PATTERN ANALYSIS
HIGHLIGHTING INDUSTRY PATTERNS THAT DRIVE NEW WEALTH IN A REGIONAL ECONOMY

SOUTHEAST REGION

MORE WITH MERIC
TIMELY TARGETED INTELLIGENT

MISSOURI
Department of Economic Development
AN INTRODUCTION TO INDUSTRY PATTERN ANALYSIS

Discovering patterns of connected industries can be difficult given the number of companies in an economy and the data available for analysis. Yet understanding the business patterns that drive wealth in a region is critical to designing effective development initiatives.

This report uses industry trend, concentration, and individual firm data to summarize two important patterns in a region’s economic core:

- **Spot Strengths** of large sector employment, typically in one or two firms, and

- **Core Clusters** of employment across a mix of similar or linked industries.

Recognizing spot strengths and core cluster patterns is important as these collectively large employers attract new income to a region. Knowing these industries, and the shared supply-chain and labor issues these companies have, can aid economic and workforce developers in the crafting of policies for the broadest impact.

Pattern analysis highlights the strengths and linkages of area industries and can serve as a starting point for understanding a regional economy. People familiar with company operations know that no two firms have the same business model. Pattern information should ultimately be enhanced by individuals with local business knowledge.

See the **NOTES** section for more details on industry pattern analysis and the methods used in this report.
What comes after “Pattern Recognition?”

Economic and workforce developers have been speaking the “cluster” language for a long time. However, just knowing that a spot strength or core cluster pattern exists is only one step in the process. Here are some additional things to consider:

**Group Think**
While large, individual businesses will always be important and drive some policy actions, decision-makers can use pattern knowledge to focus efforts on the common problems that related businesses have. This approach makes the best use of limited resources by providing the biggest impact to the most companies.

**Customize Help**
One size does not fit all when it comes to supporting an industry pattern. Assisting a business cluster may involve specific projects like expanding utilities or broader actions such as helping attract additional knowledge workers. Whatever the needs, the pattern approach can help prioritize actions.

**Work on Workforce**
Many business location or expansion decisions revolve around issues of available labor. Workforce training geared toward supporting clusters can be very valuable as many of the firms hire workers with similar skill sets. Likewise, talented workers want to locate where clusters of similar businesses offer better odds at finding employment.

Career centers, community colleges, and universities can customize training programs to meet the need of cluster industries for specialized workers.

**Spread the Word**
Economic and workforce developers can tell the story of how a region’s industries and institutions create clusters of opportunity for existing companies, workers, and new investment. Examples such as the Animal Health Corridor (Missouri-Kansas) and the Plant and Medical Sciences Cluster (St. Louis) are excellent branding campaigns that highlight the combined strengths of businesses, universities, incubators, and workforce to form clusters of growth.

**Plan for the Future**
The current recession reminds everyone that major structural changes in the economy will occur from time to time. Missouri’s automotive industry is undergoing that change right now. Developers that understand a region’s pattern of industries will be better positioned to promote new opportunities of growth that fit well with an economy’s existing and transforming strengths.
INDUSTRY OVERVIEW

The Southeast region has a population of 444,037, which accounts for 7.4 percent of Missouri’s total population. Economic centers are spread throughout the region in cities like Cape Girardeau, Sikeston, Poplar Bluff, and Farmington. Cape Girardeau County accounts for the largest share of jobs at just over 18 percent.* The average wage in 2008 was $29,039, considerably lower than the state average of $40,710.

In 2008 non-farm employment for the area was 167,843, which includes public and private sectors. Healthcare and manufacturing accounted for one out of every three jobs. Although most employment in the primary farming sector is not captured by standard employment measures, over 13,600 people were estimated to be either a farm owner or worker in 2007.** Many of these farmers also have other jobs, but clearly agriculture in a significant part of this region’s economy.

