

**TWINSBURG CHRYSLER  
STAMPING PLANT**

**RECOVERY ACTION  
PLAN**



**Prepared by  
The City of Twinsburg  
Summit County Department of Community and Economic Development  
Northeast Ohio Four County Regional Planning and Development Organization  
October 28, 2011**

**Funding by  
U.S. Department of Commerce, Economic Development Administration  
Economic Adjustment Assistance  
Award No. 06-69-05549**

**Twinsburg Chrysler Stamping Plant  
Recovery Action Plan**

**TABLE OF CONTENTS**

**PART 1 – INTRODUCTION AND REASON FOR A RECOVERY  
ACTION PLAN**

**Reason for a Recovery Action Plan.....1**

**PART 2 – CLOSURE IMPACTS**

**Closure Impacts on the City of Twinsburg .....5**

**Closure Impacts Outside of Twinsburg, Ohio.....13**

**Supplier Network Impacts .....18**

**PART 3 –INDUSTRIAL EMPLOYMENT BASE**

**County-wide Industrial Inventory.....20**

**Status of the Region .....26**

**Shift/Share Analysis.....27**

**Cluster Analysis .....39**

**Sector and Cluster Strengths Relative to Forecasts of Employment Activity.....53**

**Innovation Index .....55**

**Occupation Clusters.....58**

**Summary and Observations .....61**

**PART 4 – CHALLENGES AND OPPORTUNITIES**

**Chrysler Stamping Plant Redevelopment Potential .....63**

**Challenges Unique to Twinsburg .....67**

<b>Challenges Unique to Summit County .....</b>	<b>68</b>
<b>Challenges for the NEFCO Region .....</b>	<b>71</b>
<b>Opportunities Unique to Twinsburg .....</b>	<b>73</b>
<b>Opportunities Unique to Summit County .....</b>	<b>75</b>
<b>Opportunities for the NEFCO Region .....</b>	<b>85</b>
<b>Peer Comments .....</b>	<b>87</b>
 <b>PART 5 – RECOVERY PLAN</b>	
<b>Plan Goals and Objectives.....</b>	<b>91</b>
<b>Prioritized Action Steps.....</b>	<b>96</b>
<b>Financial Assistance Considerations .....</b>	<b>99</b>
<b>CEDS Eligible Plan Elements .....</b>	<b>101</b>

## LIST OF TABLES

<b>Table 1</b>	
<b>City of Twinsburg Historical Income Tax Data.....</b>	<b>5</b>
<b>Table 2</b>	
<b>Annual Municipal Wage and Income Tax Losses For Summit County Municipalities Outside Twinsburg.....</b>	<b>13</b>
<b>Table 3</b>	
<b>Job Losses By County Of Residence .....</b>	<b>15</b>
<b>Table 4</b>	
<b>Reported Residence Address Outside The State of Ohio .....</b>	<b>17</b>
<b>Table 5</b>	
<b>Summary of NAICS Business Classifications in Summit County .....</b>	<b>21</b>
<b>Table 6</b>	
<b>Sectors with Positive Location Quotients in Summit County in 2010.....</b>	<b>28</b>
<b>Table 7</b>	
<b>Regional Clusters With Location Quotients of 1.20 or Greater .....</b>	<b>51</b>
<b>Table 8</b>	
<b>Innovation Index Scores for Akron and Other Metropolitan Areas .....</b>	<b>57</b>
<b>Table 9</b>	
<b>Occupational Cluster Employment and Location Quotients Summit County (2001 and 2009) .....</b>	<b>58</b>

## LIST OF FIGURES

<b>Figure 1</b>	
<b>Twinsburg General Fund Distribution .....</b>	<b>7</b>
<b>Figure 2</b>	
<b>Taxing Authority Share of Foregone Property Tax Revenues .....</b>	<b>9</b>
<b>Figure 3</b>	
<b>Job Loss by County Of Residence .....</b>	<b>16</b>
<b>Figure 4</b>	
<b>Index Score Positive 5 .....</b>	<b>31</b>
<b>Figure 5</b>	
<b>Index Score Positive 4 .....</b>	<b>32</b>
<b>Figure 6</b>	
<b>Index Score Positive 3 .....</b>	<b>33</b>
<b>Figure 7</b>	
<b>Index Score Negative 5 .....</b>	<b>34</b>
<b>Figure 8</b>	
<b>Index Score Negative 4 .....</b>	<b>37</b>
<b>Figure 9</b>	
<b>Index Score Negative 3 .....</b>	<b>38</b>
<b>Figure 10</b>	
<b>Advanced Materials Cluster .....</b>	<b>40</b>
<b>Figure 11</b>	
<b>Biomed/Life Science Cluster .....</b>	<b>41</b>
<b>Figure 12</b>	
<b>Chemicals/Chemical Products Cluster .....</b>	<b>42</b>
<b>Figure 13</b>	
<b>Glass and Ceramics Cluster .....</b>	<b>43</b>
<b>Figure 14</b>	
<b>Manufacturing Supercluster .....</b>	<b>44</b>

<b>Figure 15</b>	
<b>Primary Metals Manufacturing Cluster .....</b>	<b>45</b>
<b>Figure 16</b>	
<b>Fabricated Metals Cluster .....</b>	<b>46</b>
<b>Figure 17</b>	
<b>Machinery Manufacturing Cluster .....</b>	<b>47</b>
<b>Figure 18</b>	
<b>Electrical Equipment, Appliances, Component Manufacturing Cluster .....</b>	<b>48</b>
<b>Figure 19</b>	
<b>Transportation Equipment Manufacturing Cluster .....</b>	<b>49</b>
<b>Figure 20</b>	
<b>Printing, Publishing Cluster .....</b>	<b>50</b>
<b>Figure 21</b>	
<b>Aerial View of Chrysler Stamping Plant Site.....</b>	<b>63</b>
<b>Figure 22</b>	
<b>Ohio EPA Brownfield Sites in Summit County .....</b>	<b>70</b>
<b>Figure 23</b>	
<b>Summit County Commercial/Industrial Parks .....</b>	<b>76</b>
<b>Figure 24</b>	
<b>Vacant Commercial and Industrial Land – Summit County .....</b>	<b>79</b>
<b>Figure 25</b>	
<b>Post Secondary Educational Resources .....</b>	<b>80</b>

## **CREDITS AND ACKNOWLEDGEMENTS**

### **Primary Recovery Team Staff**

**Larry E. Finch, AICP**

Recovery Plan Coordinator  
(Director of Community Planning and Development  
Twinsburg, Ohio)

**Erin E. Siebel**

Assistant Recovery Plan Coordinator  
(Summit County Grants Program Analyst  
Department of Community & Economic Development)

**Connie Krauss**

Director  
Department of Community & Economic Development

**Patrick Bravo, M.P.A.,J.D.**

Deputy Director  
Department of Community & Economic Development

**Joseph Hadley**

Executive Director  
Northeast Ohio Four County Regional Planning and Development Organization

**Sylvia Chinn-Levy**

Program Manager for Economic Development  
Northeast Ohio Four County Regional Planning &  
Development Organization (NEFCO)

**Industrial Real Estate Market Resource Contributors**

Matthew E. Beesley, SIOR – CRESCO Real Estate (Cushman & Wakefield)  
Robert K. Brehmer, CCIM – NAI Daus Commercial Real Estate Services, Worldwide  
David K. Ford, Jr. – CB Richard Ellis, Inc.  
Tom Fox – NAI Cummins Commercial Real Estate  
David Kaplan – NAI Cummins Commercial Real Estate Services, Worldwide  
Joe Perrow – GEIS Companies  
Bob Raskow - NAI Cummins Commercial Real Estate

**Industrial Shift-Share Data Contributed by:**

**TeamNEO** – Richard Seifritz and Research staff

## **PART 1 – INTRODUCTION AND REASON FOR A RECOVERY ACTION PLAN**

### **Reason for a Recovery Action Plan**

#### **Automotive Sector General Weakness and Bankruptcies.**

The U. S. Auto Manufacturing Sector was decimated by declining product demand and increasing operational losses. The seasonally adjusted annual rate of production (AARP) declined from 15.6 million units in 2008 to 9.8 million units in 2009. U.S. manufacturers continued to lose market share to foreign owned manufacturers. In late 2008 the “Big Three Auto Makers” testified before Congress seeking Federal loans to perpetuate their businesses. While the aid was not provided, they were invited to draft a “Restructuring Plan for Long-Term Viability.”

The automotive sector was already saddled with substantial excess capacity, non-competitive wage structures, debt and legacy costs. The nationwide decline in demand sent both Chrysler and General Motors scrambling for bankruptcy protection.

In May of 2009 Chrysler filed for Chapter 11 bankruptcy. This filing came months after Chrysler LLC submitted a viability plan to the U.S. Treasury and the President’s Auto Task Force outlining a restructuring action necessary to keep the company viable. This plan included an alliance with Fiat, several plant closings and concessions from all stakeholders. This plan was rejected by the U. S. Treasury and the President’s Auto Task Force as not viable. However, Chrysler was asked to pursue a global alliance with Fiat and seek more aggressive concessions from all stakeholders. On April 30, 2009, Chrysler announced they had reached an agreement with Fiat for a global alliance and that they would pursue a petition to the U.S. Bankruptcy Court under Section 363 of the Bankruptcy Code. This enabled expedited transfer of Chrysler’s principal assets to a new company. Assets and liabilities that were not in line with the new company’s business plan remained in the “Old Company” for disposal.

The Twinsburg Stamping Plant was one of the assets not in line with the new company’s plan. All work previously done by the Twinsburg facility was to be transferred to Warren Stamping and Sterling Stamping plants in Michigan. Other facilities scheduled for closing included the following:

- Sterling Heights Assembly (later purchased back by the new company).
- Kenosha Engine
- Detroit Axle
- Conner Avenue Assembly
- St. Louis North Assembly
- Newark Assembly
- St. Louis Assembly



## **Initial Closure Response Efforts**

The bankruptcy filings were not made public until May 1, 2009. Immediately upon learning of the fate of the Twinsburg facility, the Mayor and the City's Economic Development Director scrambled to assemble a meeting of government, institutional and political stakeholders. Mayor Katherine Procop and staff contacted State and local economic development and social service providers to arrange a strategy meeting for Monday, May 4<sup>th</sup>. The Mayor contacted State and Federal legislators. Mark Barbash, Interim Director of the Ohio Department of Development contacted various state entities including Ohio Jobs and Family Services, Ohio Board of Regents, and various Workforce Development agencies to inform them of the pending meeting. The City of Twinsburg Finance Director prepared a summary of revenue impacts.

The Ohio Jobs and Family Services staff conducted a Rapid Response Session at Twinsburg UAW Union Hall on Sunday May 3, 2009. On Monday, May 4, 2009, a Chrysler Closure Response meeting was held in City Council Chambers. More than 50 representatives from various social service, economic development, and workforce development agencies were in attendance along with representatives from offices of Governor Ted Strickland, Congressman Steven LaTourette, Congresswoman Marcia Fudge, Senator George Voinovich, Senator Sherrod Brown, Representative Brian Williams, Summit County Council and the Summit County Executive Russell Pry. The same afternoon Mayor Procop called a staff meeting to discuss Chrysler's status, City budgets and discuss possible considerations and budget strategies.

The next day, a summary of the prior day's meeting was prepared along with a mailing list of response participants. Recommendations were made for the formation of five working groups to organize an effective response. Working groups were organized around the following topics:

1. Social Support Services
2. Re-employment/Jobs Training/Entrepreneurship
3. Legislation and Asset Resolution
4. Site Reutilization
5. City Impact and Recovery

On May 6<sup>th</sup>, City staff contacted University of Michigan's Community Economic Adjustment Program (CEAP) offices and Cleveland State University's partnering staff to identify potential assistance services these entities might be able to provide in mitigating the impacts of job losses. Contact was also made with Michigan State's Center for Automotive Research and Automotive Communities Program staff.

On May 7<sup>th</sup>, Noah Sudow of the Ohio Board of Regent's Chancellor's office volunteered the services of his office to lead the Re-employment/Jobs Training/Entrepreneurship Work Group. The next day, Leah Anglin-Walsh (Director of Governor Strickland's Region 9 Economic Development office) agreed to host a meeting of economic development participants to begin formulating task lists and responsibilities.

A few days later, Senator Brown and Mayor Procop addressed the UAW Local 122 at the Union Hall in Twinsburg. The closing announcement was discussed as were efforts to assure the employees that their interests would not be ignored.

The Summit County Office of Workforce Development announced an organizational meeting to be conducted at their offices on Thursday May, 14<sup>th</sup> at 10:00 am for the

purposes of outlining the agency's role in providing assistance, training and employment services to impacted employees. The Ohio Jobs and Family Services staff had already conducted a Rapid Response Session at Twinsburg UAW Union Hall on Sunday May 3, 2009. Subsequent Rapid Response Sessions were conducted on May 28<sup>th</sup> and June 2<sup>nd</sup> for the purposes of introducing impacted workers with services available from Ohio Jobs and Family Services (sessions were continued on a regular basis throughout the closure period).

Dr. Ed Montgomery and the President's Automotive Task Force visited Twinsburg on May 22<sup>nd</sup> to explain their role in providing assistance to the community in recovering from job losses and plant closure impacts. Twinsburg staff was introduced to key contacts in Federal agencies including the U.S. Department of Commerce Economic Development Administration, U.S. Environmental Protection Agency, the Department of Labor, and others.

The following month, the City's Economic Development Director met with Governor Strickland and economic development staff from Ontario, Ohio and Montgomery County, Ohio to discuss responses to closures in each of these communities and to share thoughts and recommendations related to recovery planning.

On June 30<sup>th</sup>, the University of Michigan's CEAP staff conducted a focus group meeting at the Akron Public Library to help stimulate the discussion about actions and resources that might be devoted to recovery planning.

In the fall of 2009, the City of Twinsburg, along with the Summit County Department of Community and Economic Development and the Northeast Ohio Four County Regional Planning and Development Organization as co-applicants, made an application to the U. S. Department of Commerce Economic Development Administration for Economic Adjustment Assistance in the form of Recovery Action Plan funding. Funding was approved and project efforts began in October, 2010.

### **Bankruptcy Sale of the Chrysler Twinsburg Stamping Plant**

Along with the announcement of bankruptcy and plant closure, the bankruptcy filing provided for the process of transfer of assets to the New Car Company and the clarification of assets which remain in the old car company (Old Carco, LLC). Old Carco assets were placed under the management of Capstone Advisory Group, the asset managers for the Old Carco.

In mid-2009 the City began receiving requests from parties expressing an interest in operating the stamping plant for new owners. The Mayor and staff visited Chrysler's headquarters in Michigan to plead for the reconsideration of the closure and encourage licensed manufacturing of Chrysler parts by a new owner at the Twinsburg site. As Chrysler LLC still retained substantial un-used plant capacity, the licensed production option was not seen as viable.

On September 30, 2009, Capstone published a request for proposals soliciting interest on the part of prospective purchasers of the Twinsburg facility. Terms of the solicitation included clarification of assets to be available for purchase, purchase condition as is/where is, a requirement to honor a Chrysler Group License that allowed Chrysler Group (the new company) to occupy the plant through July 31, 2010, and other

closing conditions. The deadline for submission of purchase Letters of Interest was set for October 16, 2009.

After receiving a limited response to the request for proposals, the Capstone Group determined it would be appropriate to market the site more broadly, select a stalking horse bidder and conduct an auction for final disposal. A deadline of July 14, 2010, was set for an auction date. This date was 17 days in advance of the termination of the Chrysler Group License.

Capstone Advisors negotiated with those companies who expressed interest in the facility in an attempt to get the maximum return for the lien holders. While some discussion occurred around doing what was best for the community by working with companies that had an interest in operating the facility with near-term site employment potential, in the end, the selected stalking horse candidate was a salvage company.

On July 14<sup>th</sup> the auction was conducted. The asset was sold to a partnership lead by Canadian-based Maynard Industries, an industrial salvage and equipment company. The asset was sold for \$45.5 million. At the time of sale, the assessed value of the land and buildings was \$34,000,000. Personal property, including the excess machinery and equipment, was not included in the assessed value. Fifteen transfer and tandem presses, blankers and cut-to-length machinery, machine shop equipment, tools and dies, jigs and miscellaneous fixtures and supporting equipment items were among the excess equipment. Total value of this remaining equipment was estimated to be in excess of \$100 million.

The license agreement enabled Chrysler to continue operations in the facility until July 31, 2010. As a result, presses and production machinery continued to operate until very close to the July 31, 2010 date, after which all equipment was auctioned.

### **Chrysler Plant Closing and Termination of Employment**

The Chrysler Group took advantage of the license period by continuing operations and banking parts for shipment to assembly plants. Employment reductions began in late 2009, shortly after the closing announcement. At the end of that year there were approximately 1,260 full-time employees at the facility. Reductions continued through the license period as the company offered transfers and early retirements to eligible employees. On March 31, 2010, the City of Twinsburg received a copy of a Worker Adjustment and Retraining Notification Act (WARN) Notice from Chrysler Group, outlining the schedule for termination of the remaining workers at the Twinsburg plant. When the WARN notice was received, only 338 employees remained at the facility. All employment was terminated by July 31, 2010.

## PART 2 – CLOSURE IMPACTS

### Closure Impacts on the City of Twinsburg

#### Income Tax Revenue Losses

Impacts associated with the loss of the City’s major employer were extensive and varied. However, the most significant of the impacts was the immediate loss of income tax revenue.

Like other municipalities in Ohio, Twinsburg’s main source of revenue is income tax paid by those working and living in the community. Historically, income taxes represent more than seventy percent (70%) of the total general fund revenue.

For the year 2008, the year prior to the closing announcement, total income tax receipts to the City were \$18,467,000. Income tax revenues to the City accounted for 78.8 percent of all income. Other funds sources included local government funds from the State of Ohio, fines, fees-for-service and investment income.

Total revenue in 2008 already reflected a reduction in income tax receipts resulting from a slowing economy and reductions in workforce by most industrial employers including Chrysler. Increasing efficiencies in production methods and increased automation had a continuing impact on employment at the site for several years. Chrysler, which had employed more than 5,000 persons in its early stages, had invested heavily in labor saving devices, work flow improvements, and robotic systems. By 2008, total employment at the site was approximately 2,000 persons and total wages paid were about \$110,000,000. This provided the City with more than \$2,200,000 of income tax revenue.

Table 1 illustrates City of Twinsburg Historic Income Tax data from 2000 through 2010.

**Table 1  
City of Twinsburg Income Tax Historical Data**

<u>Year</u>	<u>Income Tax Receipts</u>	<u>Chrysler Wage Taxes</u>	<u>Chrysler as % Income Tax</u>	<u>% Change All Income Tax</u>	<u>% Change Chrysler Tax</u>
2000	\$17,674,100	\$4,150,000	23.5%		
2001	\$16,532,000	\$3,212,600	19.4%	-6.46%	-22.6%
2002	\$17,597,100	\$3,476,700	19.8%	6.44%	8.2%
2003	\$17,535,700	\$3,713,200	21.2%	-0.35%	6.8%
2004	\$17,597,800	\$3,120,700	17.7%	0.35%	-16.0%
2005	\$18,523,200	\$2,802,900	15.1%	5.26%	-10.2%
2006	\$17,774,800	\$2,297,500	12.9%	-4.04%	-18.0%
2007	\$17,517,400	\$2,907,500	16.6%	-1.45%	26.6%
2008	\$17,905,600	\$2,054,700	11.5%	2.22%	-29.3%
2009	\$17,174,500	\$2,030,000	11.8%	-4.08%	-1.2%
2010	\$18,915,700	\$1,382,000	7.3%	10.14%	-31.9%

Source: City of Twinsburg Tax Department and Regional Income Tax Agency.

The closure announcement, which came in late 2009, followed continued reduction in the workforce at the Stamping Plant. These reductions were a result of the weakening of demand in the auto sector and losses of market share by Chrysler. It became apparent that the City would need to curb spending and find ways to offset the impacts of continuing revenue reduction. With the closure date set at July 31, 2010, about six months from the closure announcement, the expediency of this necessity was apparent.

### **Utility Revenue Losses**

Large industrial users are major consumers of utility services. Utility services provided by the City of Twinsburg to the Chrysler Stamping Plant consisted of waste water services only. Over the last three years of operation, the plant averaged \$43,000 annually in wastewater fees.

### **City Response to Revenue Losses**

**Operational and Staffing Change Considerations.** In anticipation of reduced income due to the plant closing, the administration embarked on a spending reduction and revenue management plan. The goal of this effort was to identify opportunities to change operational procedures, seek efficiencies and cut expenditures as necessary to cope with the anticipated loss of revenue. It was apparent that the anticipated loss in revenue would be on the order of 12 to 15 percent (as much as \$2.2 million), and that the loss would likely be immediate and permanent. Based on the magnitude of the loss it would also be likely that all cost reduction measures must be considered, including staff and service reductions and the identification of new revenue sources or additional taxes.

If the expenditure savings were to come entirely from a reduction of staff, a 23 percent reduction of force (39 FTE's) would result. Such an extreme reduction in staff would hamper the City's ability to provide many services. An analysis by the Human Resources staff indicated that such a reduction of staff would result in the following:

- Closure of the Fitness Center, Pool, and Recreation Activities Center
- Closure of the City's Gleneagles Golf Course
- Reduction of property maintenance inspections
- Elimination of televised Council meetings, City Tree Program, City Beautification Program
- Elimination of leaf pick-up and branch chipping services
- Reduced right-of-way grass mowing, street cleaning
- Elimination of the DARE Program, Safety Resource Officer and Safety Town programs conducted by the Police Department
- Closure of the new Fire Station 2
- Termination of Fire Prevention Bureau, Special Services and Community Training services conducted by the Fire Department

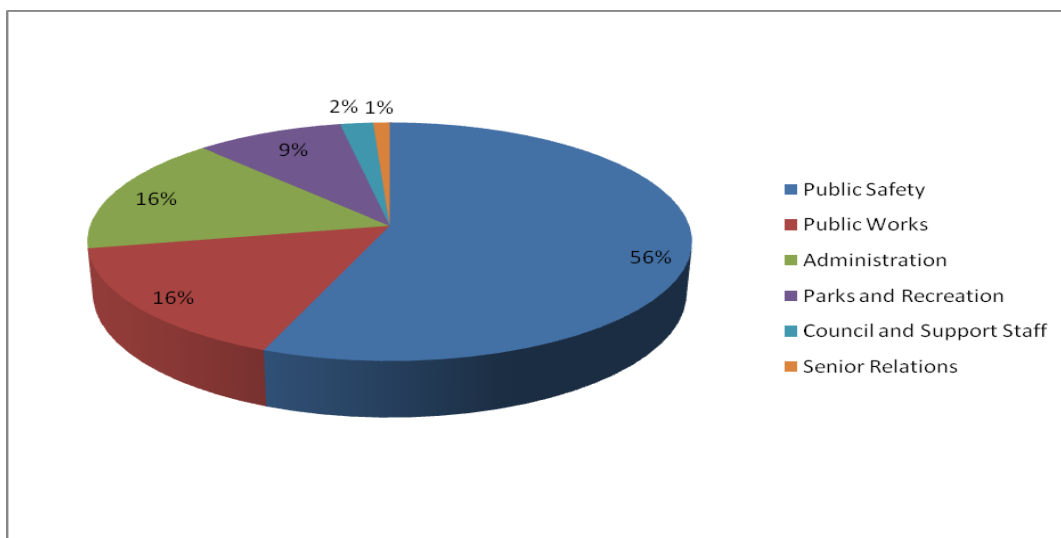
Additional cost savings actions were proposed including the following:

- Imposition of an all-employee wage freeze
- Suspension of HVAC services contract
- Elimination of part-time positions
- Ending compensation paid to City Boards and Commission members
- Freeze in hiring
- Reduction in arborist services
- Reduction in services provided to support the Annual Twins Days Festival
- Reduction (and elimination where possible) of over-time compensation
- Cancellation of the Home Days, Olde Thyme Fayre and other community events

**Revenue Generation Considerations.** Actions were also proposed for the generation of new or additional revenues. Among those were changing the distribution of revenues between operational and capital expenditures. Twinsburg had established fund distribution guides by ordinance. Ordinances required a split of fund receipts and distribution to the General Fund and to the Capital Improvements Fund. General Fund revenues are utilized to fund the day-to-day operations of government. Capital Improvements Fund monies include those reserved for major expenses in infrastructure and assets. This fund was required to receive 20 percent of total revenues. In order to sustain operations, it would be necessary to dedicate all revenue funds to the General Fund for operations.

The following chart illustrates how general fund monies were distributed in 2008. It was immediately apparent that the reduction of \$2,200,000 from the annual budget would require several significant actions just to keep the City from running a deficit.

**Figure 1  
General Fund Distribution**



Twinsburg residents currently pay nothing for trash collection. As most communities charge the residents a fee to offset the costs of collection services, it was thought that imposition of a fee for this community service was a reasonable revenue generation option.

Seniors in Twinsburg can have their driveways plowed in the winter. Imposing a registration fee for this service was considered to offset the administrative costs of this program.

Increased fees for Parks and Recreation activities and programs were considered including enabling the sale of 500 non-resident memberships to generate additional fitness Center Revenue, increasing membership fees at the City's Waterpark, and charging Youth Sport Membership fees.

Operational and staff changes, as well as cost reduction and revenue enhancement measures would have significant impacts on the community and its residents, including substantial service reductions in key areas like safety services. It was apparent that an effort would need to be made to avoid the most severe of these by attempting to secure a tax increase. After examining revenue gap potential a decision was made to ask the residents to increase the income tax rate. Increasing the income tax rate from 2.00 percent to 2.25 percent would potentially raise as much as \$2.6 million in revenues. To assure that an income tax increase would not be viewed as a license to spend tax payer money and to assure that cost containment measures would be put in place, a variety of operational and staff changes, as well as revenue generation measures, were proposed. This tax increase was put to the ballot in the fall of 2009 and passed by the voters.

**Implemented Budget Control Measures.** The following measures were implemented to reduce operational costs, shore up City revenues and brace for the unknown total impacts of the plant closure.

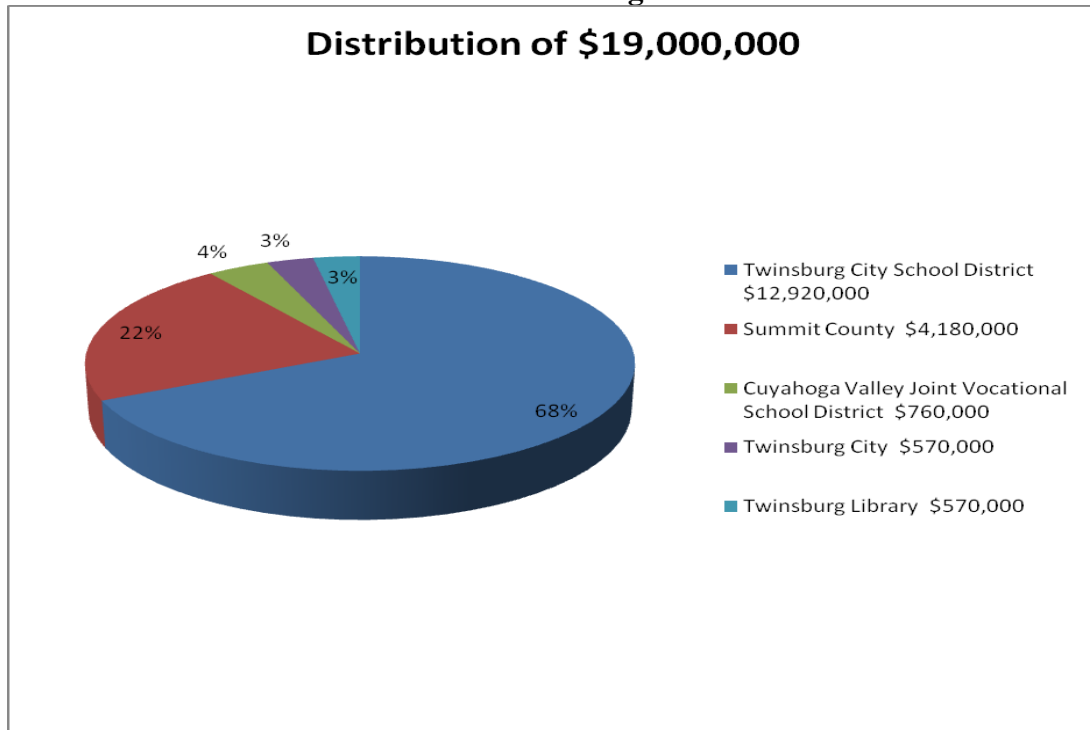
- Freeze capital account distributions to zero
- All employee wage freeze
- Elimination of part-time positions
- Hiring freeze
- Staff reductions through attrition
- Reduced Arborist services
- Reduced branch chipping schedule
- Overtime reduction
- Reduced DARE program
- Cancelled Home Days and Olde Thyme Fayre
- Implemented Senior Snow Plowing Registration fee
- Implemented Youth Sports Membership fees
- Instituted travel policy restrictions

## Foregone Property Tax Revenues

Throughout its life, Chrysler and the Chrysler Stamping Plant benefited from real estate and personal property tax exemptions through the City of Twinsburg / Summit County Enterprise Zone. Three Enterprise Zone Agreements had been executed with the company, each providing a 50 percent abatement of personal property taxes resulting from company investments in equipment. Two of these agreements had run their course and expired prior to the announcement of plant closing. A third agreement was still in effect and was to expire on December 31, 2011. By the last years of this agreement, changes to the State's tax structure essentially eliminated personal property taxes in Ohio. Regardless, the agreements committed the company to continued operations in the City for the duration of the agreements in return for the tax benefits extended.

More than \$19 million of public revenue were forgone over the lifetime of the three Enterprise Zone agreements. The following chart provides a visual summary of the approximate share of this total forgone revenue applicable to each taxing authority.

**Figure 2**  
**Tax Revenue Foregone**



## Stigma of Major Employer Loss

As the automotive sector industrial crisis continued to unfold with the bankruptcies of Chrysler and General Motors, it became obvious that Twinsburg would



join the ranks of communities with large closed auto production plants. Several Michigan communities had gone through similar adjustments in the previous decade and now another round of adjustments would add a growing inventory of huge closed manufacturing buildings and sites to those already seeking a purpose.

The Chrysler bankruptcy process preceded General Motors liquidation. The organizers of the bankruptcy and transfer of assets took a short view of asset disposal. Closed facilities remained with the “OldCar Company” while assets necessary for the re-organized Chrysler LLC would be transferred to that company. OldCar Company assets would be disposed of as-is/where is. No contingency fund was established to address site contamination issues or other impediments to successful site redevelopment of OldCar Company sites.

This casual view of the bankruptcy court relative to the disposal process left communities like Twinsburg fearing that they would be stuck with vacant abandoned industrial properties on important approaches to business districts. Twinsburg’s large site has more than 2,200 lf of road frontage on the City’s main entry road. The building façade extends more than 1,200 lf along this frontage. If this facility was allowed to fall into a state of disrepair the community’s image would be greatly affected.

