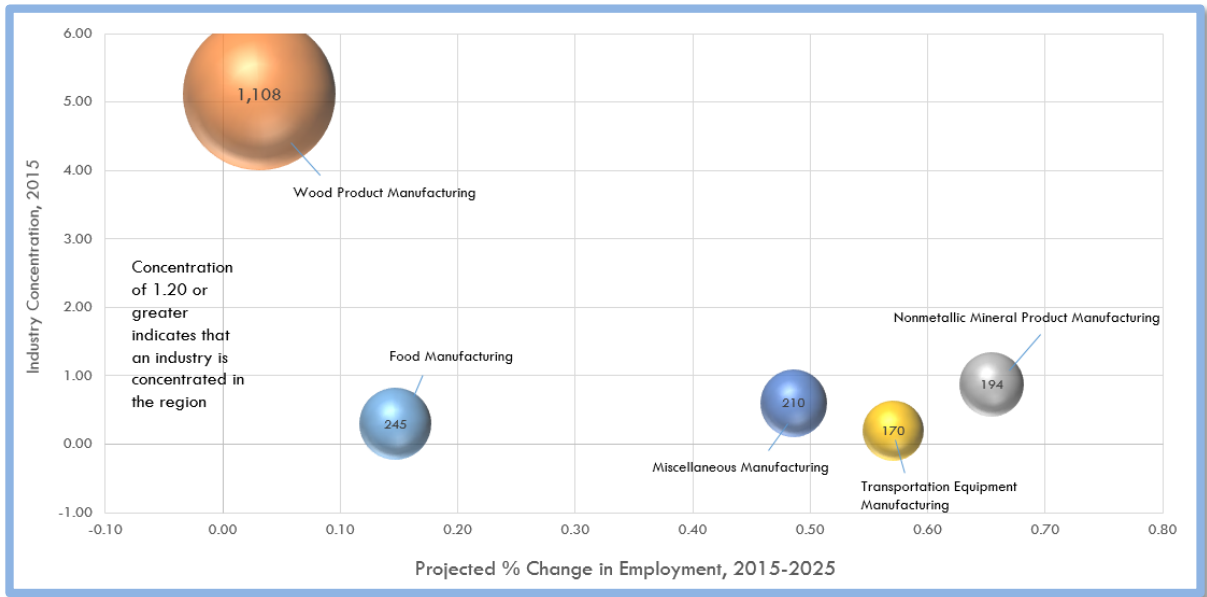


Figure 6. Destination States of NWRAO Commodities by Truck - 2014

IHS has identified the intrastate pattern of commodity exports from the three RAOs. The flow from the NWRAO to other Florida counties is presented in Appendix B. About 412,300 short tons, or 58.4% of the commodities exported by truck, were sent from the NWRAO to the following 10 Florida counties located outside it (in descending order of tonnage sent): Bay, Duval, Leon, Taylor, Escambia, Hillsborough, Miami-Dade, Orange, Okaloosa, and Pinellas.

### Manufacturing Cluster Analysis

The Northwest region is comprised of a number of small business manufacturers, with an average of 21 employees per establishment. Manufacturing totals 4.1% of the region’s employment and 6.1% of the gross regional product. Over 150 establishments in the region bring in healthy paychecks relative to the other industries in the area, \$46,387 versus the regional average of \$32,785.



Source: Emsi Complete Data 2016.2

Figure 7. Northwest Industry Clusters: Projected Job Growth and Industry Concentration, 2015-2025

## Food Manufacturing

There were approximately 20 food manufacturing companies in the region in 2015 that employed 250 workers, down slightly from 2005. Regional employment concentration in this industry is the same as that of Florida overall. This indicates that food processing companies are much less concentrated regionally and across the state than nationally.

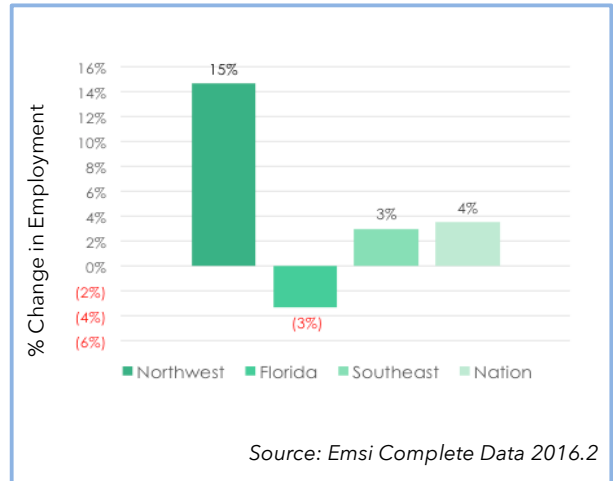


Figure 8. Projected Job Growth, 2015-2025

Food processing directly contributes \$27 million to regional economic output—approximately the same amount as its fish and shell fishing industries. The total of all wages paid to workers employed directly by food processors was \$15 million and the average total earnings per worker was \$51,500 in 2015.

Thirty percent of the jobs in the cluster are related to meat (including fish and shell fish) cutting and trimming, while 17% relate to packing or operating packaging machines. Team assemblers make up another 5%. The remainder are an assortment of occupations ranging from grading and sorting to retail sales to truck driving. Very few of these jobs require more than a high school diploma. Training required is typically short to medium term on-the-job training with no prior experience necessary.

## Wood Product Manufacturing

The Northwest region is home to over 1,000 of the state's wood production jobs. While the cluster employs a lower percentage of workers than can be found in similar areas in the Southeast, it is projected to add more jobs incoming years compared to flat growth regionally and nationally.

Average total earnings of \$51,312 in 2015 are comparable to earnings statewide and in the Southeast. Nationwide, average total earnings in the wood products industry were \$54,693. The cluster added jobs from 2005 to 2015 even as it declined in many areas around the country.

As a result, it is becoming more concentrated in the region and could continue to be a source of new jobs. Key industries include: sawmills, wood preservation, truss manufacturing, other millwork, all other miscellaneous wood products, and related industry sanitary paper manufacturing within NAICS 322.

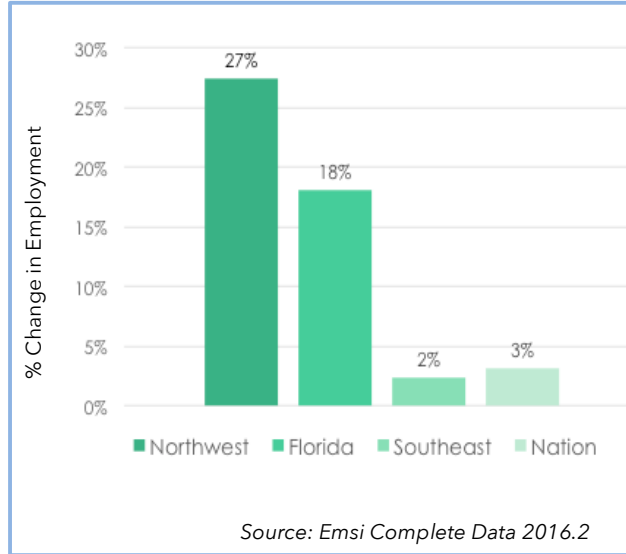


Figure 9. Projected Job Growth, 2015-2025

The important role of rural Florida’s wood product and furniture industries is a natural result of its forest resources—it has over 15 million acres in timberlands—and the

passed-down skills required to process those resources. Over time, the wood-based cluster has grown more diverse. Today it consists of not only those who harvest the forests and mill the lumber, but also those who turn the wood into furniture and other products. The region is home to a number of companies that make kitchen, office, and household furniture, as well as products used by builders and farmers. In the furniture manufacturing sector nationally, there have been large declines in employment in large part to foreign competition. Yet the region may be in better shape than many other areas to survive and even grow because it has developed and maintained advantages connected to niche markets and to Florida’s growing housing industry.

**Nonmetallic Mineral Manufacturing**

This sector is comprised of concrete and stone product manufacturing. These industries are seeing tremendous growth in the state and particularly in the Northwest. That growth is projected to continue.

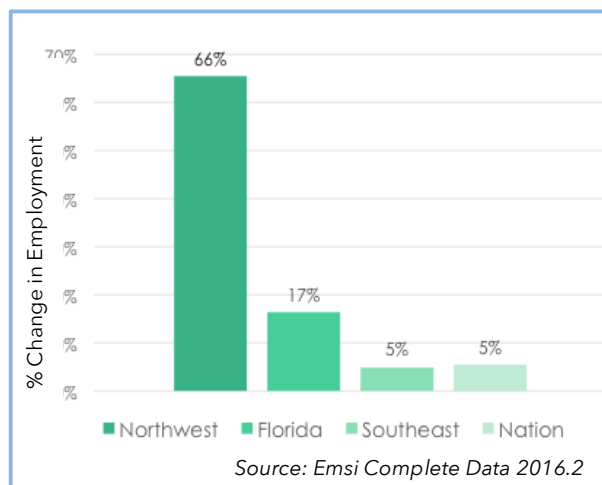


Figure 10. Projected Job Growth, 2015-2025

These industries bring in an average of \$48,090 in earnings, which is below the national

average of \$65,000. This cost benefit could help local manufacturers further their exports and make the region attractive to companies considering moving their options.

**Transportation Equipment Manufacturing**

Transportation manufacturing is strong in the Southeast and its presence in Northwest of Florida is growing and is projected to grow. This sector includes truck trailer as well as boat manufacturing.

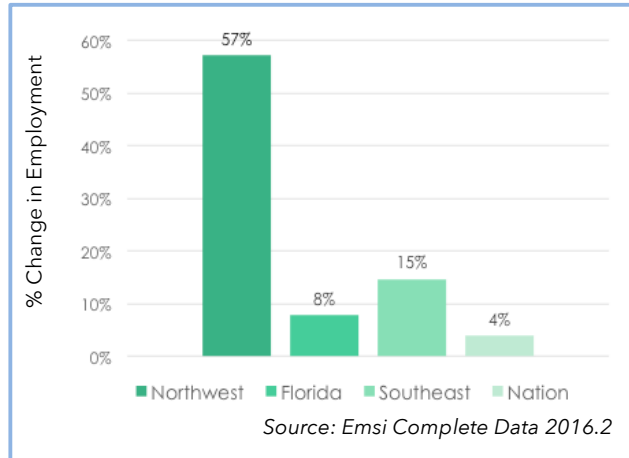


Figure 11. Projected Job Growth, 2015-2015

**Miscellaneous Manufacturing**

Due to the limitations of government classification systems, we sometimes end up with “miscellaneous” categories as we see here in the Northwest. The particular industries of interest in this space are medical manufacturing-related, in particular surgical appliance and supplies manufacturing as well as dental laboratories.

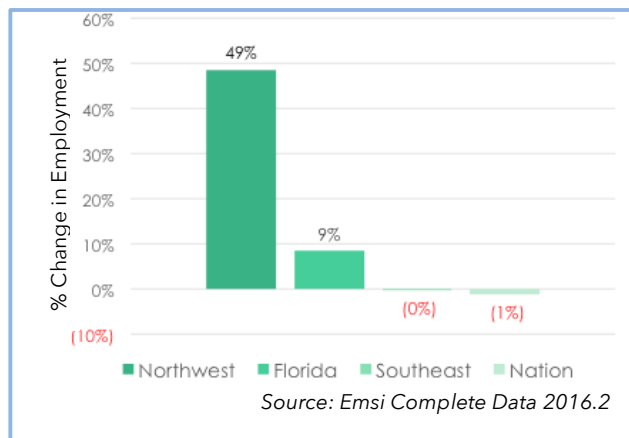


Figure 12. Projected Job Growth, 2015-2025

These local industries are paying almost half the national average for this sector, \$42,800 compared to \$78,750. This level of labor cost savings could be of significant advantage to the recruiting process.



## **Economic Profile of the South Central Rural Areas of Opportunity**

Three counties in the SCRAO are in RMAs: Glades and Hendry are part of the Southwest Regional Manufacturing Association (SRMA), whereas Okeechobee is in the South Florida Manufacturers Association (SFMA). IHS has already prepared an economic profile of the SFMA. Highlands County is defined as the Sebring metropolitan statistical area (MSA); Desoto County comprises the Arcadia micropolitan statistical area (micro); Hardee County is the Wauchula micro; Hendry County is the Clewiston micro, and Okeechobee makes up the Okeechobee micro.

### **Characteristics of the Regional Economy**

Figure 13 provides a map which shows the six counties that make up the SCRAO and presents major locations and transportation infrastructure such as interstate highways and rail lines. The SCRAO is positioned in the south central portion of the state between the Tampa MSA to the northwest and the Miami MSA to the southeast. Although interstate highways 75 and 95 do not pass through the region, they are within short drives to the west and east, respectively.

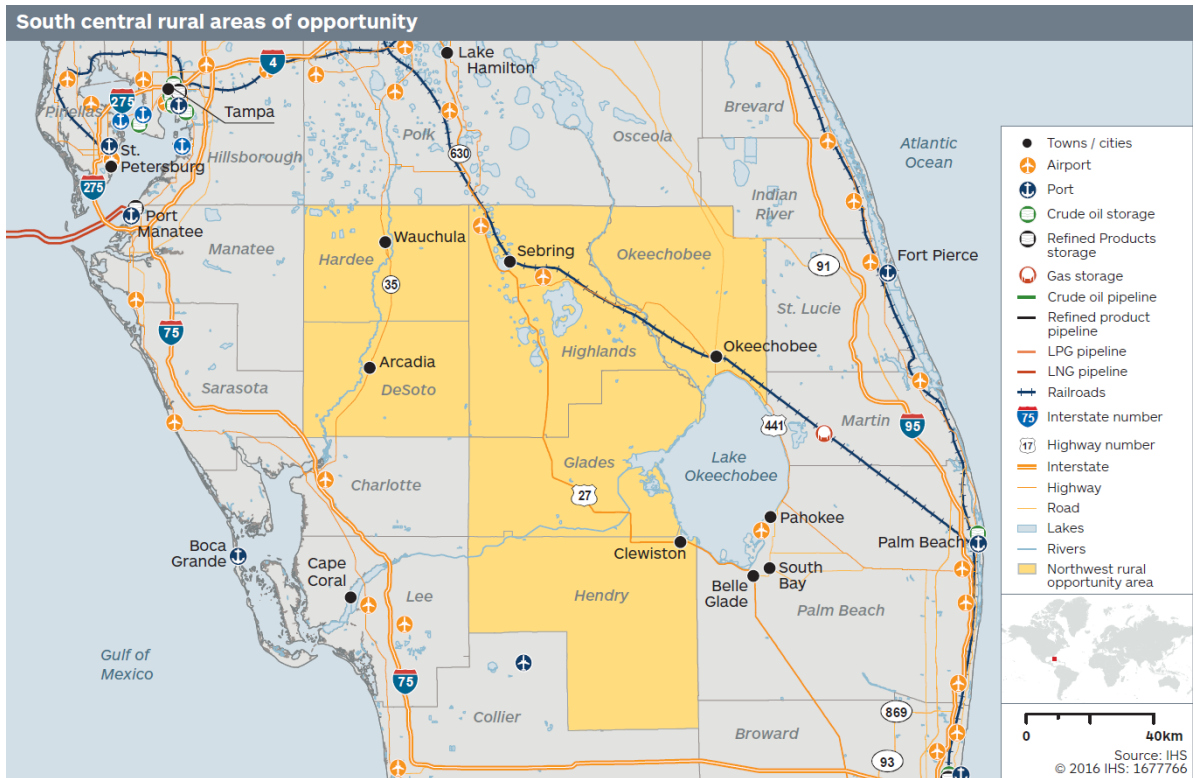


Figure 13. Map of SCRAO Region

### Population

It is estimated that the 2015 population in the SCRAO counties is 254,171 people, or 1.3% of the population of Florida. Reflecting the rural character of the SCRAO, population density was 50.6 people per square mile, one-seventh of Florida’s density of 369.5 people per square mile.

### Unemployment rate

The SCRAO’s cumulative unemployment rate for 2015 was 7.3%, down from the 8.4% annual rate in 2014. In March 2016, the average, not seasonally adjusted unemployment rate (based on workers’ place of residence) for the SCRAO was 5.8%, 1.1 percentage point higher than the state’s 4.7% unemployment rate. The March 2016 national unemployment rate was 4.7%, lower than the SCRAO by more than 1.0 percentage point. The year-on-year (y/y) difference from March 2015 to March 2016 was a decline of 0.9 percentage point, larger than the statewide decline of 0.7 percentage point in the same period. In March 2016, Hendry County had the highest unemployment within the RAO, at 7.3%, and Desoto and Okeechobee Counties both had the lowest unemployment rate, at 5.0%. The SCRAO’s unemployment declined almost twice as much as the national average of 0.5 percentage point y/y.

The SCRAO's unemployment rate has been historically higher than the statewide rate, with the difference averaging 1.9 percentage points since January 2011. Most recently, its unemployment rate has been 2.0 percentage points higher than the statewide average.

### Labor force

The SCRAO labor force consisted of 97,860 workers in March 2016, down minimally y/y by 207 workers, or 0.2%. The labor force contracted more significantly during 2014 and 2015, shrinking 2.4%, or 2,250 workers. The labor force decreased further by 395 workers, or 0.4 percentage point, between February and March 2016. The contractions in the SCRAO differ from Florida's labor force, which rose 1.3% between March 2015 and March 2016, and the US labor force, which increased 1.6% during the same period. Unemployment decreased y/y and the labor force increased y/y in both Florida and the nation between February and March 2016.

The SCRAO labor force has been declining since 2011, with seasonal factors in part causing the labor force to decline 7% in 2015 alone. Lows in the labor force occur in line with highs in the unemployment rate, a pattern that suggests persistent inconsistently available jobs, typical of agricultural areas with low levels of industry diversity.

The key finding from the labor force analysis is that the labor market in the SCRAO is weaker than at either the state or US levels. The loose labor market is consistent with stable wages as the supply of workers is high, resulting in labor having less leverage to negotiate wage increases.

### Economic structure

The SCRAO had 79,321 total jobs in 2015, with 1,634 in manufacturing, or 2.1% of total employment in the region. This share was well below the Florida and US shares of 4.1% and 8.4%, respectively. As a result, the region had a lower-than-average employment location quotient (LQ) compared with the state at 0.51, but a much lower LQ of 0.24 compared with the US share for manufacturing employment.

Of the 22 major sectors, 6 have employment LQs greater than or equal the national industry average. Mining (NAICS 21); agriculture, forestry, and fishing (NAICS 11); and construction (NAICS 23) had LQs above 3 compared with national industry concentrations. When compared with Florida industry

concentrations, the SCRAO has higher concentrations than the state in agriculture, forestry, and fishing; mining; and construction.

Manufacturing employment in the SCRAO declined at a compound annual growth rate (CAGR) of 0.9% between 2000 and 2015, substantially slower than the rates of decline for Florida and the United States during the same period of 2.4% and 2.3%, respectively.

Employment by major economic sector (by two-digit NAICS code) is ranked in the following table in descending order by number of jobs.

Table 14. SCRAO Employment by Major Economic Sector

SCRAO employment by major economic sector				
Industry	Number of jobs	Share	LQ	CAGR 2000–15
23 Construction	15,051	19.0%	4.33	-0.7%
11 Agriculture, forestry, and fishing	13,436	17.0%	7.36	-1.8%
62 Healthcare and social assistance	10,250	12.9%	1.01	1.7%
44–45 Retail trade	8,595	10.8%	1.01	-1.1%
92 Local government	7,913	10.0%	1.01	-0.8%
72 Accommodation and food services	4,627	5.8%	0.65	1.1%
56 Administrative and waste services	3,267	4.1%	0.68	-1.3%
92 State government	2,561	3.2%	0.91	-3.3%
54 Professional and technical services	2,160	2.7%	0.46	7.6%
<b>31–33 Manufacturing</b>	<b>1,634</b>	<b>2.1%</b>	<b>0.24</b>	<b>-2.2%</b>
42 Wholesale trade	1,604	2.0%	0.50	0.5%
81 Other services, excluding public	1,445	1.8%	0.47	0.3%
21 Mining	1,444	1.8%	3.37	0.9%
48–49 Transportation and warehousing	1,335	1.7%	0.52	3.6%
52 Finance and insurance	1,167	1.5%	0.36	-0.4%
71 Arts, entertainment, and recreation	867	1.1%	0.73	1.5%
53 Real estate, rental, and leasing	563	0.7%	0.49	-1.1%
92 Federal government	443	0.6%	0.30	-3.1%
61 Educational services	295	0.4%	0.16	5.8%
22 Utilities	248	0.3%	0.82	-0.7%
51 Information	246	0.3%	0.16	-6.6%
55 Management of companies and enterprises	80	0.1%	0.07	-1.7%
<b>Total industries</b>	<b>79,231</b>	<b>100%</b>		<b>-0.5%</b>

Source: IHS Business Market Insights database

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Because of its historical role as a center of tourism, transportation, and business and health services, Florida has an above-average concentration of its total employment in the private, services-providing (PSP) sectors<sup>11</sup>. The PSP share of employment in Florida in 2015 was 75.9%, compared with the US share of 68.9%. The PSP share of employment is lower in the SCRAO, at 46%, confirming that its economic activity is less concentrated in provision of services than in the production of goods (e.g., agriculture, mining, construction, and manufacturing), which has the potential to increase the manufacturing sector's relative importance. In addition to being less concentrated in manufacturing than the United States as a whole, the SCRAO's manufacturing employment declined at a CAGR of 2.2% during the last 15 years, compared with declines of 2.4% for Florida and 2.3% for the United States during the same period.