Southeast Region Industry Employment 2008

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Agriculture, Forestry, Fishing, and Hunting</td>
<td>2,408</td>
<td>1.4%</td>
<td>$24,413</td>
</tr>
<tr>
<td>21</td>
<td>Mining</td>
<td>1,817</td>
<td>1.1%</td>
<td>$55,306</td>
</tr>
<tr>
<td>22</td>
<td>Utilities</td>
<td>1,475</td>
<td>0.9%</td>
<td>$55,280</td>
</tr>
<tr>
<td>23</td>
<td>Construction</td>
<td>8,236</td>
<td>4.9%</td>
<td>$39,520</td>
</tr>
<tr>
<td>31-33</td>
<td>Manufacturing</td>
<td>25,548</td>
<td>15.2%</td>
<td>$35,574</td>
</tr>
<tr>
<td>42</td>
<td>Wholesale Trade</td>
<td>6,165</td>
<td>3.7%</td>
<td>$38,064</td>
</tr>
<tr>
<td>44-45</td>
<td>Retail Trade</td>
<td>21,891</td>
<td>13.0%</td>
<td>$20,517</td>
</tr>
<tr>
<td>48-49</td>
<td>Transportation and Warehousing</td>
<td>7,024</td>
<td>4.2%</td>
<td>$37,249</td>
</tr>
<tr>
<td>51</td>
<td>Information</td>
<td>2,298</td>
<td>1.4%</td>
<td>$35,388</td>
</tr>
<tr>
<td>52</td>
<td>Finance and Insurance</td>
<td>4,857</td>
<td>2.9%</td>
<td>$36,017</td>
</tr>
<tr>
<td>53</td>
<td>Real Estate and Rental and Leasing</td>
<td>1,476</td>
<td>0.9%</td>
<td>$26,620</td>
</tr>
<tr>
<td>54</td>
<td>Professional, Scientific, and Technical Services</td>
<td>2,807</td>
<td>1.7%</td>
<td>$33,600</td>
</tr>
<tr>
<td>55</td>
<td>Management of Companies and Enterprises</td>
<td>829</td>
<td>0.5%</td>
<td>$44,593</td>
</tr>
<tr>
<td>56</td>
<td>Administrative and Support Services</td>
<td>6,167</td>
<td>3.7%</td>
<td>$19,407</td>
</tr>
<tr>
<td>61</td>
<td>Educational Services</td>
<td>13,811</td>
<td>8.2%</td>
<td>$31,501</td>
</tr>
<tr>
<td>62</td>
<td>Health Care and Social Assistance</td>
<td>31,508</td>
<td>18.8%</td>
<td>$30,216</td>
</tr>
<tr>
<td>71</td>
<td>Arts, Entertainment, and Recreation</td>
<td>1,769</td>
<td>1.1%</td>
<td>$16,443</td>
</tr>
<tr>
<td>72</td>
<td>Accommodation and Food Services</td>
<td>13,028</td>
<td>7.8%</td>
<td>$11,312</td>
</tr>
<tr>
<td>81</td>
<td>Other Services</td>
<td>6,011</td>
<td>3.6%</td>
<td>$15,104</td>
</tr>
<tr>
<td>92</td>
<td>Public Administration</td>
<td>8,721</td>
<td>5.2%</td>
<td>$28,971</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>167,843</strong></td>
<td><strong>$29,039</strong></td>
<td><strong>None</strong></td>
<td><strong>None</strong></td>
</tr>
</tbody>
</table>

**The most accurate and timely industry employment numbers come from the Bureau of Labor Statistics, Quarterly Census of Employment and Wages program (QCEW). However, reporting requirements for this program excludes most farmers so the USDA 2007 Census of Agriculture is used as an alternative, non-comparative measure.
Southeast Region

INDUSTRY PATTERNS

Industry pattern analysis revealed several core clusters and a spot strength in Southeast Missouri. Agribusiness was found to be a widespread cluster while Mining and Plastics/Rubber Manufacturing represented clusters of diverse large to mid-sized firms. Machinery Manufacturing was a spot strength of large employment size.

These core cluster and spot industries accounted for almost 10 percent of all private employment in the region.* Patterns reinforce the overall importance of agribusiness and manufacturing to this economy.