In addition to concerns about the condition of the property and its future status, Twinsburg administrators were concerned about the potential stigma associated with being one of the automotive closure communities. National media reported on those communities with closed plants and spread the word throughout the country that this moderately affluent Ohio suburban community would join other communities like Detroit, Lansing, Newark and St. Louis in the continuing struggle to resurrect and re-purpose large, failed automotive industrial sites. Images of boarded and shuttered industrial buildings with deteriorating asphalt parking areas, broken windows, un-cut lawns and rusting metal immediately came to mind. The challenges associated with maintaining a stable environment for existing businesses and maintaining fiscal solvency for the community’s residents became immediately apparent. The potential downside of the closure and bankruptcy could impact the City’s bond rating, financial capacity, industrial and commercial property market, and jeopardize residential property values. Concerns about red-lining, the ability to attract new businesses and industry, and about the changing perception of the community surfaced.

## **Preservation of Bond Rating**

Twinsburg enjoyed a stable bond rating for many years prior to the closure. Immediately prior to the announcement the City’s financial rating from Moody’s was A2 with a stable outlook. Twinsburg borrowed little and maintained the bulk of its available general revenue bonding capacity. Conservative fiscal management resulted in a fund surplus going into 2008, even in the face of declining economic activity generally.

City administrators had heard of rumors about the closure of the Stamping Plant for years. While everyone was aware that a standalone stamping plant removed from auto assembly facilities faced a significant disadvantage due to logistics costs, there was no hint from the corporate level that the plant faced closure.

Regardless of any lack of announcement of future closure, the City administration was aware that too much reliance on a single industrial sector could have ramifications in the future. An industrial diversification effort was consciously pursued in the years preceding the closure. Fortunately for the City, a base of diverse industries was in place upon which to build greater diversification. The City was fortunate to be able to enhance this diversity by attracting Goodrich Power Systems (an aircraft electrical component developer and manufacturer), Fasteners for Retail (a retail point of sale display manufacturer), University Hospitals Health System (medical offices and urgent care), Verizon Wireless (wireless communications service provider), and Cleveland Clinic Foundation (medical offices emergency and outpatient center). The Cleveland region's medical and insurance industry strength contributed to growth of existing companies like Edgepark Surgical, Quest Diagnostics, WebMD, Emdeon, Hitachi Medical USA, RX Options and others. A fortuitous surge in investment was coming to the City at about the same time as Chrysler was declining.

In July of 2009, Moody's affirmed a downgrade to an A1 rating with a negative outlook. This downgrade was attributed to Ohio's phase out of tangible personal property tax, declining employment levels at Chrysler and the pending Chrysler bankruptcy. Declining income tax receipts, due to plant idling and work interruptions, caused declines in the City's cash balances. Income tax increases had yet to be presented to the voters and there was no assurance that an increase would pass. While significant projects were being planned (like the Cleveland Clinic medical facility), they had yet to provide employment and income tax revenue. Further, the magnitude of revenue losses from Chrysler's anticipated shut down were larger than what could be anticipated by new projects and existing business expansion.

City administrators were anxious to refinance and combine existing outstanding debt to take advantage of historically low bond rates. This could not be successfully achieved without an improvement in bond rating. Since the downgrading of the City's bond rating by Moody's in November of 2009, the City successfully passed a .25 percent increase in the income tax rate. In addition, many of the anticipated investments by new and existing companies were being implemented and were becoming visually apparent in the community landscape.

The decision was made to pursue a revision to the City's bond rating in anticipation of issuing debt to consolidate outstanding obligations and reduce long-term debt expense. Staff prepared summaries of investments being made in City properties, forecasts of revenues anticipated to result from those investments, as well as forecasts of tax revenues anticipated to be realized by the .25 percent income tax increase. Moody's scheduled an interview with the Mayor, Finance Director and other staff members to help them gain insight into the rationale supporting a change in rating. The City took advantage of this opportunity to organize a city tour for the Moody's staff that would present to them visual evidence of the progress and investment being achieved in the community in spite of the closure of the Chrysler Stamping Plant. A visit to the Stamping Plant was included in the tour for the purposes of explaining the economic development opportunities inherent in its redevelopment for contemporary industrial purposes. This tour occurred on November 10, 2010.

On November 23, 2010, Moody's published a revised bond rating for the City of Twinsburg, assigning an Aa2 rating and removed the negative outlook. Critical

considerations associated with the revised rating included the voter authorization of the .25% income tax increase, expenditure controls implemented by the City, stability of existing employers and addition of new employers. Moody's concluded that the willingness and ability to increase the income tax rate to restore reserves was evidence of strong financial management supporting the removal of the negative outlook.

## Impacts Outside of Twinsburg, Ohio

**Income tax revenue losses.** The largest and most direct losses of income tax revenue impacted the City of Twinsburg. However, because of the wide distribution of employees, wage losses, and therefore income tax revenue losses, were distributed widely, including locations outside the State of Ohio. Unincorporated locations in a county do not have the ability to collect income taxes outside Joint Economic Development Districts. Actual income tax revenue losses to municipalities depend upon the allowable credits a resident community permits its residents to claim when they are employed in a City that also collects income tax. For example, the City of Akron has an income tax rate of 2.25%. The City credits its residents for taxes paid to other communities up to a 2.25% limit. As the City of Twinsburg collects income tax at a rate of 2.25% from wage earners employed in the City, the City of Akron would allow a credit for the total amount of income tax paid to Twinsburg and would therefore receive no income tax revenue from the worker employed at the Twinsburg Chrysler facility. The following provides a summary of income tax revenue losses to Summit County communities where Chrysler workers resided.

**Table 2**  
**Annual Municipal Wage and Income Tax Losses**  
**For Summit County Communities Outside of Twinsburg**

Entity	Lost Jobs	Wage Losses	Inc. Tax Rate (%)	Tax Revenue Loss
Akron	264	\$ 21,648,000	2.25 (100% credit to 2.25%)	\$ 0
Barberton	7	\$ 574,000	2.00 (100% credit to 2.00%)	\$ 0
Bath Twp.	1	\$ 82,000	None	\$ 0
Clinton	7	\$ 574,000	None	\$ 0
Copley Twp.	20	\$ 1,640,000	None	\$ 0
Cuyahoga Falls	52	\$ 4,264,000	2.00 (100% credit to 2.00%)	\$ 0
Fairlawn	4	\$ 328,000	2.00 (100% credit to 2.00%)	\$ 0
Hudson	18	\$ 1,476,000	1.00 (100% credit to 1.00%)	\$ 0
Macedonia	19	\$ 1,558,000	2.00 (100% credit to 2.00%)	\$ 0
Peninsula	2	\$ 164,000	1.00 (50% to .5%)	\$ 820
Reminderville	2	\$ 164,000	1.50 (no credit)	\$ 2,460
Richfield	3	\$ 246,000	2.00 (100% credit to 2.00%)	\$ 0
Sagamore Hills	13	\$ 1,066,000	None	\$ 0
Silver Lake	1	\$ 82,000	2.00 (100% credit to 2.00%)	\$ 0
Stow	65	\$ 5,330,000	2.00 (100% credit to 2.00%)	\$ 0
<b>Total</b>		<b>\$ 39,196,000</b>		<b>\$ 3,280</b>

Source: Regional Income Tax Agency (RITA) reports

At the end of 2008 there were approximately 1,330 total employees at the Chrysler facility paying a total of about \$2.2 million in income tax. At the 2% income tax rate the average computed salary is approximately \$82,000 per employee. This is the wage rate at which losses have been computed. At the time of the closure 55 employees resided in

Twinsburg and 478 employees resided elsewhere in Summit County. Twinsburg lost all income tax revenue it had previously received (about \$ 2.2 million). Outside Twinsburg, only the Villages of Peninsula and Reminderville actually lost income tax revenue. Peninsula extends a 50% credit for taxes paid up to 1% of earnings. Reminderville provides no credit for taxes paid in other communities. Together, these communities lost \$3,280 annually, due to Chrysler job losses.

With a State of Ohio income tax rate of 6.5%, Ohio would have lost approximately \$7,150,000 of income tax revenue. However, this does not reflect the fact that many employees found other employment, relocated, or retired and may have acquired income from other sources.

As the table indicates, the City of Akron was the location of the greatest number of former Chrysler employees. While the City of Akron extends a 100% credit for income taxes paid to other communities and did not receive income tax, they nevertheless experienced a significant loss of spending potential in that the earnings of the former Chrysler employees would have been lost, or reduced, as a result of job termination. It should be noted again that not all the computed lost wages would have actually occurred as many employees may have found other jobs, gone into retirement with retirement benefits, or received unemployment benefits for a period of time.

**Effects and Secondary Impacts of Plant Closure on Summit County.** The Twinsburg Chrysler Stamping Plant closure resulted in the loss of the only plant dedicated to automotive body parts stamping in Summit County. The plant itself was a consumer of products and services in the region. Further, the employees of the facility purchased goods and services daily, whether near their home or near the plant. Closure of the plant had a direct effect on the loss of jobs and their related wages, but also had secondary impacts related to loss of consumer spending, business activity, and employment in related industries.

Economic impacts of changes in final demand, in earnings and employment can be estimated based on known inter-industry relationships. The U.S. Department of Commerce Bureau of Economic Analysis developed a system of estimating regional input and output based on industry relationships and trading patterns. This method is known as the Regional Industrial Multiplier System (RIMS). RIMS has provided tables of multipliers that may be used to estimate regional impacts associated with changes in economic activity such as plant closure, airport construction, shopping mall expansion, etc.

Five types of multipliers are provided in the RIMS process including final demand multipliers for output, for earnings and for employment and direct-effect multipliers for earnings and employment. Final demand multipliers estimate the increase or decrease in final demand in each industry in the region based on a change in final demand of a subject industry. Using these multipliers it is possible to estimate the broader demand change in all industries in dollar value of output demand, in earnings and in employment. For example, if steel demand in the Summit County area is increased by \$1million, the effect of this increase in other industry sectors like fabricated metal products and motor vehicles and equipment may also be estimated using multipliers applied to the increased demand value of steel.

Direct effect multipliers may be used to estimate the impact of a specific change in earnings or employment on all earnings or employment in the region based on the initial change in earnings or employment by a subject industry. At the end of 2009, earnings by all employees at the Chrysler facility totaled slightly over \$101,500,000. Of this total, 40% (\$40,676,000) in wages would have been lost to Summit County resident employees. Based on RIMSII multipliers supplied by the Bureau of Economic Analysis, direct effects related to this loss of employee income would have been a loss of more than \$108 million in earnings to all households in the County. Similarly, the loss of 533 jobs in Summit County would have resulted in an industry-wide loss of 1,921 jobs due to inter-industry relationships.

### **Job Losses by Ohio County of Residence**

Many of the employees of the Twinsburg Chrysler Stamping Plant commuted to Twinsburg from locations in other counties outside of Summit County. Employees may have had one or more addresses in a year. Based on Jobs and Family Service information related to resident address of employees and contract employees, the following table indicates job losses by County of residence:

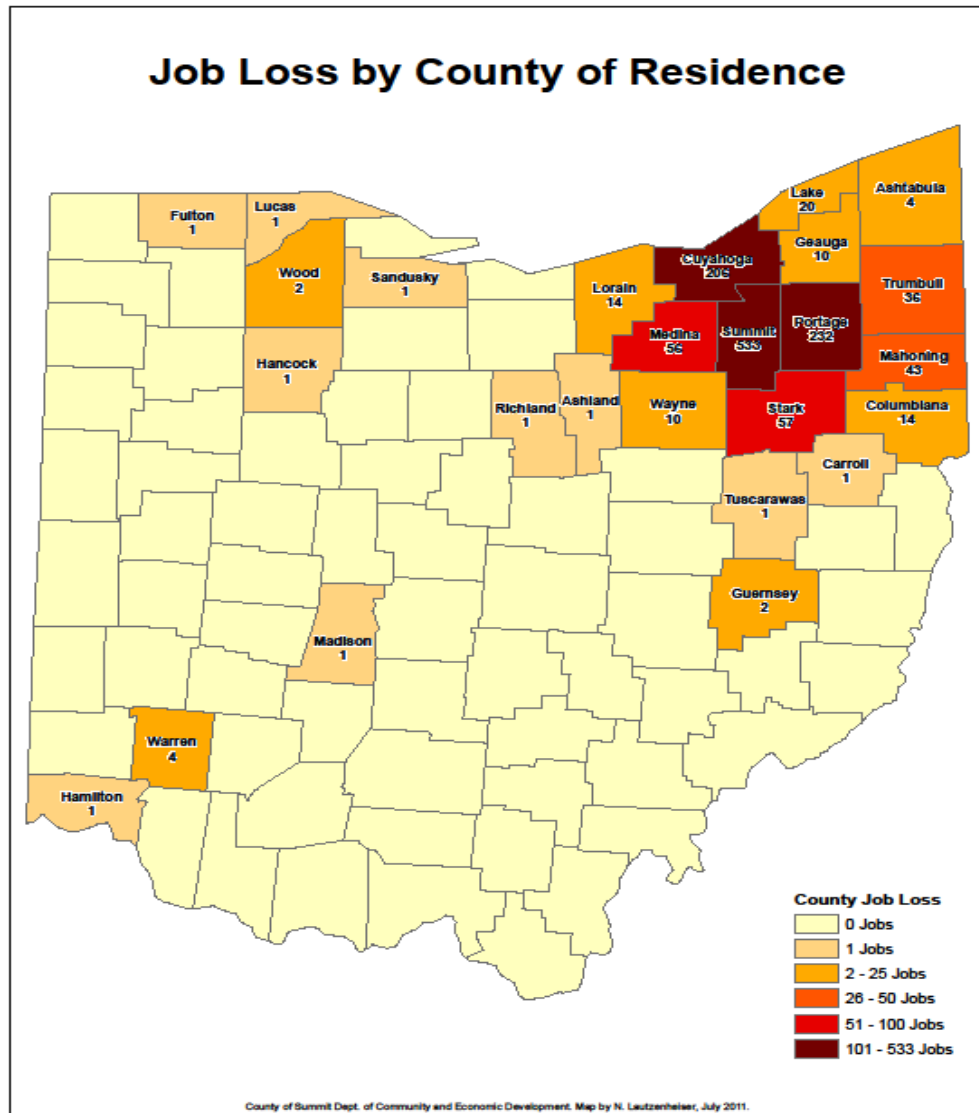
**Table 3  
Job Loss by County of Residence**

<u>County</u>	<u>Jobs Lost</u>
Ashland	1
Ashtabula	4
Carroll	1
Columbiana	14
Cuyahoga	206
Fulton	1
Geauga	10
Gurnsey	2
Hamilton	1
Hancock	1
Lake	20
Lorain	14
Lucas	1
Madison	1
Mahoning	43
Medina	56
Portage	232
Richland	1
Sandusky	1
Stark	57
Summit	533
Trumbull	36
Tuscarawas	1
Warren	4
Wayne	10
Wood	2

Source: Jobs and Family Services summary data. June, 2009

State-wide job loss locations are illustrated on the following Ohio County map to give the reader a better understanding of the regional employment nature of this automotive stamping facility.

**Figure 3**  
**Job Loss by County of Residence**



Source: Ohio Jobs and Family Services, June, 2009

## Job Losses Outside the State of Ohio

Surprisingly, several employees reported resident addresses outside the State of Ohio. While some of these may have been contract employees, some of them were full-time employees. Due to privacy issues, no attempt was made to clarify specific salary or employment status. The following table illustrates resident locations outside the State of Ohio:

**Table 4**  
**Reported Residence Addresses Outside the State of Ohio**

<u>State of Residence</u>	<u>No. of Employees</u>
Alabama	1
Arizona	1
California	1
Georgia	2
Indiana	8
Illinois	1
Michigan	1
Missouri	1
Nevada	1
North Carolina	1
Pennsylvania	5
South Carolina	1
Tennessee	1
West Virginia	1
Wisconsin	1

Source: Ohio Jobs and Family Services, June, 2009



## **Supplier Network Impacts**

### **CEAP Supply Chain Data**

The University of Michigan's Center for Economic Adjustment Assistance (CEAP) is a nonprofit organization, funded in part by the Department of Commerce Economic Development Administration. CEAP provides assistance to communities undergoing change as a result of the recent re-organization of the U.S. automobile manufacturing sector. Among the services provided to the Twinsburg region of Northeast Ohio, the CEAP staff organized a workshop in July, 2009 where State, Federal and Non-profit agencies were gathered to communicate with area agencies about the programs and funding opportunities available to support recovery efforts. As recovery planning got underway, the CEAP provided lists of supply chain companies in Ohio. This list of supply chain companies provided a starting point to determine the extent of impacts to companies as a result of the closure of the Twinsburg Chrysler Stamping Plant.

Supply chain company data was secured by CEAP staff from publicly available and company specific information about industry relationships. Data included information on all known supply chain companies regardless of automotive company served. Some companies provided parts or services to several different automotive manufacturers. General descriptions of the parts or services provided were included in the supplier lists. Approximately 140 companies were listed.

In order to attempt to qualify the impacts associated with the Twinsburg Chrysler Stamping Plant Closure it was necessary to sort out and identify those companies which had supply relationships with Chrysler. Seventy-six companies on the list indicated they had supplier relationships with Chrysler. Actual supplier activities may have taken place between the corporate office, with specific plant locations or among various tiers of suppliers who, in turn, sold to the corporate office or manufacturing facilities. It also became apparent that various company facilities did obtain some services independently. These relationships were not identified by the CEAP.

### **Telephone Survey of Supply Chain Companies**

A survey document was prepared that was designed to secure information on the nature of any impacts associated with Chrysler's bankruptcy and the closure of the Twinsburg Stamping plant. A copy of this survey is provided in the Appendix of this document. The survey was administered by phone to contact numbers identified on the CEAP list. Sixty-seven companies indicated an affiliation with Chrysler. Calls to these companies resulted in only thirty-three responses. No response was received from thirty-four of the numbers indicated. Of these, twelve were disconnected or no longer in service.

Six of the companies surveyed indicated that they were indeed impacted by the Chrysler bankruptcy. However, only two of these were specifically impacted by the closure of the Twinsburg Stamping Plant. The businesses that were impacted directly by the Twinsburg closure experienced revenue losses of more than 10 percent and 45 percent. Both either experienced temporary shut-downs or layoffs. The most impacted

of the companies expressed a need for research and development support, and job training assistance.

It is extremely likely that the impact was greater than identified in the survey as so many of the contact numbers were either disconnected or did not participate in the survey. Additional companies have been identified which were impacted but were not on the list of suppliers. One of those, Noble Metals of Stow, Ohio, has since closed. Exact impacts of the Twinsburg closure are difficult to identify as local plant records regarding purchases of service and supplies are not readily available.

## **PART 3 – INDUSTRIAL EMPLOYMENT BASE**

### **County-wide Industrial Inventory**

#### **Objective**

While some communities in the County have knowledge of their largest employers, most have no complete inventory of their resident industries. It was recognized early in the planning process that it would be necessary to obtain a current and complete inventory of the industrial base of Summit County. A current inventory provides many potential benefits related to economic development policy development. It enables planners to identify clusters of industries unique to the County and region. It also enables national forecasts of economic activity and employment to be applied to industry types to facilitate rational forecasts of local economic activity by industry.

#### **Sources of Inventory Data**

An attempt was made to solicit industrial base data from each community in the Summit County planning area. Letters were sent to every municipality requesting data. Only a few responses were received and it became apparent that most communities did not maintain a database of industries.

The U.S. Bureau of Census 2007 Economic Census data was obtained and reviewed. While a variety of information was available, a comparison of Census data with recent in-house survey data for the City of Twinsburg indicated significant under-counting of both manufacturers and retail trade businesses.

A fairly complete inventory of industries in the City of Twinsburg was completed less than two years ago using income tax reporting information, building occupancy information, sewer billing account information and other sources. Unfortunately, similar information was not available for other communities or unincorporated areas of Summit County. It was apparent that another source of information with consistent data characteristics was needed.

A variety of commercially available industrial directories and data bases were investigated. As a key to data analysis would be the availability of accurate NAICS codes, a determination was made to acquire a county-wide inventory from the NAICS Association, LLC. Data was purchased for the entire Summit County area for the most recent year available (2010) for businesses in the following NAICS code categories: 31-33 manufacturing; 42 wholesale trade; 454 non-retail stores; 48-49 transportation and warehousing; 61 education services; 62 healthcare and social services, 8111-8113 maintenance and repair; and, 238 specialty trade contractors.

A total of 9,347 records were included in the data base. Data for each record included location, ownership, primary and secondary lines of business and their associated SIC and NAICS codes, contact information, ownership status, number of employees and more. Table 5 provides an overview of NAICS code descriptions, numbers of businesses indicating a primary NAICS code in the group of interest, the total

number of employees by NAICS code class, and the average number of employees per business by NAICS category.

**Table 5**  
**Summary of NAICS Business Sectors**  
**In Summit County**

NAICS Code	Description	Number of Locations	Number of Employees	Average Number of Employees/Business
1133	Logging	1	12	12
2111	Crude Oil/Nat. Gas	1	65	65
2123	Nonmetallic Mineral Mining and Quarrying	3	28	9
2131	Support Activities for Mining	4	67	17
2381	Foundation, Structure, and Building Exterior Contractors	335	1857	6
2382	Building Equipment Contractor	444	2822	6
2383	Building Finish Contractor	302	1252	4
2389	Other Specialty Trade	260	1629	6
3111	Animal Food Manufacturing	2	33	17
3113	Sugar and Confectionery Product Manufacturing	7	28	4
	Fruit & Veg Preserving & Specialty Food			
3114	Manufacturing	12	241	20
3115	Dairy Product Manufacturing	7	242	35
3116	Animal Slaughtering & Processing	1	15	15
3118	Bakeries & Tortilla Manufacturing	35	845	24
3119	Other Food	9	202	22
3121	Beverage Manufacturing	15	891	59
3122	Tobacco Manufacturing	2	8	4
3131	Fiber, Yarn & Thread Mills	2	3	2
3132	Fabric Mills	10	88	9
3133	Textile & Fabric Finishing & Fabric Coating Mills	3	140	47
3141	Textile Furnishings Mills	12	40	3
3149	Other Textile Products	33	352	11
3152	Cut & Sew Apparel Manufacturing	7	34	5
3159	Other Cut & Sew Apparel Manufacturing	3	7	2
3161	Leather & Hide Tanning & Finishing	1	6	6
3169	Other Leather & Allied Product Mfg.	6	311	52
3219	Other Wood Product Manufacturing	30	262	9
3222	Converted Paper Product Mfg.	23	669	29
3231	Printing & Related Support Activities	167	1821	11
3241	Petroleum & Coal Products Mfg.	10	173	17

<b>NAICS Code</b>	<b>Description</b>	<b>Number of Locations</b>	<b>Number of Employees</b>	<b>Average Number of Employees/Business</b>
3251	Basic Chemical Manufacturing	30	891	30
3252	Resin & Synthetic Rubber Mfg. Pesticide, Fertilizer & Other Agricultural	29	976	34
3253	Chemical Mfg.	6	99	17
3254	Pharmaceutical & Medicine Mfg.	11	57	5
3255	Paint, Coating & Adhesive Mfg. Soap, Cleaning Compound, & Toilet Preparation	11	840	76
3256	Mfg.	10	331	33
3259	Other Chemical Product & Preparation Mfg.	17	304	18
3312	Steel Product Mfg. From Purchased Steel	6	841	140
3313	Alumina & Aluminum Production & Processing	6	200	33
3314	Nonferrous Metal Production & Processing	3	42	14
3315	Foundries	16	896	56
3321	Forging & Stamping	28	778	28
3323	Architectural & Structural Metals Manufacturing	50	1187	24
3324	Boiler, Tank & Shipping Container Manufacturing	2	1840	920
3325	Hardware Manufacturing	7	123	18
3326	Spring & Wire Product Mfg.	4	23	6
3327	Machine Shops	128	553	4
3328	Coating, Engraving, Heat Treating & Allied Activities	43	693	16
3329	Other Fabricated Metal Product Mfg.	32	464	15
3331	Agriculture, Construction & Mining Machinery Manufacturing	13	343	26
3332	Industrial Machinery Manufacturing	33	930	28
3333	Commercial & Service Industry Machinery Manufacturing	15	738	49
3334	HVAC Equipment Manufacturing	11	218	20
3335	Metalworking Machinery Mfg.	97	1499	15
3339	Other Gen. Purpose Machinery Mfg.	60	1060	18
3341	Computer & Peripheral Equip. Mfg.	16	1871	117
3342	Communications Equip. Mfg.	11	62	6
3343	Audio & Video Equip. Mfg.	5	202	40
3344	Semiconductor & Other Electronic Component Mfg.	11	189	17
3345	Navigational, Measuring, Electromedical & Control Inst.Mfg.	41	936	23
3346	Mfg. & Reproducing Magnetic & Optical Media	9	22	2

<b>NAICS Code</b>	<b>Description</b>	<b>Number of Locations</b>	<b>Number of Employees</b>	<b>Average Number of Employees/Business</b>
3351	Electric Lighting Equip. Mfg.	10	185	19
3352	Household Appliance Mfg.	1	3	3
3353	Electrical Equipment Mfg.	19	409	22
3363	Motor Vehicle Parts Mfg.	26	770	30
3364	Aerospace Product & Parts Mfg.	11	956	87
3369	Other Transportation Equip. Mfg.	2	26	13
3371	Household & Institutional Furniture & Kitchen Cabinet Mfg.	21	503	24
3372	Office Furniture Manufacturing	10	320	32
3379	Other Furniture & Related Product Manufacturing	3	16	5
3391	Mattress Manufacturing	61	701	11
3399	Other Miscellaneous Manufacturing	128	1266	10
4231	Motor Vehicle & Parts Wholesalers	113	1575	14
4232	Furniture & Home Furnishing Wholesalers	46	200	4
4233	Lumber & Other Construction Materials Wholesalers	69	519	8
4234	Professional & Commercial Equip Wholesalers	153	1447	9
4235	Metal & Mineral Wholesalers	60	708	12
4236	Electrical & Electronic Goods Wholesalers	108	1471	14
4237	Hardware, Plumbing & Heating Supplies Wholesalers	65	596	9
4238	Machinery, Equipment, & Supplies Wholesalers	319	2571	8
4239	Misc. Durable Good Wholesalers	183	857	5
4241	Paper & Paper Product Wholesalers	40	534	13
4242	Drugs & Druggists' Sundries Wholesalers	13	96	7
4243	Apparel, Piece Goods & Notion Wholesalers	30	204	7
4244	Grocery & Related Product Wholesalers	95	1105	12
4245	Farm Product Raw Material Wholesalers	21	49	2
4246	Chemical & Allied Products Wholesalers	73	950	13
4247	Petroleum & Petroleum Products Wholesalers	14	65	5
4248	Beer, Wine & Distilled Alcoholic Beverage Wholesalers	9	28	3
4249	Misc. Nondurable Good Wholesalers	127	987	8
4541	Electronic Shopping & Mail-Order	19	126	7

<u>NAICS Code</u>	<u>Description</u>	<u>Number of Locations</u>	<u>Number of Employees</u>	<u>Average Number of Employees/Business</u>
4542	Vending Machine Operators	30	187	6
4811	Scheduled Air Transportation	3	29	10
4812	Nonscheduled Air Transportation	5	27	5
4821	Rail Transportation	4	16	4
4831	Deep Sea, Coastal, & Great Lakes Water Transportation	2	27	14
4841	General Freight Trucking	280	3735	13
4842	Specialized Freight Trucking	35	180	5
4851	Urban Transit Systems	4	344	86
4852	Interurban & Rural Bus Transport	2	2	1
4853	Taxi & Limousine Service	23	176	8
4854	School & Employee Bus Transport	4	152	38
4855	Charter Bus Industry	2	41	21
4859	Other Transit & Ground Passenger Transportation	7	110	16
4861	Pipeline Transportation of Crude Oil	1	3	3
4871	Scenic & Sightseeing Transport-Land	3	10	3
4881	Support Activities for Air Transport	9	120	13
4882	Support Activities for Rail Transport	11	84	8
4883	Support Activities for Water Transport	1	2	2
4884	Support Activities for Road Transport	55	241	4
4885	Freight Transportation Arrangement	44	257	6
4889	Other Support Activities for Transport	73	173	2
4911	Postal Service	27	1495	55
4921	Couriers & Express Delivery Services	7	64	9
4922	Local Messengers & Local Delivery	7	36	5
4931	Warehousing & Storage	74	649	9
5111	Newspaper, Periodical, Book, & Directory Publishers	26	1217	47
5112	Software Publishers	5	227	45
5161	Internet Publishing	1	10	10
6111	Elementary & Secondary Schools	216	11780	55
6112	Junior Colleges	2	35	18
6113	Colleges, Universities, & Professional Schools	33	5075	154
6114	Business Schools & Computer & Management Training	7	50	7
6115	Technical & Trade Schools	21	308	15
6116	Other Schools & Instruction	145	953	7
6117	Educational Support Services	20	46	2
6211	Offices of Physicians	1634	5491	3
6212	Offices of Dentists	262	1522	6
6213	Offices of Other Health Practitioners	242	1264	5

<u>NAICS Code</u>	<u>Description</u>	<u>Number of Locations</u>	<u>Number of Employees</u>	<u>Average Number of Employees/Business</u>
6214	Outpatient Care Centers	44	1111	25
6215	Medical & Diagnostic Laboratories	30	196	7
6216	Home Health Care Services	43	1491	35
6231	Nursing Care Facilities	45	3268	73
6232	Residential Mental Retardation, Mental Health & Substance Abuse Facilities	28	566	20
6233	Community Care Facilities for the Elderly	12	633	53
6239	Other Residential Care Facilities	18	456	25
6241	Individual & Family Services	201	3807	19
6242	Community Food & Housing & Emergency & Other Relief Services	10	63	6
6243	Vocational Rehabilitation Services	16	287	18
6244	Child Day Care Services	138	1697	12
7211	Traveler Accommodation	80	1274	16
7212	RV Parks & Recreational Camps	4	22	6
7213	Rooming & Boarding Houses	2	8	4
7221	Full Service Restaurants	277	7449	27
7222	Limited-Service Eating Places	338	5918	18
7223	Special Food Services	34	606	18
7224	Drinking Places (Alcoholic Beverages)	178	1122	6
8111	Automotive Repair & Maintenance	489	2482	5
8112	Electronic & Precision Equipment Repair & Maintenance	93	876	9
8113	Commercial & Industrial Machinery & Equipment Repair & Maintenance	40	219	5

Source: NAICS Association, LLC, Summit County, Ohio, 2010.

Construction related NAICS classifications (23--) include a large number of employees in a large number of companies. Over 1,300 locations employ more than 7,000 employees. The current recession, with its repressed capital investment characteristics, certainly impacts a large number of these businesses and workers.