### Agricultural sector

Agriculture is a dominant feature of the rural SCRAO counties in terms of its contribution to the economy and its effect on land-use patterns and development densities, and it is one of the major agricultural regions in Florida. The following are a summary of the major characteristics of the SCRAO's agriculture sector in 2012<sup>12</sup>.

- A total of 4,202 farms occupying approximately 2.5 million acres, about 25.6% of the Florida total
- An average farm size of 784.5 acres, compared with the statewide average of 200.0 acres
- A total value of \$1.55 billion of agricultural products; \$1.11 billion for crops, including nursery and greenhouse products, and \$0.44 billion in livestock, poultry, and their products, with agricultural commodities produced representing 20% of the statewide total
- An average market value of agricultural products sold per farm of \$369,700, 230% of the statewide figure of \$161,300

IHS also measured the agriculture sector's current contribution to the SCRAO economy using data from its proprietary Business Market Insights (BMI) database. Animal and crop production sectors (NAICS 111 and 112)

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<sup>11</sup> The private, services-providing (PSP) sector consists of the following major sectors: trade, transportation, and utilities; information; financial activities; professional and business services; education and health care; leisure and hospitality; and other services. The PSP sector excludes employment in the private, goods-producing sectors—agriculture, natural resources and mining, construction, manufacturing, and government.

<sup>12</sup> United States Department of Agriculture, National Agricultural Statistics Service, 2012 Census of Agriculture—county data.

accounted for 13% of the total wage and salary employment in the SCRAO in 2015. By comparison, these farms sectors represented only 1% of Florida's overall employment in the same year. Of the aggregate agricultural, forestry, and fishing sector (NAICS 11), 79% of SCRAO employment is in animal and crop production. Based on the IHS BMI, combined animal and crop production sales in the SCRAO were more than \$2.16 billion in 2015, a 4% compound annual growth rate between 2000 and 2015, lower than Florida's animal and crop production growth of 5%.

### Structure diversity

To evaluate the diversity of the SCRAO's industrial structure, IHS calculated the Hachman Index<sup>13</sup>, which compares a regional economy's distribution of economic activity by sector—in this case employment—with that of the US economy. The Hachman Index's maximum value is 1.00; in other words, the closer the region's Hachman Index value is to 1.00, the more similar that region's economic structure is to the US economy.

For the SCRAO, the Hachman Index was 0.384, well below the Florida economy, which has a Hachman Index of 0.941. Regional economies, especially smaller ones, are usually less diverse than larger state economies or the US economy. The SCRAO's Hachman Index score indicates that, even as a small rural economy, it is a significantly less diverse economy than average.

The relatively low level of the SCRAO's structure diversity suggests that its overall economic performance is heavily dependent on a few sectors, with manufacturing ranking relatively low. The low level of diversity indicates a regional dependence on just a few industries, among which are the construction; agriculture, forestry, and fishing; and healthcare sectors—three major sectors that have limited interindustry interaction. About one-third of employment in the SCRAO depends on highly seasonal industries—construction and agriculture—the result of which is persistently higher-than-average unemployment during off-seasons.

The SCRAO's low level of structure diversity and relatively low employment in manufacturing suggest that fostering additional manufacturing into the region would be a welcome development, especially if it could support the region's agricultural, construction, or healthcare needs and absorb seasonal unemployment. The larger employing manufacturers in the area include food

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<sup>13</sup> See Footnote 8

processing manufacturing and concrete and cement manufacturing; these already take advantage of local production and demand. Enhancing the manufacturing sector's contribution to the SCRAO economy involves identifying additional gaps in agricultural and construction supply chains that could be fulfilled with local production, including key inputs that could be made in the region rather than imported (also known as import substitution), and expanding the value of agricultural exports through the food processing manufacturing subsectors. There are two types of exports: domestic–agricultural and manufactured goods made in the SCRAO that are sold to other Florida counties or to other US states, and foreign–agricultural and manufacturing goods sold to foreign countries.

Manufacturers in the SCRAO seeking to expand their exports should take maximum advantage of their relatively proximity to both the Port of Tampa, which ranked 21st in 2014 among all US ports based on total tonnage handled, about one-third of which consisted of foreign imports and exports; and Port Everglades near Fort Lauderdale, which ranked 30th.

As manufacturing companies increase the volume and value of their domestic and foreign exports, they will bring income back into the region, benefiting workers and households. At the same time, as production rises, companies will increase their demand for inputs made by local suppliers, some of which will come from other local manufacturing firms. As the round-by-round increases in demand are transmitted through the backward linkages, they will generate further increases in regional economic activity in all sectors through the indirect multiplier effect.

## Characteristics of the Manufacturing Sector

To provide a more accurate picture of the SCRAO's overall manufacturing industry, the following sections provide data on manufacturing subsectors' growth, structure, diversity, and risk ratings. We conclude with a shift-share analysis to get a more detailed perspective on regional manufacturing-sector performance in 2015.

### Industry growth

As shown in table 15, between 2000 and 2015, employment grew significantly in four of the three-digit manufacturing subsectors in the region, increasing most significantly in the nonmetallic mineral manufacturing subsector and declining most significantly in food processing sectors. Overall, the SCRAO's CAGR for employment in the manufacturing sector of a 2.2% decline was on a par with the US annual decline of 2.3%.

Among the region's largest subsectors in 2015, employment in machinery shrunk 10.8% annually, a far larger decline than in both Florida and the United States, where it dropped less than 2.0%. Printing support activity manufacturing employment also declined more quickly than in either Florida or the United States. One of the structural features of the manufacturing sector in a rural county is that a few subsectors account for a high share of total manufacturing employment. This occurs because rural counties do not have diverse manufacturing sectors with activity in all subsectors; as shown previously, there are three-digit subsectors for which the SCRAO has little or no employment. In 2015, the five largest manufacturing subsectors accounted for 86% of manufacturing employment in the SCRAO.

### Durables and nondurables

Additional insight into a region's manufacturing sector can be obtained by analyzing the durable and nondurable sectors. Durables, or hard goods, are those that are not totally consumed during their immediate or first use (i.e., provide use during an extended period, usually with a useful life of at least three years, and thus do not have to be purchased often). By contrast, nondurables, or soft or consumable goods, are immediately and totally consumed when initially used, have a useful life of less than three years and need to be purchased frequently.



Table 15. Growth Rate in the Manufacturing Sector: Employment

Sector	Employment				Rank
	2000	2015	LQ 2015	CAGR	
311 Food	1,413	565	0.69	-5.9%	12
312 Beverage and tobacco products	3	11	0.09	9.0%	3
313 Textile mills		2	0.03		
314 Textile product mills	9	5	0.08	-3.8%	10
315 Apparel	48				
316 Leather and allied products	3	21	1.38	13.9%	1
321 Wood products	127	133	0.65	0.3%	7
322 Paper	68				
323 Support activities—printing	32	9	0.04	-8.1%	13
324 Petroleum and coal		13	0.22		
325 Chemical	113	156	0.35	2.2%	4
326 Plastics and rubber products	103	96	0.26	-0.5%	8
327 Nonmetallic minerals	101	456	2.10	10.6%	2
331 Primary metals	22				
332 Fabricated metal products	54	26	0.03	-4.8%	11
333 Machinery	151	27	0.04	-10.8%	14
334 Computer and electronic products		66	0.12		
335 Electrical equipment and appliances		2	0.01		
336 Transportation equipment	19	21	0.02	0.7%	6
337 Furniture and related products	23	15	0.07	-2.8%	9
339 Miscellaneous	9	10	0.03	0.7%	5
<b>Total manufacturing</b>	<b>2,298</b>	<b>1,634</b>	<b>0.24</b>	<b>-2.2%</b>	
<b>Durable manufacturing</b>	<b>506</b>	<b>756</b>	<b>0.18</b>	<b>2.7%</b>	
<b>Nondurable manufacturing</b>	<b>1,792</b>	<b>878</b>	<b>0.36</b>	<b>-4.6%</b>	
<b>Total industries</b>	<b>85,917</b>	<b>79,231</b>		<b>-0.5%</b>	

Notes: CAGR is compound annual growth rate; LQ is location quotient.

Source: IHS Business Market Insights

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As shown in the previous table, in 2015, durable employment was 756 jobs, or 46.3% of total manufacturing employment, while nondurable employment was 878 jobs, or 53.7% of total manufacturing. The US shares of manufacturing employment in 2015 were 63.3% for durables and 36.7% for nondurables, whereas in Florida, they were 67.9% and 32.1%, respectively. Manufacturing employment in the SCRAO is much more evenly distributed between the

durable and nondurable sectors than it is in Florida and the United States. The largest nondurable sector is food manufacturing; companies can take advantage of the region's large agricultural sector.

Because of differences in the goods made and the production processes used, the durable and nondurable manufacturing sectors also differ from each other in terms of the mix of skilled workers required, level of wages paid, and productivity, all of which will determine appropriate economic and workforce development strategies.

### Output and productivity

In addition to employment, it is also helpful to consider output by sector and productivity (output per worker), to get a better sense of an individual manufacturing subsector's contribution to a regional economy. For example, a capital-intensive (i.e., high levels and values of structures and equipment per worker) sector such as petroleum refining, chemicals, or primary metals may not employ a lot of workers (i.e., have high levels of output per worker) but could generate substantial increases in regional economic activity through either backward linkages (i.e., they purchase large amounts of inputs from suppliers located in the region) or through their forward linkages (i.e., the products they make are in turn purchased by other firms in the region who use them as inputs in making other types of goods or services). When evaluating the manufacturing sector's regional economic contribution, it is important to note that, based on changes in productivity, employment growth rates may differ from output growth rates, because companies can produce more even as they are reducing their employment. In the SCRAO, nine sectors had positive CAGRs but only seven had them for employment.

Nine manufacturing sectors grew output between 2000 and 2015, led by the nonmetallic minerals, chemicals, and wood products sectors, as shown in the previous table.

Table 16. Growth Rates in the Manufacturing Sector: Output

Growth rates in the manufacturing sector: Output				
Output (millions of US dollars)				
Sector	2000	2015	CAGR	Rank
311 Food	294.4	219.3	-1.9%	12
312 Beverage and tobacco product	0.9	5.3	12.2%	3
313 Textile mills	0.0	0.5		
314 Textile product mills	1.0	0.9	-1.1%	11
315 Apparel	4.2	0.0		
316 Leather and allied products	0.3	4.1	19.0%	1
321 Wood products	16.2	29.9	4.1%	8
322 Paper	11.2	0.0		
323 Support activities—printing	3.3	1.6	-4.7%	13
324 Petroleum and coal	0.0	13.9		
325 Chemical	40.2	163.8	9.8%	4
326 Plastics and rubber products	15.2	31.5	5.0%	7
327 Nonmetallic minerals	14.6	129.6	15.7%	2
331 Primary metal	4.2	0.0		
332 Fabricated metal products	6.2	5.6	-0.7%	10
333 Machinery	28.6	8.4	-7.8%	14
334 Computer and electronic prod	0.0	12.1		
335 Electrical equipment and appli	0.0	0.8		
336 Transportation equipment	2.9	6.0	5.1%	6
337 Furniture and related products	2.0	2.7	2.1%	9
339 Miscellaneous	1.1	2.4	5.1%	5
<b>Total manufacturing</b>	<b>446.6</b>	<b>638.4</b>	<b>2.4%</b>	
<b>Durable manufacturing</b>	<b>75.8</b>	<b>197.6</b>	<b>6.6%</b>	
<b>Nondurable manufacturing</b>	<b>370.8</b>	<b>440.8</b>	<b>1.2%</b>	
<b>Total industries</b>	<b>7,864.3</b>	<b>12,782.3</b>	<b>3.3%</b>	

Note: CAGR is compound annual growth rate.

Source: IHS Business Market Insights

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The following table presents productivity, expressed in output per worker. The US manufacturing sector has become much more productive in recent years, continuing to make more with fewer workers. As shown in the following table, this was also the case in the SCRAO, where manufacturing productivity grew at an annual rate of 3.9% between 2000 and 2015. Extending the durable and nondurable analysis presented previously, output per worker in the durable manufacturing sector in the United States in 2015 was \$375,043, compared with \$619,325 in the nondurable sector; the latter's level is greater because of high productivity in the petroleum refining and chemical sectors. The following

table shows that productivity in the SCRAO's nondurable sector grew almost twice as fast as in the durable sectors, primarily because of the increase in chemical output.

Table 17. Growth Rates in the Manufacturing Sector: Productivity

Sector	Output per worker			Rank
	2000	2015	CAGR	
311 Food	208,324	388,149	4.2%	9
312 Beverage and tobacco products	314,327	480,143	2.9%	14
313 Textile mills		263,475		
314 Textile product mills	114,698	175,963	2.9%	13
315 Apparel	88,192			
316 Leather and allied products	100,097	194,678	4.5%	5
321 Wood products	127,932	224,659	3.8%	10
322 Paper	165,341			
323 Support activities—printing	102,284	177,518	3.7%	11
324 Petroleum and coal		1,066,325		
325 Chemical	356,062	1,049,745	7.5%	1
326 Plastics and rubber products	147,147	328,348	5.5%	2
327 Nonmetallic minerals	144,632	284,265	4.6%	4
331 Primary metals	191,345			
332 Fabricated metal products	114,826	214,936	4.3%	8
333 Machinery	189,246	311,577	3.4%	12
334 Computer and electronic products		183,555		
335 Electrical equipment and appliances		405,594		
336 Transportation equipment	150,905	286,015	4.4%	7
337 Furniture and related products	87,261	182,773	5.1%	3
339 Miscellaneous	126,042	240,417	4.4%	6
<b>Total manufacturing</b>	<b>194,355</b>	<b>390,701</b>	<b>4.8%</b>	
<b>Durable manufacturing</b>	<b>149,901</b>	<b>261,354</b>	<b>3.8%</b>	
<b>Nondurable manufacturing</b>	<b>206,907</b>	<b>502,076</b>	<b>6.1%</b>	
<b>Total industries</b>	<b>91,534</b>	<b>161,329</b>	<b>3.9%</b>	

Note: CAGR is compound annual growth rate.

Source: IHS Business Market Insights

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The output per worker figures presented in the previous table show the direct increases in manufacturing employment that would be generated by an output increase. Chemicals will produce only 0.95 direct jobs per each additional \$1

million in output, whereas nonmetallic minerals will generate 3.5 direct jobs. If one economic development strategy is to maximize the direct increase in manufacturing employment, organizations should focus on those sectors with the lowest levels of worker productivity. However, there is an important caveat to this strategy, since not all manufacturing jobs are equal—they differ widely based on their annual wages. Economic development agencies must consider the prevailing annual wages in the manufacturing subsectors they want to promote, which are a function of the types of occupations required, which in turn are determined by the types of manufacturing activities.

### Establishment size

The structure of the SCRAO's manufacturing sector was analyzed based on the distribution of establishments by employment size category by three-digit subsector, as shown in the following table. Because of the region's rural nature, the manufacturing sector is primarily made up of small establishments. In 2015, the SCRAO had only 119 manufacturing establishments with payroll, 93.3% of which had fewer than 50 employees. Small and medium-sized manufacturing enterprises (SMEs) are typically defined as companies with fewer than 500 workers; all the establishments in the region were defined as SMEs in 2015. Manufacturing establishments in the SCRAO in 2015 had an average of 13.7 employees on payroll in 2015.

The significance of the distribution of manufacturing establishments by employment size is that different types of strategies and accompanying services are required for small firms versus large firms. SMEs are more vulnerable to changes in the business cycle, fluctuations in interest and currency rates, and regulatory changes. They also may have more difficulty accessing capital and be less able to provide worker training. The proportion of establishments accounted for by SMEs varies widely by subsector based on production processes used, barriers to entry, need to achieve economies of scale, capital intensity, etc. Some subsectors such as fabricated metals, machinery, and printing have traditionally had higher shares of SMEs, whereas others such as petroleum refining and chemicals have low shares.

**Table 18. Distribution of Manufacturing Establishments by Employment, 2015**

Distribution of manufacturing establishments by employment size, 2015

Sector	1 to 4 employees	5 to 9 employees	10 to 19 employees	20 to 49 employees	50 to 99 employees	100 to 249 employees	250 to 499 employees	500 to 999 employees	1,000 + employees	Totals by sector
311 Food	3	-	-	5	2	2	-	-	-	12
312 Beverages and tobacco	2	1	-	-	-	-	-	-	-	3
313 Textile mills	1	-	-	-	-	-	-	-	-	1
314 Textile mill products	2	-	-	-	-	-	-	-	-	2
315 Apparel	-	-	-	-	-	-	-	-	-	-
316 Leather	2	1	1	-	-	-	-	-	-	4
322 Paper	-	-	-	-	-	-	-	-	-	-
323 Support activities—printing	7	-	-	-	-	-	-	-	-	7
324 Petroleum and coal	1	-	1	-	-	-	-	-	-	2
325 Chemicals	10	2	2	3	-	-	-	-	-	17
326 Plastics and rubber	5	1	-	2	-	-	-	-	-	8
<b>Total nondurable</b>	<b>33</b>	<b>5</b>	<b>4</b>	<b>10</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>56</b>
321 Wood products	2	2	1	1	1	-	-	-	-	7
327 Nonmetallic minerals	2	7	4	1	1	1	-	-	-	16
331 Primary metals	-	-	-	-	-	-	-	-	-	-
332 Fabricated metal products	7	1	1	-	-	-	-	-	-	9
333 Machinery	2	2	1	-	-	-	-	-	-	5
334 Computers and electronics	-	-	-	-	1	-	-	-	-	1
335 Electrical equipment and appliance	2	-	-	-	-	-	-	-	-	2
336 Transportation equipment	7	1	-	-	-	-	-	-	-	8
337 Furniture and related products	5	-	-	-	-	-	-	-	-	5
339 Miscellaneous	10	-	-	-	-	-	-	-	-	10
<b>Total durable</b>	<b>37</b>	<b>13</b>	<b>7</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>63</b>
<b>Total by size</b>	<b>70</b>	<b>18</b>	<b>11</b>	<b>12</b>	<b>5</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>119</b>

Source: IHS Business Market Insights

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### Largest manufacturing employers

The region’s largest employers, by local employment, are shown in the following table. Business research firm Hoover’s Inc. uses a different methodology than the IHS BMI database, which is based on the US Census Bureau’s County Business Patterns and other commercial business lists. There can also be differences in assigning an establishment to a NAICS code based on the type of business activity performed there. As result, the distribution of establishments presented in the previous table by NAICS code may differ from the NAICS code of the largest employers presented in the following table. As we have experienced in other similar studies, compiling an accurate list of largest employers by NAICS code is a challenging task for the reasons noted previously, because conditions keep changing, and accurate data about the number of people currently working at an individual establishment may be hard to get, in part because they are proprietary. To ensure maximum

accuracy, lists of top employers should be reviewed by local economic development officials who have the most current knowledge of their economies. The Southwest Florida Economic Development Alliance shows plantation botanicals as having 500 employees on its list of largest employers.

Table 19. Largest 15 Manufacturing Employers

Largest 15 manufacturing employers				
Company name	County	Local employment	Primary NAICS code	Primary industry
Plantation Botanicals, Inc.	Hendry	500	325411	Pharmaceutical
A. Duda and Sons, Inc.	Hendry	150	311411	Fruit and vegetable processing
The Mancini Packing Co.	Hardee	100	311422	Fruit and vegetable processing
Turf Care Supply Corp.	Highlands	100	325311	Agricultural chemicals
Winslow Marine Products Corp.	DeSoto	85	336612	Boat building
E-Stone USA Corp.	Highlands	70	327390	Cement and concrete products
Monsanto Company, Inc.	Hendry	62	325320	Agricultural chemicals
Genpak LLC	Highlands	60	326150	Plastic and rubber products
Landscape Products, Inc.	Okeechobee	50	327331	Cement and concrete products
Scosta Corp.	Highlands	50	332311	Architectural and structural metals
The Andersons, Inc.	Highlands	50	325312	Agricultural chemicals
Roof Tile, Inc.	Okeechobee	47	327390	Cement and concrete products
Tu-Co Peat	Highlands	42	325314	Agricultural chemicals
D&J Machinery, Inc.	Hendry	40	332710	Machine shops
Syfrett Feed Co., Inc.	Okeechobee	39	311119	Livestock and other animal food

Source: Hoover's Inc., data downloaded 16 May 2016 © 2016 IHS

The list of top manufacturing employers is consistent with information on establishment sizes; the top employers include companies in chemicals (i.e., pharmaceuticals), food, nonmetallic minerals (i.e., concrete producers), and transportation equipment (i.e., boat building).