Cluster Summary

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Agribusiness</th>
<th>Mining</th>
<th>Plastics/Rubber Mfg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>Crop Production</td>
<td>Agricultural and Forestry Support</td>
<td>Food Manufacturing (Spot Strength)</td>
</tr>
<tr>
<td>Location Quotient</td>
<td>2.46</td>
<td>1.71</td>
<td>1.96</td>
</tr>
<tr>
<td>Employment</td>
<td>1,604</td>
<td>684</td>
<td>ND</td>
</tr>
<tr>
<td>Avg. Wage</td>
<td>$20,776</td>
<td>$28,543</td>
<td>ND</td>
</tr>
</tbody>
</table>

Description

- **Agribusiness**: Engaged in growing crops mainly for food and fiber. Comprised primarily of farms, orchards, groves, and nurseries growing crops, plants, vines, trees and their seeds.
- **Agricultural and Forestry Support**: Support activities for agriculture or forestry producing firms such as commodity cultivating, harvesting, management, processing, etc.
- **Food Manufacturing (Spot Strength)**: Transforms livestock and agricultural products into goods for intermediate or final consumption. Food products are typically sold to wholesalers or retailers for distribution to consumers.
- **Mining**: Primarily engaged in mining, mine site development, and preparing metallic minerals and nonmetallic minerals.
- **Plastics/Rubber Product Manufacturing**: Engaged in the processing of plastic materials and/or raw rubber into value-added products. Processing typically includes molding and extrusion.

---

*Spot industry employment and wages by detailed sector is not reportable due to BLS confidentiality restrictions.*
Southeast Region

The Agribusiness cluster, comprised predominately of crop producers, agriculture support services, and food manufacturers, represents a significant and diverse industry in this region.* Farmers and food manufacturers both benefit from close proximity which reduces transportation costs. Nearby ports on the Mississippi River also provide bulk commodity transportation to export markets.

Crop producers, especially in the low lands near the Mississippi River, benefit from good climate and deep soil. Crops such as soybeans, corn, rice, and cotton are grown here and serve as major exports.

* Crop production employment used in the summary and location quotient is from the Quarterly Census of Employment and Wages (QCEW) and does not capture most farm production employment. The U.S. 2007 Census of Agriculture indicated that a combined total of 13,606 farm owners and hired labor worked in the Southeast Region but due to different collection methodologies cannot be directly added to the QCEW. However, the Agriculture Census employment numbers do highlight the greater significance of farm production to the region’s economy.
Southeast Region

As the LQ Pattern chart illustrates, Agribusiness employment grew in the region from 2003 to 2007, particularly in production and support activities.

**Mining Cluster**  
*Mining, Except Oil and Gas (NAICS 212)*

Mining is the most specialized cluster in the Southeast region with an LQ near 6. This means the industry is nearly six times as concentrated in mining employment as the U.S. average.

Industries in the region largely mine aggregate stones and metals for a variety of industries such as construction and manufacturing. Supporting transportation networks and industries are key elements to this sector’s success.

Mining employment has grown at a faster rate than other clusters in the region. Employment grew at an annual rate of nearly 5.8 percent from 2003 to 2007. U.S. annual growth was 1.5 percent over the same time period.

**Plastics/Rubber Products Manufacturing Cluster**  
*Plastics and Rubber Products Manufacturing (NAICS 326)*

Plastics and Rubber Products Manufacturing boast a regional LQ near 3.6, large employment, and a diverse number of firms that make it an important cluster for Southeast Missouri.

While some firms in this region are focused on automotive products, and hence greatly impacted by the downward trends in vehicle production, the majority serve broader markets. Packaging and flexible injection molding companies supply a wide range of sectors that can include food manufacturing, construction, medical supplies, and other consumer products.

This industry is important to watch even as recent job numbers have shown recessionary declines. Many of these companies are leaders in adaptive manufacturing that is the model for future capital investments. Companies that have flexible production lines can quickly change from molding one product to another. This rapid ability to respond to demand creates on-going opportunities for these firms to enter new markets.
INDUSTRY CONTRIBUTION IMPACT: PLASTICS/RUBBER PRODUCT MANUFACTURING

Pattern recognition is important since changes to business production can have broad regional impacts across a range of linked industries and institutions. Plastics and rubber product manufacturing is analyzed in this example of how those connections positively influence the area’s economy.

Plastics and Rubber Products Manufacturing uses inputs such as organic chemicals, rubber product manufacturing, electric power generation, natural gas production, and synthetic dye/pigment manufacturing to create value-added products. Regionally the industry makes packaging materials and parts that are typically inputs to other final products sold in export markets, thereby bringing additional money into the regional economy.

Workers in this cluster are among the highest paid in the region. An addition of 100 employees in this manufacturing sector creates an estimated total of 194 jobs paying $9.0 million in salaries and contributing over $15.9 million to the state’s gross domestic product.