Manufacturing is dominated by plastics and rubber product manufacturers, which employ more than 7,500 workers in the County. Other major employers in the manufacturing sector include boiler and hardware manufacturers, computers and peripheral equipment, printing and related products, metal working machinery, and miscellaneous manufacturers.

The wholesale sectors are dominated by machinery wholesalers, motor vehicle parts wholesalers, professional and commercial equipment wholesalers, electrical and electronic goods wholesalers, and grocery wholesalers, non-durable goods and chemical and allied chemical products wholesalers.

Transportation and warehousing sectors are dominated by general freight trucking.

Educational services provide many jobs in the County. Nearly 12,000 employees are indicated in the primary and secondary education category, with another 5,000 in the college, university and professional school category.



The health care sector is dominated by general medical and surgical hospitals, with more than 7,000 employees indicated.

While only seven of the top thirty NAICS classifications by employment were manufacturing sector code classes, manufacturing employed more people than any other two-digit sector except healthcare.

### **Status of the Region**

TeamNEO provides quarterly reports summarizing economic activity for the entire 17-county Northeast Ohio region. Staff analyzed reports for the past six quarters (December 2009 through the first quarter of 2011). Beginning in the fourth quarter of 2009, it was noted that our area was performing in line with the rest of the country during this recession, as compared to the 1981 recession when we fared far worse. Team NEO determined that this was because our area has diversified its economy greatly in the past 20 years. While in the past manufacturing jobs accounted for a large segment of the region's Gross Regional Product (GRP), "higher growth industries such as Finance, Insurance and Real Estate (FIRE); Healthcare; and Professional, Scientific and Technical Services have become larger segments of NEO's industrial mix."<sup>1</sup>

According to Team NEO, Northeast Ohio is well-situated to grow and participate in the new green energy movement. In fact, as noted in their report, much of the same materials needed for the new "cleantech" movement are the same as were previously required in the automobile industry and other traditional manufacturing industries. This includes such industries as paint, coating and adhesives; foundries; rubber products; architectural and structural metals; printing and related support activities; basic chemicals; iron and steel mills; and plastics products.

In the first quarter of 2011, TeamNEO reported that the region continued its positive momentum and showed growth in employment and an increase in development across Northeast Ohio. The region's unemployment rate (9.0%) was less than the nation's (9.2%). Team NEO notes that in April of 2011, Ernst & Young LLP and the Council On State Taxation (COST) ranked Ohio among the top three states for favorable business tax rates on new investments. Three businesses also broke ground in Akron in the first quarter of 2011: Goodyear Tire & Rubber Co. broke ground for its new headquarters which will employ nearly 2,000 people when it opens in 2013; Involta LLC also began construction on its new \$20 million data center, which is set to create more than 50 high paying jobs in the Akron area; finally Röchling Automotive, a Germany-based automotive manufacturing company, chose Akron as its seventh U.S. site for a 75,000 square foot factory employing over 120 skilled workers.<sup>2</sup>

---

<sup>1</sup> Cleveland Plus® Economic Review; December 2009, Volume 3, Issue 4

<sup>2</sup> Plus Review; Q1 2011; Quarterly Economic Indicators; 16 Counties of Northeast Ohio

## Shift-Share Analysis

Comparison of previous inventories with current information also allows for the identification of shifts or changes in the industrial base that may be important to the future of the County and region. Increasing employment locally relative to national employment may indicate a competitive strength. Similarly, decreasing employment in a sector relative to total national employment in the sector could indicate a weakness or inability to successfully compete.

Trends in local and regional economic growth may be explained by evaluating a region's national share of employment, the mix of industry in the region and their rates of growth, and the regional shifts in employment by industry. Regional shifts may indicate a region's leading (nationally competitive) industries and lagging industries. Where an industry's share has declined relative to national growth, it is a lagging industry.

The Recovery Action Plan participants secured the assistance of TeamNEO, a non-profit organization devoted to economic development in Northeast Ohio's 16-county geographical area to perform data acquisition and computer analysis. TeamNEO's staff utilized recently compiled industrial sector data and employment information by NAICS code classes of industry to generate shift-share analyses of industrial sectors of interest in this effort. The following NAICS code categories were included in this shift-share analysis: 31-33 manufacturing; 42 wholesale trade; 454 non-retail stores; 48-49 transportation and warehousing; 61 education services; 62 healthcare and social services, 8111-8113 maintenance and repair; and, 238 specialty trade contractors. The results of the shift/share analysis are provided in Appendix B.

Several useful pieces of information resulted from the process. One component in the shift-share analysis is the location quotient (LQ) which is an expression, in the form of a ratio, that compares the concentration of a resource or activity in a specific area, like employment in an industry in Summit County, to that of a larger area (in this case the nation). A ratio value of more than 1 indicates a higher concentration in the first location compared to the second. A negative value indicates a lower concentration in the first location compared to the second. A value close to 1 may not reflect a significant difference. In order to be conservative in the assumptions made using this information, LQ's with at least .20 above or below the value of 1 were considered. Based on this standard, the following industrial sectors indicated a higher concentration in Summit County employment compared to the nation.

**Table 6**  
**Sectors with Positive LQ in Summit County in 2010**

NAICS		
Code	Description	LQ
2382	Building equip. contractors	3.13
2389	Other specialty trade contractors	1.29
3231	Printing and other related support services	1.53
3256	Soap, cleaning compounds	1.31
3261	Plastics product manufacturing	2.65
3324	Boiler, tank and shipping container mfg.	2.02
3335	Metal working machinery manufacturing	1.26
3363	Motor vehicle parts manufacturing	1.36
4234	Professional and commercial equipment whlsl.	2.35
4238	Machinery, equipment and supplies whlsl.	2.12
4244	Grocery and related products wholesalers	1.41
4251	Wholesale electronic markets, agents, brokers	1.85
4841	General freight trucking	3.13
4931	Warehousing and storage	1.43
6111	Elementary and secondary schools	1.65
6211	Offices of physicians	4.99
6212	Offices of dentists	1.66
6213	Offices of other health practitioners	1.98
6216	Home health care services	2.68
6221	General medical and surgical hospitals	14.61
6231	Nursing care facilities	3.79
6232	Residential mental retardation & mental health	1.22
6233	Community care for the elderly	2.60
6241	Individual and family services	1.76
6244	Child day care services	1.55
8111	Automotive repair and maintenance	2.59

Source: TeamNEO Shift-Share Analysis, Summit County, 2011

Of the twenty-six sectors listed as having relatively high location quotients in Summit County, twenty-four are expected to experience stable or growing employment by 2015. Only two, metal working machinery manufacturing, and general freight trucking are anticipated to decline in employment by 2015 based on the forecasts used by TeamNEO. Sixteen of the thirty largest employing NAICS categories had location quotients greater than 1.20.

Sectors with high location quotients, however, are only a small portion of the industrial and business base of the County. Their employment and outlook only impacts a small portion of economic activity. For a wider assessment of trends in area economic activity and employment, the change in county-based share of sector employment

compared to the national share is useful. As part of the shift-share analysis conducted by TeamNEO, changes over the period of 2005 to 2010 and forecasts of changes from 2010 to 2015 were examined. As noted previously, increases in the share of national employment in an industry suggest that the region may possess some competitive advantage. The shift-share analysis provided index values reflecting either positive growth or negative growth relative to national share for two periods. The 2005 to 2010 values reflect shifts experienced during that time period. Additional values were produced representing forecasts for the 2010 to 2015 period. For the purposes of this analysis, index values of more than 100 or lower than -100 were considered to be significantly indicative of change.

During the 2005 to 2010 time period a gain in national share, i.e. a positive shift in employment locally relative to the nation, of more than 100 index points was experienced by twenty of the 160 NAICS code sectors analyzed. The largest relative gain was indicated in NAICS code 3324 (Boiler, tank, and shipping container manufacturing) at 1637, followed by 6221 (General Medical and Surgical Hospitals), which exhibited a high index value of 881. Appendix C provides a description and maps illustrating the distribution of entities that experienced a gain in national share between 2005 and 2010. Businesses with growth rates exceeding national growth during this period were distributed widely throughout the County. Businesses and entities with the highest gains in national share are concentrated in the central part of the County and in northeastern suburbs of Stow, Hudson, Twinsburg and Macedonia.

At the same time the above sectors grew, other sectors in the County lost share relative to the national average. Appendix C also provides a description and maps illustrating the distribution of entities that experienced a loss in national share between 2005 and 2010. Of the 165 NAICS codes considered in this study, 35 exhibited losses in national share from 2005 to 2010 as indicated by shift-share index scores. These companies and entities are broadly distributed throughout the County through all index groups.

The end product of the shift-share analysis is an index number that represents the sum of all factors used in the assessment, including the region's industrial mix, concentrations of industrial sectors relative to the national average, forecasts of employment by industry, and competitive advantage as indicated by increasing employment trends in industry. Index numbers range from a possible value of +5 to -5. Sectors with a +5 index represent sectors with the most favorable outlooks for the region, while those with a -5 represent those with the most negative outlook for future growth and competitiveness. These indexes serve as general indicators and planning tools only. Individual businesses and sectors may perform differently than the index anticipates due to innovations or unanticipated developments within the sector.

Based on the shift-share analysis, and forecasts of economic activity, those sectors with index ranking of +3 to +5 represent those entities with the most promise for the region's future competitiveness. Three industrial sectors reflected the highest index value of +5. They included NAICS codes 3251-Basic chemical manufacturing; 3256-Soap, cleaning compounds, and toilet preparation manufacturing; and, 3261-Plastics products manufacturing. NAICS code 8113-Commercial and industrial machinery and equipment maintenance and repair was the only sector with a positive score of +4. NAICS codes listed below reflected an index score of +3.

- 6221 – General surgical and medical hospitals
- 6219 – Other ambulatory health care services
- 4542 – Vending machine operators
- 4231 – Motor vehicle and motor vehicle parts wholesalers
- 3363 – Motor vehicle parts manufacturing
- 3329 – Other fabricated metal products manufacturing
- 3325 – Hardware manufacturing
- 3324 – Boiler, tanks and shipping container manufacturing
- 3262 – Rubber product manufacturing
- 3259 – Other chemical products and preparation manufacturing
- 3255 – Paint, coatings and adhesives manufacturing
- 3252 – Resin, synthetic rubber and related product manufacturing

A total of sixteen NAICS code classes examined had index scores of +3 to +5. Of these, five exhibited 2010 location quotients of 1.20 or higher, while seven exhibited location quotients of .80 or lower. Only one of those with a low location quotient was anticipated to experience a significant increase in location quotient by 2011.

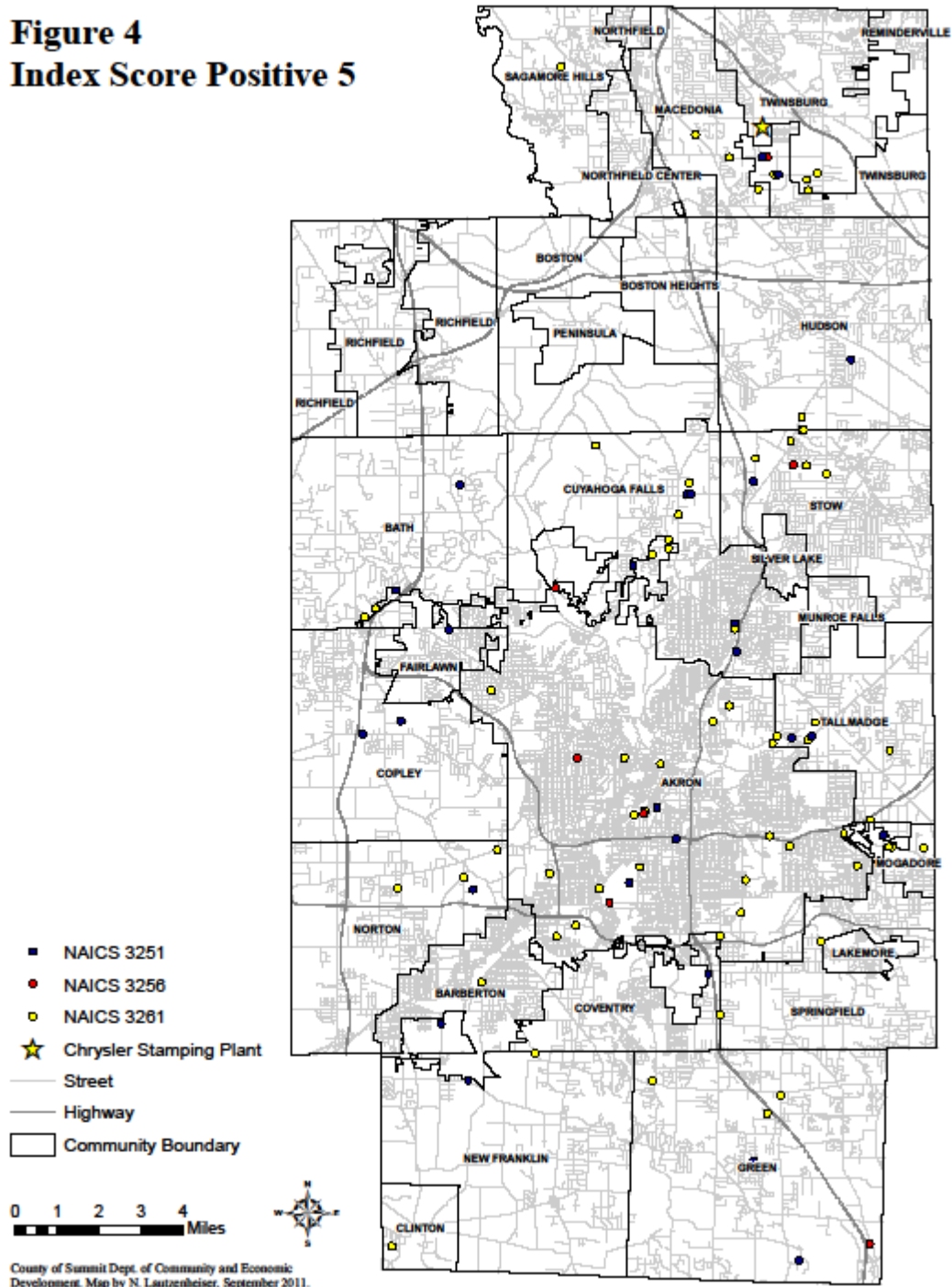
Based on the shift-share analysis, and forecasts of economic activity, the above +3 to +5 indexed code classes represent sectors with the most promise for the region's future competitiveness. As very strong location quotients were anticipated for only two of the sixteen sectors with index scores of +3 or higher, it is apparent that the Summit County region will be subject to substantial competitiveness from other regions. Innovation, efficiencies and support structures will need to be in place if the region is to substantially improve its relative strength and gain significant employment.

Figure 4 through Figure 6 illustrate the distribution of entities with NAICS codes with positive index scores of +3 to +5.

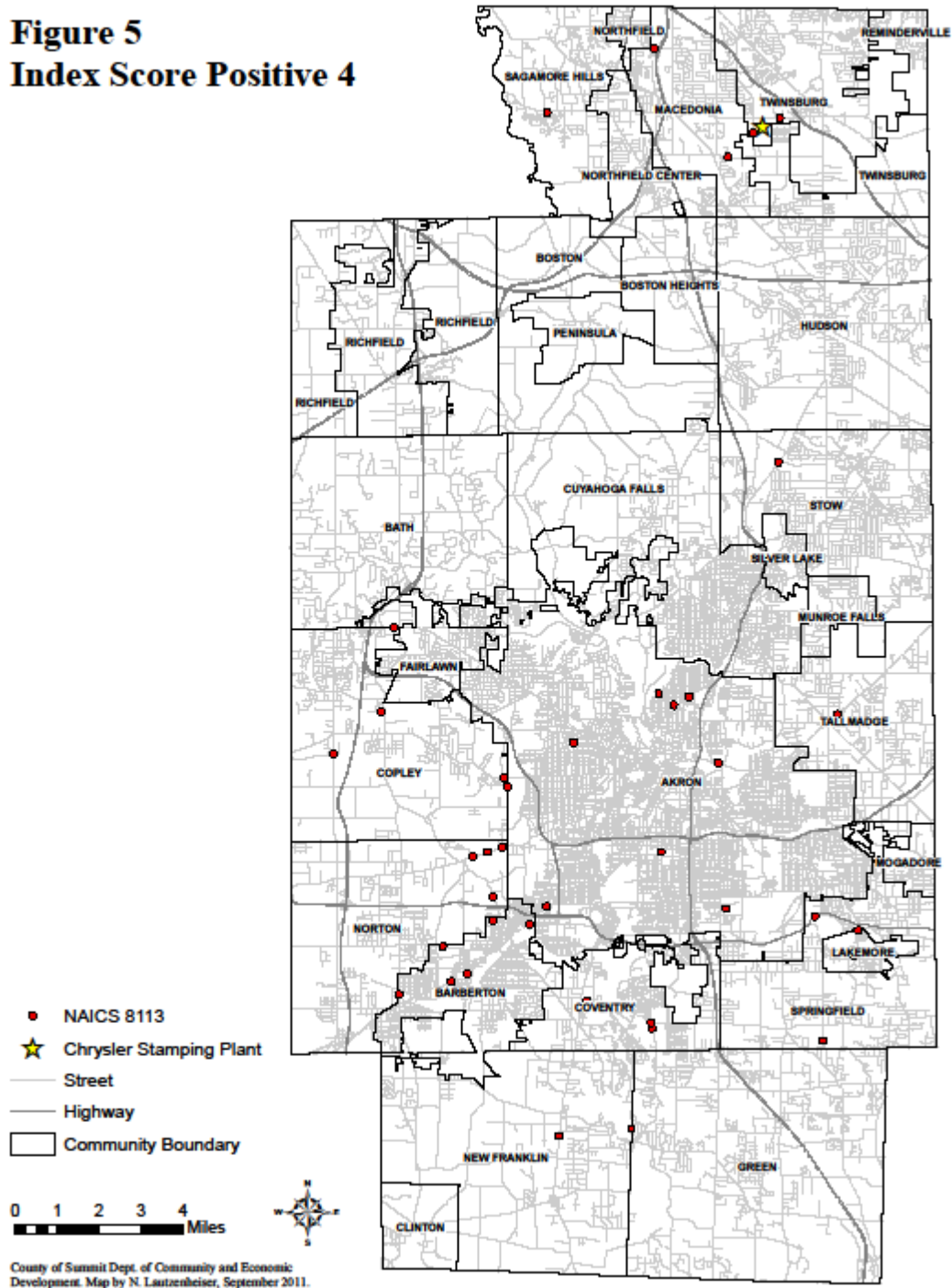
Fourteen NAICS classifications reflected an index score of -5. They included those listed below:

- 3219 – All other miscellaneous wood product manufacturing
- 3221 – Pulp, paper and paperboard mills
- 3272 – Glass and glass product manufacturing
- 3273 – Cement and concrete products manufacturing
- 3331 – Agricultural, construction and mining machinery manufacturing
- 3344 – Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing
- 3351 – Electric lighting equipment manufacturing
- 3352 – Household appliance manufacturing
- 3359 – Other electrical equipment and component manufacturing
- 4243 – Apparel, piece goods, and notions merchant wholesaler
- 4247 – Petroleum and petroleum products merchant wholesaler
- 4821 – Rail transportation
- 4842 – Specialized freight trucking
- 4882 – Support activities for rail service

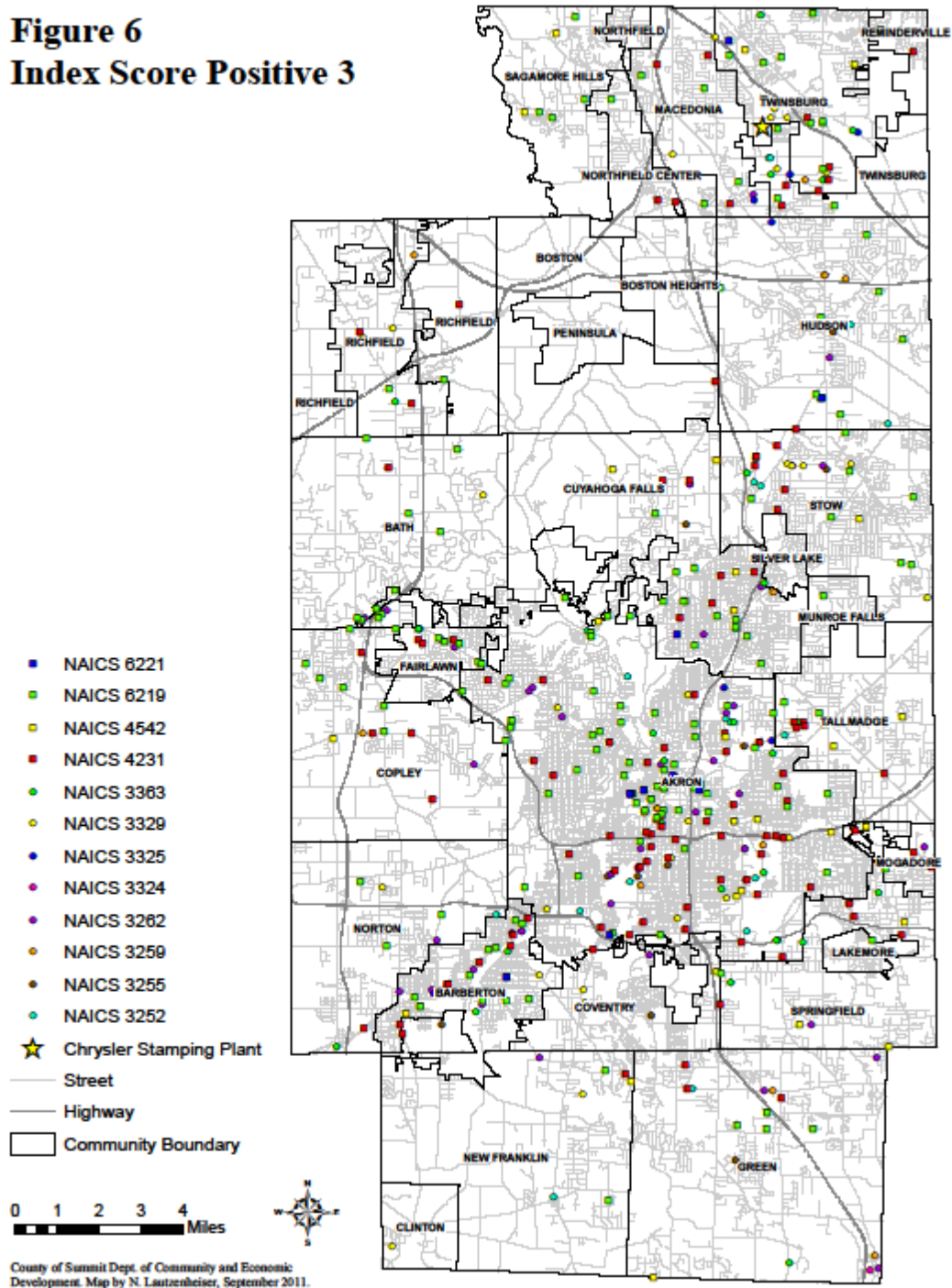
**Figure 4**  
**Index Score Positive 5**



**Figure 5**  
**Index Score Positive 4**

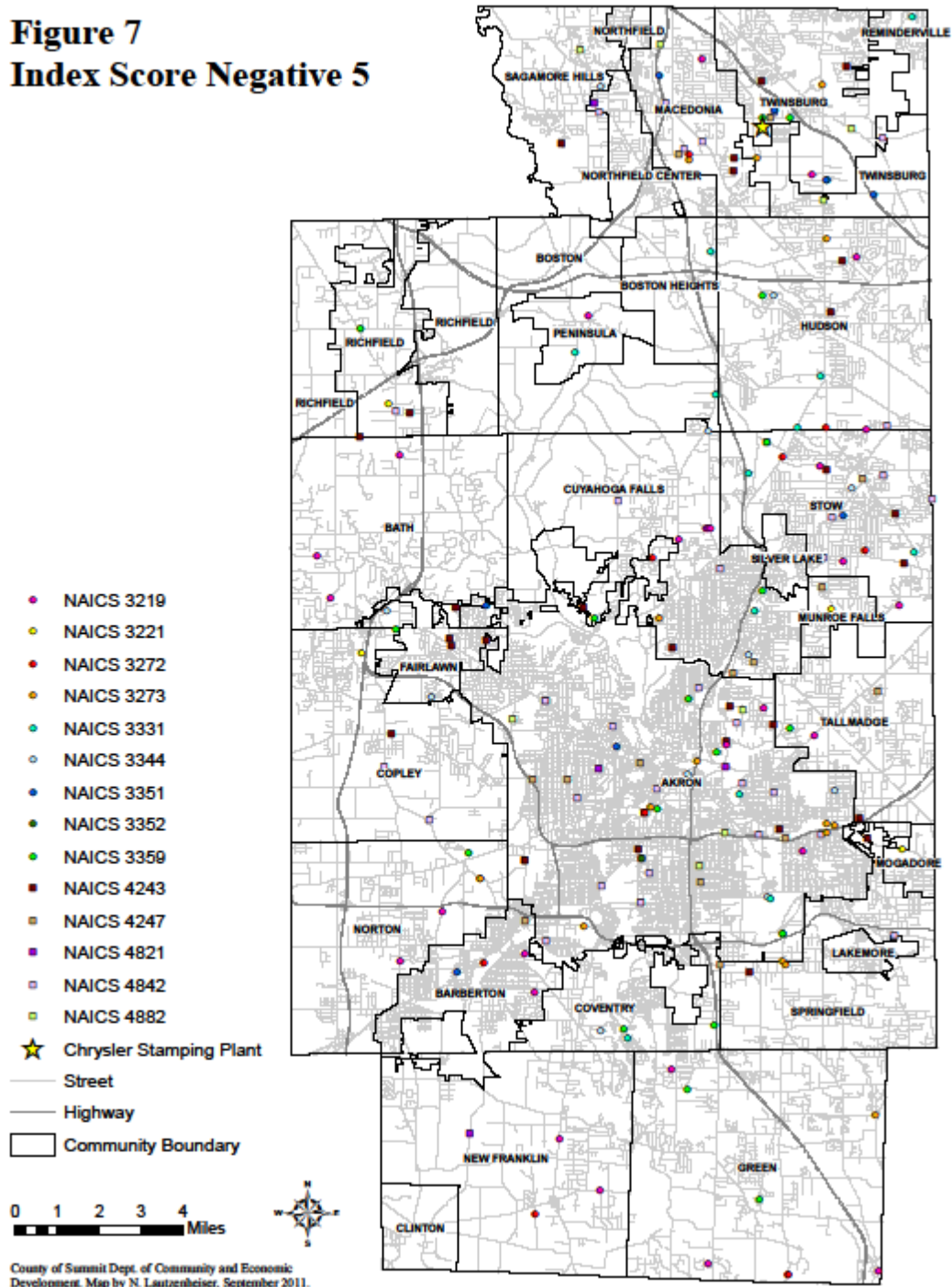


**Figure 6**  
**Index Score Positive 3**





**Figure 7**  
**Index Score Negative 5**



Thirteen NAICS classifications reflected an index value of -4. They included those listed below:

- 3121 – Beverage manufacturing
- 3141 – Textile furnishings mills
- 3274 – Lime and gypsum product manufacturing
- 3279 – Other non-metallic mineral product manufacturing
- 3311 – Iron and steel mills and ferroalloy manufacturing
- 3312 – Steel product manufacturing from purchased steel
- 3313 – Alumina and aluminum production and processing
- 3314 – Non-ferrous metal production and processing
- 3333 – Commercial and service industry machinery manufacturing
- 3379 – Other furniture related manufacturing
- 4248 – Beer, wine, and distilled alcoholic beverage merchant wholesaler
- 6115 – Technical and trade schools
- 6241 – Individual and family services

Twenty-nine NAICS classifications reflected an index value of -3. They included the following:

- 3119 – Other food manufacturing
- 3132 – Fabric mills
- 3133 – Textile and fabric finishing and fabric coating mills
- 3152 – Cut and sew apparel manufacturing
- 3241 – Petroleum and coal products manufacturing
- 3253 – Pesticide, fertilizer and other agricultural chemical manufacturing
- 3254 – Pharmaceutical and medicine manufacturing
- 3271 – Clay product and refractory manufacturing
- 3334 – Ventilation, heating, air-conditioning and commercial refrigeration equipment manufacturing
- 3336 – Engine, turbine and power transmission equipment manufacturing
- 3341 – Computer and peripheral equipment manufacturing
- 3342 – Communications equipment manufacturing
- 3343 – Audio and video equipment manufacturing
- 3371 – Household and institutional furniture and kitchen cabinet manufacturing
- 4249 – Miscellaneous non-durable goods merchant wholesaler
- 4543 – Direct selling establishments
- 4811 – Scheduled air transport
- 4831 – Deep sea, coastal, and Great Lakes water transport
- 4851 – Urban transit systems
- 4853 – Taxi and limousine services
- 4854 – School and employee bus transportation
- 4859 – Other transit and ground passenger transportation

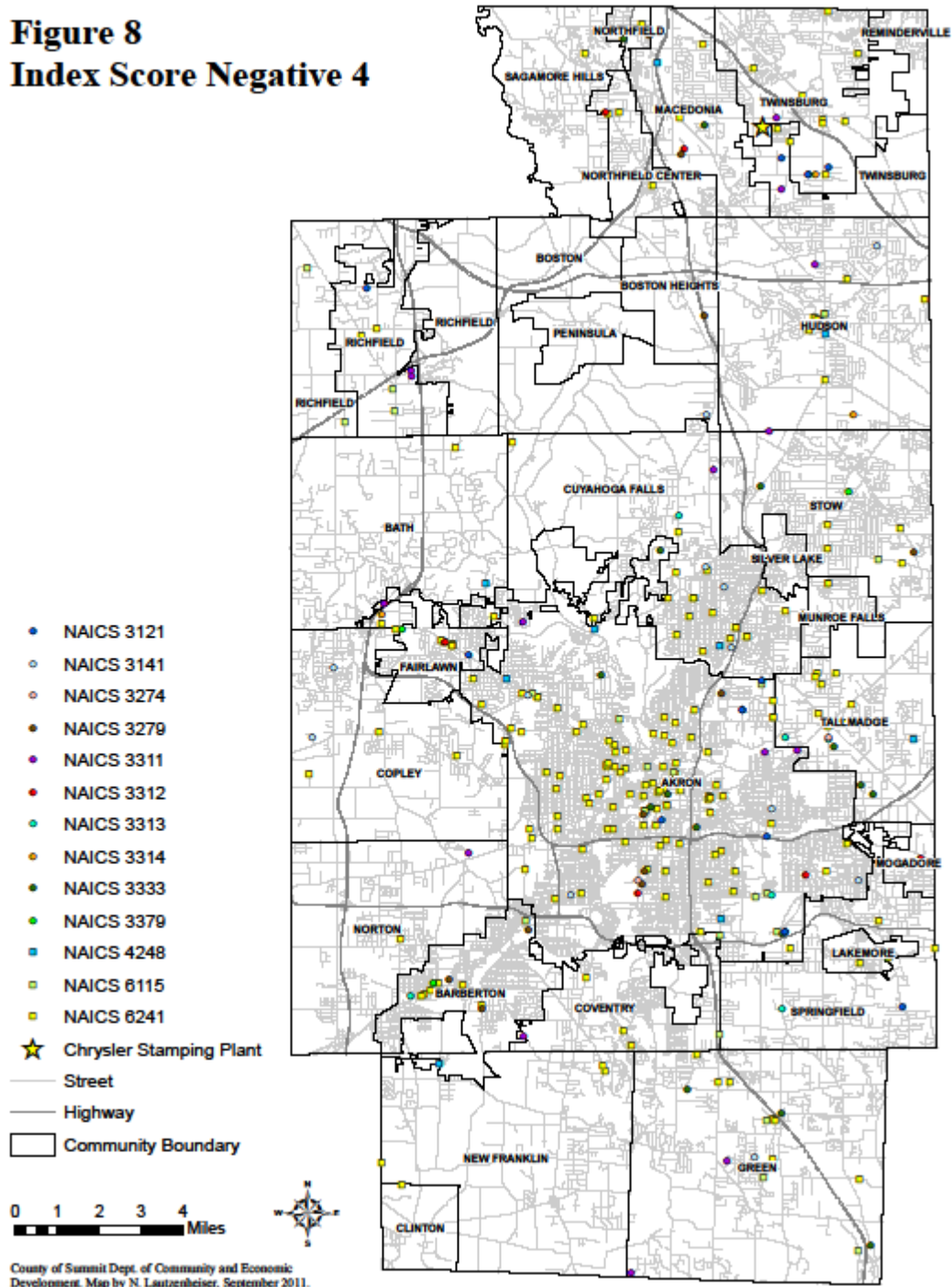
- 4871 – Scenic and sightseeing transportation
- 4881 – Support activities for air transportation
- 4885 – Freight transportation arrangement
- 4922 – Local messengers and delivery services
- 6112 – Junior colleges
- 6113 – Colleges, universities, and professional schools
- 6116 – Other schools and instruction

Fifty-six NAICS classifications experienced negative index scores of -3 to -5. This represents three and one-half times the number of classifications experiencing positive index values of +3 to +5. This fact under-scores the need to increase innovation, efficiency, and creative application of existing and new technology.