### Structure diversity

To evaluate the SCRAO's manufacturing-sector diversity, we again used the Hachman Index<sup>14</sup> based on four-digit NAICS employment codes, with LQs based on employment in the manufacturing sector. As expected, because of its rural characteristics and many manufacturing subsectors having little or no activity, the SCRAO's Hachman Index in 2015 was a very low 0.085 compared with the statewide figure of 0.702. The result is consistent with the previous

<sup>14</sup> See Footnote 8.

finding that manufacturing employment is concentrated in a small number of sectors. We note that the SCRAO's manufacturing-sector diversity index is substantially lower than the 0.133 for the North Central RAO, but above the 0.059 in the Northwest RAO.

### Advanced manufacturing

With 357 jobs in the advanced manufacturing sectors as defined by US Bureau of Labor Statistics (BLS) and the Brookings Institution<sup>15</sup>, the SCRAO has 21.9% of its manufacturing industry employment in advanced manufacturing subsectors. This share is less than half the Florida and US shares of 49.8% and 46.8%, respectively. The SCRAO's advanced manufacturing employment occurs in three sub-sectors: 3253-Agricultural Chemicals, 3271-Clay Products, and 3344-Semiconductors. It is in the advanced manufacturing sub-sectors that we should expect the greatest innovation (i.e., have higher patent rates), and they have higher growth rates in productivity, require more highly skilled workers, and pay higher wages than other manufacturing sectors. Advanced manufacturing sectors tend to cluster in large, diverse metropolitan economies because of their competitive advantages over rural counties, including a larger supply of skilled workers, transportation accessibility, presence of colleges and universities, higher-quality infrastructure, innovation resources such as incubators, and proximity to suppliers and customers.

### Shift-share analysis

To examine the performance of the four-digit manufacturing subsectors based on changes in employment between 2000 and 2015, a shift-share analysis was conducted of the manufacturing subsectors in the regional study area. (A more complete description of shift-share analysis is provided in the previous section for the Northwest RAO under the same heading.)

In the SCRAO, the highest-performing A and B sectors included:

- Cement and concrete products
- Pesticides, fertilizer, and other agricultural chemicals

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<sup>15</sup> The definition of advanced manufacturing subsectors comes from two sources: Daniel E. Hecker, "High-technology employment: a NAICS-based update," *Monthly Labor Review*, July 2005, and M. Muro, Jonathan Rothwell, et al., "America's Advanced Industries: What They Are, Where They Are and Why They Matter," Brookings Advanced Industries Project, February 2015. Both studies identified high-tech and advanced sectors across the entire economy at the four-digit NAICS level; we defined advanced manufacturing to consist of all the manufacturing subsectors identified in either study. The result was that 37 of the total of 86 four-digit NAICS manufacturing subsectors were defined as advanced manufacturing subsectors.



- Other wood products
- Rubber products
- Clay and refractory products
- Soap
- Veneer, plywood, and engineering wood products

The detailed results of the shift-share analysis are presented in table 20. The A and B sectors listed in the table accounted for a surprisingly high share of 61% of total manufacturing employment in 2015.

There are two traditionally important legacy industries in which the region still has above-average shares of economic activity, but, for a variety of reasons, are underperforming the same sectors at the US level (the C sectors):

- Fruit and vegetable preserving and specialty foods
- Sugar and confectionary products

The results of the shift-share analysis can be used for developing strategies in the following manner:

- Analyze the economic sectors classified as either A or B, since they are the highest performers, to identify the region's competitive advantages that drive their performance. The B sectors should receive special attention because, although they currently account for below-average shares of economic activity, this is where the emerging sectors are likely to be found. The economic development objective is then to turn B sectors into A sectors.
- Identify the names of individual firms in each A and B sector and analyze them to determine why they are high performers. It is essential to determine the extent to which their high performances are due to firm-level factors such as excellent management, efficient operations, competitive prices, superior product quality, etc., or regional competitive advantages such as lower cost of doing business, high labor quality, proximity to markets and/or suppliers, lower tax rates, excellent transportation networks, a favorable regulatory environment, etc.
- Analyze the C sectors and identify the factors affecting their competitiveness; they comprise traditional centers of manufacturing activity, so helping them remain profitable also maintains manufacturing employment.

- Identify clusters of subsectors with similar needs that also interact with each other through buying and selling relationships.
- Identify those regional competitive advantages that apply across all the manufacturing subsectors and those that are important to a few specialized subsectors.
- Identify those regional competitive advantages where local actions can make a difference (i.e., increasing the supply of skilled workers needed by the advanced manufacturing sectors).
- Begin to develop strategies and programs that maintain and enhance regional competitive advantage in the targeted sectors.

**Table 20. Shift-share Analysis Results for SCRAO**

Shift-share analysis of the South Central RAO manufacturing sector						
NAICS sector	Description	Allocation code	2015 employment	2015 location quotient	Percent of private-sector employment in 2015	Employment CAGR 2000 to 2015
3273	Cement and concrete products	A	386	3.89	0.57	9.57%
3253	Pesticide, fertilizer, and other agricultural chemicals	A	110	5.70	0.16	0.57%
3111	Animal food	A	85	2.90	0.12	-0.08%
3271	Clay products and refractory	A	70	3.49	0.10	23.37%
3162	Footwear	A	13	1.80	0.02	18.65%
3219	Other wood products	B	110	0.88	0.16	0.18%
3344	Semiconductor and other electronic components	B	66	0.32	0.10	32.22%
3262	Rubber products	B	46	0.65	0.07	29.08%
3256	Soap, cleaning compounds, and toilet preparation	B	37	0.64	0.05	27.22%
3212	Veneer, plywood, and engineered wood products	B	23	0.60	0.03	23.25%
3371	Household and institutional furniture	B	15	0.12	0.02	-2.81%
3241	Petroleum and coal products	B	13	0.22	0.02	18.65%
3366	Ship and boat building	B	12	0.15	0.02	1.22%
3121	Beverages	B	11	0.10	0.02	9.05%
3114	Food	C	295	3.06	0.43	-4.45%
3113	Sugar and confectionery products	C	181	4.23	0.26	-8.87%
3261	Plastics products	D	50	0.16	0.07	-4.70%
3327	Machine shops	D	19	0.09	0.03	-3.81%
3339	Other general-purpose machinery	D	12	0.08	0.02	-3.35%

Note: The analysis only considers sectors with at least 10 employees in 2015.

Source: Data from IHS 2016 Business Market Insights database, analysis by IHS

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Based on our experience in other studies, it is always valuable to have economic development professionals with detailed knowledge of the regional economy review the list of the subsectors assigned to each of the four shift-share types. Ideally, the distribution of subsectors by type should generally confirm their understanding of their regional economic composition (i.e., the

subsectors they expected to be classified as A or B sectors actually appear there).

### Manufacturing wages

An IHS analysis found that 57.8% of all production workers in Florida were employed in the manufacturing sector in 2015, followed by 23.3% of all architects and engineers, making these two of the most significant categories for evaluating manufacturing occupation wages in the SCRAO. The annual median wage for workers in the production and architecture and engineering occupational categories were 103.5% and 100.4%, respectively, of statewide levels, indicating these occupations are paid higher than their state averages. The table shows that the SCRAO had median wages generally clustered around the statewide levels in 2015 for six occupational categories, with its management median wage being much lower than the Florida level. Other things being equal (i.e., labor quality, skills, and productivity), the SCRAO does not have a significant competitive advantage for labor costs compared with the state as a whole. However, the region does have a significant advantage in labor costs compared with median US wage levels for these occupational categories.

IHS estimated total annual wage payments for an individual company in selected manufacturing subsectors using the US distribution of detailed occupational employment by four-digit NAICS code. The analysis used 2015 annual wage rates for the South Florida nonmetropolitan area as published by the Bureau of Labor Statistics, since they are representative of labor-market conditions in the region. The analysis compared the total annual wage cost for a manufacturing establishment in the SCRAO with the wage cost if it paid average annual US wages for the same occupations, keeping total employment the same.

Table 21. Employment and Wage Levels in Manufacturing Occupations, 2015

Employment and wage levels in manufacturing occupations, 2015

Major occupational category	Employment in all sectors in region	Percent working in manufacturing in Florida	Median annual wage in region	Percent of Florida median wage	Percent of US median wage
11-0000 Management	2,010	5.7	80,530	81.1	81.7
17-0000 Architecture and engineering	540	23.3	66,940	100.4	87.1
41-0000 Sales and related	9,400	1.1	24,200	98.0	94.3
43-0000 Office and administrative support	10,770	2.6	29,380	97.2	88.6
49-0000 Installation, maintenance, and repair	3,480	4.3	37,370	99.2	87.3
51-0000 Production	1,910	57.8	29,920	103.5	92.8
53-0000 Transportation and material moving	4,700	4.9	27,280	102.9	90.7

Notes: The major occupational categories listed accounted for 89% of total 2015 employment in Florida's manufacturing sector. Regional employment and median wage data are for the South Florida nonmetropolitan area.

Source: Bureau of Labor Statistics, May 2016, occupational employment statistics

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An analysis showed that the total annual wage costs for a manufacturing firm in the SCRAO range between 10% and 15% lower than for the United States as a whole, consistent with median wage differences shown in the previous table.

**Pattern of export commodity flows**

FloridaMakes was interested in determining the spatial characteristics of the commodities produced in and exported from the three RAOs. In other words, where are the agricultural and manufacturing commodities produced in the SCRAO sold—what percent are sold in other Florida counties and what percent are sent to other US states. IHS used its proprietary Transearch database to perform this analysis. From this it estimated the tonnage and value in 2014 of both agricultural and manufacturing commodities by four-digit NAICS code produced in SCRAO counties that were exported by truck. The following table provides a summary of the market area served by exports from the SCRAO in terms of three-digit NAICS codes. Table 22 shows that 66.3% of the weight of commodities produced in the SCRAO in 2014 was sent by truck to other locations in Florida, compared with 33.2% that was sent to other US states. The in-state shares varied widely, from 100% for printing and publishing down to just under half for forestry and logging. Only a tiny amount of commodities was sent by truck to Canada and Mexico.

Table 22. Distribution of Export from SCRAO, 2014

Commodity	To Florida		To other US states		To Canada and Mexico		Total by commodity (thousands of short tons)
	Amount (thousands of short tons)	Percent of commodity total	Amount (thousands of short tons)	Percent of commodity total	Amount (thousands of short tons)	Percent of commodity total	
111 Crop production	3,867.9	61.1	2,437.8	38.5	24.6	0.4	6,330.3
112 Animal production and aquaculture	708.8	89.4	84.0	10.6	-	0.0	792.8
113 Forestry and Logging	15.4	49.9	15.4	50.1	-	0.0	30.8
311 Food manufacturing	246.7	71.2	91.5	26.4	8.0	2.3	346.2
312 Beverage and tobacco product manufacturing	9.7	93.1	0.7	6.9	-	0.0	10.5
316 Leather and allied product manufacturing	0.4	83.6	0.1	13.7	0.0	2.7	0.5
321 Wood product manufacturing	63.9	93.7	4.2	6.2	0.1	0.1	68.2
323 Printing and related support activities	0.2	100.0	-	0.0	-	0.0	0.2
324 Petroleum and coal products manufacturing	50.5	56.3	35.9	40.0	3.3	3.7	89.6
325 Chemical manufacturing	110.2	99.0	0.9	0.8	0.2	0.2	111.3
326 Plastics and rubber products manufacturing	11.4	64.1	6.2	34.9	0.2	0.9	17.8
327 Nonmetallic mineral product manufacturing	595.5	77.5	172.4	22.5	0.0	0.0	767.9
332 Fabricated metal product manufacturing	3.3	99.6	0.0	0.4	-	0.0	3.3
333 Machinery manufacturing	0.5	89.1	0.1	10.9	-	0.0	0.6
334 Computer and electronic product manufacturing	1.4	87.7	0.2	12.3	-	0.0	1.6
335 Electrical equipment, appliance, and component r	0.0	100.0	-	0.0	-	0.0	0.0
336 Transportation equipment manufacturing	0.1	100.0	-	0.0	-	0.0	0.1
337 Furniture and related product manufacturing	0.8	84.1	0.2	15.9	-	0.0	1.0
339 Miscellaneous manufacturing	0.6	58.0	0.4	42.0	-	0.0	1.0
<b>Total tonnage shipped from SCRAO</b>	<b>5,687.3</b>	<b>66.3</b>	<b>2,849.9</b>	<b>33.2</b>	<b>36.4</b>	<b>0.4</b>	<b>8,573.6</b>

Notes: The South Central Rural Areas of Opportunity consists of the following Florida counties: DeSoto, Glades, Hardee, Hendry, Highlands, and Okeechobee.  
Source: IHS, Transearch

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Not surprisingly, based on the previously presented analyses, the largest commodity exports by weight were crops, animal products (i.e., livestock and poultry), nonmetallic minerals, primarily concrete products, wood products, and food products.

Figure 14 provides a map which shows the major destinations by state of commodities exported by truck out of the SCRAO. The top-10 destination states, based on the weight of commodities shipped, are shown in gray. Because of the nature of exports, the heavy flow of commodities to states in the Northeast, Middle Atlantic, and Great Lakes states is clearly evident; Texas and California are also major destinations.

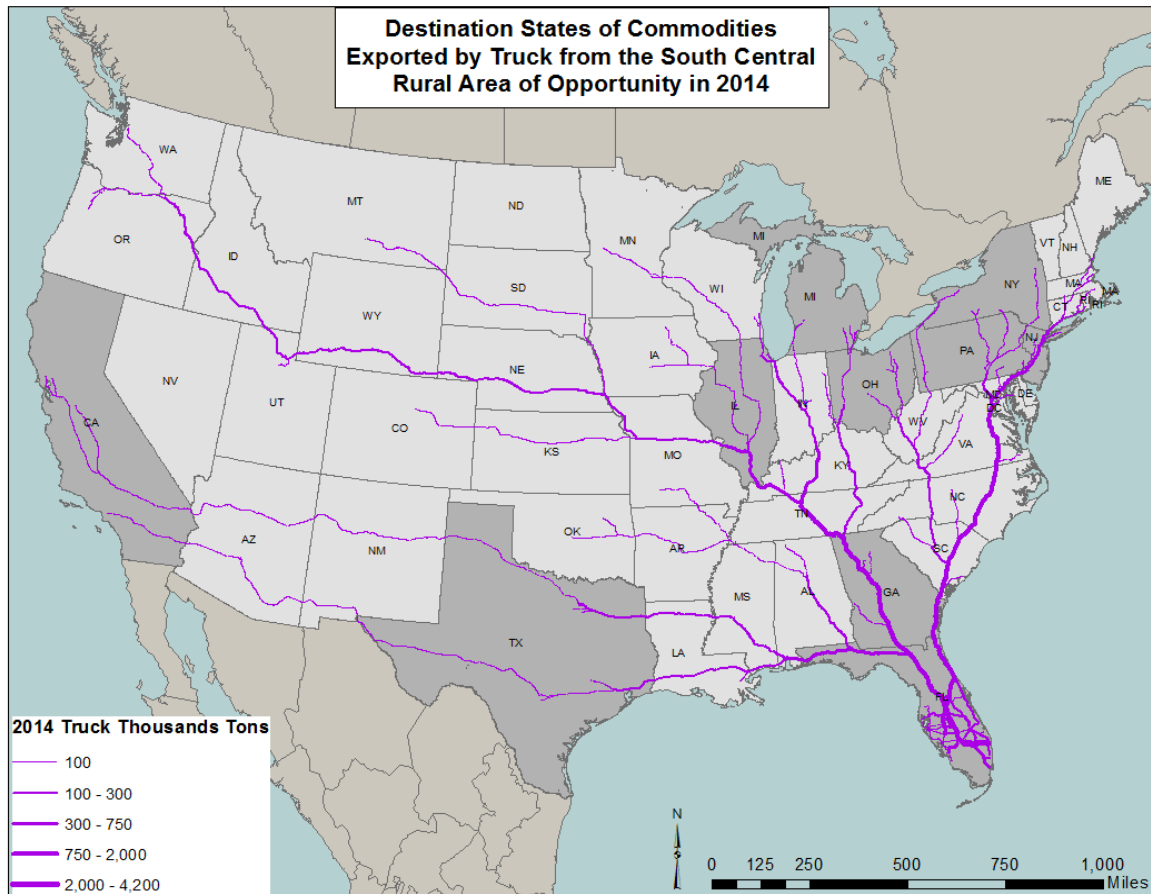


Figure 14. Destination States Exported from SCRAO in 2014

Appendix C (*Flow of commodities sent by truck from the SCRAO to other US states in 2014*) provides additional detail on the amount of commodities sent by truck from the SCRAO to US states other than Florida. The table confirms the flows in the previous map; New York was the major destination in 2014, receiving 8.5% by weight of exported commodities. We analyzed the commodity flow to New York in more detail and determined that it consisted primarily of fruit and tree nut farming (NAICS code 1113), likely oranges, grapefruit, tangerines, etc. The information presented in Appendix C can be disaggregated by commodity types upon request.

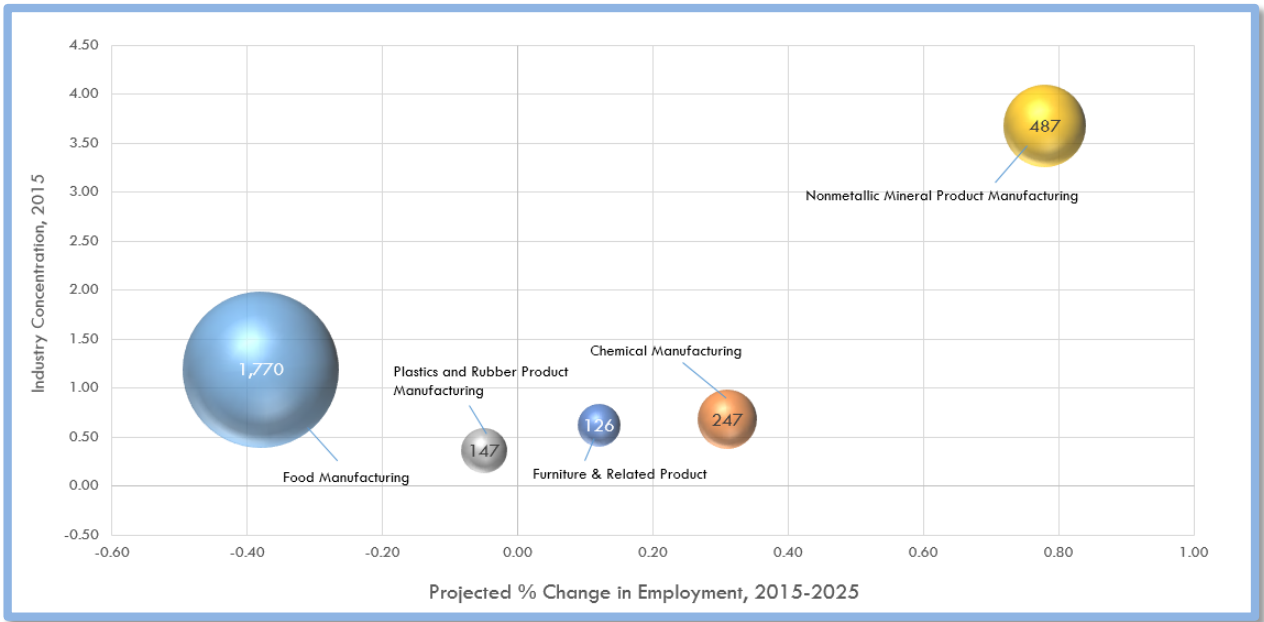
IHS has identified the intrastate pattern of commodity exports from the three RAOs. The flow from the SCRAO to other Florida counties is presented in Appendix D (*Florida destinations of commodities shipped by truck from the SCRAO in 2014*). About 5,111,900 short tons, or 89.9% of the commodities exported by truck, were sent from the SCRAO to these 10 Florida counties

located outside it (in descending order of tonnage sent): Palm Beach, Miami-Dade, Lee, Polk, Broward, Hillsborough, Orange, Duval, Collier, and Pinellas. Because it was unusually large, at almost 3.6 million tons, we analyzed the flow to Palm Beach County in more detail. In the Transearch database, the flow was initially classified as other crops (NAICS code 111); upon closer analysis, we determined that it was sugar cane being sent to the Sugar Cane Growers Cooperative of Florida processing facility in Palm Beach County, virtually all of which is for domestic consumption.