<table>
<thead>
<tr>
<th>Plastics and Rubber Products Manufacturing Impact: Addition of 100 employees</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employment</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Labor Income</strong>*</td>
</tr>
<tr>
<td><strong>Gross Domestic Product</strong></td>
</tr>
</tbody>
</table>

*Labor income includes employee benefits and proprietors income.*
INDUSTRY INTERLINKAGES: PLASTICS/RUBBER PRODUCT MANUFACTURING

Plastics and Rubber Products Manufacturing employs around 3,000 workers in the region. Backward-linked (supply goods and raw materials to the industry) and forward-linked (produce value-added goods for consumers) activities display the interrelationship between various industries that add value to this sector. While the backward linkages are between the suppliers of raw materials to the industry, forward linkages are between the industry and the consumers.
NOTES

Industry Analysis of a Region’s Economic Core

While a business is classified by the primary service or product it creates, another distinction is the market it serves. Companies that target customers outside a region are considered export-based, or core, whereas other businesses mainly serve local customers. Grocery stores, retailers, and doctor’s offices are typical examples of local market firms. The distinction between export and local market businesses is important when considering long range economic viability and development.

Export-market industries, by serving customers outside a region, bring new dollars into an economy and form the economic core of the community. Think of manufacturers and large-scale farming. Both industries serve national and global markets and therefore attract new income into the region that is paid out in wages, interests, rents, and profits. By contrast, a local market industry largely churns existing dollars within a region. While local services are absolutely important to a thriving community, seldom can an area’s population maintain a robust economy by only selling things to each other; it has to export goods and services to bring in new wealth.

Defining Export-Market Industries

Although some businesses are commonly thought of as exporters, location quotient (LQ) analysis provides a more comprehensive approach. This quotient indicates how concentrated an industry’s employment is in a certain area as compared to the U.S. average. If an industry has an LQ of 2.0 then it is twice as concentrated in employment as the U.S. average.

Location quotients can help identify regional industries that may be exporting a substantial amount of goods and services to outside markets. If an industry is much more concentrated than the national average, firms are likely creating more products than the local economy can consume. Industries typically considered as primary exporters include:

Large Agriculture and Forestry Operations
Mining
Manufacturing
Management Headquarters
Tourism*

*High retail/restaurant LQ associated with destination spots.
The list of primary exporters should be supplemented with LQ analysis to determine other industries that may be generating a large amount of income from outside a region. Services such as information technology, design and engineering, and research are often examples in metropolitan areas.

Identifying Industry Patterns

The industries with the highest LQ and combined employment were analyzed in the context of the region’s economy and knowledge of individual firms to determine if an industry pattern existed. Employment from 2003-2007 was analyzed to coincide with Missouri’s growth period during the last business cycle and to control for more recent recessionary effects. However, first quarter 2009 employment and business closures were reviewed to see if a pattern had greatly diminished due to major structural changes after the period of primary analysis.

Spot Strengths were identified as high LQ and employment sectors where 3 or fewer companies employed over 80 percent of the industry’s workforce. Spot firm employment or wage information cannot be disclosed due to confidentiality restrictions in the QCEW program. However, this report does try to identify those firm’s connections to larger clusters where applicable.

Spot firms employ a large percentage of workers and attract supply chain industries. These businesses are so prominent in a local economy, think of “factory towns,” that the firms can overshadow other regional industries. If a Spot business moves out of an area then the industry concentration (LQ) leaves with it, thereby introducing a vulnerability to the region’s economy.

Core Cluster patterns takes into account the number of businesses and employment within the region that make up an industry concentration. Cluster businesses are more diversified in firm count. Three or less firms do not account for over 80 percent of industry employment.

Core clusters benefit from the transfer of knowledge and a shared, skilled workforce that close proximity brings. Supply chains develop to serve these companies and competition keeps prices down. Experienced industry entrepreneurs periodically dream up better products, spin-off new local firms, and grow the economic core of a community.

While all companies are influenced by larger economic trends, having a number of similar businesses in an area helps diversify the risk and rewards as each company focuses on specialized products. These core cluster businesses collectively benefit from supporting services and workforce training that is tailored to common industry needs.
SOURCES

4. IMPLAN Economic Impact Model, 2007, MIG Inc.