Negative index scores suggest that these sectors may experience a challenge to remain competitive nationally. As noted previously, these indexes serve as general indicators and planning tools only. Individual businesses and sectors may perform differently than the index anticipates due to innovations or unanticipated developments within the sector. Figure 7 through Figure 9 illustrate the distribution of entities with NAICS codes with negative index scores of -3 to -5.

A summary of index score by NAICS classifications and total employment within each NAICS code is provided in Appendix D.

**Figure 8**  
**Index Score Negative 4**



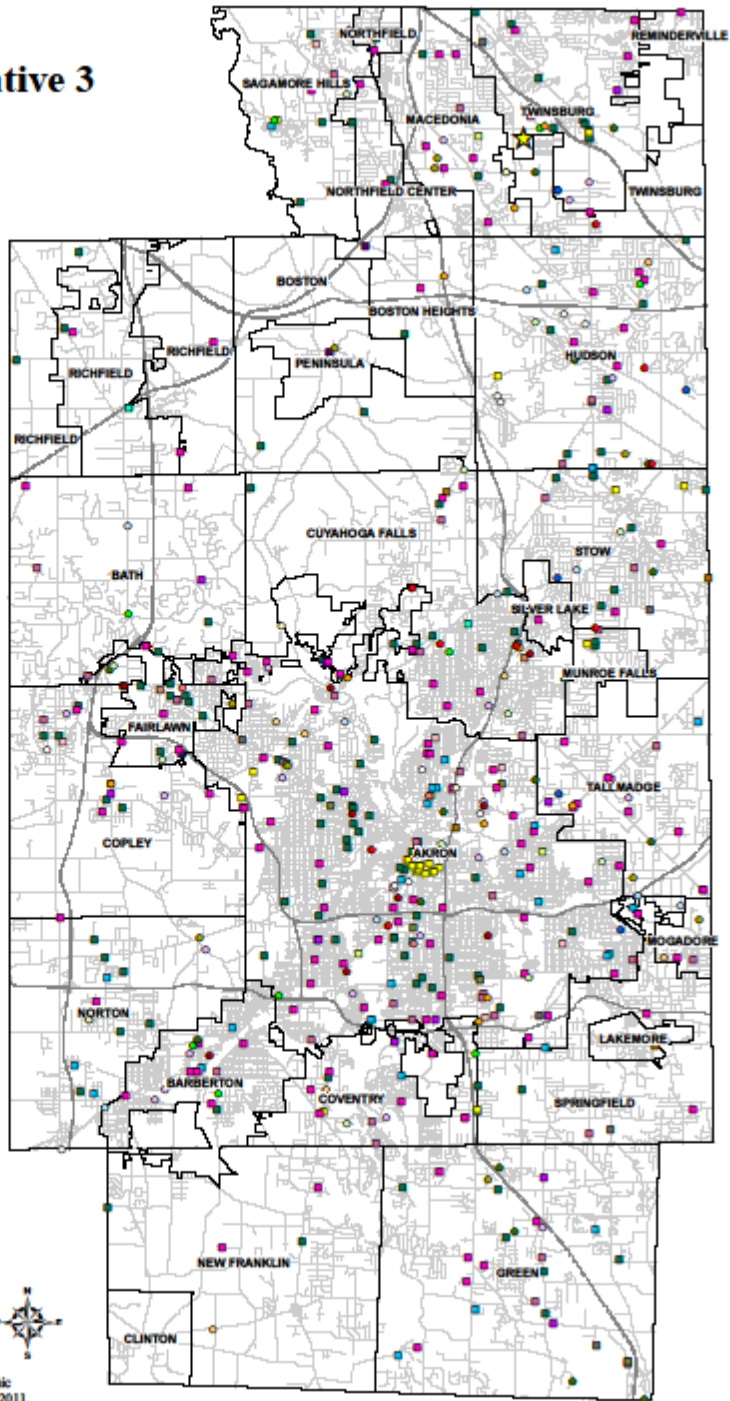
**Figure 9**  
**Index Score Negative 3**

- NAICS 3119
- NAICS 3132
- NAICS 3133
- NAICS 3152
- NAICS 3241
- NAICS 3253
- NAICS 3254
- NAICS 3271
- NAICS 3334
- NAICS 3336
- NAICS 3341
- NAICS 3342
- NAICS 3343
- NAICS 3371
- NAICS 4249
- NAICS 4543
- NAICS 4811
- NAICS 4831
- NAICS 4851
- NAICS 4853
- NAICS 4854
- NAICS 4859
- NAICS 4871
- NAICS 4881
- NAICS 4885
- NAICS 4922
- NAICS 6112
- NAICS 6113
- NAICS 6116
- ★ Chrysler Stamping Plant
- Street
- Highway
- Community Boundary

0 1 2 3 4 Miles



County of Summit Dept. of Community and Economic Development. Map by N. Lautzenheiser, September 2011.



## Cluster analysis

### Overview

Business and industrial clusters represent firms and industries that are joined indirectly by relationships including buyer-supplier relationships, a common geographical area, a shared work force, and shared institutional support networks (colleges, technical schools, work force development, etc.). The identification of clusters where the region may have a strategic or comparative advantage enables business retention, attraction and support services to be focused most effectively.

A process for utilizing cluster analysis and other tools to enhance economic development policy creation has been published in “A Practitioner’s Guide to Economic Development Tools for Regional Competitiveness in a Knowledge-based Economy.” This document is the result of research conducted by Purdue University, Indiana University, the University of Missouri, the Strategic Development Group, Inc. and Economic Modeling Specialists, Inc. with funding provided by the U.S. Department of Commerce, Economic Development Administration. This information is published and is available on the Internet at [www.statsamerica.org](http://www.statsamerica.org). Published information provides guidance and data useful to economic development practitioners in the analysis of industrial and occupational clusters, innovation, as well as the prioritization of economic development priorities.

The above interactive web-site provides a cluster analysis tool that includes current data at the State and County level. Using this interactive site, practitioners can obtain information on 17 clusters in the local and regional economy. By comparing the concentration of cluster-related businesses in the region to the nation, a location quotient, similar to that discussed earlier, can be computed. Location quotients of more than 1.0 indicated a higher concentration in the study area than the average for the nation. A higher location quotient may indicate that the study area has a competitive advantage and stronger support network for a cluster. It may also represent a region’s concentration of legacy industries which may or may not be competitively situated for future growth. More will be discussed on this issue later.

This cluster analysis tool indicates that Summit County exhibits a location quotient of 1.20 or higher for the following clusters:

- Advanced materials
- Biomedical and life sciences
- Chemicals and chemical products
- Glass and ceramics
- Manufacturing super-cluster that includes:
  - Primary metals manufacturing
  - Fabricated metals manufacturing
  - Machinery manufacturing
  - Electronic equipment, appliances and component manufacturing
  - Transportation equipment manufacturing

Figures 10 through 20 illustrate the locations of entities in each of the above clusters.

**Figure 10**  
**Advanced Materials**  
**Cluster (LQ 2.36)**

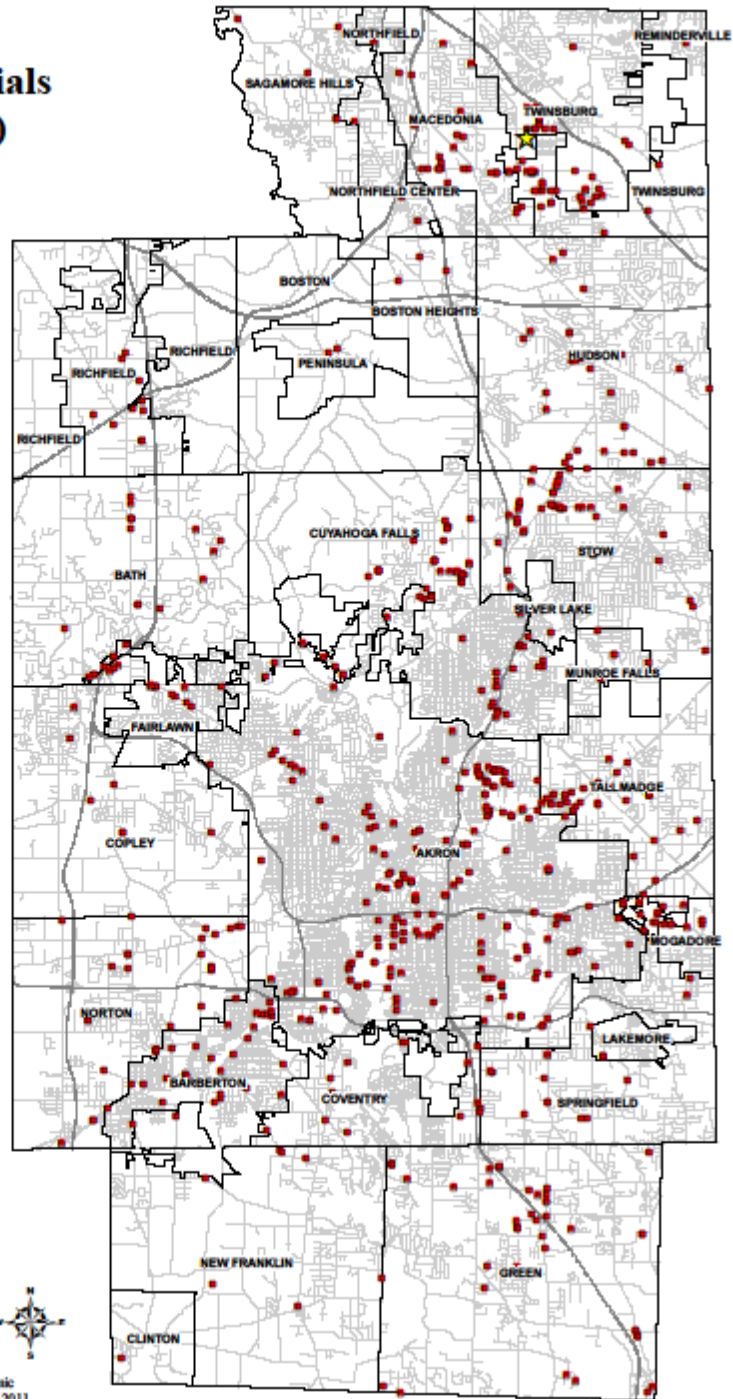
Advanced Materials Cluster  
 Total Companies: 736  
 Total Employees: 21,133

- ★ Chrysler Stamping Plant
- Advanced Materials Co.
- Street
- Highway
- Community Boundary

0 1 2 3 4 Miles

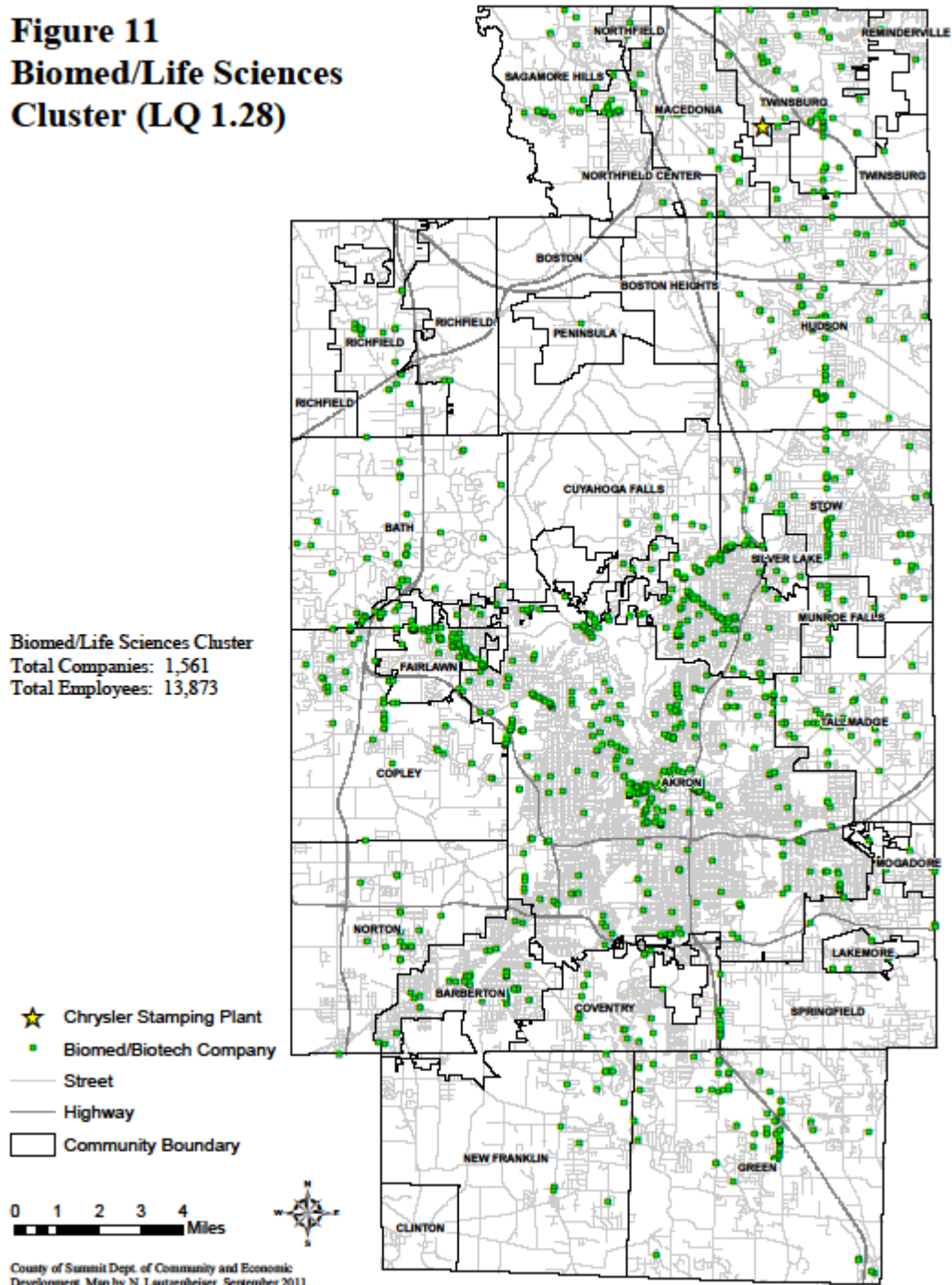


County of Summit Dept. of Community and Economic Development. Map by N. Lautzenheiser, September 2011.



**Figure 11**  
**Biomed/Life Sciences**  
**Cluster (LQ 1.28)**

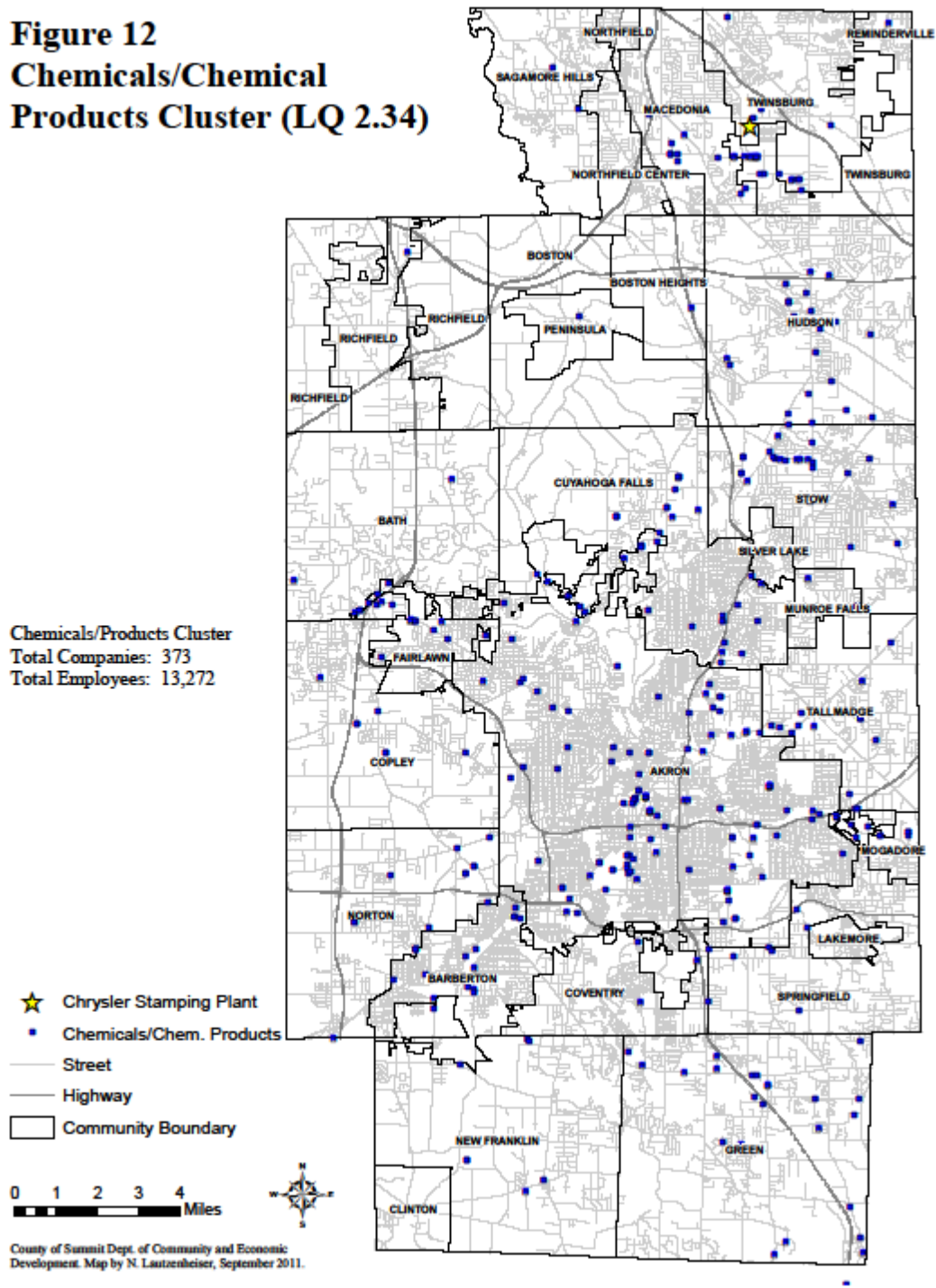
Biomed/Life Sciences Cluster  
 Total Companies: 1,561  
 Total Employees: 13,873





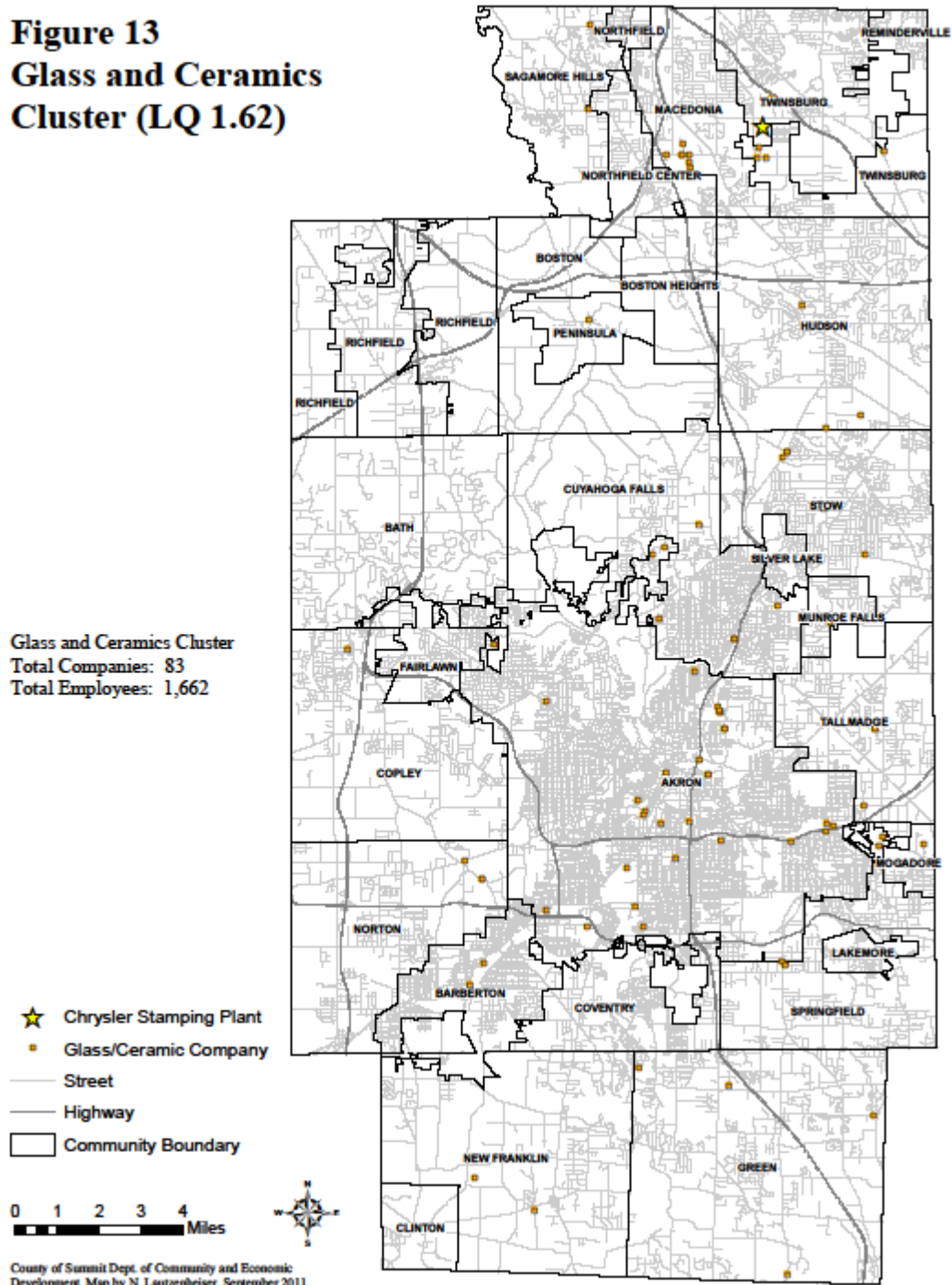
**Figure 12**  
**Chemicals/Chemical**  
**Products Cluster (LQ 2.34)**

Chemicals/Products Cluster  
 Total Companies: 373  
 Total Employees: 13,272



**Figure 13**  
**Glass and Ceramics**  
**Cluster (LQ 1.62)**

Glass and Ceramics Cluster  
 Total Companies: 83  
 Total Employees: 1,662



**Figure 14**  
**Manufacturing**  
**Supercluster (LQ 2.23)**

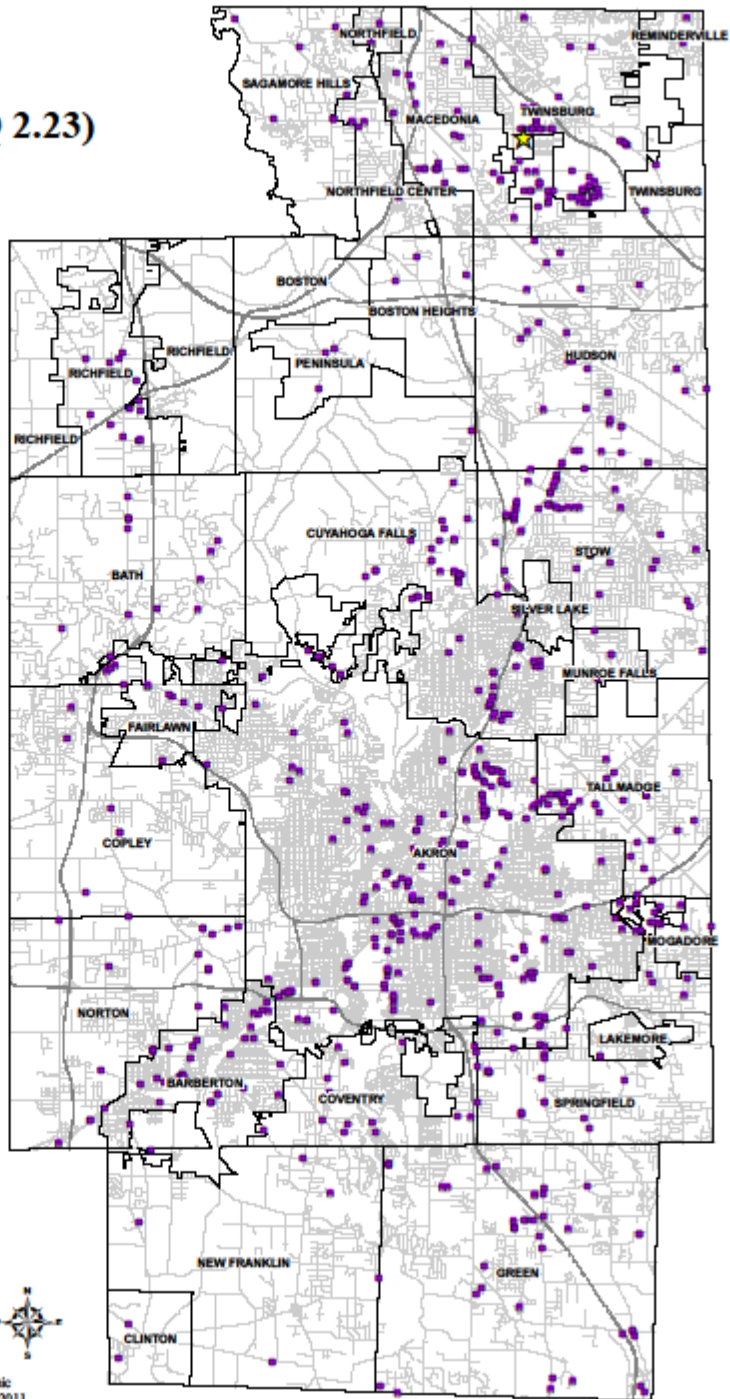
Manufacturing Supercluster  
 Total Companies: 767  
 Total Employees: 22,075

- ★ Chrysler Stamping Plant
- Manufacturing Company
- Street
- Highway
- Community Boundary

0 1 2 3 4 Miles

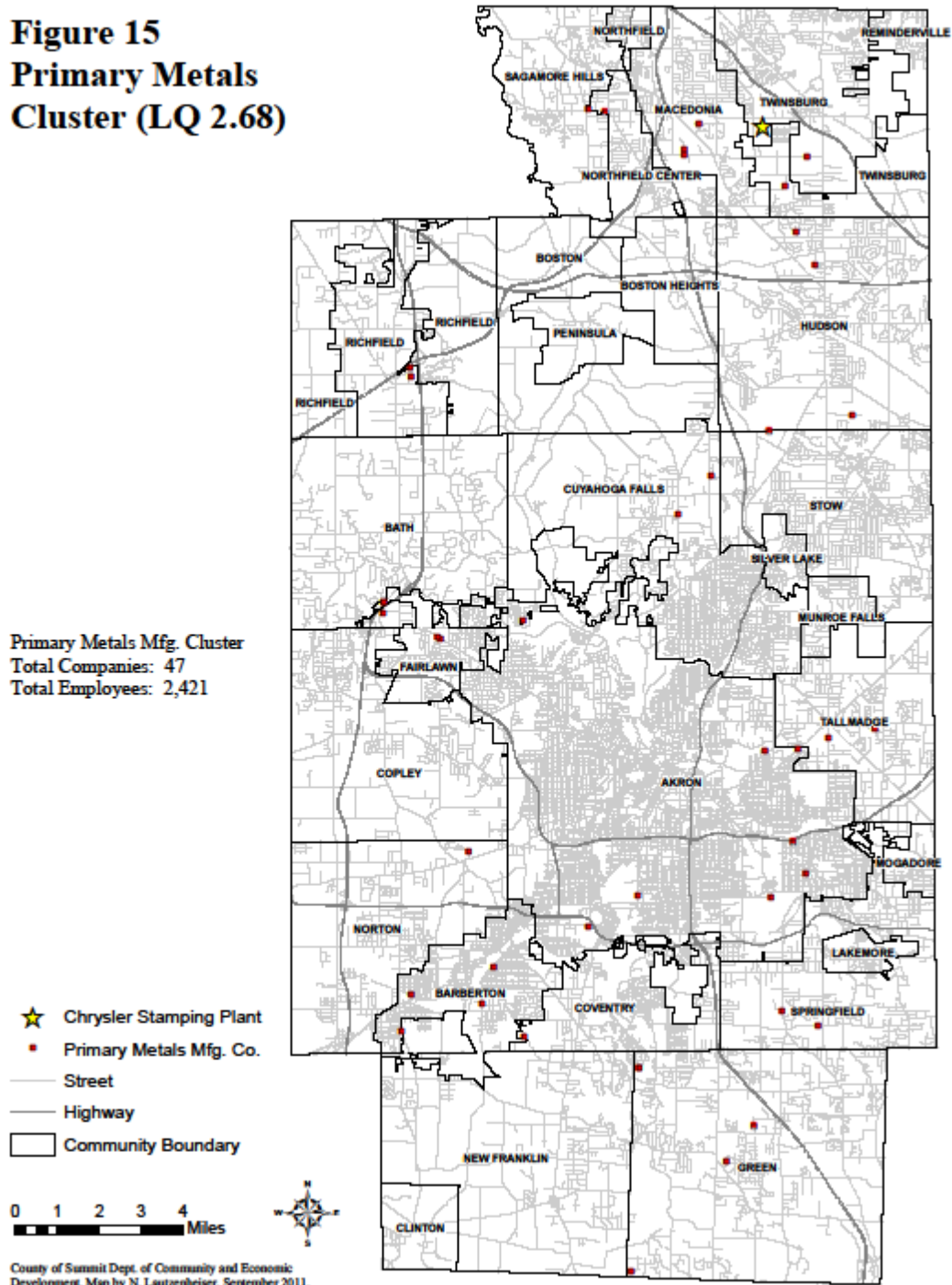


County of Summit Dept. of Community and Economic Development. Map by N. Lautzenheiser, September 2011.