### **Manufacturing Cluster Analysis**

South Central manufacturers are much closer in pay to the national average than the other two regions in this study. Average annual earnings are \$65,329 in the region, which only lags the national average of \$78,403 by approximately 20% compared to 65% for other regions.

The region has over 3,400 manufacturing jobs, over half of which are related to food manufacturing and the downstream effect of the large sugar production in the area. Food manufacturing has seen losses in employment in recent years, but small to medium firms are rising up to offset some of the losses as we've highlighted below.



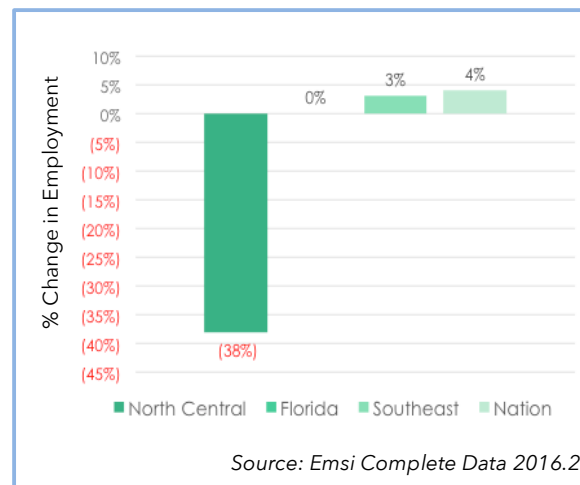
Source: Emsi Complete Data 2016.2

Figure 15. Manufacturing Industrial Clusters in the South Central Region

### Food Manufacturing

Although agricultural employment has fallen to a near-historic low percentage of the labor force in Florida, in many parts of rural Florida it remains the primary economic engine.

Farming supports fewer with acceptable income levels because of its high productivity. However, food processing employment remains an important source of jobs in many of these areas, including the South Central region. Total food manufacturing employment in the region was 1,800 in 2015. The concentration of those jobs is well above the Florida average, with a location quotient of 1.85 compared to just 0.36 for Florida as a whole. Food processing generated over \$240 million in output in 2014. Total earnings paid to workers employed directly by food processors was approximately \$114 million, with average total earnings per worker of \$81,000.



Source: Emsi Complete Data 2016.2

Figure 16. Projected Job Growth, 2015-2025



Food processing has suffered significant job losses in the region during the past decade but opportunities exist with small employers that have enjoyed growth in recent years.

A relatively small number of sugar processing plants in central Florida have added capacity as domestic and global demand continues to grow. To accomplish this, the regional sugar industry has been consistently improving the operation and efficiency of several plants. At the same time, industry employment has fallen over the last decade and it is unclear how many processing jobs will be added in this industry in coming years.

In contrast, the cluster of chosen food manufacturers is comprised of those smaller industries that were resilient or added jobs during this period. It is comprised of the following 6-digit NAICS industries: other animal food, meat processed from carcasses, rice milling, fluid milk manufacturing, leather and hid tanning and finishing.

### Plastics and Rubber Product Manufacturing

Plastics is another example of the higher aggregated cluster anticipating a loss of jobs but with pockets of growth within it. Areas such as plastics product manufacturing and un-laminated plastics profile shape manufacturing are showing signs of improvement and opportunity in the coming years.

These drilled down industries have higher earnings, ranging from \$59,000 up to \$80,000 annually. This can have a significant impact on the region with their high productivity.

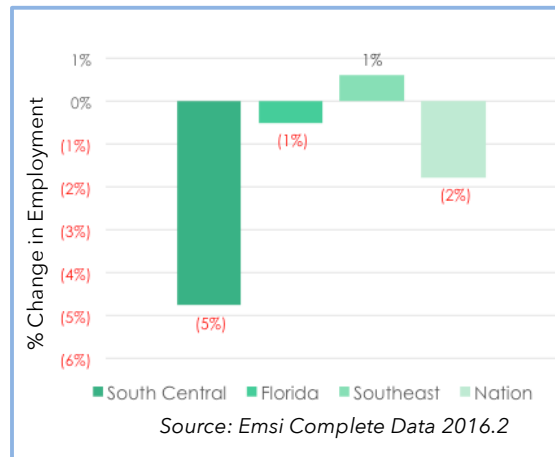


Figure 17. Projected Job Growth, 2015-2025

### Nonmetallic Mineral Product Manufacturing

As we saw in the Northwest region, the significant growth in concrete-related manufacturers in Florida in recent years has led to good growth projections for the future. This includes industries such as concrete block and brick, cut stone and stone products, as well as mineral wool manufacturing. The \$55,000 in annual average wages of this cluster are close to state average of \$60,300, making them prime jobs in terms of impact to the local economy.

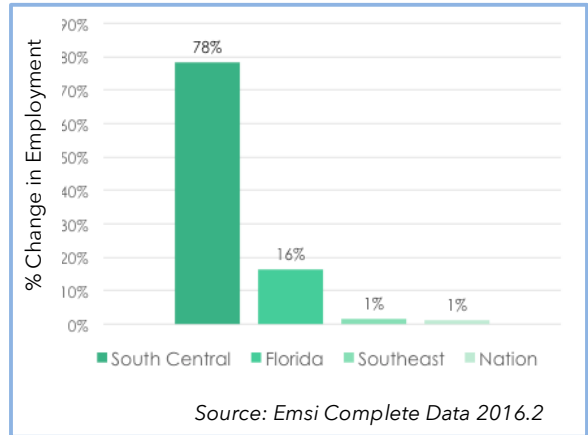


Figure 18. Projected Job Growth, 2015-2025

### Chemical Manufacturing

The regional chemical cluster provided nearly 247 jobs for South Central in 2015, led by fertilizer manufacturing. The industry isn't growing nationally, but strong regional growth is projected. While fertilizer manufacturing is no doubt an input into the agricultural production, other industries in this cluster include toilet preparation, pharmaceutical preparation and other basic organic chemical manufacturing.

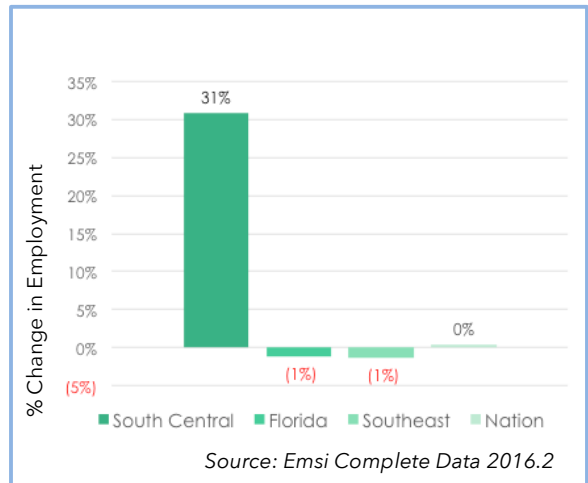


Figure 19. Projected Job Growth, 2015-2025

### Furniture and Related Products

Kitchen cabinets, counter tops, wood furniture and other wood-related products are thriving in South Central. No doubt the proximity to urban markets is helpful in this process, as much of the sales are exports. Their growth is anticipated to help offset some of the decline in the state.

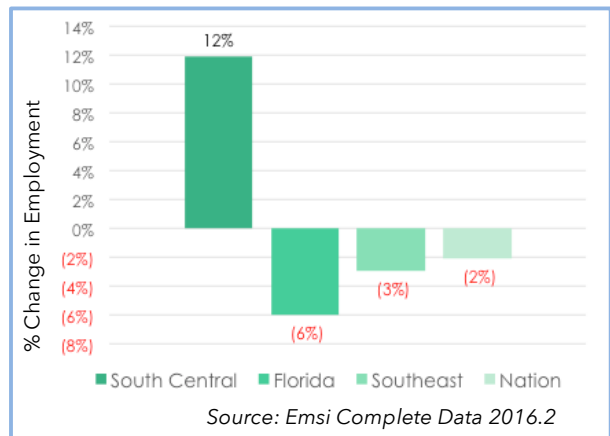


Figure 20. Projected Job Growth, 2015-2025

## **Economic Profile of the North Central Rural Areas of Opportunity**

The 14 counties of the NCRAO are located in the following RMAs, metropolitan statistical areas (MSA), and micropolitan statistical areas:

- **Gainesville Chamber of Commerce (GCC):** Baker, Bradford, Columbia, Gilchrist, and Union counties
- **Capital Region Manufacturers Association (CRMA):** Jefferson County
- **Mid-Florida Manufacturers Association (MRMA):** Levy County
- **First Coast Manufacturers Association (FCMA):** Putnam County
- **Jacksonville-St. Marys-Palatka MSA:** Baker County
- **Lake City, Florida, micropolitan statistical area:** Columbia County
- **Gainesville MSA:** Gilchrist County
- **Tallahassee-Bainbridge MSA:** Jefferson County
- **Palatka Micropolitan Statistical Area:** Putnam County

## Characteristics of the Regional Economy

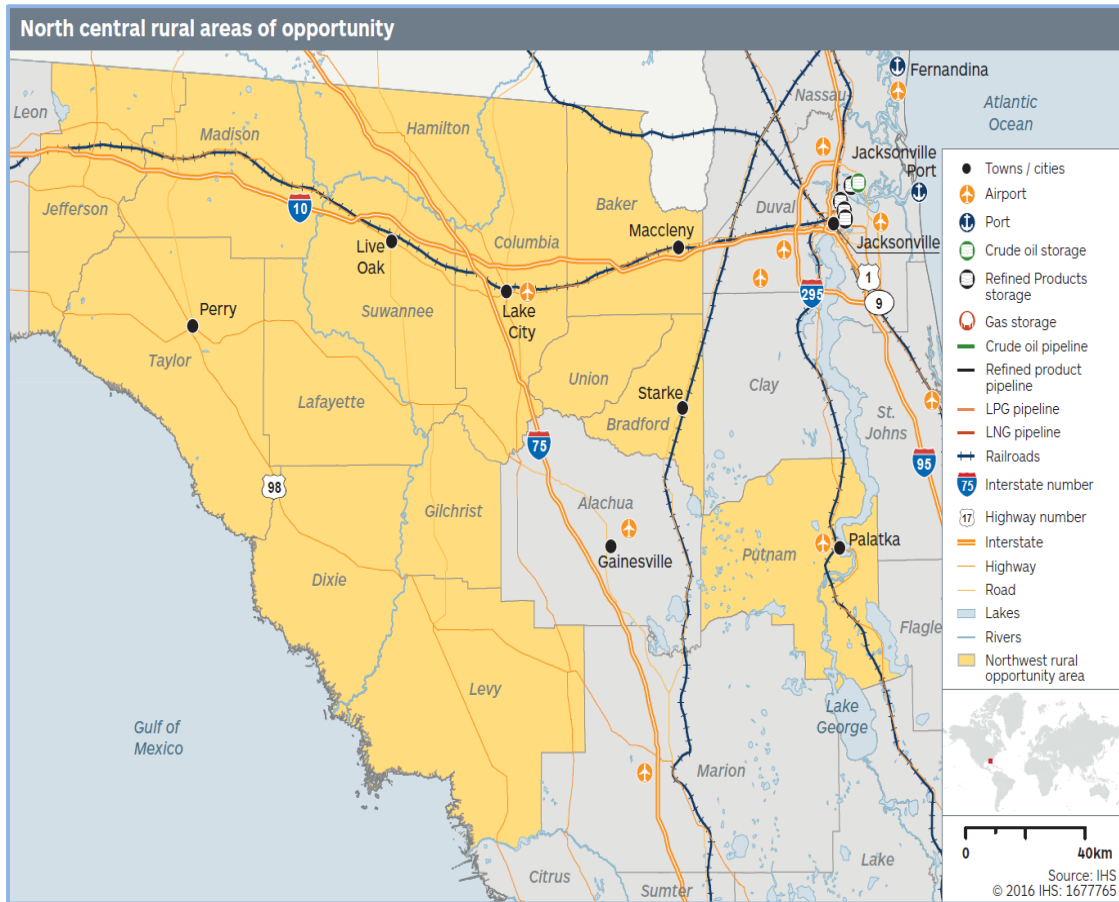


Figure 21. Map of the NCRAO Region

Figure 21 provides a map which shows the 14 counties that represent the NCRAO, and presents major locational and transportation infrastructure such as interstate highways and rail lines. The NCRAO is located directly west of the Jacksonville MSA and due east of the Tallahassee MSA. The region is well served by major highways including Interstate 75, which passes north-south through its center, while Interstate 10 passes in an east-west direction across its entire width. The NCRAO is bordered on the south by the Gulf of Mexico and on the north by Georgia. The close proximity of the NCRAO to urbanized areas to the east and west is a unique and potentially valuable locational asset; while it meets the criteria for defining a RAO, six of its counties are located within either a defined MSA or a Metropolitan Statistical Area.

## Population

It is estimated that the 2015 population in North Central RAO counties is 409,208 persons, or 2.1% of the state of Florida. The population density was 46 persons per square mile, one-eighth of the Florida density of 369.5 persons per square mile. Reflecting the rural nature of the region, approximately 79% of its total population is located in unincorporated areas.

## Unemployment rate

In March 2016, the average not seasonally adjusted (NSA) unemployment rate for the NCRAO was 4.9%, slightly above the state's rate of 4.7%, but below the US rate of 5.1%. The NCRAO's annual unemployment rate for 2015 was 5.9%, declining from an annual rate of 6.9% in 2014. The year-on-year (y/y) change from March 2015 to March 2016 was a decline of 1 percentage point, slightly above the statewide change of -0.7 percentage point over the same time period. Putnam County had the highest unemployment within the RAO at 5.8% and Lafayette County had the lowest unemployment rate of 3.8% in March 2016. Florida and the NCRAO experienced slightly larger y/y declines in their employment rates than the US economy between March 2015 and March 2016.

The NCRAO unemployment rate has been higher on average than the statewide rate since 2012, with the difference ranging from 0.2 percentage point to 0.4 percentage point. More recently from 2014 to present, the annual average NCRAO unemployment rate has averaged 0.3 percentage point higher than the state average. The national unemployment rate in 2011, at 8.9%, was a full percentage point lower than for the region. By 2013, the gap had fallen by half to 0.3%, but rose again in 2014 and 2015, with local area unemployment increasing to a difference of 0.5% and 0.3%, respectively.

## Labor force

The NCRAO labor force consisted of 162,580 workers in March 2016 and experienced a y/y increase of 2,450 persons, or 1.5%, from 160,790 to 161,880, with half of that increase, or 1,000 workers, occurring between February and March of 2016. The labor force experienced a smaller increase annually between 2014 and 2015, growing 0.7% or by 1,090 workers, from 160,792 to 161,886, suggesting that a significant portion of growth is the result of seasonal flows. These trends suggest that while much of the labor-force growth is likely tied to seasonal work, the NCRAO labor force is growing modestly outside of seasonal factors at a modest pace below the state of Florida. The state of Florida experienced modest increases of 0.3% to its labor

force, which were slightly smaller than national increases of 0.4% between February and March 2016. Florida's labor-force growth of 1.3% remained slightly slower than the national rate of 1.6% between March 2015 and March 2016.

The NCRAO labor force has experienced a 6% decline between 2008 and 2014. The slight uptick in labor-force growth between 2014 and 2015 suggests that the decline could be at its end, but it should be monitored over the coming year.

### Economic structure

The NCRAO had 119,414 total jobs in 2015 with 10,038 of them in manufacturing, representing 8.4% of total employment. This share was about twice Florida's 4.1% and the same as the nation's 8.4%. The region had an above-average employment location quotient (LQ) in manufacturing of 2.06 when based against the state and an employment LQ of 1.0 when based against the national figure as shown in the accompanying table. Of the 22 major sectors, 9 have employment LQs greater than or equal to one when compared with national industry average concentrations: agriculture, forestry, and fishing (NAICS 11); construction (NAICS 23); management of companies (NAICS 55); and state government (NAICS 92) had LQs of more than 2.0, indicating well-above-average employment concentrations of economic activity in these sectors. The high LQ in the agriculture, forestry, and fishing sector is consistent with and supports the RAO designation for the 14 counties in the region.

Table 23 shows that employment in the NCRAO's manufacturing sector declined at an annual rate of 2% between 2000 and 2015, representing a slower employment decline than that of the US or Florida manufacturing sector of 2.3% and 2.4%, respectively, over the same period. Employment by major economic sector (by two-digit NAICS code) is ranked below in descending order by number of jobs.

Table 23. NCRAO Employment by Major Economic Sector, 2015

NCRAO employment by major economic sector in 2015				
Industry	Number of jobs	Share	LQ	CAGR 2000–15
92 Local government	16,442	13.8%	1.39	0.4%
11 Agriculture, forestry, fishing	14,568	12.2%	5.30	1.9%
62 Health care & social assistance	13,723	11.5%	0.89	2.0%
44-45 Retail trade	12,917	10.8%	1.00	-0.6%
23 Construction	12,739	10.7%	2.43	2.2%
92 State government	11,410	9.6%	2.70	-1.2%
<b>31-33 Manufacturing</b>	<b>10,038</b>	<b>8.4%</b>	<b>1.00</b>	<b>-2.0%</b>
72 Accommodation & food services	6,549	5.5%	0.61	-1.3%
55 Mgt. of companies & enterp.	5,199	4.4%	2.89	31.7%
56 Administrative & waste services	5,075	4.2%	0.70	9.2%
48-49 Transportation & warehousing	3,670	3.1%	0.94	3.5%
54 Professional & technical ser.	2,776	2.3%	0.39	1.6%
81 Other services, excl. public	2,743	2.3%	0.60	1.1%
42 Wholesale trade	2,155	1.8%	0.44	0.4%
92 Federal government	1,894	1.6%	0.84	-0.5%
52 Finance & insurance	1,543	1.3%	0.31	-1.7%
53 Real estate, rental, & leasing	924	0.8%	0.53	-1.5%
61 Educational services	742	0.6%	0.26	8.1%
21 Mining	683	0.6%	1.06	-3.1%
22 Utilities	455	0.4%	1.00	-3.2%
51 Information	437	0.4%	0.19	-4.9%
71 Arts, entertainment, & recreation	393	0.3%	0.22	-1.7%
<b>Total industries</b>	<b>119,414</b>	<b>100%</b>		<b>0.3%</b>

Source: IHS Business Market Insights database

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Florida had an above-average concentration of its total employment in the Private, Services Providing (PSP) sectors<sup>16</sup> in 2015 of 75.9% compared with the US share of 68.9%. The NCRAO's employment share in PSP sectors was much lower at 49%, confirming that its economic activity is less concentrated in

<sup>16</sup> The Private, Services Providing (PSP) sector consists of the following major sectors: trade, transportation and ties; information; financial activities; professional and business services; education and health care; leisure and hospitality; and other services. The PSP sector excludes employment in the private, goods-producing sectors—agriculture; natural resources and mining; construction; manufacturing; and government.

provision of services than in the production of goods (e.g., agriculture, mining, construction, and manufacturing), which increases the relative importance of the goods-producing sector. While having the same concentration of manufacturing employment as the United States, the NCRAO has much higher concentrations in agriculture and construction; the latter figure may be due to its location between the two MSAs to the east and west so that construction firms have cost advantages by operating in the region while still being able to perform projects in the adjacent metros.

### Agricultural sector

Typical of rural counties, agriculture is a dominating contributor of economic activity in the NCRAO and has a major effect on land-use patterns and development densities. The major characteristics of the NCRAO's agriculture sector in 2012 are summarized below<sup>17</sup>.

- Total number of farms: 6,335 occupying approximately 1.05 million acres, about 11% of the Florida total
- Average farm size of 194.1 acres compared with the statewide average of 200 acres
- Total value of \$597 million of agricultural products, represented by \$225 million for crops, including nursery and greenhouse products and \$372 million in livestock, poultry, and their products; value of animal product commodities produced was 20% of statewide total
- Average market value of agricultural products sold per farm of \$97,300, 60% of the statewide figure of \$161,300

The current economic contribution of the agriculture sector to the NCRAO's economy was measured using data from the IHS proprietary Business Market Insights (BMI) database. Animal and crop production sectors (NAICS 111 and 112) represent 9% of the total wage and salary employment in the NCRAO in 2015. By comparison, these farms sectors represented only 1% of Florida's overall employment in the same year. Of the agricultural, forestry, and fishing aggregate sector (NAICS 11), 64% of NCRAO employment in the aggregate sector consists of animal and crop production. Based on the IHS BMI, the combined animal and crop production sales in the NCRAO were more than \$1.9 billion in 2015, a 5% compound annual growth rate (CAGR) between 2000 and 2015, a higher rate than Florida's animal and crop production growth of 5%.

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<sup>17</sup> United States Department of Agriculture, National Agricultural Statistics Service, 2012 Census of Agriculture – County Data.



### Structure diversity

A Hachman Index<sup>18</sup> was calculated to evaluate the diversity of the NCRAO region's industrial structure, which compares a regional economy's distribution of economic activity by sector, in this case employment, to that of the US economy. With the Hachman Index, the maximum value is 1.00, or, in other words, the closer the region's Hachman Index value is to 1.00, the more similar that region's economic structure is to the US economy.

For the NCRAO region, the Hachman Index was 0.607; lower than the Florida economy, which has a Hachman Index of 0.941. Since regional economies, especially smaller ones, are usually less diverse than larger state economies or the United States overall, the NCRAO region's Hachman score indicates that it is a moderately diverse economy for a rural region. The moderate level of the NCRAO's structural diversity is a positive attribute in that its overall economic performance is less heavily dependent on the performance of a few sectors, like agriculture and manufacturing, which is typical for a rural region. The moderate level of diversity indicates a more balanced set of inter-industry linkages between different economic sectors that buy inputs from, and sell outputs to, each other.

The NCRAO's average share of manufacturing employment, which is actually above average for rural areas, and its moderate level of structural diversity suggest that there is room to grow its manufacturing sector without becoming overly dependent on it. Ways to enhance the manufacturing sector's contribution to the NCRAO economy include: 1) identifying gaps in the agricultural and manufacturing supply chains such that key inputs needed can be made in the region rather than imported (i.e., also known as import substitution); and 2) expanding the value of exports produced by its manufacturing subsectors. There are two types of exports from the NCRAO: 1) domestic—sold to other Florida counties or other US states; and 2) foreign—sold to foreign countries. As manufacturing companies increase the volume and value of their domestic and foreign exports, they will bring income back into the region, benefitting workers and households. At the same time, as production rises, they will increase their demand for inputs made by local suppliers, some of which will come from other local manufacturing firms. As the round-by-round increases in demand are transmitted through the

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<sup>18</sup>Calculate two-digit LQs by NAICS sector weighted by employment shares and then invert the result.

backward linkages, they will generate further increases in regional economic activity in all sectors through the indirect multiplier effect.

## Characteristics of the Manufacturing Sector

To provide a more accurate picture of the NCRAO's overall manufacturing industry, the following sections provide data on manufacturing subsectors' growth, structure, diversity, and risk ratings. We conclude with a shift-share analysis to get a more detailed perspective on regional manufacturing-sector performance in 2015.

### Industry growth

Table 24 shows that between 2000 and 2015, employment declined in 12 of the 21 three-digit manufacturing subsectors and increased in 6 sectors. The most significant increase in manufacturing subsectors was in beverage & tobacco manufacturing, with compound annual growth in employment of 13.2%.

### Durables and nondurables

Further detail on the structure of a region's manufacturing sector can be obtained by analyzing the durable and nondurable sectors. Durables, or hard goods, are defined as those that are not totally consumed during their immediate or first use (i.e., provide use over an extended period of time, usually with a useful life of at least three years, and thus do not have to be purchased often). By contrast, nondurables, or soft or consumable goods, are immediately and totally consumed when initially used, have a useful life of less than three years, and need to be purchased frequently.

In 2015, employment in the NCRAO's durable sector was 5,113 jobs or 50.9% of total manufacturing employment, while nondurable employment was 4,925 jobs or 49.1% of total manufacturing. By contrast, the US shares of manufacturing employment in 2015 were 63.3% for durables, and 36.7% for nondurables, while in Florida they were 67.9% and 32.1%, respectively. It is clear that manufacturing employment in the NCRAO is much more evenly distributed between the durable and nondurable sectors than it is in Florida and the United States. The largest nondurable sectors based on employment in the NCRAO in 2015 were food, paper, and chemicals, while the largest durable employers were fabricated metals, transportation equipment, and nonmetallic minerals.

Table 24. Growth Rates in the Manufacturing Sector: Employment

Sector	Employment				
	2000	2015	LQ 2015	CAGR	Rank
311 Food	3,071	1,981	1.61	-2.9%	12
312 Beverage & tobacco prod.	31	198	1.11	13.2%	3
313 Textile mills					
314 Textile product mills	2	13	0.14	13.3%	2
315 Apparel	177		0.01		
316 Leather & allied product	1	32	1.40	26.0%	1
321 Wood product	2,450	1,998	6.49	-1.4%	9
322 Paper	2,252	1,747	5.81	-1.7%	10
323 Support activities—printing	371	215	0.59	-3.6%	15
324 Petroleum & coal	13	2	0.02	-11.7%	17
325 Chemical	831	534	0.80	-2.9%	13
326 Plastics & rubber products	389	203	0.36	-4.2%	14
327 Nonmetallic mineral	383	525	1.61	2.1%	6
331 Primary metal	61	84	0.26	2.2%	4
332 Fabricated metal products	1,623	1,407	1.17	-0.9%	8
333 Machinery	265	193	0.21	-2.1%	11
334 Computer & electronic prod.	17	7	0.01	-5.7%	16
335 Electrical equip. & appliance	14				
336 Transportation equip.	585	557	0.42	-0.3%	7
337 Furniture & related products	866	112	0.36	-12.7%	18
339 Miscellaneous	165	230	0.47	2.2%	5
<b>Total manufacturing</b>	<b>13,567</b>	<b>10,038</b>	<b>1.00</b>	<b>-2.0%</b>	
<b>Total in durable manufacturing</b>	<b>6,429</b>	<b>5,113</b>	<b>0.80</b>	<b>-1.5%</b>	
<b>Total in nondurable manufacturing</b>	<b>7,138</b>	<b>4,925</b>	<b>1.32</b>	<b>-2.4%</b>	
<b>Total all industries</b>	<b>114,079</b>	<b>119,414</b>		<b>0.3%</b>	

Notes: CAGR is compound annual growth rate; LQ is location quotient.

Source: IHS Business Market Insights

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Because of difference in the goods made and the production processes used, the durable and nondurable manufacturing sectors also differ from each other in terms of the mix of skilled workers required, level of wages paid, and productivity, all of which will determine appropriate economic and workforce development strategies.

The difference between the durable and nondurable sectors indicates that a focus on expanding the durable sector will require greater efforts to develop the supply of highly skilled workers in the local labor force. However, the generally lower entry-level education and training requirements for the nondurable sectors, excluding chemicals, indicate that these sectors have a greater potential to employ less-skilled workers, thus providing more opportunities for them to begin careers.

### Output and productivity

In addition to employment, it is helpful to consider output by sector and productivity (output per worker) to get a better sense of an individual manufacturing subsector's contribution to a regional economy. For example, a very capital-intensive (i.e., high levels and values of structures and equipment per worker) sector such as petroleum refining, chemicals, or primary metals may not employ a lot of workers (i.e., have high levels of output per worker), but could generate substantial increases in regional economic activity through either their backward linkages (i.e., they purchase large amounts of inputs from suppliers located in the region) or through their forward linkages (i.e., the products they make are in turn purchased by other firms in the region who use them as inputs in making other types of goods or services). In other words, when evaluating the manufacturing sector's regional economic health, it is important to note that based on changes in productivity, employment growth rates may differ significantly from output growth rates. In the NCRAO, 15 sectors had positive CAGRs for output, but only 6 had them for employment.

The large sectors with high annual growth rates in output included beverage and tobacco, nonmetallic minerals, miscellaneous, and chemicals as shown in the table below.

Table 25. Growth Rates in the Manufacturing Sector: Output

Sector	Output (millions of \$)			Rank
	2000	2015	CAGR	
311 Food	635.1	897.6	2.3%	13
312 Beverage & tobacco prod.	9.8	96.2	16.4%	3
313 Textile mills				
314 Textile product mills	0.2	2.3	16.6%	2
315 Apparel	5.7			
316 Leather & allied products	0.1	6.2	31.7%	1
321 Wood product	317.4	450.1	2.4%	12
322 Paper	766.5	1327.5	3.7%	8
323 Support activities—printing	38.3	38.8	0.1%	15
324 Petroleum & coal	4.6	2.1	-5.0%	17
325 Chemical	309.6	611.1	4.6%	7
326 Plastics & rubber products	39.5	55.0	2.2%	14
327 Nonmetallic mineral	55.7	149.2	6.8%	5
331 Primary metal	1.3	11.9	15.7%	4
332 Fabricated metal products	189.6	308.0	3.3%	11
333 Machinery	50.6	82.8	3.3%	10
334 Computer & electronic prod.	2.1	1.7	-1.4%	16
335 Electrical equip. & appliance	1.9			
336 Transportation equip.	86.5	147.2	3.6%	9
337 Furniture & related products	76.7	20.6	-8.4%	18
339 Miscellaneous	21.2	56.0	6.7%	6
<b>Total manufacturing</b>	<b>2612.4</b>	<b>4264.3</b>	<b>3.3%</b>	
<b>Durable manufacturing</b>	<b>802.9</b>	<b>1227.6</b>	<b>2.9%</b>	
<b>Nondurable manufacturing</b>	<b>1809.4</b>	<b>3036.7</b>	<b>3.5%</b>	
<b>Total all industries</b>	<b>11813.3</b>	<b>20191.5</b>	<b>3.6%</b>	

Notes: CAGR is compound annual growth rate.

Source: IHS Business Market Insights

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Table 26 below presents productivity as expressed by output per worker. The US manufacturing sector has become much more productive in recent decades as the level of output rises while employment levels have declined dramatically. Productivity growth occurred in the NCRAO where manufacturing output grew at an annual rate of 5.3% between 2000 and 2015. Continuing with the durable and nondurable analysis presented above, output per worker

in the US durable manufacturing sector in 2015 was \$375,043 compared with \$619,325 in the nondurable sector; the latter's level is greater because of the very high level of productivity in the petroleum refining and chemical sectors. The annual growth rate in productivity in the NCRAO's nondurable sector between 2000 and 2015 was 37% higher than in the durable sector primarily because of the increased output in paper, chemicals, and food.

**Table 26. Growth Rates in the Manufacturing Sector: Productivity**

Sector	Output per worker		CAGR	Rank
	2000	2015		
311 Food	\$ 206,807	\$ 453,100	5.4%	7
312 Beverage & tobacco prod.	\$ 317,002	\$ 485,625	2.9%	18
313 Textile mills				
314 Textile product mills	\$ 114,201	\$ 176,919	3.0%	17
315 Apparel	\$ 88,353			
316 Leather & allied product	\$ 98,793	\$ 192,884	4.6%	11
321 Wood product	\$ 129,535	\$ 225,298	3.8%	16
322 Paper	\$ 340,347	\$ 759,872	5.5%	6
323 Support activities—printing	\$ 103,155	\$ 180,412	3.8%	15
324 Petroleum & coal	\$ 351,390	\$ 1,057,564	7.6%	2
325 Chemical	\$ 372,539	\$ 1,144,473	7.8%	1
326 Plastics & rubber products	\$ 146,961	\$ 329,200	5.5%	5
327 Nonmetallic mineral	\$ 145,301	\$ 284,257	4.6%	10
331 Primary metal	\$ 190,293	\$ 518,826	6.9%	3
332 Fabricated metal products	\$ 116,818	\$ 219,062	4.3%	13
333 Machinery	\$ 190,810	\$ 433,312	5.6%	4
334 Computer & electronic prod.	\$ 125,893	\$ 248,903	4.6%	9
335 Electrical equip. & appliance	\$ 133,643			
336 Transportation equip.	\$ 147,869	\$ 264,252	3.9%	14
337 Furniture & related products	\$ 89,103	\$ 183,725	4.9%	8
339 Miscellaneous	\$ 128,571	\$ 243,382	4.3%	12
<b>Total manufacturing</b>	<b>\$ 192,553</b>	<b>\$ 424,816</b>	<b>5.4%</b>	
<b>Durable manufacturing</b>	<b>\$ 124,895</b>	<b>\$ 240,087</b>	<b>4.5%</b>	
<b>Nondurable manufacturing</b>	<b>\$ 253,491</b>	<b>\$ 616,597</b>	<b>6.1%</b>	
<b>Total all industries</b>	<b>\$ 109,704</b>	<b>\$ 180,803</b>	<b>3.4%</b>	

Notes: CAGR is compound annual growth rate.

Source: IHS Business Market Insights

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The direct increase in employment generated by a rise in the level of annual output in a subsector is a function of the level of output per worker. Based on the figures in the above table, for each \$1 million in additional output, 4.5 jobs are created in fabricated metals and 3.5 in nonmetallic minerals compared

with 2.2 in food and 0.9 in chemicals. If maximizing employment growth in manufacturing is an economic development objective, organizations should focus on those sectors listed above with the lowest levels of worker productivity. It is important to note that not all manufacturing jobs are equal—they differ widely based on their annual wage levels. Economic development agencies must consider the prevailing annual wage levels in the manufacturing subsectors they want to promote, which are a function of the types of occupations required, which in turn are determined by the types of manufacturing activities to be performed.

### Establishment size

The structure of the NCRAO's manufacturing sector was analyzed based on the distribution of establishments by employment size category by three-digit subsector as shown in the table 27 below. Because of the rural nature of the region, the manufacturing sector primarily consists of small establishments. In 2015, the NCRAO had 230 manufacturing establishments with payroll, 83% of which had fewer than 50 employees. Small and medium manufacturing enterprises (SMEs) are typically defined as companies with fewer than 500 workers; 97.8% of all establishments in the region were defined as SMEs in 2015. The average manufacturing establishment in the NCRAO in 2015 had 43.6 employees compared with 25.0 in Florida and 40.3 in the United States.

The significance of the distribution of manufacturing establishments by employment size is that different types of strategies and accompanying services are required for small firms than for large ones. SMEs are more vulnerable to changes in the business cycle, fluctuations in interest and currency rates, regulatory changes, may have more difficulty in accessing capital, and be less able to provide worker training. The proportion of establishments accounted for by SMEs varies widely by subsector based on production processes used, barriers to entry, need to achieve economies of scale, capital intensity, etc. Some subsectors, such as fabricated metals, machinery, and printing, have traditionally had higher shares of SMEs while others such as petroleum refining and chemicals have low shares.

**Table 27. Distribution of Manufacturing Establishments by Employment Size, 2015**

Distribution of manufacturing establishments by employment size, 2015										
Sector	1 to 4 employees	5 to 9 employees	10 to 19 employees	20 to 49 employees	50 to 99 employees	100 to 249 employees	250 to 499 employees	500 to 999 employees	1,000 + employees	Totals by sector
311 Food	9	3	4	2	2	1	-	-	1	22
312 Beverages & tobacco	3	1	-	1	-	1	-	-	-	6
313 Textile mills	-	-	-	-	-	-	-	-	-	-
314 Textile mill products	-	2	-	-	-	-	-	-	-	2
315 Apparel	-	-	-	-	-	-	-	-	-	-
316 Leather	-	-	-	1	-	-	-	-	-	1
322 Paper	1	-	-	1	-	-	-	1	1	4
323 Support activities—printing	6	2	1	-	1	1	-	-	-	11
324 Petroleum & coal	1	-	-	-	-	-	-	-	-	1
325 Chemicals	4	2	1	-	1	-	1	-	-	9
326 Plastics & rubber	7	1	2	2	1	-	-	-	-	13
<b>Total nondurable</b>	<b>31</b>	<b>11</b>	<b>8</b>	<b>7</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>69</b>
321 Wood products	14	1	3	4	3	4	1	1	-	31
327 Nonmetallic minerals	9	1	1	2	1	2	-	-	-	16
331 Primary metals	6	2	-	-	1	-	-	-	-	9
332 Fabricated metal products	21	7	5	1	3	3	1	-	-	41
333 Machinery	9	2	2	1	1	-	-	-	-	15
334 Computers & electronics	7	-	-	-	-	-	-	-	-	7
335 Electrical equip. & appliances	-	-	-	-	-	-	-	-	-	-
336 Transportation equipment	4	2	2	-	1	-	1	-	-	10
337 Furniture and related products	5	-	1	1	1	-	-	-	-	8
339 Miscellaneous	18	1	1	1	2	-	-	-	-	23
<b>Total durable</b>	<b>93</b>	<b>16</b>	<b>15</b>	<b>10</b>	<b>13</b>	<b>9</b>	<b>3</b>	<b>1</b>	<b>-</b>	<b>160</b>
<b>Total by size</b>	<b>124</b>	<b>27</b>	<b>23</b>	<b>17</b>	<b>18</b>	<b>12</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>229</b>

Source: IHS Business Market Insights

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### Largest manufacturing employers

The region’s largest employers, by local employment, are shown in table 28 below. Hoover’s Inc. uses a different methodology than the IHS BMI database, which is based on County Business Patterns and other commercial business lists. There can also be differences in assigning an establishment to a NAICS code based on the type of business activity performed there. As result, the distribution of large establishments presented in the table above by NAICS code may differ from the NAICS code of the largest employers presented below. As we have experienced in other similar studies, compiling an accurate list of largest employers by NAICS code is a challenging task for the reasons noted above because conditions keep changing and accurate data about the number of persons currently working at an individual establishment may be hard to get in part because it is proprietary. To ensure maximum accuracy, lists of top employers should be reviewed by local economic development officials who have the most current knowledge of their economies.



In spite of the cautions presented, the list of largest manufacturing employers generally aligns closely with current employment by three-digit NAICS sector as evidenced by the firms in the paper, food, wood products, transportation equipment, and fabricated metals sectors.

**Table 28. Fifteen Largest Manufacturing Employers in NCRAO**

Fifteen largest manufacturing employers				
Company name	County	Local employment	Primary NAICS code	Primary industry
Foley Cellulose, LLC	Taylor	558	322110	Pulp & paper mills
Titan Dynamics Systems, Inc.	Taylor	240	325920	Chemical
Corbitt Manufacturing Company, Inc.	Columbia	230	321113	Lumber & plywood product
The Chemours Company TT, LLC	Bradford	200	333131	Construction machinery
Thule, Inc.	Taylor	190	336390	Automobile parts
United Welding Services, Inc.	Taylor	190	336390	Automobile parts
Georgia-Pacific, LLC	Taylor	172	322291	Personal care products
St. Johns Ship Building, Inc.	Putnam	154	336611	Shipbuilding & repairing
New Millennium Building Systems, LLC	Columbia	148	332312	Architectural & structural metals
Prison Rehabilitative Industries Inc.	Dixie	130	313310	Textile
Sanderson Pipe Corporation	Baker	125	326122	Plastic & rubber product
RDS Manufacturing, Inc.	Taylor	115	332313	Architectural & structural metals
Corporate Graphics International, Inc.	Madison	105	323111	Commercial printing
Newcastle Shipyards, LLC	Putnam	105	336612	Boat building
CMC Steel Fabricators	Bradford	102	332312	Boat building

Source: Hoover's. Data downloaded 05/16/2016 © 2016 IHS

### Structure diversity

A Hachman Index was used to evaluate the diversity of the region's manufacturing sector, we again used the Hachman Index<sup>19</sup> based on four-digit NAICS employment, with LQs based on employment in the manufacturing sectors, not total employment. For the 14 counties included in the NCRAO, the Hachman Index of 0.133 shows that the region's manufacturing-sector diversity is lower than the manufacturing diversity of the state of Florida, which has a Hachman Index of 0.702. However, it is noted that the NCRAO's manufacturing sector diversity index is substantially higher than the figures of 0.085 in the SCRAO and 0.059 in the NWRAO, further confirming that it has relatively diverse manufacturing sector for a rural area.

<sup>19</sup> See Footnote 8.

## Advanced manufacturing

With 1,533 jobs in the advanced manufacturing sectors as defined either by researchers from the US Bureau of Labor Statistics (BLS) or the Brookings Institution<sup>20</sup>, the NCRAO has more than 15% of its manufacturing industry employment in advanced manufacturing subsectors. This share is much smaller than the Florida and US shares of 49.8% and 46.8%, respectively, which is not unexpected. However, it is also well below the shares of 21.9% and 24.6% for the SCRAO and NWRAO, respectively. Advanced manufacturing employment occurs primarily in four sub-sectors: 3253- Agricultural Chemicals, 3399-Other Machinery, 3336-Transmission and Power Transmission Equipment, and 3366-Ship and Boat Building. The reason for the NCRAO's low share of advanced manufacturing employment is its concentration of economic activity in food, paper, and wood sectors that do not have any advanced manufacturing sectors at the four-digit NAICS level as defined by the two sources cited. In the advanced manufacturing sector, we expect the greatest rates of innovation to occur (i.e., they are known to have higher patent rates), higher growth rates in productivity, the need for more highly skilled workers, and higher wages than other manufacturing sectors.