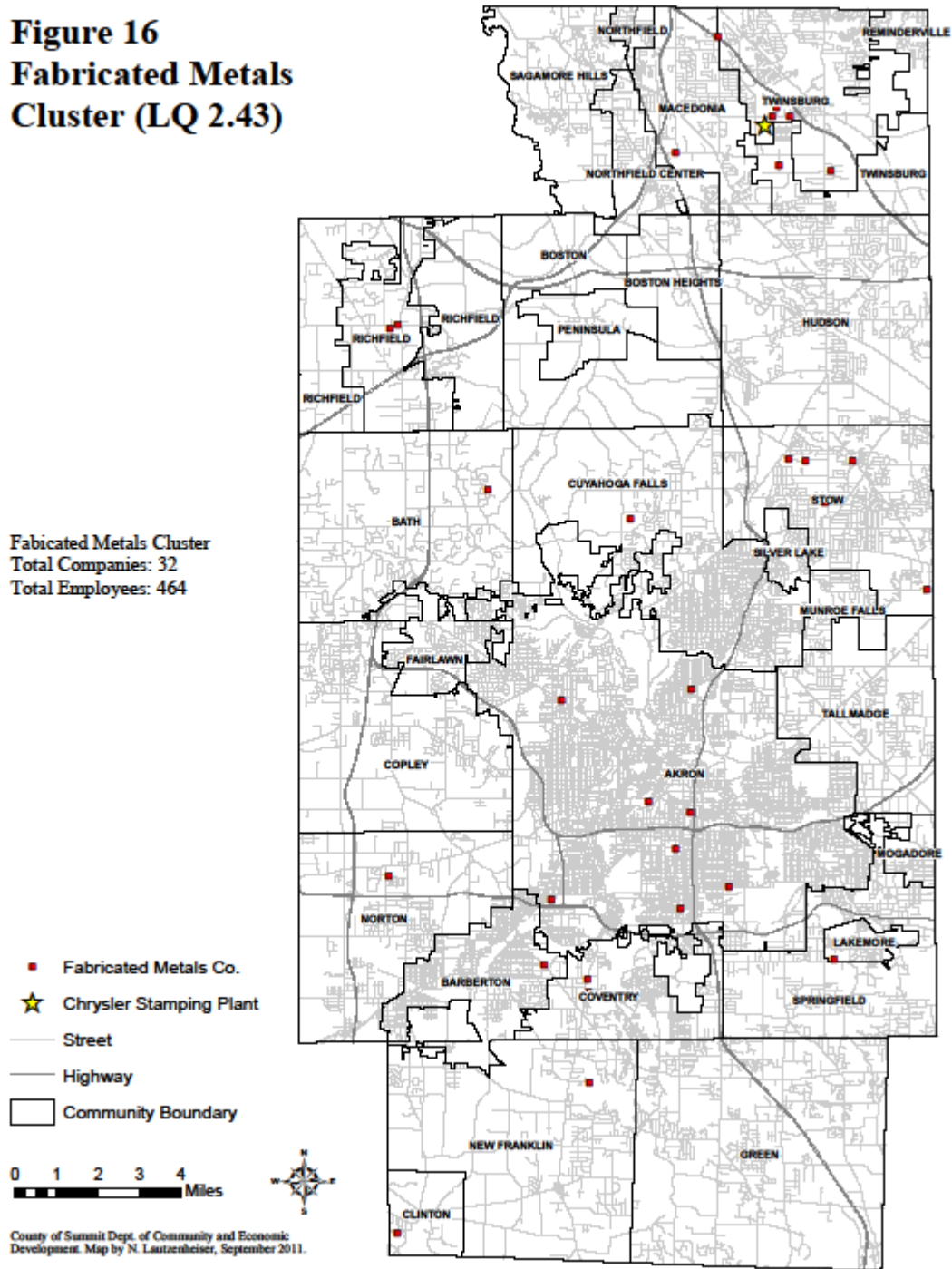
**Figure 15**  
**Primary Metals**  
**Cluster (LQ 2.68)**

Primary Metals Mfg. Cluster  
 Total Companies: 47  
 Total Employees: 2,421



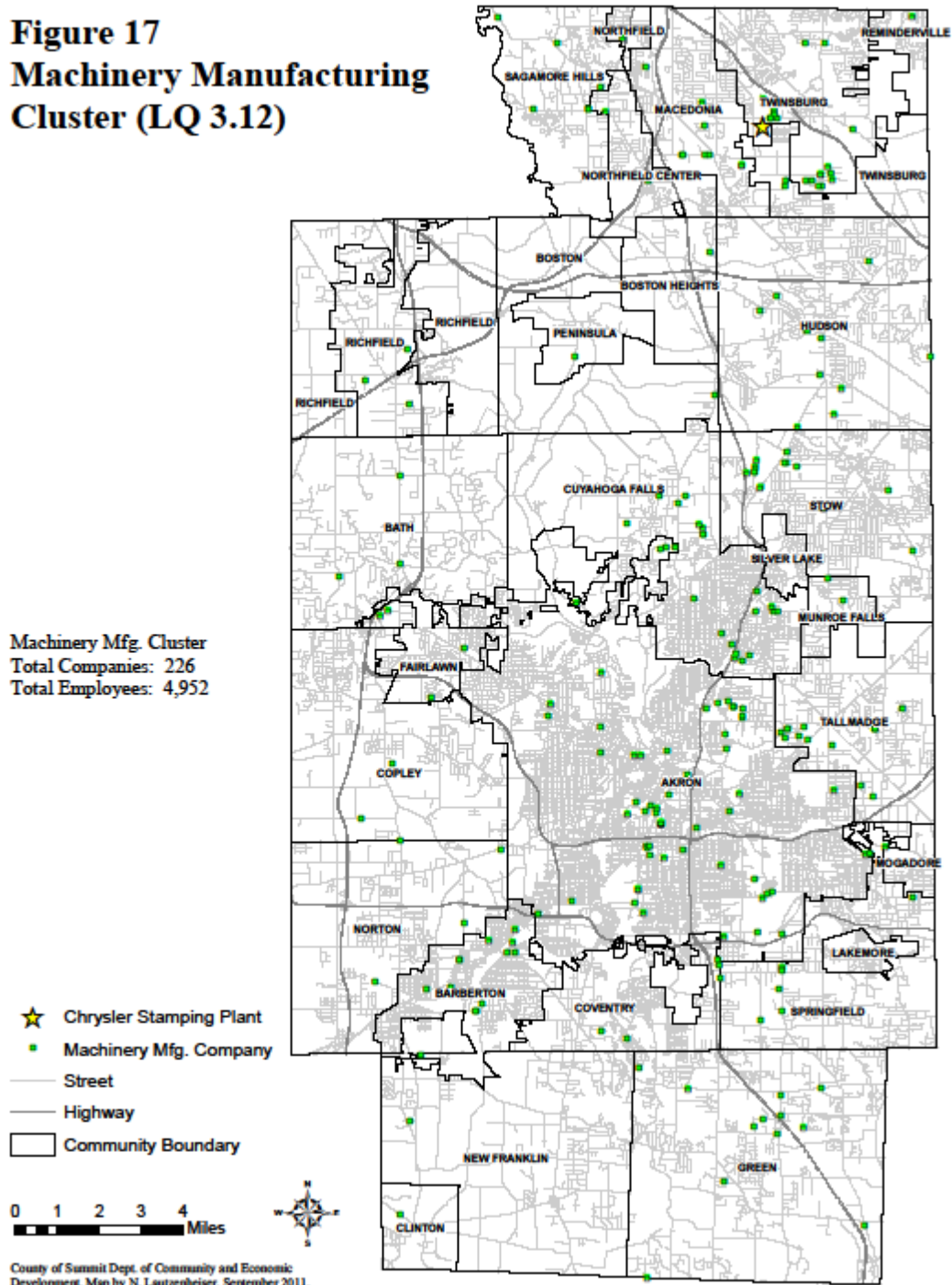
**Figure 16**  
**Fabricated Metals**  
**Cluster (LQ 2.43)**

Fabricated Metals Cluster  
 Total Companies: 32  
 Total Employees: 464



**Figure 17**  
**Machinery Manufacturing**  
**Cluster (LQ 3.12)**

Machinery Mfg. Cluster  
 Total Companies: 226  
 Total Employees: 4,952



County of Summit Dept. of Community and Economic Development. Map by N. Lautzenheiser, September 2011.

**Figure 18**  
**Electrical Equipment**  
**Cluster (LQ 1.32)**

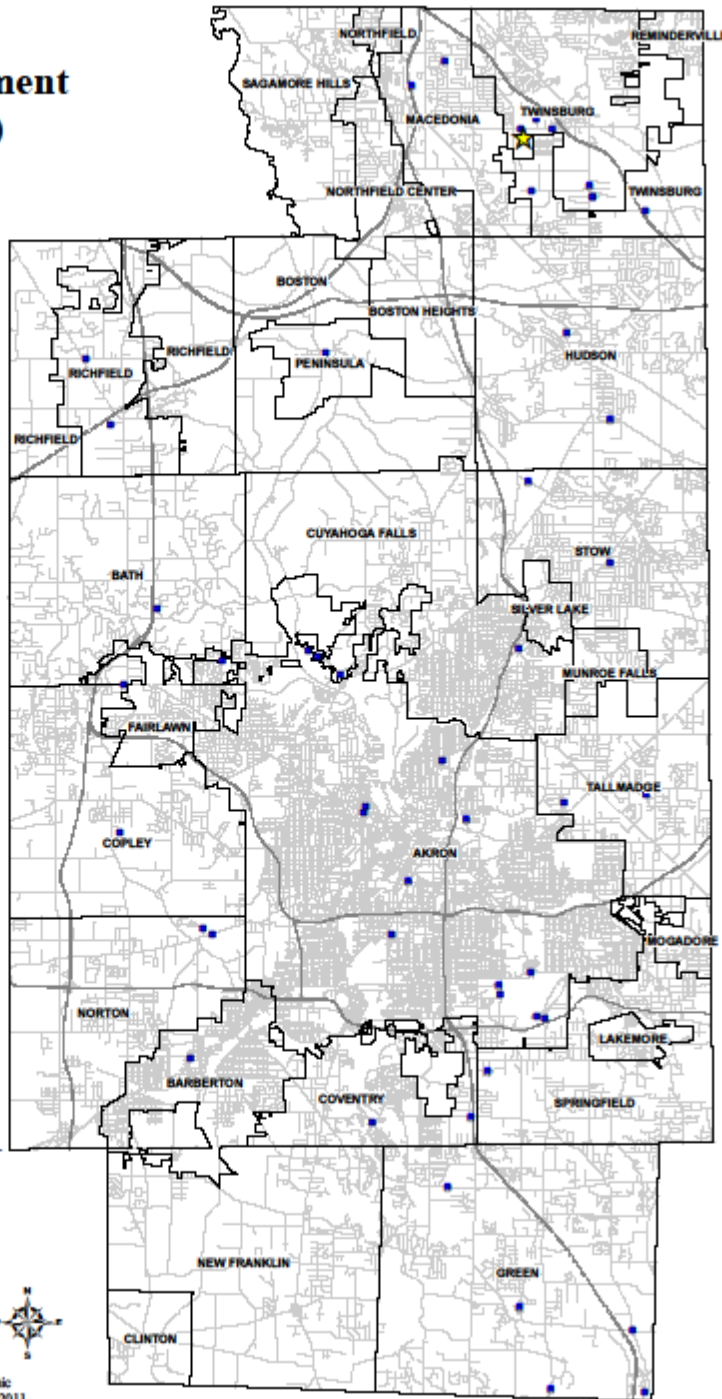
Electrical Equipment Cluster  
 Total Companies: 49  
 Total Employees: 768

- ★ Chrysler Stamping Plant
- Elec./Appl./Component Co.
- Street
- Highway
- Community Boundary

0 1 2 3 4 Miles

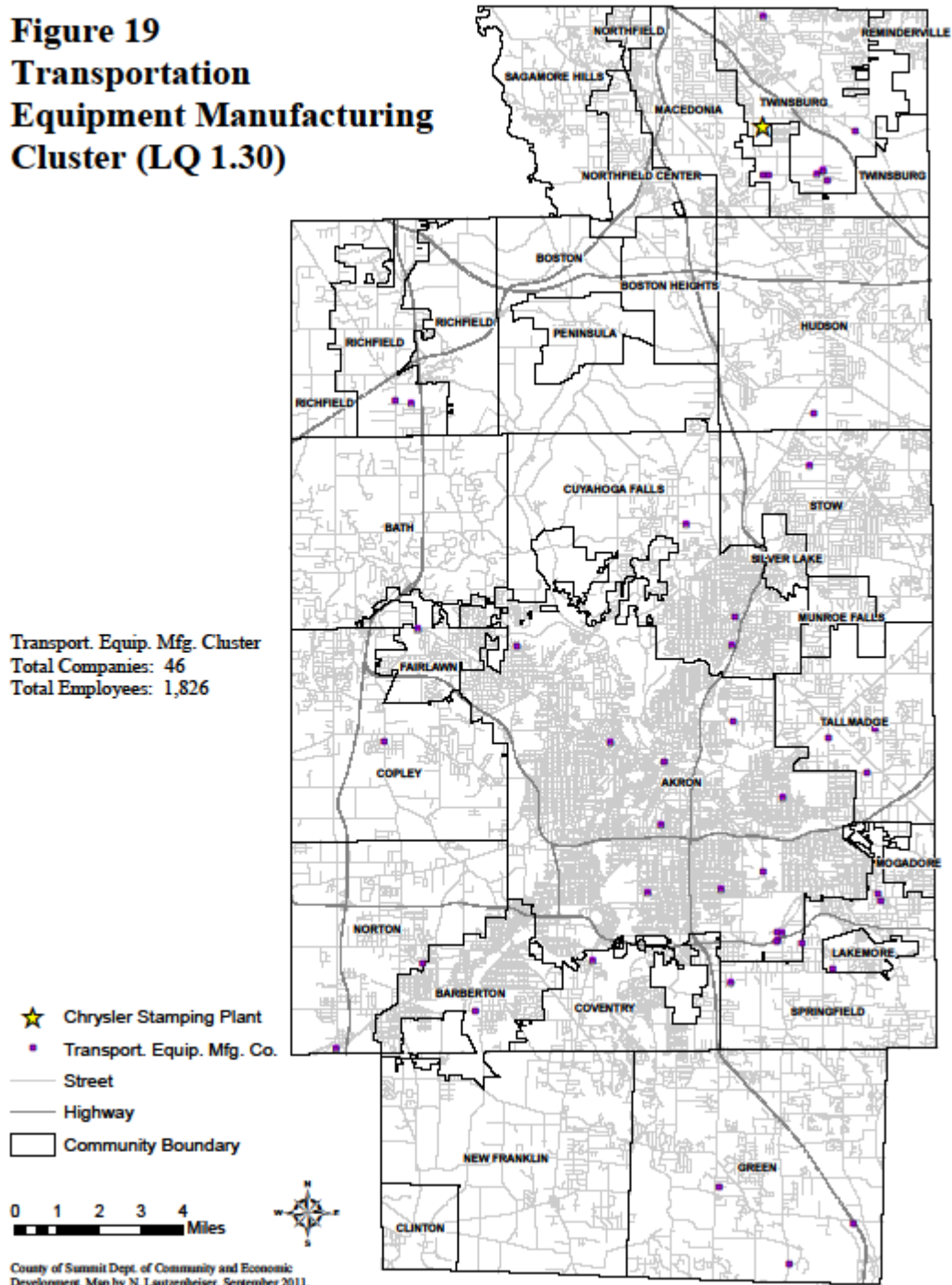


County of Summit Dept. of Community and Economic Development. Map by N. Lautzenheiser, September 2011.



**Figure 19**  
**Transportation**  
**Equipment Manufacturing**  
**Cluster (LQ 1.30)**

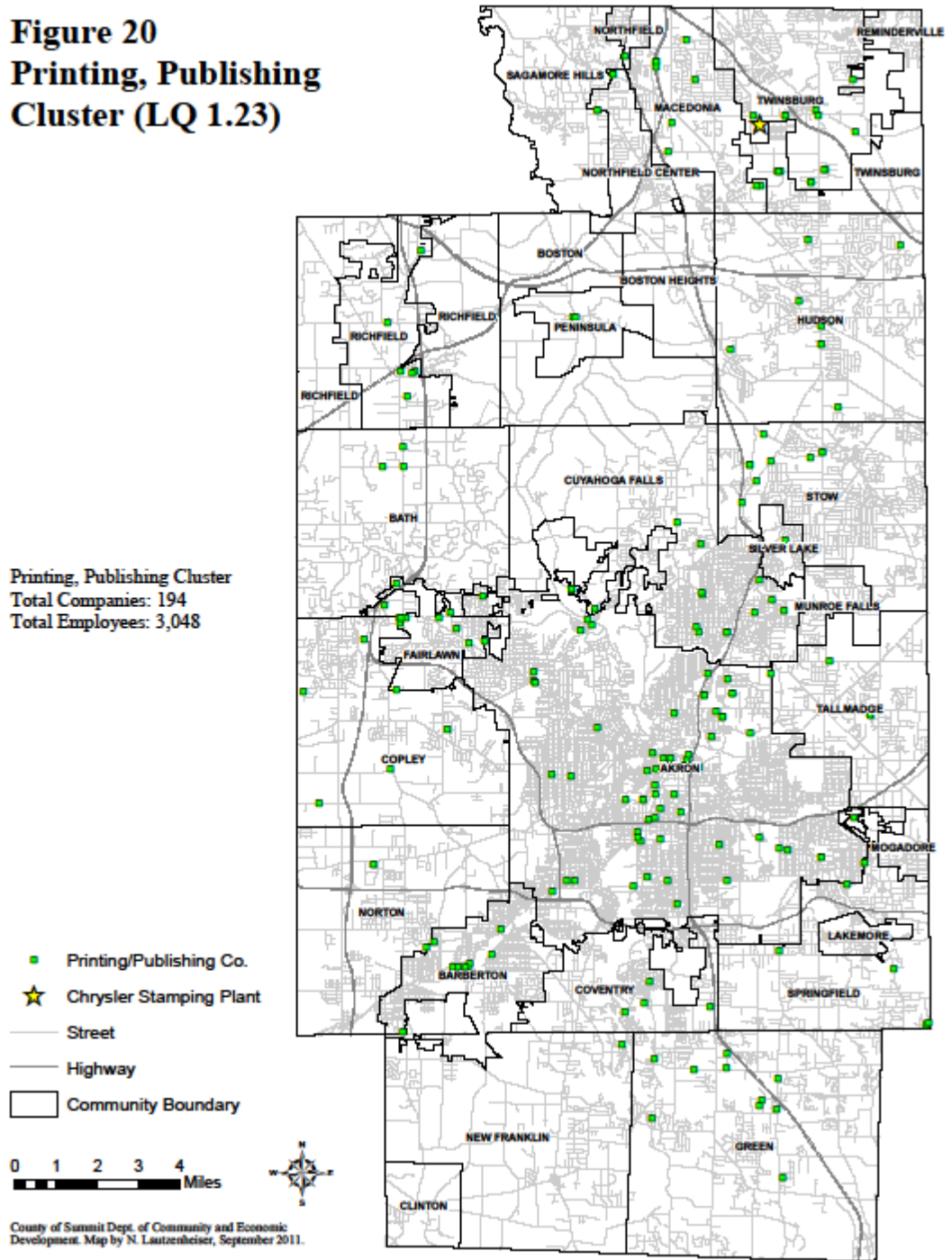
Transport. Equip. Mfg. Cluster  
 Total Companies: 46  
 Total Employees: 1,826





**Figure 20**  
**Printing, Publishing**  
**Cluster (LQ 1.23)**

Printing, Publishing Cluster  
 Total Companies: 194  
 Total Employees: 3,048



Similar cluster information was acquired for the six counties surrounding Summit County to assess the comparative concentrations in the broader region relative to the U.S. average. A summary of regional clusters with location quotients of 1.2 or greater is illustrated in Table 7.

**Table 7**  
**Regional Clusters with Location Quotients**  
**Of 1.20 or Greater**

<b>Cluster</b>	<b>Location Quotient by County</b>						
	<b>Cuyahoga</b>	<b>Geauga</b>	<b>Medina</b>	<b>Portage</b>	<b>Stark</b>	<b>Wayne</b>	<b>Summit</b>
Advanced materials	2.07	2.19	2.09	3.23	1.88	1.74	2.36
Agric. / Food Tech.	-	-	-	-	-	2.30	-
Apparel / textiles	-	-	-	-	-	-	-
Arts, Entertainment, Rec.	-	-	-	-	-	-	-
Biomedical, life sciences	1.30	-	2.80	1.44	3.39	2.46	1.28
Bus., financial services	1.21	-	-	-	-	-	-
Chemicals, chem. Products	1.44	2.84	2.49	3.41	1.78	2.02	2.34
Defense, security	-	-	-	-	-	-	-
Education, knowledge	-	-	-	1.20	-	1.28	-
Energy	-	-	-	-	-	1.29	-
Forest, wood products	-	1.86	1.55	1.29	-	2.35	-
Glass, ceramics	2.36	1.27	1.65	2.19	1.77	2.26	1.62
Information tech. & com.	-	-	-	-	-	-	-
Transportation, logistics	-	-	1.48	1.52	-	1.66	-
Manufacturing super-cluster	2.30	1.75	2.21	2.90	1.98	2.20	2.23
Primary metals	2.96	2.01	4.50	2.74	4.94	5.17	2.68
Fabricated metals	2.63	1.34	2.22	2.70	2.17	2.72	2.43
Machine mfg.	2.43	2.47	2.86	4.41	2.25	1.81	3.12
Computers & elect.	-	2.05	-	1.73	-	-	-
Electrical equip. & comp.	1.36	2.82	1.67	4.78	2.74	-	1.32
Transportation equip.	1.42	-	2.04	1.26	1.34	2.71	1.30
Mining	-	1.49	-	4.30	1.43	1.42	-
Printing, publishing	1.26	-	-	-	-	-	1.23

Source: [www.statsamerica.org/innovatin/data.html](http://www.statsamerica.org/innovatin/data.html), interactive website, 2010 data.

As Table 7 illustrates, the seven-county region surrounding and including Summit County, shares core clusters. The entire six county region of Summit County and surrounding Cuyahoga, Medina, Stark, Portage, Geauga and Wayne Counties all exhibit strong location quotients for the Advanced Materials, Chemicals and Chemical Products, Glass and Ceramics, and the Manufacturing Super-cluster. Within the Manufacturing Super-cluster, regional counties exhibit strengths in all but the Computer and Electronics sub-clusters. Location quotients for the Biomedical/Life Science cluster exceed 1.2 in all counties with the exception of Geauga County. Within the Manufacturing Electrical Equipment and Computers sub-cluster location quotients meet or exceed 1.2 in all counties except Wayne, while in the Transportation Equipment sub-cluster only Geauga County exhibits a lower than 1.2 location quotient.

The more rural counties in this region (Gauga, Medina, Portage and Wayne) exhibit location quotients over 1.2 for Forest and Wood Products. Location quotients for Mining are higher in these same counties with the exception of Medina County.

The most densely populated counties (Cuyahoga and Summit) both exhibited high location quotients for the Printing/Publishing cluster.

None of the regional counties exhibited location quotients in excess of 1.2 for the Apparel and Textiles; Arts, Entertainment, Recreation; Defense and Security; and Information Technology and Computers clusters.

## **Sector and Cluster Strengths Relative to Forecasts of Employment Activity**

The Ohio Department of Jobs and Family Services provide a forecast of job growth for metropolitan areas within the State of Ohio on a bi-annual basis. The last update of this Job Outlook Report for the Akron Metropolitan Statistical Area utilized Bureau of Labor Market Information from March, 2009. At that time, the Akron Metropolitan Statistical Area, as a whole, was expected to grow its employment by 4.1% from 2006 to 2016, representing a change in the number of persons employed from 353,000 to 368,000. Only two metropolitan statistical areas, Cincinnati-Middletown and Columbus, were expected to grow faster than the state-wide average of 5%. According to the authors, “Stronger growth was correlated with a lower concentration of manufacturing employment, which was expected to decline.”

According to the Industry Employment Projections Report, Service Providing industries had the highest projected growth in the number of new jobs, adding more than 19,000 during the period. Goods-Producing industry categories were projected to experience a decline of -7.8%, representing the largest numerical decline in job opportunities.

Within the Service Providing industry sector, Education and Health Services had the highest anticipated positive growth at 18.1%. Within the Goods-Producing industry, Manufacturing had the highest projected decline at -10.5%.

According to the Occupation Employment Projections by Major Occupational Group, Healthcare Practitioners and Technical Occupations (NAICS 621-624) were anticipated to have the highest, positive growth in total number of employees from 2006-2016, from 19,380 to 22,930, or a 18.3% change; Production Occupations (NAICS 32-33) were projected to have the highest, negative growth in total number of employees from 2006-2016, going from 36,300 to 33,790 employees, or a -6.9% change. The next two highest, positive growth areas in terms of numbers of new employees were anticipated to be Food Preparation and Service related Industries, followed by Business and Financial Operations Occupations.

When viewing the growth of those same occupational areas in terms of whether the growth, or decline, were in terms of net new jobs or replacements, Healthcare Support Occupations were the only occupations for which growth was anticipated to be higher than replacements; 183 positions versus 87 positions, respectively. For Healthcare Practitioners and Technical Occupations there were expected to be 357 new positions and 366 replacements. Community and Social Services Occupations were expected to add 91 new positions and 112 replacements. Finally, Production Occupations were expected to add 22 new positions and 711 replacements

Within the Healthcare Support Occupations, Home Health Aides represent the largest proportionate growth from 2006-2016 at 41.4%, with 71 annual openings and an average wage (2008) of \$10.03 per hour

The top five occupations with the highest number of annual openings include Cashiers; Waiters and Waitresses; and, Retail Salespersons (1<sup>st</sup> through 3<sup>rd</sup> respectively); then Laborers and Freight, Stock and Material Movers; followed by Registered Nurses.

Occupations with the highest average hourly wage included general and operations managers (\$46.81), sales reps., wholesale and manufacturing executives (\$30.03), accountants and auditors (\$29.33), and registered nurses (\$28.36).

If the region's industrial legacy is to be leveraged for the region's future benefit workforce training must be coordinated with the need for replacement skills and new technical skills. Replacement workers must have more technical knowledge than those whom they will replace as all positions are affected by technological and efficiency improvements.

## **Innovation Index**

The Summit County region exhibits a large number of industries that are expected to face challenges in the future from other regions of the country, competition from international companies, and changing technologies. In order to be competitive and survive these challenges businesses, and their support structures, must be capable of innovating and re-inventing themselves as market conditions change.

Encouraging and facilitating innovation requires many and varied inputs and support structures. Some of the conditions that support innovation include the availability of venture capital, company and university investments in research and development, the availability of business and market information, broadband penetration, and others. A region's success in innovation can be indirectly measured by outputs like employment in high-technology firms, numbers of patents issued, output per worker, graduates in science and technology, and others.

A process for measuring innovation within regions was developed as a part of the effort to produce "A Practitioner's Guide to Economic Development Tools for Regional Competitiveness in a Knowledge-based Economy" and the associated [www.statsamerica.org](http://www.statsamerica.org) website. As this source provides data for regions throughout the United States, it is possible to compare one region to another, and to the U.S. as a whole. This kind of comparison can provide an indication of relative strengths within various components supportive of innovation.

Four categories of characteristics are measured at the local, regional or metro level of geography in the "Innovation Index" toolkit. They include:

1. Human Capital – This category includes measures of educational attainment including types of degrees earned; nature and availability of educational institutions; population growth characteristics, particularly growth rates in ages 25-44 years; occupational mix focusing on six technology based knowledge occupations; and, high-tech employment providing opportunities necessary for home-grown skills to be applied in a career related to technology-based industry.
2. Economic Dynamics – This category provides measures of local business conditions and resources available to support business and entrepreneurship. Key elements included in this index include the availability of venture capital, broadband connections and availability to businesses and consumers, the rates of new business starts and business failures, and business size.
3. Productivity and Employment – This category is composed of measures of the share of high-tech employment growth relative to total employment, employment growth relative to population growth, patent activity and gross domestic product per worker and growth in gross domestic product over the last decade.
4. Economic Well Being – This category includes comparative measures of income, poverty rates, and in-migration.

State scores are also computed. While not used for the calculation of the index score, a summary of state-level characteristics is provided to enable a general comparison of various innovation elements which may be influenced by state supported activity. Among the characteristics included in State Context comparison scores are rates of science and engineering graduates from state institutions per 1,000 residents of the state, and research and development expenditures within the state.

In order to set the stage for discussions of local and regional innovation measures a comparison of state-level measures is possible utilizing the “Regional Innovation Index Toolkit” provided at the [www.statsamerica.org](http://www.statsamerica.org) website. The “Overall Innovation Index” scores for states ranged from a high of 2.0970 (Massachusetts), to a low of .5602 (Alabama). A median value for all states was .8941. The index value for the State of Ohio was .7958.

These values reflect levels relative to 2007 data. While some difference is likely due to age of data, it is not likely that substantial change has occurred over the last few years. Ohio’s values had been showing a gradual decline from a high of 1.1178 in 1999.

Looking more closely to the area impacted by the Chrysler Stamping Plant Closure and focusing on Summit County, the index is 100.1, or about the same as the U.S. as a whole. Individual measures in the areas of human capital and economic dynamics were 89.7 and 79.9 respectively, making them the weakest elements in the County index. Economic well-being scored slightly below the national average at 94.4. The county’s best performance (132.5) was in the category of productivity and employment, indicating that the County is performing well above the national average in the areas of employment growth in high-tech fields, patent activity and growth in domestic product.