The criteria applied in the two studies we used to identify advanced manufacturing were

- High levels of spending for research and development (R&D), including high intensity (i.e., above average shares of R&D spending as a percent of sales) and high levels per worker
- The share of employment in the science, technology, engineering, and mathematics (STEM) occupations

The BLS study also considered industries that use advanced manufacturing processes and that produced high-technology goods. The Brookings and BLS studies identified advanced and high-tech NAICS sectors at the four-digit level

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<sup>20</sup> The definition of advanced mfg. subsectors comes from two sources: 1) Hecker, Daniel E. "High-technology employment: a NAICS-based update" *Monthly Labor Review*, July 2005. (Hecker is an economist in the Office of Occupational Statistics and Employment Projections, US Bureau of Labor Statistics (BLS) and 2) Muro, M., Rothwell, Jonathan et al. "America's Advanced Industries: What They Are, Where They Are and Why They Matter" Brookings Advanced Industries Project, February 2015. Both studies identified high tech and advanced sectors across the entire economy at the four-digit NAICS level; we defined advanced manufacturing to consist of all the manufacturing subsectors that were identified in either study. The result was that 37 of the total of 86 four-digit NAICS manufacturing subsectors were defined as advanced manufacturing subsectors.

across the entire economy; for the purposes of this profile, only the individual sectors were considered that were part of the manufacturing sector.

### Shift-share analysis

To examine the performance of the four-digit manufacturing subsectors based on changes in employment between 2000 and 2015, a shift-share analysis was conducted of the manufacturing subsectors in the regional study area. (A more complete description of shift-share analysis is provided in the previous section for the Northwest RAO under the same heading.)

In the NCRAO, the highest-performing A and B sectors with substantial current levels of employment included

- Pulp, paper, and paperboard mills
- Other wood
- Sawmills
- Ship and boat building
- Cement and concrete products
- Machine shops
- Printing and related support activities
- Veneer, plywood, and engineering wood products

The detailed results of the shift-share analysis are presented in Table 29. The A and B sectors listed in the table accounted for a surprisingly high share of 63.7% of total manufacturing employment in 2015.

Table 29. Results of Shift-share Analysis for NCRAO

Shift-share analysis of the North Central RAO manufacturing sector						
NAICS sector	Description	Allocation Code	2015 Employ.	2015 LQ	% of private sector employment in 2015	Employment CAGR 2000 to 2015
3221	Pulp, paper, and paperboard mills	A	1,719	22.38	1.86	-1.68%
3219	Other wood product	A	974	5.75	1.05	-0.96%
3211	Sawmills and wood preservation	A	812	12.50	0.88	-1.52%
3366	Ship and boat building	A	465	4.32	0.50	4.25%
3273	Cement and concrete product	A	403	3.00	0.44	0.43%
3212	Veneer, plywood, and engineered wood products	A	212	4.11	0.23	-2.35%
3121	Beverage	A	198	1.30	0.21	13.16%
3111	Animal food	A	166	4.18	0.18	3.23%
3274	Lime and gypsum product	A	118	12.12	0.13	37.44%
3312	Steel product from purchased steel	A	68	1.84	0.07	1.55%
3169	Other leather and allied product	A	32	3.77	0.03	25.99%
3327	<b>Machine shops</b>	<b>B</b>	<b>232</b>	<b>0.77</b>	<b>0.25</b>	<b>4.91%</b>
3231	<b>Printing and related support activities</b>	<b>B</b>	<b>215</b>	<b>0.64</b>	<b>0.23</b>	<b>-3.57%</b>
3399	<b>Other miscellaneous</b>	<b>B</b>	<b>133</b>	<b>0.63</b>	<b>0.14</b>	<b>2.41%</b>
3339	<b>Other general purpose machinery</b>	<b>B</b>	<b>109</b>	<b>0.53</b>	<b>0.12</b>	<b>1.59%</b>
3391	<b>Medical equipment and supplies</b>	<b>B</b>	<b>97</b>	<b>0.41</b>	<b>0.10</b>	<b>2.01%</b>
3362	<b>Motor vehicle body and trailer</b>	<b>B</b>	<b>92</b>	<b>0.72</b>	<b>0.10</b>	<b>4.43%</b>
3336	<b>Engine, turbine, and power transmission equip.</b>	<b>B</b>	<b>63</b>	<b>0.78</b>	<b>0.07</b>	<b>5.31%</b>
3259	<b>Other chemical product and preparation</b>	<b>B</b>	<b>50</b>	<b>0.79</b>	<b>0.05</b>	<b>29.80%</b>
3118	<b>Bakeries and tortilla</b>	<b>B</b>	<b>34</b>	<b>0.15</b>	<b>0.04</b>	<b>20.79%</b>
3262	<b>Rubber product</b>	<b>B</b>	<b>32</b>	<b>0.33</b>	<b>0.03</b>	<b>6.19%</b>
3222	<b>Converted paper product</b>	<b>B</b>	<b>28</b>	<b>0.14</b>	<b>0.03</b>	<b>-1.66%</b>
3328	<b>Coating, engraving, heat treating, and allied activities</b>	<b>B</b>	<b>17</b>	<b>0.16</b>	<b>0.02</b>	<b>20.79%</b>
3251	<b>Basic chemical</b>	<b>B</b>	<b>13</b>	<b>0.11</b>	<b>0.01</b>	<b>-0.95%</b>
3372	<b>Office furniture (including fixtures)</b>	<b>B</b>	<b>13</b>	<b>0.14</b>	<b>0.01</b>	<b>3.29%</b>
3255	<b>Paint, coating, and adhesive</b>	<b>B</b>	<b>10</b>	<b>0.22</b>	<b>0.01</b>	<b>16.59%</b>
3116	Animal slaughtering and processing	C	1,780	4.90	1.92	-3.20%
3323	Architectural and structural metals	C	681	2.55	0.74	-1.54%
3253	Pesticide, fertilizer, and other agricultural chemicals	C	461	17.63	0.50	-3.66%
3329	Other fabricated metal product	C	391	2.00	0.42	-1.48%
3324	Boiler, tank, and shipping container	C	74	1.03	0.08	-4.52%
3261	<b>Plastics product</b>	<b>D</b>	<b>171</b>	<b>0.40</b>	<b>0.18</b>	<b>-5.12%</b>
3371	<b>Household and institutional furniture</b>	<b>D</b>	<b>100</b>	<b>0.58</b>	<b>0.11</b>	<b>-13.35%</b>
3331	<b>Agriculture, construction, and mining machinery</b>	<b>D</b>	<b>10</b>	<b>0.06</b>	<b>0.01</b>	<b>-16.52%</b>

Note: The analysis above includes only sectors with at least 10 or more workers in 2015.

Source: IHS Business Market Insights

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Our analysis identified a large number (15) of B sectors, which is even more surprising than the 11 A sectors shown. These emerging sectors are doing relatively well in terms of historical employment growth, but they do not yet account for an above-average share of regional employment. The B sectors currently account for only 11.3% of total manufacturing employment in the NCRAO, but their above-average performances suggest that state and local

economic development agencies such as FloridaMakes should study these sectors in more depth to determine why they are successful, and then design targeted policies, or provide incentives, that take advantage of their strengths.

For the traditionally important legacy industries in which the region still has above-average shares of economic activity (i.e., the C sectors) but, for a variety of reasons, are underperforming the same sectors at the national level, we note the following:

- Animal slaughtering and processing
- Architectural and structure metals
- Pesticides, fertilizer, and other agricultural chemicals
- Other fabricated metals

These four sectors currently provide more than 3,300 jobs in the NCRAO, so FloridaMakes and local economic development agencies should consider ways they can help them maintain, or even improve, their performance. Finally, we identified only three D sectors, which are the lowest performing in terms of relative importance to the regional economy (compared with the nation as a whole) and with slower growth than the sector had at the US level over the analysis period.

### **Manufacturing wages**

57.8% of all production workers in Florida were employed in the manufacturing sector in 2015, followed by 23.3% of all architects and engineers, so they are two of the most significant categories for evaluating manufacturing occupation wages in the NCRAO. As shown in Table 30 below, the annual median wage for workers in the production and architecture and engineering occupations were 91.0% and 82.7%, respectively, of the statewide levels. The table shows that the NCRAO had median wages substantially below the state levels in 2015, with the exception of two occupations—installation, maintenance and repair, and transportation and material moving—where the median wage levels were above the statewide levels, especially for the latter category. These differences suggest a tight labor market in the NCRAO for these two types of work, likely due to a combination of a shortage of skilled workers and employers competing for these workers. The labor cost differential is greater when compared with median US wage levels by major occupational category, again except for transportation and material handling. The proximity of the NCRAO's counties to the Jacksonville and Tallahassee

MSAs could also be a factor in driving up the wages in these two major categories.

**Table 30. Employment and Wage Levels in Manufacturing Occupations, 2015**

Employment and wage levels in manufacturing occupations, 2015					
Major occupational category	Employment in all sectors in region	% of occupation working in mfg. in Florida	Median annual wage in region	% of Florida median wage	% of US median wage
11-0000 Management	1,790	5.7	81,630	82.2	82.8
17-0000 Architecture and engineering	850	23.3	55,130	82.7	71.7
41-0000 Sales and related	10,140	1.1	22,410	90.7	87.3
43-0000 Office and administrative support	12,800	2.6	27,600	91.3	83.1
49-0000 Installation, maintenance, and repair	4,070	4.3	38,520	102.3	90.2
51-0000 Production	6,730	57.8	26,330	91.0	81.6
53-0000 Transportation and material moving	5,880	4.9	31,130	117.4	103.5

Note 1: The major occupational categories listed above accounted for 89% of total 2015 employment in Florida's manufacturing sector.

Note 2: Data in columns 2 and 4 are for the Northeast Florida nonmetropolitan area.

Source: Bureau of Labor Statistics, May 2016, Occupational Employment Statistics

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It is estimated total annual wage payments for an individual company in selected manufacturing subsectors using the US distribution of detailed occupational employment by four-digit NAICS code. Our analysis used 2015 annual wage rates for the Northeast Florida nonmetropolitan area as published by the Bureau of Labor Statistics as they are representative of labor-market conditions in the NCRAO. The purpose of the analysis was to compare the total annual wage cost for a manufacturing company located in the region with the cost if it paid average annual US wages for the same occupational mix, keeping total employment the same. Our analysis showed that the total annual wage costs for a manufacturing firm in the NCRAO range between 15% and 20% lower than in the United States when using the same distribution of occupations. One implication of these findings is that the economic development agencies in the NCRAO should encourage growth in manufacturing subsectors that pay above-average wages such as advanced and durable manufacturing. We note that the cost of shipping manufacturing products out of the NCRAO is likely to be closer to the statewide and US levels because of the higher median wage levels noted above for transportation and material moving occupations.

### Pattern of export commodity flows

FloridaMakes was interested in determining the spatial characteristics of the commodities produced in and exported from the three RAOs. In other words, where are the agricultural and manufacturing commodities produced in the NCRAO sold—what percent are sold in other Florida counties and what percent are sent to other states? IHS used its proprietary Transearch database to perform this analysis. From this it estimated the tonnage and value in 2014 of both agricultural and manufacturing commodities by four-digit NAICS code produced in the counties representing the NCRAO that were exported by truck. Table 31 provides a summary of the market areas served by exports from the NCRAO at the three-digit NAICS code level. It shows that 50.3% of commodities produced in the NCRAO in 2014 was sent by truck to other locations in Florida while almost as much, 48.2%, was sent to other states. The in-state shares for the major types of commodities shipped varied widely, from almost 79% for nonmetallic minerals and 75% for wood products down to about 50% for food and agricultural commodities. By contrast, more than 81% of the paper was sent to other US states, along with high shares and levels of crops, forestry products, livestock, and food. The amount of commodities sent by truck to either Canada or Mexico was negligible.

Not surprisingly, based on the structure of the regional economy, the largest commodity exports by weight were nonmetallic minerals, forestry and logging, wood products, crops, animal products, food, and paper.

Figure 22 below shows the major destinations by state of commodities exported by truck out of the NCRAO. The top-10 destination states, based on the weight of commodities shipped, are shown in gray. Because of the nature of exports, the heavy flow of commodities to adjacent Georgia and the northeast states is clearly evident, along with less flow amounts to Illinois, Texas, and California.

Table 31. Destination of Exports from the NCRAO by Truck, 2014

Destination of exports from the North Central Rural Areas of Opportunity by truck in 2014							
Commodity	To Florida		To other US states		To Canada and Mexico		Total by commodity (thousands of short tons)
	Amount (thousands of short tons)	% of commodity total	Amount (thousands of short tons)	% of commodity total	Amount (thousands of short tons)	% of commodity total	
111 Crop production	301.8	55.3	228.1	41.8	15.8	2.9	545.7
112 Animal production and aquaculture	369.2	46.7	420.8	53.3	0.3	0.0	790.3
113 Forestry and logging	513.3	42.9	682.2	57.0	0.4	0.0	1,195.9
311 Food manufacturing	208.9	53.5	155.1	39.7	26.6	6.8	390.6
312 Beverage and tobacco product mfg.	59.4	38.1	96.1	61.7	0.4	0.2	155.9
313 Textile mills	0.1	90.0	0.0	10.0	-	0.0	0.1
314 Textile product mills	0.1	100.0	-	0.0	-	0.0	0.1
315 Apparel manufacturing	0.0	100.0	-	0.0	-	0.0	0.0
316 Leather and allied product mfg.	0.1	56.8	0.1	43.2	-	0.0	0.2
321 Wood product mfg.	432.6	75.0	138.7	24.1	5.2	0.9	576.5
322 Paper manufacturing	185.5	15.2	990.6	81.3	42.3	3.5	1,218.4
323 Printing and related support activities	2.7	74.9	0.9	25.1	-	0.0	3.7
324 Petroleum and coal products mfg.	4.3	67.2	2.1	32.8	-	0.0	6.4
325 Chemical manufacturing	6.8	87.1	0.1	1.0	0.9	11.9	7.8
326 Plastics and rubber products mfg.	6.1	55.5	4.8	43.1	0.2	1.4	11.1
327 Nonmetallic Mineral product mfg.	924.9	78.8	247.5	21.1	1.0	0.1	1,173.4
331 Primary metal mfg.	8.6	44.7	10.5	54.7	0.1	0.6	19.2
332 Fabricated metal product mfg.	15.3	50.0	15.1	49.4	0.2	0.6	30.5
333 Machinery manufacturing	2.3	65.9	1.1	32.8	0.0	1.3	3.5
334 Computer and electronic product mfg.	0.1	100.0	-	0.0	-	0.0	0.1
336 Transportation equipment mfg.	143.1	68.9	64.3	31.0	0.3	0.2	207.7
337 Furniture and related product mfg.	1.5	92.9	0.1	7.1	-	0.0	1.6
339 Miscellaneous manufacturing	2.3	65.4	1.2	34.6	-	0.0	3.5
Total by destination	3,188.9	50.3	3,059.5	48.2	93.7	1.5	6,342.1

Note: The North Central Rural Areas of Opportunity consists of the following Florida Counties: Baker, Bradford, Columbia, Dixie, Gilchrist, Hamilton, Jefferson, Lafayette, Levy, Madison, Putnam, Suwanee, Taylor, and Union.

Source: IHS, 2016, Transearch database

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Further analysis confirmed that Georgia was the major destination in 2014, receiving 46.5% by weight of the exported commodities, with 73.2% of the exports being sent to nearby states in the southeastern United States. Appendix E (*Flow of commodities sent by truck from the NCRAO to other US States in 2014*) provides additional detail on the amount of commodities sent by truck from the NCRAO to US states other than Florida. The information presented in Appendix E can be disaggregated by commodity types upon request.



IHS has indentified the intrastate pattern of commodity exports from the three RAOs. The flow from the NCRAO to other Florida counties is presented in Appendix F (*Florida destinations of commodities shipped by truck from the NCRAO, 2014*). Almost 1,668,700 short tons, or 52.3% of the commodities exported by truck, were sent from the NCRAO to the following 10 Florida counties located outside it (in descending order of tonnage sent): Duval, Orange, Marion, Alachua, Hillsborough, Polk, Seminole, Broward, Pinellas, and Miami-Dade.

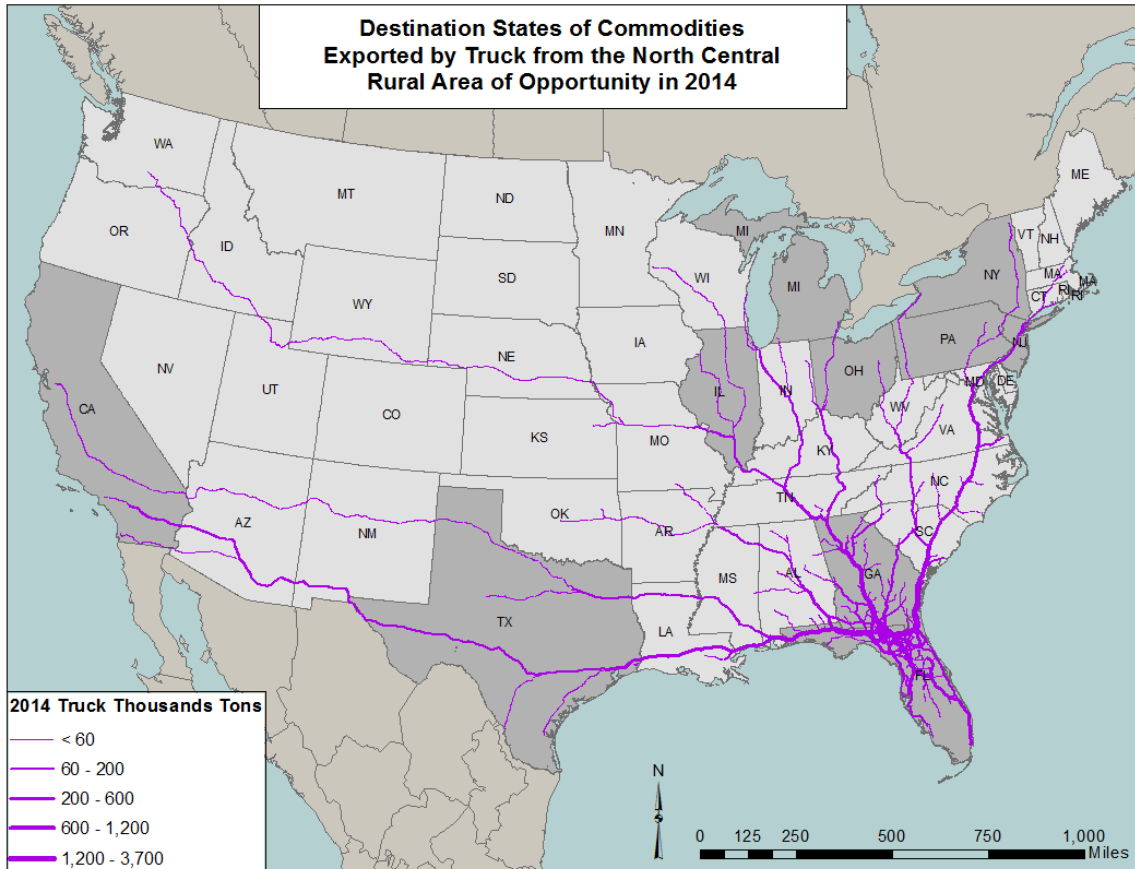
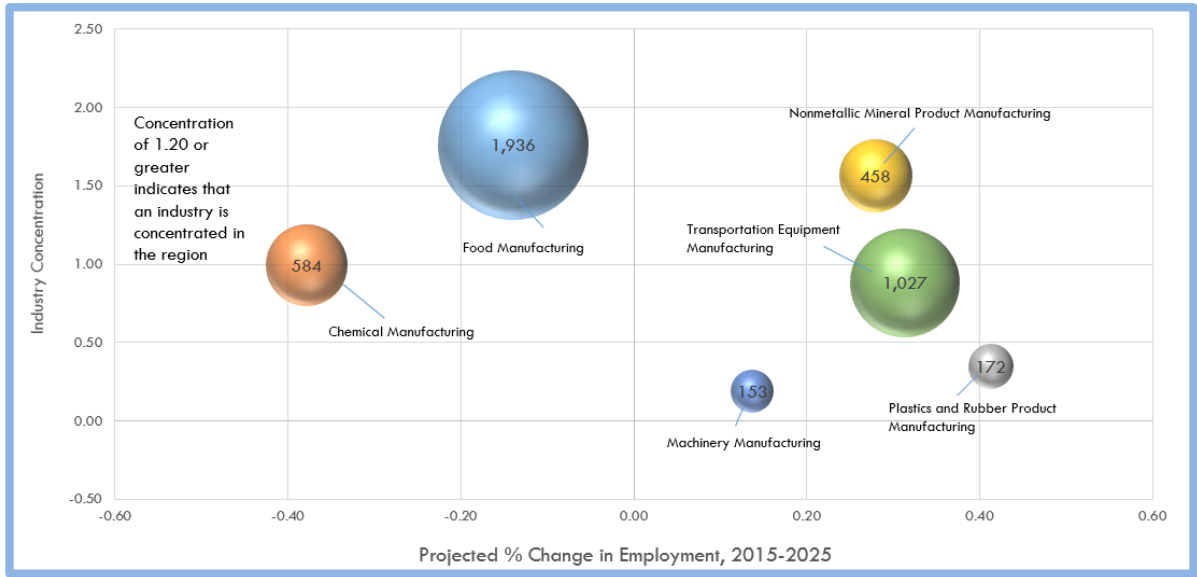


Figure 22. Destination States of Commodities Exported by Truck from NCRAO, 2014

## Manufacturing Cluster Analysis

Manufacturing in the North Central Florida region includes just over 250 establishments, comprising 9.2% of the regional employment and generating 15.7% of the total contributions to the gross regional product (GRP). These are significantly higher-paying jobs for the region, averaging \$47,547 annually versus the regional average of \$33,427.