Economic dynamics scored the lowest of the elements indicating that the County is not experiencing the level of entrepreneurship, business start-ups, broadband penetration and large company location required to support heightened innovation and economic activity.

The relatively low score for human capital indicates that not enough high-tech related degrees are being granted, and not enough high-tech job opportunities exist in the area to enable those with high-tech skills the ability to find careers locally.

The seven-county region including Summit and surrounding counties reflected similar characteristics with economic dynamics the lowest scoring measure, followed by human capital as the next lowest scoring measure. Productivity and employment ranked the highest with a score of 119.7, indicating performance better than the U.S. average.

The Akron Metropolitan Area compared favorably to other metro areas around the State of Ohio. The following table provides a summary of total index and component scores for the Akron Metropolitan Area compared to several other Metropolitan Areas in Ohio. A “metropolitan area” is defined by the U.S. Bureau of the Census as an area containing a core urban area of 50,000 or more population, including any adjacent counties that have a high degree of social and economic integration within the urban core. For Akron, this area includes Summit County and Portage County.

**Table 8**  
**Innovation Index Scores for Akron and Other Ohio Metropolitan Areas**

<b>Metropolitan Area</b>	<b>Total</b>	<b>Human Capital</b>	<b>Index Scores</b>		
			<b>Economic Dynamics</b>	<b>Productivity &amp; Employment</b>	<b>Economic Well-Being</b>
<b>Akron</b>	<b>97.8</b>	<b>86.5</b>	<b>79.4</b>	<b>119.7</b>	<b>93.1</b>
<b>Cleveland</b>	<b>96.4</b>	<b>89.8</b>	<b>81.4</b>	<b>119.4</b>	<b>92.4</b>
<b>Columbus</b>	<b>92.7</b>	<b>109.6</b>	<b>81.4</b>	<b>85.5</b>	<b>97.5</b>
<b>Dayton</b>	<b>94.1</b>	<b>100.9</b>	<b>76.0</b>	<b>106.4</b>	<b>90.7</b>
<b>Toledo</b>	<b>87.8</b>	<b>83.4</b>	<b>78.3</b>	<b>101.2</b>	<b>89.4</b>
<b>Youngstown</b>	<b>75.8</b>	<b>69.4</b>	<b>74.0</b>	<b>79.1</b>	<b>90.8</b>
<b><u>Other Metropolitan Areas</u></b>					
<b>Pittsburgh, PA</b>	<b>91.9</b>	<b>91.0</b>	<b>83.9</b>	<b>97.5</b>	<b>101.7</b>
<b>Portland, OR</b>	<b>105.4</b>	<b>123.6</b>	<b>88.7</b>	<b>106.7</b>	<b>97.1</b>
<b>Raleigh/Cary, NC</b>	<b>110.9</b>	<b>131.2</b>	<b>111.7</b>	<b>93.7</b>	<b>99.6</b>
<b>Minn./St. Paul, MN</b>	<b>116.0</b>	<b>121.6</b>	<b>100.3</b>	<b>131.1</b>	<b>100.5</b>
<b>San Antonio, TX</b>	<b>85.3</b>	<b>96.8</b>	<b>73.7</b>	<b>78.8</b>	<b>105.0</b>

Source: [www.statsamerica.org/innovation/innovation\\_index](http://www.statsamerica.org/innovation/innovation_index), August, 2010

Table 8 provides index scores for other metropolitan areas outside of Ohio for comparison purposes. These additional metropolitan areas were selected subjectively, but they represent areas frequently discussed in economic development circles and may be considered competitors to this region. These other metros illustrate generally higher index scores related to human capital and economic well-being. This information would again suggest that the Akron metropolitan area in which Twinsburg is located needs to concentrate efforts on technical skills development and job opportunities along with economic well-being (the first would likely strongly contribute to improvement in the second).



## Occupation Clusters

Occupation cluster analysis focuses on the knowledge, skills and abilities of the workforce. The analysis of occupational clusters builds on industrial cluster analysis by identifying and anticipating workforce skills which may represent an advantage for a region. Generally speaking, this process looks more deeply into the “Human Resource” component of the Innovation Index.

The transition to a global economy is minimizing the importance of regional characteristics like access to low cost labor, reliable transportation, low cost land, etc. Regional differentiation in this flattening environment is tending to focus more on workforce education, knowledge, and abilities, particularly as business moves toward more and more technologically sophisticated products and product development requirements.

Using the Innovation Data Browser tool at the statsamerica.org website, a summary of the general trend in occupational categories in Summit County between the 2001 and 2009 time period is summarized in the table below:

**Table 9**  
**Occupational Cluster Employment and Location Quotients**  
**Summit County (2001 – 2009)**

<b>Occupation Description</b>	<b>Share of Total Employed</b>		<b>Location Quotient</b>	
	<b>2001(%)</b>	<b>2009(%)</b>	<b>2001</b>	<b>2009</b>
Manag., sales, mrktg, HR	7.9	8.4	0.95	0.95
Skilled production	8.3	6.9	1.09	0.98
Health care, med. Sci.	5.8	6.8	1.16	1.20
Health care/sci. practitioners	1.6	1.5	1.33	1.19
Health care/sci. med. tech.	1.2	1.3	1.22	1.17
Health care therapy/counsel.	3.1	3.9	1.07	1.22
Math, sci., data, accounting	2.0	2.4	0.84	0.97
Legal, finance, real estate	7.5	8.2	0.98	0.99
Information technology	1.6	2.0	0.76	0.98
Natural sci., envir. manag.	0.3	0.3	0.62	0.59
Agri. bus. / Food tech.	0.3	0.3	0.20	0.23
Prim., sec., voca. educ.	4.8	5.1	0.95	0.95
Bldg, landscap. Const. design	0.4	0.4	0.87	0.87
Engineering & related	1.4	1.0	1.29	0.97
Personal services	1.6	2.1	0.86	0.93
Arts, ent., publish.,& broadctg.	1.6	1.8	0.82	0.83
Public safety/security	0.9	0.9	0.78	0.73
Post-secondary ed./knowledge	0.7	1.0	0.62	0.82
Job Zone 2	39.1	36.3	1.11	1.08
Job Zone 1	15.2	15.6	1.00	1.07
Tech-based knowledge clstr.	7.6	8.1	0.91	0.96

Note: see Appendix C for occupations within each Occupation Description

A better understanding of regional occupational clusters, the dynamics of local occupational growth patterns, and the skill sets required for emerging industrial clusters can contribute to more effective economic development policy. Tools provided in “A Practitioner’s Guide” make it possible to examine fastest growing occupational clusters and to consider occupational clusters which may represent regional opportunities.

Largest numeric occupational gains occurred in health care and medical science (aggregate); health care and medical science therapy, counseling, and rehabilitation; legal, financial and real estate services; information technology; Job Zone 1 occupations which include a variety of semi-skilled occupations (see Appendix E); and technology-based knowledge clusters. Each of these categories experienced gains in occupational employment in excess of 2,000 jobs over the period.

Largest numeric losses occurred in the skilled production related occupations, in engineering and related science occupations, and in Job Zone 2 occupations. Each of these reflected a decline in their share of total County employment over the period with declines of over 4,000 jobs in each except the engineering related occupations which lost more than 1,000 jobs during the period in the County.

The County’s national share of employment within occupational category (as reflected by changes in location quotients over the period) reflected increased share for health care and medical science (aggregate); health care and medical science therapy, counseling and rehabilitation; mathematics, statistics, data and accounting; information technology; agri-business; personal service; post-secondary education and knowledge creation; Job Zone 1; and technology-based knowledge occupational clusters. Of these, only the health care occupational clusters reflected location quotients significantly higher than the national average.

Declining national share of employment within occupational clusters occurred in health care and medical science practitioners and scientists occupations; in health care and medical science practitioners; natural sciences and environmental management occupations; and in engineering and related sciences occupations. Losses in national share were most significant in the health care and medical science practitioners and scientists occupational category, which declined from a location quotient of 1.33 to 1.19 - loss of .24) and engineering and related sciences occupational categories (1.29 to .97 - loss of .32). These losses seem to indicate that the area is losing any location advantage associated with a concentration of individuals with these very technical skill sets. These are among the skill and knowledge occupations necessary to support efforts to stimulate economic development through promotion of targeted industrial clusters.

The relationship between targeted industrial clusters and occupational clusters deserves additional evaluation. As Table 7 illustrated, Summit County and the region exhibit strengths in Biomedical/Life Sciences, Chemicals and Chemical Products, Glass and Ceramics, and the Manufacturing Super-cluster (including its component elements). Skilled production occupations are essential to each of these clusters. As Table 9 indicated, the County has experienced declining Location Quotients (LQ’s) in this occupational group. While LQ’s have been improving in health care/ medical science; math, science, data, and accounting; information technologies; post-secondary education and knowledge; and tech-based knowledge occupational clusters, only the health care/medical science occupational cluster reflects and LQ above the national average.

Even with their recent gains, the others are not yet on par with the national average. This means that additional effort must be placed on efforts to support development of these key occupational groups, if targeted clusters are to be effectively pursued.

## Summary and Observations

Summit County's economy mirrors that of Northeast Ohio and the six counties that surround it. While each county reflects slightly different strengths, the region as a whole benefits from its manufacturing legacy. This legacy provides the region with a higher than national average concentration of businesses, employment, and potential for advanced manufacturing and traditional manufacturing. Even though the area reflects these strengths, the overall forecast for manufacturing employment is not as strong. Continuing efficiency gains in manufacturing processes and migration of labor intensive manufacturing to lower labor cost regions will depress the potential for employment. Most manufacturing job opportunities will result from replacement of retiring workers. Even replacement positions will require increased technical skills as new processes, equipment and technology is introduced. New technology, innovation and cross-sector collaboration will be necessary to maintain and advance the County's manufacturing base.

Rubber product manufacturing; plastics product manufacturing, boiler, tank and shipping container manufacturing; computer and peripheral equipment manufacturing; printing and related support activity; other miscellaneous manufacturing; and metal working machinery manufacturing are the only manufacturing NAICS classifications among the top thirty NAICS classifications by employment. However, the durable goods manufacturing sector (33) employs more people than any other sector with the exception of healthcare (62). Further, manufacturing is a value-added, and export-oriented sector which brings cash to the region and generates wealth within the region. The importance of maintaining a strong manufacturing base is obvious. Unfortunately, manufacturing faces challenges from national and international competitors. Forecasts of employment anticipate declining manufacturing employment which will certainly harm the region if they materialize without an off-setting sector increase. Manufacturers will be forced to innovate and to implement efficiency and productivity improvements. Lower skill, labor intensive manufacturing process will continue to be outsourced to low labor cost locations, particularly where shipping costs and security issues are minor considerations. The future of manufacturing in this region will be dependent upon its ability to support and contribute to other industrial clusters and advanced technologies.

In addition to manufacturing, Summit County exhibits strengths in advanced materials, biomedical and life sciences, chemicals and chemical products, and glass and ceramic material industries. Each of these sectors, while strong on their own, can benefit from technology and innovation in the other. If Summit County is to remain nationally, or internationally, competitive in these industries it will be necessary to cultivate innovation, communication and workforce development efforts tailored to their advancement.

Existing occupational cluster strengths are concentrated in health care related occupations. While in 2001 the County also experienced occupational strengths in engineering and related occupations, this occupational group has declined in importance in the last ten years. Other technical occupations like math, science, data and accounting; information technology; post secondary education and knowledge; and, technical-based knowledge occupational clusters have strengthened since 2001.

The Akron Metropolitan Area (Summit and Portage counties) exhibits higher than national average growth in high-tech employment categories, patent activity, and in growth in gross domestic product per person. Several area projects like the Bridgestone Research Center expansion, Akron's Biomedical Corridor, Cleveland Medical Mart, the Austin BioInnovation Institute in Akron, the University of Akron's Institute of Polymer Science, the Kent State Liquid Crystal Institute, Stark State's Fuel Cell Prototyping Center, and Center for Wind Power at Stark State will all contribute to continued high-tech employment growth. The challenge for this region will be the need to train and retain a workforce with qualifications and expertise necessary to support existing and future technology oriented industrial development.

## PART 4 – CHALLENGES AND OPPORTUNITIES

### Chrysler Stamping Plant Redevelopment Potential

Physical characteristics of site and buildings. The Chrysler Stamping Plant site is characterized as a large rectangular land area (167 acres) occupied by a very large main building (over 2 million s.f.), accessory buildings and rail sidings. Figure 21 provides an aerial view of the property.

**Figure 21**  
**Aerial View of Chrysler Stamping Plant Site**



This property is relatively flat with minor changes in elevation as it rises to the south. Nearly the entire site has been previously disturbed. The southwest corner of the site is the only undisturbed area. This area is currently forested and does contain some wetlands.

Approximately one-half of the 167-acres is covered with buildings or impervious surfaces. The main manufacturing building is 2,189,000 s.f. in area. About 750,000 s.f. of the building has a ceiling height of 42 feet. The remaining area has ceiling heights (below the truss) of 18 feet. Structures were built in 1957. Column spacing is either 40 feet by 80 feet, or 40 feet by 100 feet in the high bay areas, with 40 feet by 40 feet spacing in the low bay area. Other building characteristics include wet fire suppression, 138,000 KVA power distributed through 13 substations, 75 ton capacity cranes in the high bay area, 13 shipping and receiving docks.

The building is supported by large parking and truck maneuvering areas covering more than 21 acres of land surface. Rail access is provided by Norfolk and Southern Rail service with major sidings including rail into the building on the steel delivery side (east side), dock area on the south side, and two lines coming into the building on the low bay portion (western half). In addition, Norfolk Southern operates a large rail yard immediately south of the property, making rail car assembly and cueing convenient to the site.

Environmental Considerations. Because the site has been used as an automotive stamping plant from its inception, potential contaminants normally associated with industry are generally not present. The stamping operation required oils, lubricants, and various cleaning solvents. Electrical transformers on the site released small amounts of contaminants (PCBs). Probably the most significant environmental issues are associated with asbestos used in building components and insulation.

Owners of the property commissioned a Phase 1 and Phase 2 Environmental Audit. These Audits were performed by Hull & Associates over the 2010 and 2011 time period. Key results of the audit are provided in the following bullet-point summary:

- Asbestos containing materials occur in various building components which will require special handling and disposal methods as part of demolition.
- The large basement area under the high-bay portion of the building will have limited re-use potential and will require controlled filling and will involve structural modifications to eliminate voids in the floor of the building.
- PCB's are present on the site and will require remediation.

Site Liabilities. Site characteristics that might discourage redevelopment vary with the type of redevelopment anticipated. As the site is currently zoned in the City's C-3 Heavy Industrial District, characteristics that might discourage redevelopment for any of the permitted uses in this district should be considered. The Heavy Industrial District includes most typical industrial land uses including administrative and business offices, warehousing, manufacturing, compounding, assembly, machine repair services, storage yards, wholesaling, brewing, foundry, entertainment establishments and other uses. With

the exception of wetlands on previously undeveloped portions of the site, no naturally occurring surface features or characteristics would deter redevelopment for any of the permitted uses. Shallow bedrock in the area may represent a limitation, but only for utility construction. Existing structures on the site and environmental contamination noted above represent primary liabilities to site redevelopment. Other liabilities are listed below:

- Large site with limited utility and infrastructure support
- Massive structure with limited potential for full single use occupancy.
- Limited potential to subdivide tenant spaces in the large structure as utility services are not available to large parts of the structural area and individual tenant access and security would be difficult if not impossible to develop.
- Site clearance to remove some or all building structure, slabs and foundations will be required before new structures and utilities can be placed on the site.
- Electrical power limited to the capacity of the current substation (138 KVA).

Site Assets. Site characteristics that make the site desirable from the perspective of potential users encourage redevelopment and may be promoted as assets. With regard to industrial uses on the former Chrysler Stamping Plant site, several desirable characteristics are present. The following provides a summary of the most significant site assets relative to industrial users.

- Large rectangular site.
- Strategically advantageous location in the Southeast Cleveland/Northern Summit County region.
  - Logistics supported by substantial motor freight accessibility
  - Frontage on a State Route (S.R. 82)
  - Located .25 miles from I-480
  - Located within 4 miles of I-77/I-271
  - Located within 5 miles of I-80 (Ohio Turnpike)
  - On-site rail
  - Adjacent Norfolk Southern rail yard
  - Within 17 miles of the Port of Cleveland (accessible by rail)
- Strategically advantageous location in the U.S. Market Place.
  - Within 500 miles of 60% of the population of the U.S. and Canada
- Highly visible site on an arterial streets
- More than one mile of road frontage
- Low cost wastewater treatment charges
- Low property tax rates
- Local incentive package available

Existing facilities relative to current market. As noted, the existing buildings on the site were constructed in 1957. While the facility has been well maintained, because of trends in manufacturing and warehousing much of the building area is impacted by functional obsolescence. This is particularly true of the “low bay” portions of the main manufacturing structure, where ceiling heights are limited to 18 feet below the truss.



Contemporary manufacturing and warehousing operations tend to utilize buildings with ceilings heights of forty feet or more. These heights enable product and supply stacking, making interior building spaces more useable and providing lower costs of construction related to building volume.

High ceiling building portions are somewhat hampered by the remnants of prior use. Large presses used to form metal were set on deep foundations and a basement level scrape conveyor system transported metal trimmings from the slitters and presses along a basement level conveyor system to a bailer building located south of the main building. When presses were sold and subsequently removed, large gaps in the floor remain where the presses were previously. These gaps must be covered or filled to support subsequent manufacturing operations that might occur here. The basement conveyor system and the space it occupies have minimal re-use potential other than for the original purpose.

Regardless of the limitations associated with prior use, the high ceiling portions of the structure are unique for the general marketplace. Few large manufacturing buildings with comparable ceiling heights exist in Northeast Ohio. High ceilings and existing heavy crane capacity (up to 75 tons per crane with tandem crane capacity of 150 tons) make this portion of the building particularly appropriate for heavy machinery construction. Building characteristics combined with excellent rail service to the building make this property very marketable, although to a limited clientele.

## Challenges Unique to Twinsburg

The following represents a preliminary list of challenges impacting the City's ability to aggressively pursue economic development opportunities:

- Limited vacant developable land / small and infill parcels.
  - Largest vacant undeveloped industrial tract is 37 acres.
  - Largest vacant undeveloped commercial tract is 82 acres.
  - Largest vacant undeveloped residential tract is 82 acres.
- High costs associated with re-development of older properties.
  - Inflated property values of older commercial / industrial properties
  - Difficult / expensive land assembly costs required to support development
  - Higher costs associated with clearance and environmental compliance.
- Static growth in Northeast Ohio depressing demand for new development
- National economic downturn affecting national brands and industries
- Limited development financing and increased financing costs
- Increasing automation and worker output enabling higher production with fewer workers, hence less income tax revenue.
- Limited capital projects funding potential.
- Existing community development infrastructure needs compete with economic development infrastructure needs.
- High relative income tax rate.
- Pressure to maintaining competitive economic development stature.

## Challenges Unique to Summit County

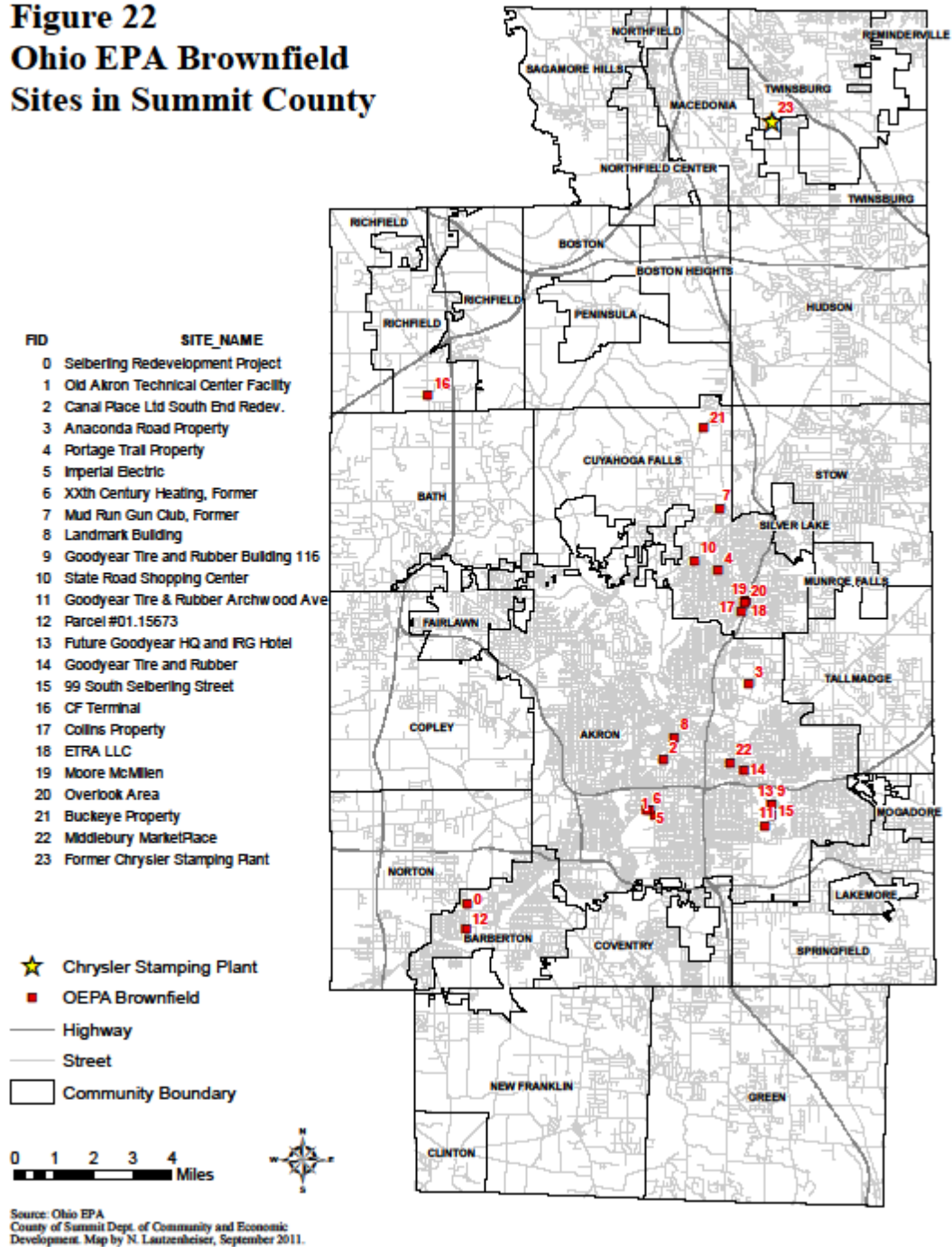
The following is a list of challenges Summit County as a whole faces when pursuing economic development opportunities:

- Limited capital for projects/development financing
  - Summit County forecasted \$31 million in property tax revenue for 2012; with a significant decrease in property value, this number is now closer to \$24 million. This is a significant hit to the County's general revenue fund and forced County officials to look at other ways to decrease the overall budget.
  - There is no general economic development funding available on the County level to assist in putting together competitive deals for potential businesses looking to invest. Therefore the County must rely on other entities to assist in formulating economic development deals.
- Existing infrastructure needs – limited capital for infrastructure projects
  - There is limited funding on the local level to address the vast infrastructure needs across the County. Funds must be leveraged from many different sources to fix the road, sewer, and bridge problems. The County must make priority lists and only work on a limited number of projects at a time.
- Site availability – limited areas of development
  - While Summit County still has a significant amount of developable land, the location of this developable land may not be conducive to businesses that lack the resources to put extra money into developing the property as most developable land is located in more rural areas.
  - Substantial industrial land area is burdened by existing obsolete buildings and environmental hazards. Figure 22 illustrates EPA Brownfield sites in the County.
- Staffing
  - The Summit County Department of Community and Economic Development has had significant turnover in staff in the past few years. With a hiring freeze in place County-wide, few options were available to replace staff that left the department. Because of this, current staff members have taken on more job responsibilities than in the past. This has caused somewhat of a strain on economic development activities as more staff has been dedicated to administering crucial federal grant funds than actively pursuing economic development projects during this difficult economic climate.
- Declining property values
  - It was recently reported that Summit County property values dropped an average of 7.9% from 2010 to 2011. This is the largest decline in the County's history. Because of the decline in property values, some taxes will decrease

and less revenue will be coming into the County. Declining property values can also have a negative effect on the overall image of a community, and may deter some people or companies from moving into the area.

- Increase in TANF, OWF, and WIA clients – increased demand on limited resources
  - As the economy declined and the unemployment rate increased, Summit County saw a significant increase in the number of people looking for social service assistance such as food stamps or home energy assistance and weatherization needs. This has put a strain on the limited funding available to those most in need.
- State reorganization of economic development
  - With the election of Governor John Kasich in 2010, much has changed in the State Department of Development. The Governor has moved job creation and economic development activities to the newly created entity “JobsOhio”. This, understandably, has caused some confusion and frustration in economic development professionals across the State as they try to make deals with companies using State grants and funding streams. While JobsOhio begins to take shape and grow, it has caused some strain on those officials at the local level.
- No organized land bank system
  - Currently the County does not operate an organized land bank system.

**Figure 22**  
**Ohio EPA Brownfield**  
**Sites in Summit County**



## Challenges to the NEFCO Region

This recovery strategy concentrates on the City of Twinsburg and Summit County, Ohio as they are most directly impacted by the Chrysler closure. However, efforts have been made to look beyond Summit County to those adjacent counties from which many of the Chrysler employees commuted (see Figure 3).

The Northeast Ohio Four County Regional Planning and Development Organization is the EDA designated Economic Development District agency for Portage, Stark and Summit County. NEFCO also serves the principal city of Wayne County, Wooster. Because the focus of the recovery strategy is on the area most affected by the plant closure, and because NEFCO is responsible for managing the Economic Development Strategy and priorities in the region which includes Summit County where improvements will likely be recommended, an assessment of challenges and opportunities in their region is important to this effort. The following challenges and opportunities are drawn from NEFCO's CEDS Annual Performance report for the counties and cities in their region: the Cities of Akron, Canton, Kent, and Wooster; and Portage, Stark, and Summit Counties. While Wayne County is no longer a member of NEFCO, its principal city, Wooster, actively participates in the organization and is a NEFCO member.

(Portions adapted from NEFCO's *Comprehensive Economic Development Strategy, Annual Performance Report, 2011*).

- **A negative view of community** -- A three-year study by Gallup and the Knight Foundation revealed many negative views voiced by residents in Portage and Summit Counties: 48 percent have no attachment to the community; a poor opinion of local leadership, the economy; 51 percent would not recommend the community as a good place to live; 13 percent have a positive outlook of the community for the next five years; people who have lived in the Akron area for less than three years were more attached to the community than longtime residents.
- **Jobs lag in high-tech industries** -- Northeast Ohio jobs in high-tech industries rose in 2008 but lagged the rest of Ohio, the Midwest and the country.
- **A lack of skilled workers** -- Despite high unemployment, some employers still find it difficult to fill manufacturing jobs due to the lack of skilled workers.
- **Foreign manufacturing competition for local industries** -- Of the fastest-growing categories of foreign-manufactured goods noted by the U.S. Business and Industry Council, many are those considered key industries in the region: motor vehicles and parts, fabricated metal products, chemicals, primary metal manufacturing, machinery, and plastics and rubber products (including tires).
- **Declining populations and loss of political representation** -- With Ohio's loss of two U.S. House members due to its declining population as documented by Census 2010, Northeast Ohio could also lose representation through redistricting. The loss of federal dollars due to the lower population is a real threat to the region. New Census 2010 data revealed that although two of NEFCO's four counties have grown since 2000, their population gains are relatively small. Since

2000, Wayne and Portage Counties increased in population by 2.6 and 6.2 percent, respectively. These gains are not insignificant, but as these gains come in NEFCO's two lesser-populated counties, they do not offset the population losses from Stark and Summit Counties

- **Restructuring state economic development functions** -- Replacement of the State of Ohio's Department of Development by the JobsOhio non-profit corporation has led to delays and uncertainty in state-supported economic development.