To understand the opportunities for North Central’s growth, we analyzed the significant drivers in the region and their projected impact moving forward. There were some significant industries headed in a downward spin, but also small- to medium size businesses that were thriving under their shadow. We analyzed opportunities with the methodology of above, highlighting the cluster analysis and supply chain gaps in the local economy.



Source: Emsi Complete Data 2016.2

Figure 23. North Central Manufacturing Industry Clusters Projected Job Growth and Industry Concentration, 2015-2015

Above are the key six clusters that our analysis forecasts for growth opportunities. The y-axis demonstrates the change in concentration (how present an industry is in a region compared to the national average - think automobile manufacturing in Detroit as “high” concentration), the x-axis represents the % change in total employment, and the overall size of the bubble is 2015 job counts for each cluster.

The goal of each of the following descriptions is to highlight the types of businesses projected to see new growth as determined by Emsi’s analysis through industry trends, forecasted employment, and supply chain opportunities.

**Plastics & Rubber Products Manufacturing**

This includes laminated plastics and polystyrene foam product manufacturing as well as tire retreading industries. These industries have emerged in the past 10 years in the region and are expected to see continued growth. Job counts in this cluster in the North Central region are projected to grow 41% compared to flat growth nationally.

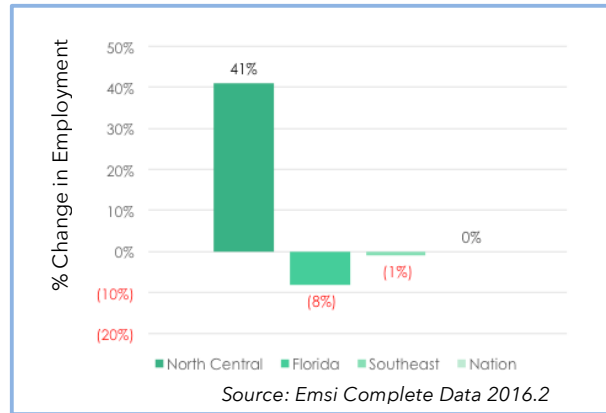


Figure 24. Projected Job Growth, 2015-2025

**Nonmetallic Mineral Product Manufacturing**

Included in this cluster is glass product manufacturing, cement manufacturing, and gypsum product manufacturing. This is another cluster that has emerged in the past 15 years in this region and is attracting high paying jobs (\$54,825 annually on average). Nationally, this industry is projected to expand by 5%, but the state of Florida is anticipated to outpace that with 16% growth, largely fueled by the 28% growth in the North Central region.

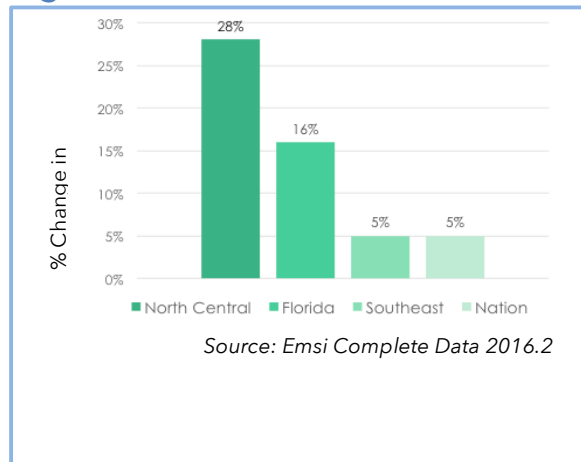


Figure 25. Projected Job Growth, 2015-2025

**Machinery Manufacturing**

Included in this industry: lawn and garden tractors, other commercial and service industries, machine tool, pump and pumping equipment, welding and soldering equipment manufacturing.

Machinery manufacturing is projected to grow significantly over the next decade, in contrast to flat or declining trends in Florida, the

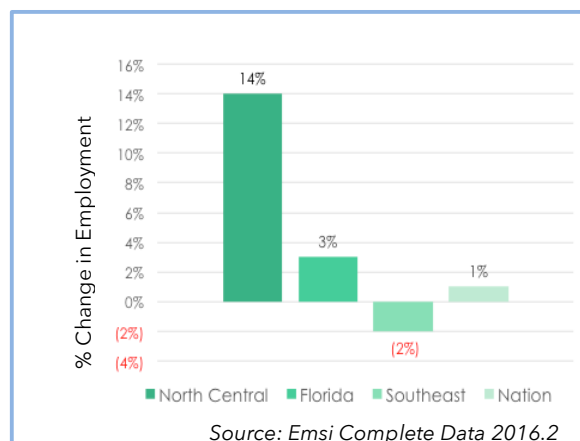


Figure 26. Projected Job Growth, 2015-2025

Southeast U.S., and nationwide. There is arguably room to grow as its percentage of all jobs is quite low. Production costs will likely remain competitive, as regional average earnings in the industry are \$45,921 compared to \$81,342 nationwide.

Reflecting the more advanced nature of this manufacturing, 11% of the jobs in machinery manufacturing are for machinists and approximately 10% are team assemblers. A wide assortment of welding, soldering, grinding, cutting and related positions round out the most common occupations in this industry. Supervisors, inspectors, and engineers are also employed in significant numbers. Most of these occupations require a high school diploma but, increasingly, additional attainment with moderate to long-term on-the-job training are required.

### Transportation Equipment Manufacturing

Among the largest of the North Central key clusters, transportation equipment manufacturing has potential for adding high-skill, high-paying jobs in the region. Beyond the state's largest aviation equipment manufacturers and their direct suppliers, there are a number of smaller firms doing related work in North Central. Jobs are projected to grow during the next decade in this industry. Because much of the industry is advanced manufacturing, the availability of a trained workforce is a constant need for these companies, particularly those in rural areas.

Some of the highest-paying manufacturing jobs in the region come from this cluster, averaging \$64,791 annually across occupations. This cluster is projected to increase 31% in employment, which significantly outpaces the national average but is line with a resurgence in the Southeast (15% growth).

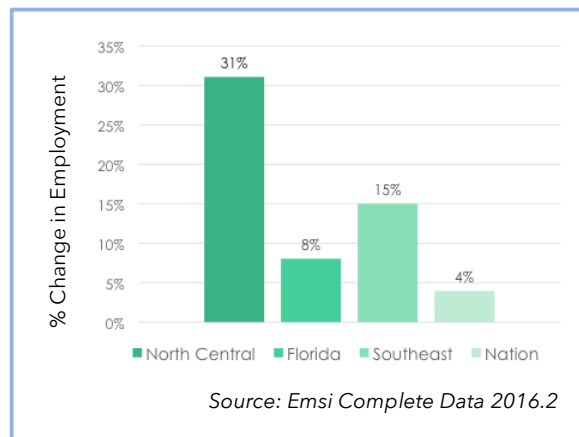


Figure 27. Projected Job Growth, 2015-2025

## Food Manufacturing

As a whole, food processing is projected to lose additional jobs in the coming decade, largely based on heavy job losses experienced in meat processing during the last decade. Despite this, there are other industries within food processing that are projected to see positive change such as bottled water, ice, and snack food manufacturing. This subset of food manufacturing is projected to grow 15% compared to the 14% decline anticipated for the industry as a whole.

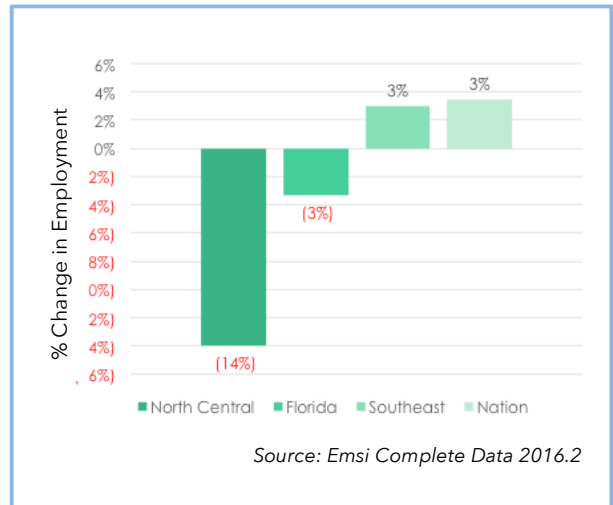


Figure 28. Projected Job Growth, 2015-2025

A quarter of the jobs in the cluster are related to meat cutting, slaughtering, and meat packing. Grading and sorting jobs account for 7% of employment while laborers and production helpers make up another 10%. Few of the major occupations in this industry require a high school diploma or previous work experience. Short-term on-the-job training is typical for these jobs.

## Chemical Manufacturing

The chemical cluster in the North Central region is comprised of about a dozen establishments. These companies are engaged in the manufacture of a variety of products including: phosphatic fertilizer, resins, paint, wood chemicals, among others. The cluster can be more easily understood in terms of these specific, growing industries. Across industries, firms have a common thread—chemicals are used as inputs at some point in the production process. The chemical manufacturing industry supported nearly 1,300 jobs in the region in 2005. Chemicals overall lost more than 700 jobs, or nearly 60% of its employment, during and after the 2007-2009 recession. This decline was

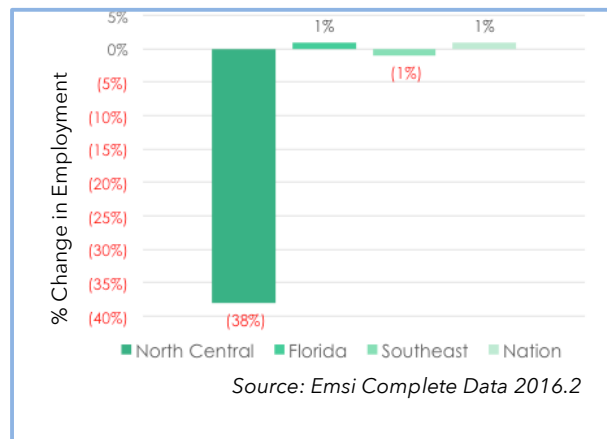


Figure 29. Projected Job Growth, 2015-2025

mostly due to the loss of employment in the fertilizer manufacturing industry. In contrast, the cluster of chosen detailed chemical manufacturers is comprised of those smaller industries that were resilient or added jobs during this period and is comprised of cyclic crude, intermediate, and gum and wood chemical manufacturing, fertilizer (mixing only) manufacturing and all other miscellaneous chemical product and preparation manufacturing.

These industries are small, but each pay over \$45,000 in earnings and are considered to be advanced types of manufacturing. Fertilizer (mixing only) shares linkages with the larger phosphatic fertilizer industry and contributes \$250,000 of value added manufacturing per job to the region's GRP.

# Summary of Recommendations and Findings

## All Regions

1. The three Rural Areas of Opportunity include more than 500 manufacturing establishments and more than 1300 manufacturing jobs. Based on USDA data, the North Central region includes 7 of the top 10 counties in the state for the percentage of county employment being in manufacturing. Holmes County in the Northwest and Glades County in the South Central region are also in the top 10. Large companies provide most of the employment. The key industries are relatively low technology and relatively low value. Supporting the large firms and their local supply chains is critical. Maintaining the right skills among the local workforce is essential. Opportunities to move low value producers toward higher value products through identification and application of new technology could have long-term benefits.
2. It is important to keep in mind resource constraints. Rural manufacturers are not typically open to outside assistance, at least not without the incentive of a crisis. Making sure that manufacturers in these rural regions are aware of the availability of services is a minimum requirement. Focusing on geographic industrial centers within each region can maximize company contact. Working with partners in the regions, such as community colleges, can stretch resources. Perhaps most importantly, providing services that meet actual needs of companies, and pricing those services appropriately is critical to securing project work.
3. With some of the most manufacturing intense counties in the state, these three RAOs are potentially strong markets for manufacturing assistance services. Working with keystone employers to ensure continued strength in important industrial clusters such as wood products, pulp and paper, chemicals, and boats should be the foundation of future strategies to keep manufacturing strong in these regions.
4. In all three regions, a few large employers and many very small firms characterize the manufacturing population. This pattern presents an

- especially difficult market for technical assistance efforts focused on small and medium-sized manufacturers because very small firms, those with five or fewer employees, are less likely to seek help or want to grow (based on national experience over many years).
5. Industries that are most common are in the regions because of natural resource availability: pine forests, minerals, sugar cane, and shoreline. Wood products, chemicals, nonmetallic mineral products, refined sugar, and boats emerge as the manufacturing industries dependent on these resources.
  6. Nationwide, MEP centers have been successful working with firms in these key regional industries. The primary services delivered have been in lean production and quality systems, but business and strategic planning, marketing, and workforce development have also been important.
  7. The challenges identified in surveys of national MEP clients tend to focus on cost reduction, finding growth opportunities, and ensuring availability of a capable workforce. FloridaMakes services and those of partners should be well matched to meet these challenges.
  8. Rural areas tend to pose significant challenges to the delivery of assistance services to manufacturers. Manufacturers tend to be small, somewhat scattered geographically, and unsophisticated. Owners, managers, and workers tend to be older, creatures of habit who have had sufficient success doing things as they always have and so are resistant to change and not open to outside advice. They are even less likely to *pay* for outside advice. These, of course, are broad generalities and companies eager for help can be found with sufficient legwork. And there are ways to build relationships with many rural firms despite their closed nature.
  9. To begin to build relationships and trust in the rural manufacturing community, hold informal seminars/workshops/grievance sessions. In these RAOs there are several cities that have concentrations of manufacturers: Perry, Lake City, Crawfordville, Sebring, Okeechobee to name a few. Industrial parks also present opportunities to meet with groups of companies, and industrial park managers are often a useful



source of information on local concerns. It might take multiple events on various topics to generate attendance, but even the process of marketing them will build name recognition for FloridaMakes.

10. Successful project sales with rural companies are more likely if the projects meet a specific need that is unavoidable. Health and safety assessments and training are a good example. Florida may have a separate state agency that does this, but if not, health and safety is an area with stringent regulatory requirements and significant fines if those are not met. Providing an expert that can point out health and safety issues and train employees in safe work practices gives an immediate financial benefit (fine avoidance) while building a trusting relationship with the manufacturer that can lead to higher value work. Meeting the requirements for OHSAS 18001, the Occupational Health and Safety Management Systems standard, soon to be adopted by the International Standards Organization as ISO 45001, can give companies an edge in marketing and recruiting, similar to the ISO 9001 standard for quality systems.

Energy audits can play a similar role, providing a simple, low-cost service that can have an immediate financial return to the client. Although lower energy prices have reduced opportunities for significant savings from energy, some of the large facilities in these regions could still benefit. Energy management, too, has an ISO standard, ISO 50001. These audits have long been a standard product of many MEP centers; in some states there have been financial support from government agencies both to conduct the audits and to implement findings.

11. In the North Central and Northwest RAOs, initiatives focused on the wood products industry, which includes companies of many sizes and many different final products, would likely have the most impact. An option to consider would be to establish a wood technology demonstration and training center that would have equipment and expertise appropriate to advance the capabilities of the industry. A model is the West Virginia Wood Technology Center in Elkins, WV. It includes training programs, facility and equipment rental, and expert advice and problem solving for local companies.<sup>21</sup> Community colleges

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<sup>21</sup> See, <http://wvwoodtech.com>.

in the regions, such as Florida Gateway College in Lake City, North Florida Community College in Madison, and Chipola College in Marianna could be candidates for such a center.

Although frequently difficult, introducing new technologies into the wood products industry could be a longer term option as a way to add value to a largely commoditized industry. Somewhat surprisingly, neither Florida State University nor the University of Florida have research centers focused on wood products, but other sources could be investigated and information passed to local wood products firms. For instance, cross laminated timber (CLT) is a relatively new engineered wood product with growing popularity in the construction industry as a substitute for steel.<sup>22</sup> Another possibility is technology developed at Scion, formerly the New Zealand Forest Research Institute.<sup>23</sup> Scion focuses on softwoods similar to the yellow pine predominant in north Florida. Various Scion technologies address improved sawmill productivity, conversion of softwood into a hardwood surrogate, new uses for pulp and fiber, and other areas that could provide Florida companies with competitive advantages unique in North America. Any efforts to spur uptake of new technology in the industry would likely require financial incentives and support from the state.

12. Because of their importance in the regions, the Department of Economic Opportunity and FloridaMakes need to work with the large employers. Policies and projects that maintain the competitiveness of these large facilities are critical to the continued regional (and state) economic health. Experience in other locations demonstrates that once keystone facilities are lost, the surrounding clusters typically shrivel.

Keeping the existing clusters as vibrant as possible is essential for regional economic health. The large facilities are key employers on their own, but they also support a supplier base of smaller manufacturers and service providers. For instance, it is likely that many machine shops (more than 30 in the three regions) depend on the large facilities for most of their business. Knowing any issues the large firms

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<sup>22</sup> A good technical description of CLT is at [www.apawood.org](http://www.apawood.org). For the business potential of CLT, see Patrick Clark, "The Race for the Wood Skyscraper Starts Here," May 16, 2016 at <http://www.bloomberg.com/news/articles/2016-05-16/the-race-for-the-wood-skyscraper-starts-here>.

<sup>23</sup> See, <http://www.scionresearch.com>.

might have with local suppliers provides a basis for service offerings by FloridaMakes.

13. Smaller manufacturers tend to seek assistance, or to be most receptive to offers of assistance, when they face crises. Sometimes key customers demand improvements in cost, delivery times, quality, or volume; sometimes declining revenue for whatever reason threatens viability. It is important to use whatever information sources might be available—layoff notices, for instance—to help these companies while there is time to adjust. Assistance providers need to be flexible in pricing and scheduling services to meet critical challenges posed by the manufacturers existing customers, and work with the manufacturers to find new customers if possible.
14. A few MEP centers around the country are dependent on rural regions; even some states are exclusively rural and many have a similar industrial mix. Centers in states such as Wyoming, Montana, and West Virginia and centers such as Manufacturing Works and the Northeastern Pennsylvania Industrial Resource Center in rural Pennsylvania could provide models for meeting the needs of rural manufacturers. Some have had particular success working with industries important to these regions, such as wood products.
15. Web sites and social media have become important marketing tools for manufacturers, helping to reduce geographic limitations to their customer base. Rural manufacturers may have worse internet access and less interest in building a virtual presence, but it is increasingly difficult to ignore it. Examining a sample of companies in these three regions found many have no website with only limited information coming from business directories such as Manta and Hoovers. For instance, TraumaOne Helicopter Base in Lake City is listed as an aircraft manufacturer in D&B, but the limited information available on the internet suggests the company may modify helicopters and provide trauma flight services, rather than manufacture aircraft. Helping rural manufacturers build an online presence cost effectively could be a useful overdue service.
16. Depending on the resources available, the relatively small number of manufacturers in these regions should allow for direct meetings with

most of them, which is the best way to learn about their concerns and aspirations. Set priorities based on industry, size, and location, focusing first on industrial parks and cities with clusters of firms. Past clients of Florida MEP should also be a priority.

17. Policies designed to increase the advanced manufacturing sector will have to concentrate on increasing the skill level of the region's manufacturing labor force. The training will have to be provided by a range of organizations, including local colleges and universities, especially community colleges; workforce investment boards (WIBs); secondary career and technical education (CTE) schools; the RMAs; labor union apprentice programs; and the manufacturing companies themselves. Regions cannot be competitive in all advanced manufacturing sectors, so economic development policies should be designed for and targeted at those advanced manufacturing sectors where clear competitive advantages exist. Competitive sectors are identified below in the shift-share analysis.