## Opportunities Unique to Twinsburg

While Twinsburg faces its own unique challenges as well as those characteristic of the current economy and regional industrial character, there are also many favorable characteristics that may be promoted to enhance the City's recovery efforts. Among those unique to the City are the following:

- Community image – Twinsburg has transitioned from a very rural crossroads to one of the region's largest employment centers. The City has been recognized regionally and nationally as a quality of life community. Recently ranked by Money Magazine as one of the top 100 places to live in the U.S., the City is perennially ranked as one of the Cleveland region's most desirable suburbs. Further, the annual Twins Days Festival provides international exposure and branding for the City.
- Community quality of life – A number of unique characteristics contribute to a superior quality of life afforded to Twinsburg residents. They include, but are not limited to, the following:
  - Substantial open space / parks / trails
  - Library rated No. 1 in the country for its size category
  - School system rated "Excellent with Distinction" (the highest ranking available)
  - Robust community services
  - Easy access to metro area cultural amenities.
- Vacant developable land – While the amount of vacant developable land is limited in the City, there remains vacant land or under-developed land in key locations. Under-developed property in the vicinity of the Square provides the opportunity to encourage more dense mixed use residential/commercial development. A number of modest sized industrially zoned tracts are available. A single large 82-acre tract of land is available for commercial development in the vicinity of the I-480 / E. Aurora Road interchange. This entire tract is not developable however due to natural and environmentally sensitive site characteristics. Finally, the former Chrysler site represents the opportunity for redevelopment of 167 acres for contemporary office/industrial park use.
- Favorable location and logistical characteristics. Several favorable location characteristics have been previously mentioned.
- Low property tax rate. Because of the City's diverse and large industrial base, property tax rates are among the lowest in Summit County and Northeast Ohio. Low property tax rates enable properties to be developed and offered at competitive lease rates.
- Creative and cooperative government administration. Twinsburg has developed a reputation as a business friendly community. The current administration promotes area businesses and strives to provide basic support services necessary to help businesses operate in a supportive environment. Basic incentive programs are administered by the City in support of economic development. They include an Enterprise Zone operated jointly with Summit County Department of



- Community and Economic Development, a locally administered Community Reinvestment Area Program, and a locally developed and administered Twinsburg Occupancy Program.
- Diverse industrial / commercial tax base including high growth potential clusters.
    - Education
    - Healthcare products and services
    - Professional businesses
    - Advanced machining
    - Business services
    - Electronic controls and electronic device manufacturing
  - Mytwinsburg.com website communication tool
  - Kent State University Twinsburg Learning Center with growing enrollment and program offerings.
    - College preparatory
    - Workforce development
    - Nursing / healthcare
    - Advanced degree programs
    - Entrepreneur-in-residence (entrepreneur support services)
  - An active Twinsburg Chamber of Commerce
    - Networking opportunities
    - Local business / community promotion
    - Training and entrepreneurship programs
  - Other assets supporting the City's economic development programs include the following:
    - Aggressive State of Ohio economic development strategies and incentives TeamNEO and Cleveland World Trade Center support.
      - Solicitation of new businesses
      - International trade assistance
    - Regional quality of life features.
    - Summit County and Greater Akron Chamber support.
      - Job retention
      - Economic development research

## **Opportunities Unique to Summit County**

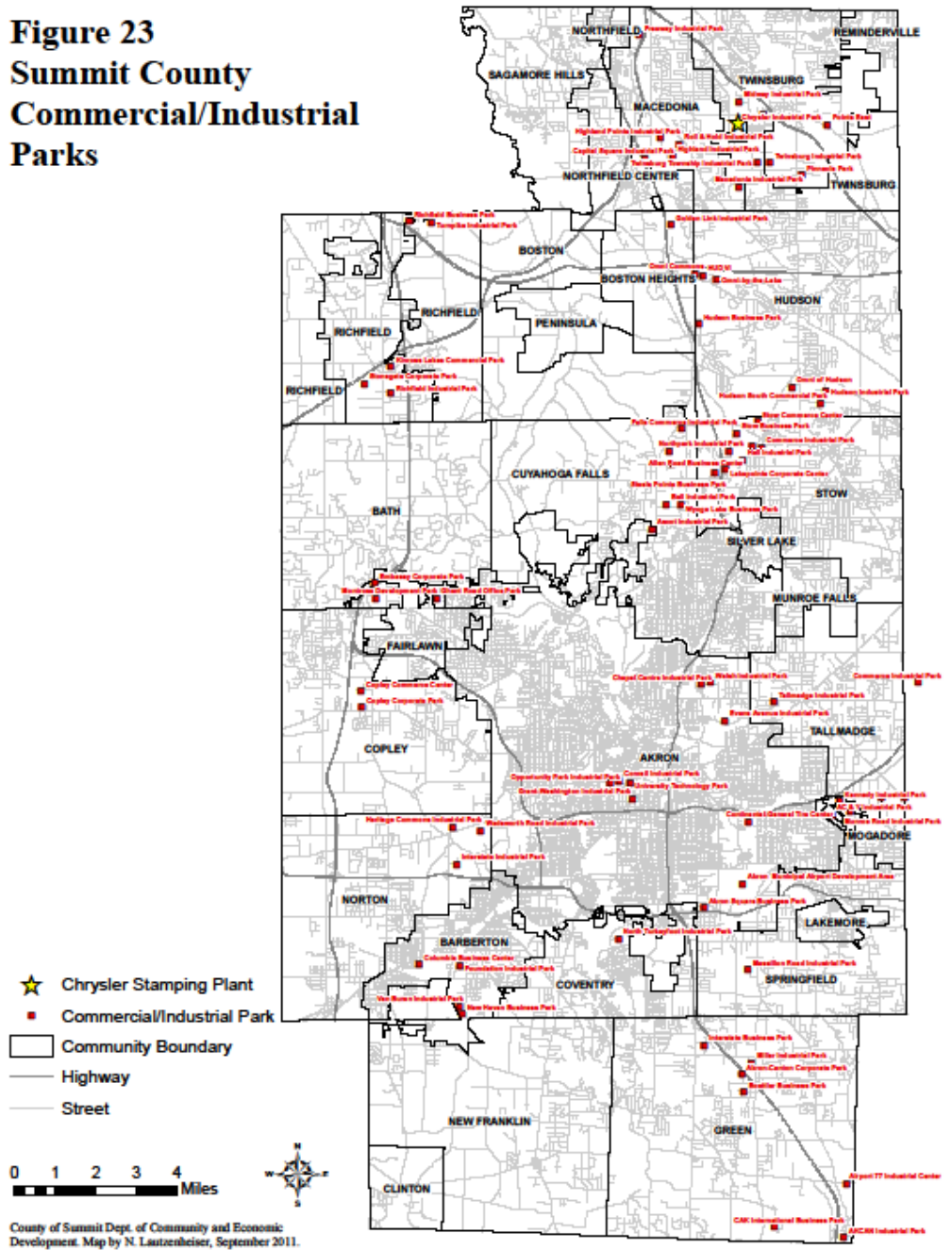
The largest city and county seat of Summit County is the City of Akron. Akron has been a leader in the promotion of economic development within the County. A number of recent project announcements will contribute significantly to the creation and preservation of technology and knowledge necessary to perpetuate and enhance the region's cluster and occupational strengths. The most significant of these recent projects is noted below:

- Goodyear Tire and Rubber Company will construct a \$150 million headquarters facility in Akron. This will retain the company within the City and provide employment for more than 2,000 employees.
- Involta LLC will construct a \$20 million LEED certified data center. This top 500 fastest growing company will offer national critical business support infrastructure and increased network connectivity while creating more than 50 high-tech job opportunities.
- Rochling Automotive, a German-based injection molded parts factory will employ more than 120 skilled workers.
- Bridgestone/Firestone Research Center will expand in Akron
- University of Akron and the Austen BioInnovation Institute in Akron has been recognized for their creation of the Economic Development Administration-funded Innovation Solutions for Invention Xceleration (ISIX) project that will bring together scientists, physicians, engineers, researchers and entrepreneurs in the biomedical and polymer science industries to speed up new product commercialization.

Summit County as a whole offers several opportunities supporting economic development. Among the opportunities presented by this fiscally sound County government are the following:

- In July 2011, Summit County's credit rating from Fitch Ratings was raised from negative to stable, and the rating was given an AA+. Fitch stated that the County "continues to benefit from a resourceful economic base, with growing finance, information, business services, health and education sectors representing a diversification from the region's traditional base.
- Improved industrial land with supporting utilities and infrastructure in contemporary commercial and industrial parks. Commercial and industrial parks are distributed widely throughout the County as illustrated on Figure 23.
- Economic development and planning staff in-house. While the County's economic development staff is not large, there are dedicated staff people working daily on various economic development projects. The County also has dedicated planning and mapping staff that are able to work on various projects.

**Figure 23  
Summit County  
Commercial/Industrial  
Parks**

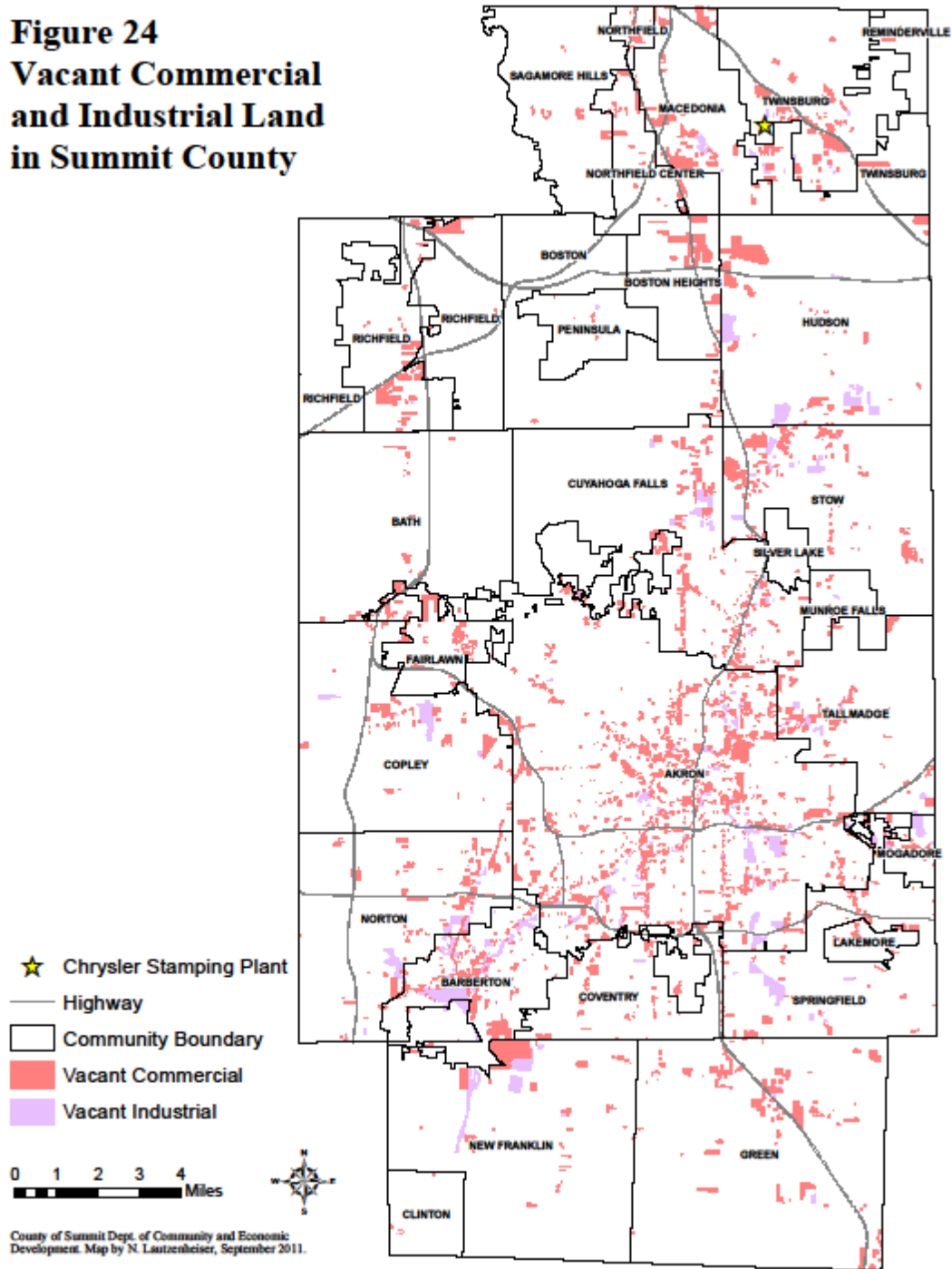


- Vacant developable land: There is a significant amount of vacant land available through the County. Figure 24 illustrates locations of vacant commercial and industrial property. Vacant land area total in the County are as follows:
  - Vacant Agricultural: 10,161 acres
  - Vacant Commercial: 2,306 acres
  - Vacant Industrial: 7,266 acres
  - Vacant Residential: 23,405 acres
- Favorable location and logistical characteristics
  - Summit County is strategically located within a 500-mile radius of 42 major U.S. cities that encompasses 55% of U.S. manufacturing plants, 57% of the total U.S. population and 60% of its buying power. The excellent interstate highway system and over 150 trucking firms afford single-day delivery to approximately 11 million people and 60% of America’s buying income. Two airports (Akron Fulton International Airport and Akron-Canton Regional Airport) offer private, single and heavy multi-engine aircraft, as well as complete commercial passenger/freight service.
- Many economic development partners
  - Greater Akron Chamber
  - Twelve other local chambers
  - Economic Development Task Force
  - Team NEO
  - Various ED professionals in other communities
  - NEOTECH
  - NorTech
  - Northeast Ohio Four County Regional Planning and Development Organization
- Substantial post-secondary educational support network with strong technology, research and innovation partnerships (see Figure 25). Among those are the following:
  - **Kent State University**, located in Portage County, is home to the Liquid Crystal Institute (LCI). The LCI is a research and development center that is devoted to liquid crystal technology. The first of its kind, the center is preparing graduate and undergraduate students for careers in the liquid crystal display field. Kent Displays, a corporate partner of LCI, developed the Boogie Board LCD Writing Tablet. This paperless tablet allows the user to take notes, draw sketches, and overall replace the use of a dry erase board and other writing surfaces.
  - **The Ohio State Agricultural Technical Institute (ATI)**, located near Wooster in Wayne County, offers continuing education and workforce

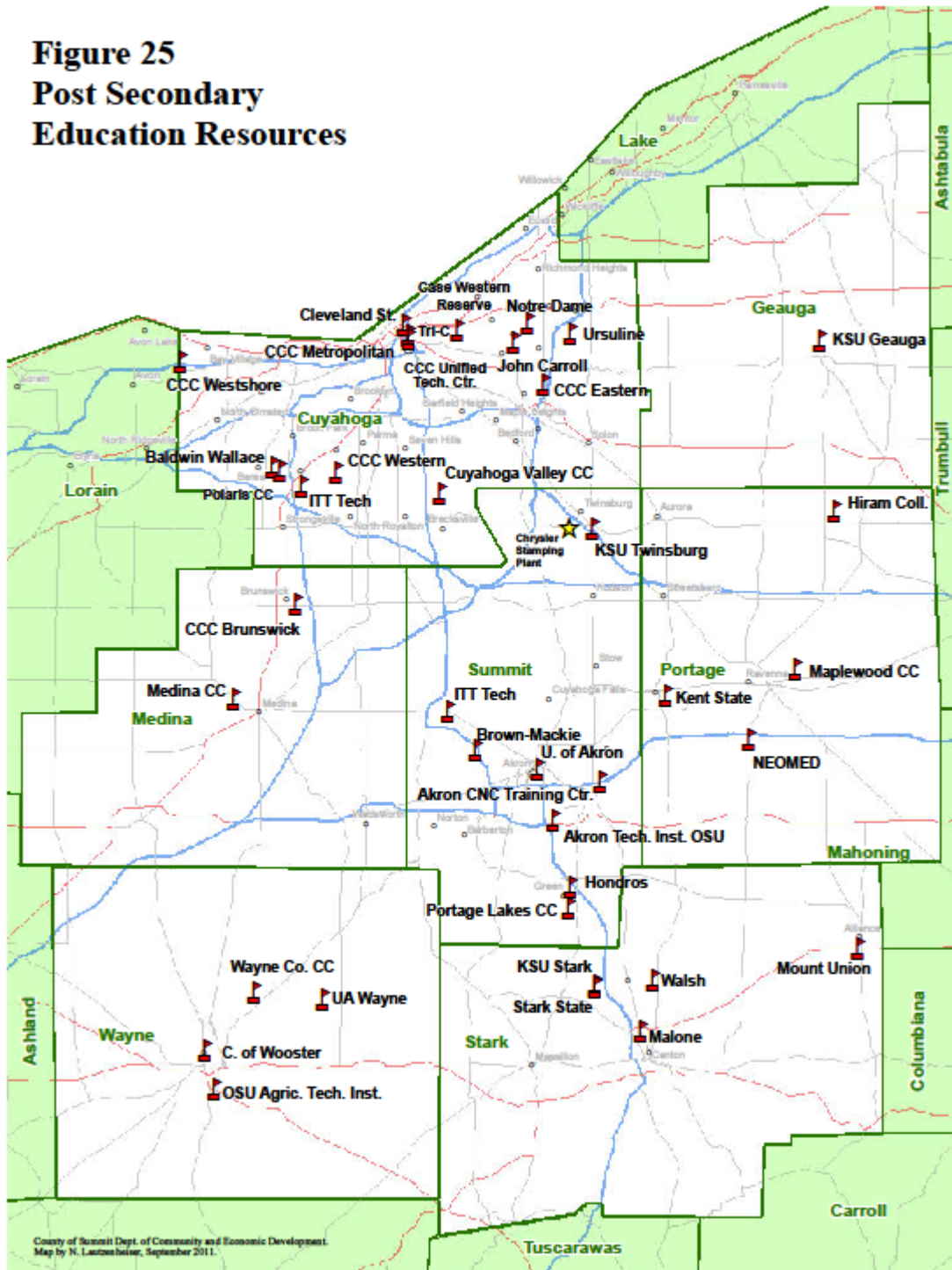
training in the various manufacturing fields. One unique venture of the ATI is the “Food Process Training Consortium”, made up of local companies Frito-Lay, Gerber’s Poultry, JM Smucker Company, Sandridge Food Corporation, and Smith Dairy. The consortium pulls their employees together to attend training at the ATI in order to have a large enough group for a training program and not pull too many of their employees off the job at one time. Training at the Agricultural Technical Institute also includes hydraulics, pneumatics, industrial electricity programmable logic controllers (PLCs), industrial motors and motor controls, welding, and troubleshooting. The ATI also administers national certification testing from the Professional Landcare Network (PLANET) for professional landscapers to become Landscape Industry Certified Technicians.

- The **Stark State College of Technology**, located in Canton in Stark County, is home to the Fuel Cell Prototyping Center. Stark State has become a leader in fuel cell education, and \$18.2 million in grants have been used in the past five years to develop fuel curricula, support industry research and development, and prepare technicians for this emerging field. The Fuel Cell Prototyping Center is the North American headquarters of Rolls-Royce Fuel Cell Systems (US) Inc. Stark State now offers a fuel cell technology option, one-year technical certificate, certificate of competency and scholarship as part of the mechanical engineering technology program. This option combines mechanical, chemical, and electrical technologies in order to provide an education for the application of scientific and engineering principles focused on alternative energy as well as fuel cell technology.
- The **University of Akron Institute of Polymer Science**, located in Summit County, is recognized as being among the world’s best polymer science and engineering programs. It is the largest and broadest program in the U.S., and faculty members in the program have generated over 160 active patents. The Akron Polymer Research Center houses classrooms, computer and processing laboratories for workforce training and non-credit course offerings.
- Outstanding biomedical and health care institutional foundation including research and teaching hospitals such as:
  - Akron Children’s Hospital
  - Summa Health System
  - Akron General Medical System
  - Cleveland Clinic Foundation Hospitals
  - University Hospitals Health Systems

**Figure 24**  
**Vacant Commercial**  
**and Industrial Land**  
**in Summit County**



**Figure 25  
Post Secondary  
Education Resources**



- Biomedical corridor
  - Summit County and the city of Akron have designated a “biomedical corridor” in downtown Akron that encourages businesses in the medical field to locate in this area and be surrounded by others in their field. This new zone will provide incentives to eligible companies locating to this area.
  - The Austen BioInnovation Institute in Akron (ABIA) is also a significant opportunity available in Summit County. The ABIA, located in downtown Akron, is considered the hub of medical innovation in Northeast Ohio and received one of the six national EDA i6 grants in 2010.

- Entrepreneurial Activity

Recent activity to support entrepreneurship has taken place in various parts of Summit County.

- Twinsburg has entered into an agreement with Kent State University to sponsor costs associated with hiring an “Entrepreneur in Residence” (EIR). This individual will work with Kent State faculty, staff and students to promote business start up and innovation. The EIR will have office hours at City Hall and will be a resource for students at Twinsburg High School, residents of the City, as well as for businesses seeking guidance on product development.
- Twinsburg Public Library Entrepreneurial Support. The Twinsburg Library has designated an Adult Public Services Manager as a resource for questions and information about entrepreneurship and business assistance. This individual will work closely with the Kent State / City of Twinsburg Entrepreneur in Residence, and with the Twinsburg Area Chamber to assist area residents, students and small businesses.
- The City of Hudson, located just south of Twinsburg, has a strong economic development department and great interest from their Economic Growth Board in developing and encouraging entrepreneurial talent. The recent creation of the 501(c)(3) organization TECHudson, which emerged from the Hudson Incubator Business Center, is an example of dedication to and need for programs that help to launch technology-based businesses with low-cost services and mentoring. The City of Hudson has committed up to \$374,000 to assist with this new organization. TECHudson also envisions the growth of an entrepreneurship research center and a youth entrepreneurship program to continue to strengthen its current efforts to grow entrepreneurship. A community program, which is free to the public, connects resources from major area universities, the Burton Morgan Foundation, and other business organizations (such as EDA-funded JumpStart, Inc.) with business-owners and entrepreneurs.



- The EDA-funded, highly successful Akron Global Business Accelerator also pools office resources and provides assistance to innovative businesses. With several years in operation, the AGBA draws on an experienced staff and provides business services from the University of Akron, the City of Akron, and Small Business Administration to its tenants.
- Metro Parks/Cuyahoga Valley National Park
  - The County enjoys a vibrant Metro Parks system, with over 10,000 acres of dedicated park space all over the County. These parks contain over 125 miles of trails for public use.
  - The Cuyahoga Valley National Park is also partly located in Summit County; visitors travel from across the country to see this federally protected national park. The park covers over 33,000 acres between Cleveland and Akron.
- Library system
  - The Akron/Summit County Public Library system has been rated three times as a “Five Star Library” by the LJ Index of Public Library Service, a national rating of public libraries in the *Library Journal*, with approximately 950,000 annual visitors.
  - Twinsburg’s Public Library is an independent library which has established itself as an exemplary facility. It has been repeatedly ranked the Nation’s top ranked library of its size by independent library rating services.
- Charter form of government.
  - Summit County was the first of Ohio’s 88 counties to adopt a charter form of government; Cuyahoga County became the second County in 2010. This form of government, run by an elected County Executive and an 11-member County Council, is arguably more responsive and transparent than the traditional commissioner form of government. It also allows one person – the County Executive – to go out and represent the County and present one unified voice when dealing with businesses.
- Enterprise Zones/CRA’s
  - Summit County has seven enterprise zones. Businesses looking to expand or build in these zones can take advantage of real property tax abatements by entering into an enterprise zone agreement with the County and applicable community. Local governments across the County also administer their own Community Reinvestment Areas (CRA). The County administers the CRA in Twinsburg Township.

- Alternative Energy Zone
  - Summit County Council recently passed legislation declaring Summit County an Alternative Energy Zone, the first of its kind in Northeast Ohio. This new designation allows businesses with qualified alternative energy projects to make payments in lieu of taxes (PILOT) payments instead of paying public utility tangible personal property or real property taxes in return for investing in Summit County.
- Population
  - While the County as a whole decreased in population over the last decade, there were many areas in the County that gained population. The County as a whole is the 4<sup>th</sup> most populous in Ohio.
- Strong government collaboration: Summit County engages in strong collaboration with local governments. This can be seen many ways:
  - The County has one combined General Health District, eliminating duplication of services across the County. There were previously three separate health districts (Akron Health Department; Barberton Health District; and Summit County Health District.)
  - The County of Summit Division of Building Standards regulates the construction, demolition, and occupancy of buildings and structures within the Summit County jurisdiction, in order to protect the health, safety and welfare of our residents. Specifically, they review, approve, and issue all permits required by the State of Ohio, regarding the new construction, repair, alteration, or addition to all public and private buildings and structures, as well as annually register all construction contractors; including general building trades, electrical, mechanical, and plumbing. Summit County Building Standards provides this service for almost all Summit County communities; a few communities still operate their own Building Standards Department.
  - Nineteen Summit County communities signed the 2011 Job Preservation and Revenue Sharing agreement, aimed at preventing job poaching between neighboring communities and financially assisting communities who lose an employer to another signatory community. This agreement encourages communities to work together in an effort to help promote business and job growth in Summit County.
  - The Summit Business Partnership was launched in 2003. This Partnership is a systematic service delivery system for economic and community development molded after proven, successful private sector customer satisfaction programs. The objective is to satisfy, retain and grow those businesses that are already located in Summit County. Through the Summit Business Partnership, economic

development professionals across Summit County are able to identify and assist those companies in need, and work to keep businesses successful in Summit County.

- Executive Pry launched the Summit Jobs Partnership in his 2011 State of the County address. This new initiative will allow private-sector employers to actively participate in and direct the development and implementation of publically funded educational and training programs.

## Opportunities for the NEFCO Region

While the Region faces its share of challenges, it also possesses substantial assets and resources to assist job creation. Among them are the following:

- **Increase in venture capital** -- Venture capital, an indication of the transition from manufacturing to a technology-based economy, has increased more than four-fold since 2009 in the Akron-Canton region.
- **Centers of innovation** -- The region was recognized by President Obama for its flexible liquid crystal displays industry and the activities of JumpStart and NorTech which are key players in economic development. Akron was named an “Ohio Hub of Innovation and Opportunity” focusing on biomaterials, orthopedics and wound healing by former Ohio Governor Ted Strickland.
- **A growing biomedical focus** -- The Austen BioInnovation Institute, a collaboration of six health/education/community organizations, continues to expand facilities and staff to reach its goal of creating 2,400 jobs within the next decade.
- **Strength of local communities** -- *Site Selection* magazine named Wayne County as the second best performing small economy in the U.S. Wayne County also led all micropolitan areas in the Midwest and State of Ohio in business expansion and attraction in 2009. In 2011, it again received the distinction of being the top micropolitan area in the Midwest and ranked fourth among all micropolitan areas in new and expanded facilities for 2010. Wayne County was named second best performing small economy in the U.S. and led all micropolitan areas in the Midwest and State of Ohio in business expansion and attraction in 2009. Additionally, the City of Twinsburg has been ranked repeatedly as one of the “Best 100 Places to Live” by Money Magazine. Twinsburg has received a ranking of 32<sup>nd</sup> among the Top 100.
- **Job growth in manufacturing** -- Manufacturing employment in Northeast Ohio (16 county region) increased by 8,000 jobs in mid-2010.
- **Continued presence of world headquarters** -- After years of delays in the construction of Goodyear’s global headquarters, construction is now underway.
- **Strong research capacity** -- Northeast Ohio has diverse research assets as it focuses on medicine, materials, aerospace, fuel cells and agriculture. In 2008, Northeast Ohio colleges and universities reported \$493 million in research expenditures and posted a 50 percent growth rate, outpacing the remainder of Ohio, the Midwest and the U.S. Centers of this research are: the University of Akron’s Institute of Polymer Science, Kent State University’s Liquid Crystal Institute, Austen BioInnovation in Akron, The Ohio State University’s Ohio Agricultural Research and Development Center, and Stark State College’s Fuel Cell Prototyping Center.
- **Unique facility to launch an airship** -- Akron, home of the Airdock, is one of the few places in the U.S. that can build and house a large airship. The High Altitude Long Endurance-Demonstrator prototype was launched in the summer of 2011.
- **Strategic location** -- The proximity of the NEFCO region to Cleveland,

Youngstown and Pittsburgh makes it an integral part of the larger region that would link the strengths, economies and resources of Northeast Ohio-Western Pennsylvania.

- **Promise for alternate energy** -- Stark State College of Technology will develop an \$11.8 million center for wind power.
- **Hi-tech industry growth** -- From 2007-2008, employment in Northeast Ohio's high-tech industries grew by 1.8 percent or 3,025 jobs, despite the decline in employment in non high-tech industries. Northeast Ohio's high-tech employment growth surpassed the remainder of Ohio and the Midwest.
- **Ag-bio research and applications** -- Recent developments at the Ohio Agricultural Research and Development Center include the construction of the \$22 million Plant and Animal Research Center, and a new designation of the BioHio Research Park as an affiliate of The Ohio State University will enable commercial applications of research by scientists at the OARDC. A research arm of the OARDC, the Ohio BioProducts Innovation Center, has recently submitted an application to the EDA to become a University Center. Its functions would be to promote the commercialization of bioplastics research in an area known for its plastics and polymer successes.
- **JobsOhio commitment to quick response** – This new state agency created with the primary goal of job creation has stated that its goal is to streamline the state's economic development functions and to be able to act quickly to win deals and businesses.

## **Peer Comments**

### **Economic Development Practitioners Meeting**

On Wednesday, September 28, 2011, a summary of findings and recommendations was presented to a group of economic development professionals. Bi-monthly meetings conducted by this Summit County group have been providing opportunities for discussion and collaboration on various topics. The September meeting provided the opportunity to present findings and recommendations developed during the preparation of this Recovery Action Plan. A preliminary Recovery Plan draft was distributed to all potential participants prior to the meeting. Participants were asked to scan the report and ask any questions or state any suggestions at the meeting. A summary of economic base, industrial and occupational cluster information, and recommendations was also distributed at the meeting.

It was noted that clusters identified in the current report generally reinforced clusters identified in an earlier study of the 17-county Northeast Ohio region. Attendees were particularly interested in trends reflected by changing location quotients in occupational clusters, particularly declining location quotients for skilled production; health care, health science technicians; and engineering and related occupations. These are occupations that the area has historically thought of as strengths. Declining numbers of workers may be indicative of declining strength in the industries related to these occupations.

Participants also expressed concerns about the ability of companies to obtain skilled workers. Several participants have received complaints from companies experiencing difficulty in filling positions with reliable, motivated workers with the skills needed to operate more technical industrial equipment like CNC machines.

Some concerns were expressed in the manner in which training funds are focused, and on the need to re-direct training to skills in need by industry and at levels relating to the volume of jobs available in the marketplace. For example, training 200 persons as truck drivers when the market has only a need for 100 truck-drivers wastes funds and may be wasting the time of those receiving training as it will be likely that no job will be available even after accomplishing successful training.

### **Industrial Real Estate and Developer Forum**

On September 12, 2011, a forum, consisting of seven area professional industrial real estate and development experts and the co-applicants, was conducted at the Akron Public Library. A brief overview of the purpose of the Chrysler Closure Recovery Action Plan was provided. Attendees were requested to comment on the status of industrial real estate in the study area. They were specifically requested to comment on the nature of any prevalent obsolescence issues that limit the use of existing properties,

whether or not existing available developed properties are in line with current market needs, and what can be done to improve job ready status and encourage occupancy.

The experts indicated that current market conditions have depressed speculative construction and substantial vacant inventory exists in the marketplace that must be absorbed before additional product is demanded, unless a user has specific requirements for a property. The large inventory of available properties is depressing lease rates and making leases substantially favorable to new construction. While there is a good supply of vacant appropriately zoned land, parcels that are truly shovel ready are limited. Factors such as existing wetlands, lack of adequate utility services, lack of rail service, and a lack of adequate power can all discourage site use. Wetland permitting is particularly arduous, taking six months or more to get a determination. Many deals have been lost solely as a result of the time it takes to get a wetland fill or mitigation permit.

It was suggested that existing industrial properties be inventoried and an assessment made as to the reasonableness of their industrial use considering their location, surrounding uses, site and building characteristics. It was noted that older multi-story industrial properties will never likely find an industrial purpose and should be considered for adaptive re-use or demolition.

Realtors expressed a need for a comprehensive and up-to-date source of information about available properties and expressed the need for a source of macro data supporting their marketing efforts. Data such as demographic characteristics, wage and income data, and education and workforce characteristics should be readily available to them upon request.

It was suggested that consideration should be given to development of incentives specifically for small businesses as they seem to be the current job creators. Other suggestions for incentive and assistance included financial assistance to retrofit older buildings with sprinkler systems now required by building codes, for assistance related to roof-raising, and for energy efficiency and LEED certification.

Participants felt that the Route 8 corridor between Akron and Macedonia had the greatest potential for new development, particularly in consideration of the recent improvements to limited access highway status. This will focus new development at interchanges like Seasons Road, Highland Road and Route 303.