18. The results of the shift-share analysis can be used for developing strategies in the following manner:

- Analyze the economic sectors classified as either A or B, as they are the highest performers, to identify the competitive advantages in the region that drive their performance. The B sectors should receive special attention because despite currently accounting for below-average shares of economic activity, they are where the emerging sectors are likely to be found. The economic development objective is then to turn B sectors into A sectors.
- Identify the names of individual firms in each A and B sector and analyze them to determine why they are high performers. It is essential to determine the extent to which their high performances are due to: 1) firm-level factors such as excellent management, efficient operations, competitive prices, superior product quality, etc. and 2) regional competitive advantages such as lower cost of doing business, high quality of labor, proximity to markets and/or suppliers, lower tax rates, excellent transportation networks, favorable regulatory environment, etc.
- Analyze the C sectors and identify the factors that affect their competitiveness; they comprise traditional centers of manufacturing

activity so helping them remain profitable also maintains manufacturing employment.

- Identify clusters of subsectors with similar needs that also interact with each other through buying and selling relationships.
- Identify those regional competitive advantages that apply across all the manufacturing subsectors and those that are uniquely important to a few specialized subsectors.
- Identify those regional competitive advantages where local actions can make a difference (i.e., increasing the supply of skilled workers needed by the advanced manufacturing sectors).
- Begin to develop strategies and programs that maintain and enhance regional competitive advantage in the targeted sectors.

19. An initiative to engage the region and support cluster development will focus on strategies that support early-stage business development and high growth potential companies in the region. With an abundance of service providers, including small business incubators, Small Business Development Centers, rural economic development organizations, universities and other entities that exist to help start and grow businesses, the region has an opportunity to maximize results by collaboratively working to support them. Regional engagement can leverage the investment in these organizations from federal, state, local and private sources by making them visible as a cohesive network across the region.

20. Innovation acceleration in the area of advanced manufacturing requires the bridging of a number of gaps in the U.S. innovation system, particularly the gap between research and development activities and technology diffusion to the private sector. State universities, federal labs, and National Manufacturing Innovation Institutes that are on the cutting edge of innovation, have the potential to play a very important role in the implementation of an Advanced Manufacturing Strategy for the state. Explore applied research projects that provide access to advanced technologies and advanced manufacturing processes, evaluation and analysis services; demonstrations and testing of equipment and technologies and access to university research.

21. Even though rural manufacturers often strategically locate near key production inputs, a surprising amount of materials used in production are obtained from considerable distances. Building the supplier base

with more regional producers creates a major economic development opportunity to capture more of the economic potential of manufacturing in the Northwest, North Central, and South Central regions.

22. The difference between the durable and nondurable sectors indicates that a focus on expanding the durable sector will require greater efforts to develop the supply of highly skilled workers in the local labor force. However, the generally lower entry-level education and training requirements for the nondurable sectors, excluding chemicals, indicate that these sectors have a greater potential to employ less-skilled workers, thus providing more opportunities for them to begin careers.
23. If one of the objectives of a region's economic development plan is to increase employment in the traditional, "blue-collar" manufacturing occupations, then expansion of the nondurable sectors should be promoted, especially outside petroleum refining and chemicals. By contrast, if the economic development objective is to attract higher-paying jobs in the STEM occupations that are often associated with nonproduction facilities such as research and development centers, then the policies should be directed at the durable sectors. In adopting the latter strategy, complementary STEM programs to increase skills of the workforce will also have to be implemented.

## North Central

North Central Florida imports roughly \$2 billion in products and services. Around \$410 million of that demand is directly related to the target manufacturing industries presented in this study. One of the primary strategies for growth should be implementing a plan to shore up the region's supply chain which will be an effective means to help keep dollars local and expand the market opportunities of driver industries.

Among key clusters, North Central satisfies little of its transportation, plastic and rubber, or chemical production requirements within the region. And while much of its nonmetallic mineral products are obtained locally, this percentage could also be increased. Creating a comprehensive list of businesses that fall within this cluster will help identify specifics to the pain points in supply chain.

## Northwest

The Northwest is heavily dependent on natural resource-based industries that can be prone to legislative interruption, particularly the wood products sector. If natural resources become difficult to obtain locally, this could disrupt the projected growth in some areas. Offsetting these industries with growth in the niche markets present in the region (surgical appliance, dental labs, boat building, etc.) will help diversify the local economic base for future stability in the manufacturing sector.

Northwest cluster industries obtain approximately 40% of their logs and processed wood products regionally. But other resource-based manufacturing industries have much longer supply chains. For example, food manufacturing presence could grow to meet current and future industrial demand as Florida food markets continue to grow—particularly for locally and organically grown food products. Northwest fishing and aquaculture strengths are an example of potential processing opportunities.

## South Central

Sugar production will continue to be a major part of the South Central region, but with over \$800 million in imports of goods and services and \$330 million of that directly related to the industries highlighted in this study, there is tremendous opportunity to grow and diversify the region.

While it will remain a high priority to ensure the downstream processing of the sugar production remains active and stable, the local communities should further examine the opportunities arising in different non-agricultural sectors. Encouraging entrepreneurial efforts in those areas could help create new possibilities.

South Central buys nearly half of its agricultural products locally but imports a large majority of its processed food inputs from out of the region. Similarly, wood products are primarily obtained from outside of the South Central region. These are just two examples of potential synergies with northern Florida RAO regions.

## Appendices

### Appendix A: Flow of commodities sent by truck from the NWRAO to other US states in 2014

Commodities shipped by truck from the Northwest RAO to other US states, 2014		
Destination	Flow (thousands of short tons)	%
Georgia	350.3	33.6
Alabama	240.0	23.0
Tennessee	43.7	4.2
Texas	38.7	3.7
South Carolina	35.8	3.4
North Carolina	34.0	3.3
Louisiana	32.9	3.2
Mississippi	25.6	2.5
Ohio	22.8	2.2
Illinois	22.4	2.2
Indiana	21.8	2.1
New York	20.2	1.9
Pennsylvania	16.2	1.6
Michigan	15.4	1.5
Virginia	12.7	1.2
Kentucky	12.5	1.2
Missouri	10.5	1.0
California	9.8	0.9
New Jersey	8.8	0.8
Wisconsin	8.6	0.8
Iowa	7.0	0.7
Maryland	6.5	0.6
Massachusetts	6.0	0.6
Arkansas	5.1	0.5
Washington	4.9	0.5
Other states	30.6	2.9
Total outside Florida	1042.8	

Source: IHS, 2016, Transearch database

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## Appendix B: Destination of exports from the NWRAO to other Florida counties

Florida destinations of commodities shipped by truck from the Northwest RAO, 2014			
Destination county	Flow (thousands of short tons)		% of total in-state truck shipments
	Agric. & nat. resources	Manufacturing	
Alachua County, FL	11	3.7	0.6
Baker County, FL	0.0	0.0	0.0
Bay County, FL	19.8	85.2	9.9
Bradford County, FL	0.1	0.3	0.0
Brevard County, FL	0.1	3.9	0.1
Broward County, FL	2.7	10.0	1.3
<b>Calhoun County, FL</b>	3.6	2.6	1.8
Charlotte County, FL	0.0	0.4	0.0
Citrus County, FL	0.0	0.8	0.0
Clay County, FL	11	13	0.5
Collier County, FL	0.1	2.4	0.0
Columbia County, FL	0.8	18	0.4
DeSoto County, FL	0.3	0.0	0.2
Dixie County, FL	8.0	19	4.0
Duval County, FL	25.4	74.8	12.7
Escambia County, FL	7.9	16.3	3.9
Flagler County, FL	0.0	0.3	0.0
<b>Franklin County, FL</b>	0.2	5.2	0.1
<b>Gadsden County, FL</b>	8.3	21.8	4.1
Gilchrist County, FL	17	0.1	0.8
Glades County, FL	-	-	0.0
<b>Gulf County, FL</b>	0.7	6.7	0.3
Hamilton County, FL	-	0.2	0.0
Hardee County, FL	0.3	0.2	0.2
Hendry County, FL	0.0	0.0	0.0
Hernando County, FL	0.0	0.7	0.0
Highlands County, FL	0.2	0.4	0.1
Hillsborough County, FL	3.1	20.9	1.6
<b>Holmes County, FL</b>	2.0	2.5	1.0
Indian River County, FL	-	0.6	0.0
<b>Jackson County, FL</b>	23.2	20.0	11.6
Jefferson County, FL	0.3	0.7	0.1
Lafayette County, FL	4.0	0.2	2.0
Lake County, FL	0.4	2.4	0.2
Lee County, FL	1.3	5.0	0.7
Leon County, FL	0.7	63.0	0.3
<b>&lt;continued&gt;</b>			

## Appendix B Continued

Florida destinations of commodities shipped by truck from the Northwest RAO, 2014			
Destination county	Flow (thousands of short tons)		% of total in-state truck shipments
	Agric. & nat. resources	Manufacturing	
<continued>			
Levy County, FL	0.6	0.2	0.3
<b>Liberty County, FL</b>	15.3	4.4	7.6
Madison County, FL	2.7	1.1	1.3
Manatee County, FL	0.2	2.6	0.1
Marion County, FL	3.8	3.1	1.9
Martin County, FL	-	0.7	0.0
Miami-Dade County, FL	3.7	15.1	1.9
Monroe County, FL	-	0.2	0.0
Nassau County, FL	4.1	2.4	2.1
Okaloosa County, FL	0.2	15.8	0.1
Okeechobee County, FL	0.2	0.0	0.1
Orange County, FL	2.8	15.8	1.4
Osceola County, FL	0.5	2.2	0.2
Palm Beach County, FL	2.0	9.0	1.0
Pasco County, FL	0.2	2.6	0.1
Pinellas County, FL	1.0	13.7	0.5
Polk County, FL	3.4	6.1	1.7
Putnam County, FL	3.9	1.4	1.9
Santa Rosa County, FL	1.0	3.7	0.5
Sarasota County, FL	0.2	4.0	0.1
Seminole County, FL	0.3	3.9	0.2
St. Johns County, FL	0.5	1.5	0.2
St. Lucie County, FL	-	0.8	0.0
Sumter County, FL	1.4	1.0	0.7
Suwannee County, FL	7.4	0.7	3.7
Taylor County, FL	20.6	6.3	10.3
Union County, FL	3.2	0.5	1.6
Volusia County, FL	0.3	2.9	0.1
<b>Wakulla County, FL</b>	0.6	6.4	0.3
Walton County, FL	1.5	12.7	0.8
<b>Washington County, FL</b>	1.4	8.2	0.7
Total in Florida	200.7	505.6	100.0

Note: Counties constituting the RAO are shown in blue.

Source: IHS, May 2016, Transearch database

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## Appendix C: Flow of commodities sent by truck from the SCRAO to other US states in 2014

### Commodities shipped by truck from the SCRAO to other US states, 2014

Destination	Flow (thousands of short tons)	Percent
New York	242.6	8.5
Illinois	186.3	6.5
Pennsylvania	182.3	6.4
Texas	169.4	5.9
Ohio	160.0	5.6
Georgia	149.1	5.2
New Jersey	141.4	5.0
California	116.7	4.1
Michigan	109.9	3.9
Massachusetts	94.4	3.3
Indiana	87.4	3.1
Wisconsin	81.0	2.8
Virginia	80.6	2.8
North Carolina	78.6	2.8
South Carolina	76.2	2.7
Missouri	69.0	2.4
Oregon	68.4	2.4
Maryland	67.0	2.4
Tennessee	60.7	2.1
Washington	57.0	2.0
Alabama	55.8	2.0
Minnesota	53.3	1.9
Iowa	51.7	1.8
Kentucky	42.0	1.5
Louisiana	40.6	1.4
<i>Other states</i>	328.7	11.5
<b>Total outside Florida</b>	<b>2,849.8</b>	

Source: Transearch

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## Appendix D: Florida destinations of commodities shipped by truck from the SCRAO in 2014

### Florida destinations of commodities shipped by truck from the SCRAO, 2014

<b>Destination</b>	<b>Flow (thousands of short tons)</b>		<b>Percent of total in-state truck shipments</b>
	<b>Agricultural and natural resources</b>	<b>Manufacturing</b>	
Achua County	2.7	5.7	0.1
Baker County	-	0.2	0.0
Bay County	0.8	2.7	0.0
Bradford County	0.7	0.2	0.0
Brevard County	7.9	18.9	0.2
Broward County	104.8	83.6	2.3
Calhoun County	-	0.1	0.0
Charlotte County	2.8	10.8	0.1
Citrus County	0.5	2.0	0.0
Clay County	7.0	2.5	0.2
Collier County	11.1	46.2	0.2
Columbia County	0.9	2.5	0.0
<b>DeSoto County</b>	9.6	4.7	0.2
Dixie County	0.1	0.1	0.0
Duval County	34.6	32.9	0.8
Escambia County	1.7	2.7	0.0
Flagler County	0.2	0.9	0.0
Franklin County	-	0.1	0.0
Gadsden County	-	0.6	0.0
Gilchrist County	1.0	1.6	0.0
<b>Glades County</b>	2.3	4.6	0.1
Gulf County	-	0.1	0.0
Hamilton County	-	0.1	0.0
<b>Hardee County</b>	9.7	9.1	0.2
<b>Hendry County</b>	14.2	29.7	0.3
Hernando County	2.4	1.9	0.1
<b>Highlands County</b>	11.6	29.4	0.3
Hillsborough County	72.7	101.9	1.6
Holmes County	0.1	0.1	0.0
Indian River County	3.4	13.8	0.1
Jackson County	0.1	0.4	0.0
Jefferson County	-	0.1	0.0
Lafayette County	0.5	5.1	0.0
Lake County	5.7	7.5	0.1
Lee County	17.4	214.4	0.4
Leon County	1.4	6.0	0.0

(continued)

Appendix D continued

**Florida destinations of commodities shipped by truck from the SCRAO, 2014**

Destination	Flow (thousands of short tons)		Percent of total in-state truck shipments
	Agricultural and natural resources	Manufacturing	
Levy County	0.4	0.7	0.0
Liberty County	0.0	-	0.0
Madison County	0.6	0.1	0.0
Manatee County	16.0	30.7	0.3
Marion County	4.2	6.5	0.1
Martin County	6.5	12.6	0.1
Miami-Dade County	215.6	54.7	4.7
Monroe County	1.0	4.0	0.0
Nassau County	0.3	0.6	0.0
Okaloosa County	1.3	2.1	0.0
<b>Okeechobee County</b>	27.6	30.9	0.6
Orange County	92.8	47.9	2.0
Osceola County	16.8	14.4	0.4
Palm Beach County	3,597.5	96.7	78.3
Pasco County	3.4	7.8	0.1
Pinellas County	27.7	29.2	0.6
Polk County	202.2	28.1	4.4
Putnam County	0.5	1.4	0.0
Santa Rosa County	0.5	0.7	0.0
Sarasota County	9.7	22.7	0.2
Seminole County	4.1	13.8	0.1
St. Johns County	2.0	3.4	0.0
St. Lucie County	7.3	19.2	0.2
Sumter County	4.0	2.7	0.1
Suwannee County	0.8	9.5	0.0
Taylor County	0.2	0.3	0.0
Union County	-	0.0	0.0
Volusia County	21.2	10.0	0.5
Wakulla County	0.0	0.2	0.0
Walton County	0.1	0.8	0.0
Washington County	0.0	0.2	0.0
<b>Total in Florida</b>	<b>4,592.1</b>	<b>1,095.2</b>	

Note: Counties making up the SCRAO are shown in blue.

Source: Transearch

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## Appendix E: Flow of commodities sent by truck from the NCRAO to other US states in 2014

### Commodities shipped by truck from the North Central Rural Areas of Opportunity to other US states, 2014

Destination	Flow (thousands of short tons)	%
Georgia	1,422.0	46.5
Alabama	269.2	8.8
South Carolina	212.9	7.0
North Carolina	150.9	4.9
Virginia	98.0	3.2
Tennessee	86.5	2.8
Texas	78.3	2.6
Louisiana	68.8	2.2
New York	67.5	2.2
Pennsylvania	52.0	1.7
Ohio	51.4	1.7
Mississippi	46.4	1.5
California	40.8	1.3
Illinois	39.3	1.3
Kentucky	34.6	1.1
Indiana	33.8	1.1
Michigan	33.4	1.1
New Jersey	30.5	1.0
Wisconsin	28.0	0.9
Massachusetts	27.2	0.9
Missouri	24.4	0.8
Maryland	22.9	0.7
Arkansas	22.3	0.7
Iowa	15.1	0.5
Connecticut	12.1	0.4
Other States	91.0	3.0
Total shipped to other states	3,059.5	

Source: IHS, 2016, Transearch database

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## Appendix F: Florida destinations of commodities shipped by truck from the NCRAO in 2014

### Florida destinations of commodities shipped by truck from the North Central RAO, 2014

Destination county	Flow (thousands of short tons)		% of total in-state truck shipments
	Agric. & nat. resources	Mfg.	
Alachua County, FL	17.9	134.0	1.5
<b>Baker County, FL</b>	0.3	1.2	0.0
Bay County, FL	9.7	30.0	0.8
<b>Bradford County, FL</b>	1.4	4.0	0.1
Brevard County, FL	7.0	20.7	0.6
Broward County, FL	29.9	61.3	2.5
Calhoun County, FL	3.1	0.2	0.3
Charlotte County, FL	0.8	3.1	0.1
Citrus County, FL	1.9	43.3	0.2
Clay County, FL	21.3	30.5	1.8
Collier County, FL	2.9	10.3	0.2
<b>Columbia County, FL</b>	8.5	24.4	0.7
DeSoto County, FL	5.8	0.2	0.5
<b>Dixie County, FL</b>	38.0	8.1	3.2
Duval County, FL	174.3	345.7	14.7
Escambia County, FL	3.5	6.4	0.3
Flagler County, FL	1.6	5.4	0.1
Franklin County, FL	0.2	0.1	0.0
Gadsden County, FL	7.5	4.8	0.6
<b>Gilchrist County, FL</b>	18.0	8.5	1.5
Glades County, FL	0.3	0.2	0.0
Gulf County, FL	0.3	0.4	0.0
<b>Hamilton County, FL</b>	0.3	53.1	0.0
Hardee County, FL	5.3	1.4	0.4
Hendry County, FL	4.8	0.2	0.4
Hernando County, FL	3.2	31.2	0.3
Highlands County, FL	3.9	2.8	0.3
Hillsborough County, FL	61.2	54.7	5.2
Holmes County, FL	0.5	0.5	0.0
Indian River County, FL	1.6	4.2	0.1
Jackson County, FL	17.0	3.4	1.4
<b>Jefferson County, FL</b>	0.9	0.2	0.1
<b>Lafayette County, FL</b>	23.0	10.2	1.9
Lake County, FL	11.0	37.8	0.9
Lee County, FL	12.1	16.9	1.0
Leon County, FL	2.4	18.4	0.2

<continued>

Appendix F continued

**Florida destinations of commodities shipped by truck from the North Central RAO, 2014 (continued)**

Destination county	Flow (thousands of short tons)		% of total in-state truck shipments
	Agric. & nat. resources	Mfg.	
<b>&lt;continued&gt;</b>			
<b>Levy County, FL</b>	5.8	48.6	0.5
Liberty County, FL	18.0	1.5	1.5
<b>Madison County, FL</b>	9.1	3.0	0.8
Manatee County, FL	7.0	12.9	0.6
Marion County, FL	28.1	138.3	2.4
Martin County, FL	1.0	3.7	0.1
Miami-Dade County, FL	43.2	39.9	3.7
Monroe County, FL	0.1	1.7	0.0
Nassau County, FL	29.8	25.8	2.5
Okaloosa County, FL	0.4	5.6	0.0
Okeechobee County, FL	9.3	2.0	0.8
Orange County, FL	69.9	192.3	5.9
Osceola County, FL	15.2	31.4	1.3
Palm Beach County, FL	27.7	40.9	2.3
Pasco County, FL	6.0	14.1	0.5
Pinellas County, FL	34.5	48.8	2.9
Polk County, FL	82.7	19.9	7.0
<b>Putnam County, FL</b>	36.4	53.3	3.1
Santa Rosa County, FL	0.6	1.7	0.0
Sarasota County, FL	6.6	17.9	0.6
Seminole County, FL	13.8	78.1	1.2
St. Johns County, FL	4.3	20.1	0.4
St. Lucie County, FL	1.5	4.1	0.1
Sumter County, FL	17.6	55.1	1.5
<b>Suwannee County, FL</b>	107.5	82.2	9.1
<b>Taylor County, FL</b>	74.9	37.0	6.3
<b>Union County, FL</b>	13.9	1.7	1.2
Volusia County, FL	16.2	42.7	1.4
Wakulla County, FL	0.9	0.5	0.1
Walton County, FL	0.5	1.1	0.0
Washington County, FL	0.4	0.4	0.0
Total in Florida	1,184.3	2,004.6	100.0

Note: Counties representing the RAO are shown in blue.

Source: IHS, May 2016, Transearch database

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