### **Regional Economic Development Agency Comments Related to Industrial Analysis**

In order to further refine the impacts of the Chrysler plant closure in the greater northeast Ohio region, interviews were held with economic development professionals with the counties and key cities in and surrounding Summit County. Participants were asked to view the results of the seven-county shift-share analysis and to give their impressions of trends identified in the analysis as well as those they have observed in their communities. Their observations are summarized by their character as either opportunities or challenges to the region. The following are observations considered to represent regional opportunities:

- Validation of Previous Studies– The results of our data analyses confirmed trends observed nearly 20 years ago. A 1994 study of Summit, Portage, Medina counties mentioned some of the same clusters as those sectors deemed strong in the Akron Metropolitan area. At that time, the currently strong biomedical cluster was

- emerging. An Akron official mentioned some possible growth in the metalworking and rubber sectors but most likely on a smaller scale than in the past and no longer involving sales to large automotive companies.
- Higher Education – Throughout the region, there is an abundance of colleges and other institutions of higher education, including a medical school. Stark County is also home to several competitive trade/vocational schools and programs.
  - Diversified Economy–In addition to the manufacturing and biomedical sectors, the region has a strong agricultural economy, which provides diversity. Dairy and Food production sectors in Wayne and Stark Counties, and a growing local food movement in three counties and their primary cities support the agricultural economies.
  - Possible Emerging Sectors -- Two sectors that were prominent and previously unknown were Seafood Packaging in Wayne and Medina Counties, and Vending Machine Operators in Summit and Cuyahoga Counties.
  - New Technology – Economic development officials confirmed that the shift-share results supported current strengths in the region in the agbiosciences (Wayne County), biomedical innovation (Summit County), and liquid crystal research and applications (Portage County). EDA-funded investments in the BioHio Research Park and the Austen Bioinnovation Institute in Akron are such examples of community, local and federal support.
  - Other– Some advantages mentioned by economic development professionals included an abundance of water and other utilities and transportation infrastructure that provide the regional with easy access to major national markets.

The following are observations considered to represent regional challenges:

- Lack of sites in the region's cities -- Many of those interviewed mentioned the lack of industrial sites in urban areas (limiting a city's tax base) and a shortage of downtown space for business expansion. These were particularly acute in the Cities of Ravenna, Kent, Canton and Medina.
- Brownfields -- Although only noted in one interview, the presence of brownfields provides both an opportunity for a city (vacant land) and a liability when clean-up is a lengthy process. The City of Ravenna mentioned brownfields as a challenge to economic development.
- Government restructuring – One of the counties, Cuyahoga, has been experiencing a rebuilding process, as voters approved the office of a county executive. According to one government official in Cuyahoga County, prior to the current administration, there was no central office for economic development.
- Need for communication between public and private sectors – Geauga County noted the breakdown in communications between companies and county officials. This occurred as companies changed ownership and past contacts moved on. This lack of communication makes it more difficult to plan for a county's economic future when, as is the case for Geauga County, one employer is still prominent but has begun to downsize.



- Declining primary industries – The region continues to lose jobs in the manufacturing sector as production moves out of state or to another country. Stark County has seen the loss of a primary sector, Household Appliances, while Geauga County has lost jobs in the Wood Products and Metalworking sectors. Medina County has also seen an erosion of employment in Motor Vehicle Parts.
- Quality of Workers – In nearly every community, economic development planners pointed out the shortage of workers with a strong work ethic and who could pass a drug test. Expanding job training programs and promoting connections between schools and workplaces may help to produce quality workers for the jobs in the region.
- Regulations -- Government regulations that hinder business development was mentioned as a challenge to economic development.

## PART 5 – RECOVERY PLAN

### Plan Goals and Objectives

Recovery Action Plan Goals communicate the desired result toward which economic development efforts will be crafted. Goals are supported by actions designed to produce the end result. While many more actions are necessary to implement a goal, objective statements provide the primary actions for which other efforts will be undertaken. The following are goal statements and supporting objectives considered necessary to achieve and sustain a vibrant economy in Twinsburg, Summit County and the region. Goals for each of the participating institutions are provided in bold type followed by supporting objectives in a subordinate position in regular type face.

#### Twinsburg focused goals:

- **Re-purpose the former Twinsburg Chrysler Stamping Plant property for contemporary industrial development.**

This goal is supported by the following targeted objectives:

- Eliminate structural impediments to site redevelopment by addressing the following issues:
  - demolition of low value, low ceiling height portions of the 2.2 million s.f. industrial building.
  - Backfill 200,000 SF 20-foot deep basement under High Bay.
  - Investigate mitigation of 2.97 acres of wetlands onsite.
  - Demolish 3,000,000 SF of onsite impervious (i.e. concrete and asphalt) pavements.
  - Establish storm retention and outflow on the south 80 acres which will require a storm basin pump in the magnitude of \$275,000.
  - Re-develop existing and new storm sewer, water and sanitary sewer lines across the property.
  - Decommission the 60 year old privately owned electrical substation onsite.
  - Upgrade the First Energy (Ohio Edison) main transmission lines into the property to support a full redevelopment of the property.
  - Make application for Clean Ohio Assessment and Remediation Funding for determination of environmental issues and their remediation at the former Chrysler site.
  - Make application to the Ohio Department of Development Jobs Ready Sites Program for funding to assist with site infrastructure development at the former Chrysler Stamping Plant site.

- Encourage occupancy of the high-bay, crane and rail served portions (800,000 s.f.) of the industrial building for heavy manufacturing businesses. Target machinery manufacturing, commercial and industrial machinery maintenance and repair, motor vehicle parts manufacturers, fabricated metal product manufacturers, boiler, tank and shipping container manufacturing, as these entities reflect high index scores and require high ceilings and crane equipped facilities.
- Targeted entities for potential occupancy of newly cleared industrial park area should include manufacturers that exhibit high index scores in Part 3 of this report and entities which might further enhance the regions strongest clusters (Advanced Materials, Biomedical/Life Sciences, Chemicals and Chemical Manufacturing, Glass and Ceramics, Manufacturing, and Printing/Publishing).
- **Fill gaps in the infrastructure network that limit the City's ability to support other site development and job growth**
  - Construct roadway and utility extensions necessary to enable industrial/office park development of the former Olivet Institute Baptist Church property and adjacent vacant properties east of Darrow Road between E. Enterprise Parkway and Old Mill Road.
  - Provide broadband infrastructure to support industrial, office and commercial development throughout the City.
- **Encourage investment in, and occupancy of, aging industrial buildings**
  - Investigate and, if possible, implement financial incentives to encourage older industrial building retrofits like roof raising, sprinkler system addition, energy efficiency improvements, etc. that would extend their useful life, encourage occupancy and job creation, and add value to the property.
- **Establish a comprehensive and coordinated promotion and marketing process focused on attracting businesses to the former Chrysler site.**
  - Support efforts of the real estate community by documenting favorable site and regional characteristics that would encourage occupancy by targeted industrial sectors.
  - Utilize social media technologies to promote and communicate site availability, document supporting infrastructure, workforce characteristics and related incentive programs.
  - Establish a webpage on the City's website dedicated to the promotion of the former Twinsburg Stamping Plant site.
- **Establish a land acquisition and assembly program to support coordinated land development for industrial, commercial and residential development.**

- Sell un-needed City owned properties and channel proceeds into a land acquisition fund to be used to acquire strategically situated sites necessary to facilitate planned, architecturally coordinated projects.
- **Encourage more concentrated development in central Twinsburg to provide a heightened sense of place, improve community image, and create potential walkable downtown and live/work environment.**
  - Utilize a land acquisition and assembly program to acquire individual and separate ownership tracts to be assembled for coordinated redevelopment.
  - Investigate adaptive re-use potential of the Old School in central Twinsburg for museum, business incubator, or other uses.
  - Encourage development of efficient mixed use development of housing, specialized commercial services, retail and office uses in the central Twinsburg area and encourage convenient live/work opportunities, particularly in currently underdeveloped properties east of Darrow Road.
- **Establish a process for collaboration and involvement between area colleges, technical schools, secondary schools and the region’s employers to expose students to tech-based occupations and encourage them to train for technology careers.**
  - Using occupational cluster information provided in this report, identify possible measures and actions to stem the decline in location quotients for key technical occupations and skilled workers in order to sustain and grow the areas locational advantage in key industrial clusters.
  - Using Summit County’s Summit Jobs Partnership as a model, establish a network of area employers who would be willing to communicate job requirements and demonstrate the nature of workforce needs to high school and college students, and to communicate directly with educators on the issue of curriculum development.
  - Investigate current research and market trend data research going on at local businesses and universities and establish a method to communicate and share information for product development opportunities.
  - Utilize social media technologies to communicate targeted industrial sector issues or problems and to invite innovative recommendations and problem solutions.
- **Support innovation, invention, and entrepreneurship**
  - Establish a micro-loan, venture capital or other start-up funding mechanism focused on existing and emerging cluster strengths.
  - Investigate and document the several entrepreneurship support networks and services currently available through area colleges and universities, library systems, economic development groups and other institutions like the NASA Glenn Center and the Ohio Aerospace Institute.

- Investigate possible incentive programs to encourage and support small business start-up and growth.
- Add a directory of entrepreneurial resources to the City's website.

**Summit County focused goals:**

- **Support innovation, invention, and entrepreneurship by establishing a revolving loan fund focused on identified cluster strengths.**
  - Develop and utilize a revolving loan fund to provide microloan funding to encourage business retention and expansion in Summit County.
  
- **Create an inventory of existing industrial properties and classify them by their ability and suitability for contemporary industrial uses or adaptive re-use.**
  - Investigate methods to fund a county-wide assessment of industrial properties to identify their potential and suitability for industrial development, adaptive re-use, or clearance and redevelopment.
  - Coordinate with all Summit County municipalities to determine a method of keeping a county-wide property database up to date.
  
- **Establish a land-banking funding mechanism to enable acquisition and assembly of properties for development and job creation.**
  - Inventory properties with significant tax delinquencies, abandoned properties, neglected properties and properties burdened by obsolete structures and uses.
  - Identify possible sources of funding used by government entities to acquire problem properties.
  - Research best practices and work toward developing a plan to implement a land bank in Summit County.
  
- **Fully utilize the Summit Jobs Partnership to support a process for collaboration and involvement between area colleges, technical schools, secondary schools and the region's employers to develop an employer-based method for workforce development in Summit County and actively pursue policies that will focus training efforts on those industries that are emerging and strengthening in Summit County.**

- Develop a relationship with key players at applicable local educational centers in order to work toward a curriculum and training system that prepares the workforce for the new job climate.
- Encourage students to train for technology-driven careers and expose them to current tech-based occupations.
- Engage local business people to help develop training methodologies and a support system for those looking to begin high-tech careers.
- Focus workforce development efforts on those emerging careers that present the most opportunity for long-term employment.

## **Regional Goals**

- **Promote diversification of local and regional economies and encourage complementary economic development activities that serve to benefit the NEFCO region and Northeast Ohio.**
  - Increase the number of livable wage jobs.
  - Support technology and the development of entrepreneurial programs.
  - Support efforts to make the region more globally competitive.
  - Strengthen existing workforce development and educational programs that train individuals and instill values of commitment and a strong work ethic.
- **Encourage industries that have been identified as strong or emerging in the region**
  - Target manufacturing industries that contribute toward a strong and diverse economy.
  - Encourage collaboration between industrial sectors, occupations and skills directed at the development of innovative problem solutions to specific product development goals.
- **Provide for an efficient and sustainable use of land and natural resources**
  - Encourage the reuse of existing buildings and brownfield sites
  - Support projects that are consistent with a general plan
  - Support development that uses innovative plans to preserve greenspace and other natural features
- **Promote economic activities that represent collaborative efforts which are consistent with NEFCO's *Comprehensive Economic Development Strategy***
  - Assist in efforts that increase government efficiency through collaboration and cooperation.
- **Develop projects that represent a high return on investment**
  - Support economic development efforts that maximize local resources by creating the greatest benefit for resources invested.

## **Prioritized Action Steps**

A variety of actions are suggested by the Goals, Objectives and Recommendations previously narrated in this document. This section attempts to categorize required actions by anticipated duration of efforts (near-term, mid-term and long-term), and by critical importance to the recovery effort.

### **Twinsburg Near-Term High Priority Efforts**

1. Make application for Clean Ohio Assessment and Remediation Funding for determination of environmental issues and their remediation at the former Chrysler site.
2. Make application to the Ohio Department of Development Jobs Ready Sites Program for funding to assist with site infrastructure development at the former Chrysler Stamping Plant site.
3. Eliminate structural impediments to site redevelopment by demolition of low value, low ceiling height portions of the 2.2 million s.f. industrial building.
4. Provide necessary water, sanitary sewer, storm sewer, broadband, and energy infrastructure to the 120-acres of industrial land made available by the demolition of existing industrial structure on the former Chrysler site.
5. Support efforts of the real estate community by documenting favorable site and regional characteristics that would encourage occupancy by targeted industrial sectors.
6. Provide an incentive to encourage retrofits of older industrial buildings to encourage occupancy, job creation and added value.
7. Using Summit County's Summit Jobs Partnership as a model, establish a network of area employers who would be willing to communicate job requirements and demonstrate the nature of workforce needs to high school and college students, and to communicate directly with educators on the issue of curriculum development.
8. Investigate current research and market trend data research going on at local businesses and universities and establish a method to communicate and share information for product development opportunities.
9. Investigate and document the several entrepreneurship support networks and services currently available through area colleges and universities, library systems, economic development groups and other institutions like the NASA and the Ohio Aerospace Institute.
10. Sell un-needed City owned properties and channel proceeds into a land acquisition fund to be used to acquire strategically situated sites necessary to facilitate planned, architecturally coordinated projects.

11. Encourage occupancy of the high-bay, crane and rail served portions (800,000 s.f.) of the industrial building for heavy manufacturing businesses. Target machinery manufacturing, commercial and industrial machinery maintenance and repair, motor vehicle parts manufacturers, fabricated metal product manufacturers, boiler, tank and shipping container manufacturing, as these entities reflect high index scores and require high ceilings and crane equipped facilities.

### **Twinsburg Long-Term Priority Efforts**

1. Targeted entities for potential occupancy of newly cleared industrial park area should include manufacturers that exhibit high index scores in Part 3 of this report and entities which might further enhance the regions strongest clusters (Advanced Materials, Biomedical/Life Sciences, Chemicals and Chemical Manufacturing, Glass and Ceramics, Manufacturing, and Printing/Publishing).
2. Construct roadway and utility extensions necessary to enable industrial/office park development of the former Olivet Institute Baptist Church property and adjacent vacant properties east of Darrow Road between E. Enterprise Parkway and Old Mill Road.
3. Provide broadband infrastructure to support industrial, office and commercial development throughout the City.
4. Utilize social media technologies to communicate targeted industrial sector issues or problems and to invite innovative recommendations and problem solutions.
5. Add a directory of entrepreneurial resources to the City's website.
6. Investigate adaptive re-use potential of the Old School in central Twinsburg for museum, business incubator, or other uses.
7. Encourage development of efficient mixed use development of housing, specialized commercial services, retail and office uses in the central Twinsburg area and encourage convenient live/work opportunities, particularly in currently underdeveloped properties east of Darrow Road.
8. Establish a micro-loan, venture capital or other start-up funding mechanism focused on existing and emerging cluster strengths.

### **Summit County Near-Term High Priority Efforts**

1. Develop and utilize a revolving loan fund to provide microloan funding to encourage business retention and expansion in Summit County.
2. Develop a relationship with key players at applicable local educational centers in order to work toward a curriculum and training system that prepares the workforce for the new job climate.
3. Focus workforce development efforts on those emerging careers that present the most opportunity for long-term employment.
4. Encourage students to train for technology-driven careers and expose them to current tech-based occupations.



5. Coordinate with all Summit County municipalities to determine a method of keeping a county-wide property database up to date.
6. Engage local business people to help develop training methodologies and a support system for those looking to begin high-tech careers.

### **Summit County Long-Term Priority Efforts**

1. Inventory properties with significant tax delinquencies, abandoned properties, neglected properties and properties burdened by obsolete structures and uses.
2. Identify possible sources of funding used by government entities to acquire problem properties.
3. Investigate methods to fund a county-wide assessment of industrial properties to identify their potential and suitability for industrial development, adaptive re-use, or clearance and redevelopment
4. Research best practices and work toward developing a plan to implement a land bank in Summit County.

### **NEFCO Regional Priority Efforts**

NEFCO is governed by a Board that will consider the findings of this Recovery Plan, evaluate previously stated objectives and assess priorities for further efforts. Among NEFCO's responsibilities will be the evaluation and recommendation of specific projects for consideration for funding through Economic Development Administration assistance programs. In this role NEFCO reacts to specific project requests as submitted by member communities in their region. While NEFCO's primary goal is to support job creation, project priorities are determined annually based on potential project submissions, their ability to contribute to NEFCO's mission, and their eligibility under E.D.A.'s funding criteria.

## **Financial Assistance Considerations**

Implementation of plan recommendations will depend upon the ability to pay for their costs, whether they are soft costs like engineering and site assessment, or hard costs like roadway improvement, or railroad siding construction. This section provides a summary of the most probable sources of financial and technical assistance associated with each category of proposed public action:

### **Environmental Assessment / Remediation**

- Clean Ohio Assessment Fund
- Clean Ohio Remediation Fund
- U.S.EPA Brownfields Program

### **Infrastructure Improvements**

- Ohio Department of Development Jobs Ready Sites Program
- Tax Increment Financing
- Special assessment / business improvement district assessment
- Ohio Water Development Authority
- E.D.A. Public Works and Economic Development
- H.U.D. Community Development Block Grant Program

### **Workforce Development / Retention**

- Ohio Skills Bank
- Ohio Research Scholars Program
- Choose Ohio First Scholarship Program
- Workforce Investment Act (WIA)
- Trade and Globalization Adjustment Assistance Act
- E.D.A. Regional Innovation Clusters
- Department of Energy Workforce Development for Teachers and Scientists
- Department of Health and Human Services Health Research and Services Administration

### **Business Start-up / Entrepreneurship Guidance**

- Jumpstart
- Ohio Small Business Development Center
- NorTech
- U.S. Small Business Administration
- SCORE
- Department of Commerce International Trade Administration

- Ohio Aerospace Institute

### **R & D Opportunities**

- Department of Energy Advanced Research Projects
- Department of Energy Frontiers Research Centers
- Department of Energy Innovation Hubs
- Department of Energy Office of Science
- Department of Health and Human Services National Institute of Health
- Ohio Third Frontier Program

## **CEDS Eligible Plan Elements**

In order to qualify for financial assistance from the U.S. Department of Commerce, Economic Development Administration projects must meet eligibility requirements, be considered as consistent with the purpose of the agency and be evaluated for listing on the administering agency's Comprehensive Economic Development Strategy list of projects. The local administering agency for E.D.A. is NEFCO. NEFCO is a co-applicant and has actively participated in the preparation of this Recovery Action Plan. Based on NEFCO's knowledge of E.D.A. and the CEDS process, the following project elements are anticipated to be eligible for cost participation by E.D.A. While these elements are generally eligible, it is recognized that additional study or project detail may need to be provided before a specific financial assistance application is submitted for any proposed project element.

1. Filling gaps in the infrastructure network that limit the ability to support development and job growth.
  - a. Former Chrysler site
  - b. Olivet Institute Baptist Church site
  - c. Industrial sites throughout Summit County
2. Support innovation, invention and entrepreneurship
  - a. County revolving loan fund for innovation and entrepreneurship
  - b. Cluster targeted business incubator
  - c. Employer-based technical occupations development program involving area technical schools, universities and high schools to encourage and cultivate technical and skilled worker occupations to support targeted industrial cluster industries
3. Provide an incentive to encourage retrofits of older industrial buildings to encourage occupancy, job creation and added value.
4. Economic development planning
  - a. Inventory and assess re-use potential of existing vacant industrial sites throughout Summit County and recommend possible industrial rehabilitation and occupation, adaptive re-use purposes, or demolition based on surrounding land use compatibilities, zoning, rehabilitation costs and stakeholder interests.

# **APPENDICES**

**APPENDIX A**  
**Supply Chain Survey Form**

**APPENDIX B**  
**Summary of Shift/Share Index Scores by NAICS Classification**

**APPENDIX C**  
**Gain or Loss in National Share – 2005 to 2010**

**APPENDIX D**  
**Innovation Index**

**APPENDIX E**  
**Occupational Clusters**

**APPENDIX F**  
**Shift/share Data File**

# **APPENDIX A**

## **Supply Chain Survey Form**

**CHRYSLER TWINSBURG STAMPING PLANT  
CLOSURE IMPACT SURVEY**

Are you the right person to talk to about the impacts of automotive bankruptcy and how your company may have been impacted? If Yes, proceed with the interview.  
If No, ask for contact name, number and time for call

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The City of Twinsburg and the Summit County Department of Development have received a grant from the U.S. Dept. of Commerce Economic Development Administration to identify the regional impacts of the Twinsburg Chrysler Stamping Plant closure.

We would like to ask you some questions to help us identify if and how the Chrysler bankruptcy and Twinsburg Plant closing may have impacted your company. Your responses will remain confidential and your specific company information will not be released or published. Once impacts have been identified, we will work with public agencies and private enterprise to develop measures and policies to help the region recover from these losses.

1. Did the bankruptcy of Chrysler impact your business?  
Yes \_\_\_\_\_ No \_\_\_\_\_ (verify they did no work for Chrysler, thank, terminate interview)

b. If Yes:

How?

Did you provide parts (what parts) \_\_\_\_\_

We provided services (what services) \_\_\_\_\_

What is your estimate of \$ value and % of company revenue lost?

\$ value \_\_\_\_\_

% of revenue \_\_\_\_\_

Did the impact result in a reduction of employees or number of hours worked?

Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes:

Estimated number of jobs lost \_\_\_\_\_

Estimated reduction in hours worked \_\_\_\_\_

Estimated reduction in total payroll \_\_\_\_\_

Have you recovered from these losses?

Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes:

How and to what extent have you recovered?

What % of lost revenue? \_\_\_\_\_

Number of jobs called back? \_\_\_\_\_

Other? \_\_\_\_\_

What actions did you take to initiate this recovery?

Not much (just waited for production to return) \_\_\_\_\_

Diversified into other automotive products/clients \_\_\_\_\_

Diversified into other market segments \_\_\_\_\_

What product or market segment?

\_\_\_\_\_  
(military/defense, other manufacturing, etc.)

How many employees currently work at your site? \_\_\_\_\_

If No:

Do you anticipate that you will recover from these

losses in the near future? Yes \_\_\_\_\_ No \_\_\_\_\_

2. Was any of the impact described attributable directly to the closing of the  
Twinsburg Chrysler Stamping Plant? Yes \_\_\_\_\_ No \_\_\_\_\_

If No: go to 4.

If Yes:

What goods or services did you provide?

We provided parts including \_\_\_\_\_

We provided services \_\_\_\_\_

Other (note) \_\_\_\_\_

What is your estimate of \$ value and % of company revenue lost?

\$ value \_\_\_\_\_

% of revenue \_\_\_\_\_

Same as noted previously \_\_\_\_\_

Did the impact result in a reduction of employees or number of hours  
worked?

Yes \_\_\_\_\_ No \_\_\_\_\_ Same as noted previously \_\_\_\_\_ (go to 3)

If Yes:

Estimated number of jobs lost \_\_\_\_\_

Estimated reduction in hours worked \_\_\_\_\_

3. Have you recovered from these losses?



Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes:

How and to what extent have you recovered?

What % of lost revenue? \_\_\_\_\_

Number of jobs called back? \_\_\_\_\_

Other? \_\_\_\_\_

What actions did you take to initiate this recovery?

Not much...just waited for production to return \_\_\_\_\_

Diversified into other automotive products/clients \_\_\_\_\_

Diversified into other market segments \_\_\_\_\_  
(military/defense, other manufacturing, etc.)

Other \_\_\_\_\_

4. Are you aware of other companies that have been impacted by the Chrysler  
Twinsburg Stamping Plant closure? Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes:

Can you provide the name and contact person so we can survey them  
to identify how they have been impacted?

\_\_\_\_\_  
\_\_\_\_\_

5. Are you evaluating, or have you evaluated your company's product export  
potential? Yes \_\_\_\_\_ No \_\_\_\_\_

6. What kind of assistance would be most helpful to your business?

Job training / workforce development \_\_\_\_\_

R & D support \_\_\_\_\_

Equipment loans \_\_\_\_\_

Trade policy changes \_\_\_\_\_

Other (note) \_\_\_\_\_

Thank you for participating in this survey. We will summarize the survey results in  
a report to the U.S. Dept. of Commerce Economic Development Administration.

Would you like to receive a copy of this report? Yes \_\_\_\_\_ No \_\_\_\_\_

If Yes: To what address (or email address) would like it to be sent to:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Thank you and good day.

# **APPENDIX B**

**Summary of Shift/Share Index Scores  
By NAICS Classification**

**Index Score +5 (Figure 4)**

NAICS	CATEGORY	EMPLOYMENT	# of Companies		
3251	Industrial Gas Manufacturing	891	29		
	Inorganic Dye & Pigment Manufacturing				
	Synthetic Organic Dye & Pigment Manufacturin				
	Alkalies & Chlorine Manufacturing				
	All Other Basic Inorganic Chemical Manufacturing				
	Plastics Packaging Film & Sheet (Including Laminated) Manufacturing				
	Unlaminated Plastics Film & Sheet (Except Packaging) Manufacturing				
	Laminated Plastics Plate, Sheet (Except Packaging) & Shape Manufacturing				
	Polystyrene Foam Product Manufacturing				
	Urethane & Other Foam Product (Except Polystyrene) Manufacturing				
3261	Plastics Bottle Manufacturing	2737	70		
	Plastics Plumbing Fixture Manufacturing				
	Resilient Floor Covering Manufacturing				
	All Other Plastics Product Manufacturing				
	Polish & Other Sanitation Good Manufacturing				
	Surface Active Agent Manufacturing				
	Toilet Preparation Manufacturing				
	<b>TOTAL</b>			<b>3909</b>	<b>109</b>

**Index Score +4 (Figure 5)**

NAICS	CATEGORY	EMPLOYMENT	# of Companies
8113	Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	219	40
	<b>TOTAL</b>		

**Index Score +3 (Figure 6)**

NAICS	CATEGORY	EMPLOYMENT	# of Companies
	Plastics Material & Resin Manufacturing		
	Synthetic Rubber Manufacturing		
	Cellulosic Organic Fiber Manufacturing		
3252	Noncellulosic Organic Fiber Manufacturing	976	28
	Paint & Coating Manufacturing		
3255	Adhesive Manufacturing	840	11
	Custom Compounding Of Purchased Resins		
3259	All Other Miscellaneous Chemical Product & Preparation Manufacturing	304	17
	Tire Manufacturing (Except Retreading)		
	Tire Retreading		
	Rubber and Plastics Hoses and Belting Manufacturing		
	Rubber Product Manufacturing for Mechanical Use		
3262	All Other Rubber Product Manufacturing	4775	54
3115	NONE	0	0
	Power Boiler & Heat Exchanger Manufacturing		
3324	Metal Can Manufacturing	1840	2
3325	Hardware Manufacturing	123	7
	Industrial Valve Manufacturing		
	Fluid Power Valve & Hose Fitting Manufacturing		
	Other Metal Valve & Pipe Fitting Manufacturing		
	Ball & Roller Bearing Manufacturing		
	Fabricated Pipe & Pipe Fitting Manufacturing		
	Industrial Pattern Manufacturing		
3329	All Other Miscellaneous Fabricated Metal Product Manufacturing	464	32

	Gasoline Engine & Engine Parts Manufacturing	
	Other Motor Vehicle Electrical & Electronic Equipment Manufacturing	
	Motor Vehicle Steering & Suspension Components (Except Spring) Manufacturing	
	Motor Vehicle Transmission & Power Train Parts Manufacturing	
	Motor Vehicle Metal Stamping	
3363	All Other Motor Vehicle Parts Manufacturing	770
	Automobile & Other Motor Vehicle Merchant Wholesalers	
	Motor Vehicle Supplies & New Parts Merchant Wholesalers	
	Tire & Tube Merchant Wholesalers	
4231 (Other)	Motor Vehicle Parts (Used) Merchant Wholesalers	1575
4542 (Other)	Vending Machine Operators	187
	Ambulance Services	
6219 (Other)	All Other Miscellaneous Ambulatory Health Care Services	1268
6221 (Other)	General Medical & Surgical Hospitals	7219
	<b>TOTAL</b>	<b>20341</b>
		<b>503</b>

**Index Value -5 (Figure 7)**

<b>NAICS</b>	<b>CATEGORY</b>	<b>EMPLOYMENT</b>	<b># of Companies</b>
3212	NONE	0	0
	Cut Stock, Resawing Lumber & Planing		
	Other Millwork (Including Flooring )		
	Wood Container & Pallet Manufacturing		
	Manufactured Home (Mobile Home) Manufacturing		
	Prefabricated Wood Building Manufacturing		
3219	All Other Miscellaneous Wood Product Manufacturing	234	29
	Pulp Mills		
	Paper (Except Newsprint) Mills		
3221	Paperboard Mills	262	4
	Flat Glass Manufacturing		
	Other Pressed & Blown Glass & Glassware Manufacturing		
3272	Glass Product Manufacturing Made Of Purchased Glass	491	9
	Ready-Mix Concrete Manufacturing		
	Concrete Block and Brick Manufacturing		
	Concrete Pipe Manufacturing		
3273	Other Concrete Product Manufacturing	383	18
	Farm Machinery & Equipment Manufacturing		
	Lawn & Garden Tractor & Home Lawn & Garden Equipment Manufacturing		
	Construction Machinery Manufacturing		
	Mining Machinery & Equipment Manufacturing		
3331	Oil & Gas Field Machinery & Equipment Manufacturing	343	13
	Air Purification Equipment Manufacturing		
	Industrial & Commercial Fan & Blower Manufacturing		
	Heating Equipment (Except Electric & Warm Air Furnaces) Manufacturing		
	Air-Conditioning & Warm Air Heating Equipment & Commercial & Industrial		
3344	Refrigeration Equipment Manufacturing	218	11

	Electric Lamp Bulb & Part Manufacturing		
	Residential Electric Lighting Fixture Manufacturing		
3351	Commercial, Industrial & Institutional Electric Lighting Fixture Manufacturing	105	9
3352	Other Lighting Equipment Manufacturing		
	Electric Housewares & Household Fan Manufacturing	3	1
	Storage Battery Manufacturing		
	Current-Carrying Wiring Device Manufacturing		
	Noncurrent-Carrying Wiring Device Manufacturing		
	Carbon & Graphite Product Manufacturing		
3359	All Other Miscellaneous Electrical Equipment & Component Manufacturing	251	20
	Piece Goods, Notions & Other Dry Goods Merchant Wholesalers		
	Men's & Boys' Clothing & Furnishings Merchant Wholesalers		
	Women's, Children's & Infants Clothing & Accessories Merchant Wholesalers		
4243 (Other)	Footwear Merchant Wholesalers	204	30
	Petroleum & Petroleum Products Merchant Wholesalers (Except Bulk		
4247 (Other)	Stations & Terminals)	65	14
4821 (Other)	Line-Haul Railroads	16	4
	Used Household & Office Goods Moving		
	Specialized Freight (Except Used Goods) Trucking, Local		
4842 (Other)	Specialized Freight (Except Used Goods) Trucking, Long-Distance	180	35
4882 (Other)	Support Activities For Rail Transportation	84	11
<b>TOTAL</b>		<b>2839</b>	<b>208</b>

Index Value -4 (Figure 8)

NAICS	CATEGORY	EMPLOYMENT	# of Companies
3121	Soft Drink Manufacturing Ice Manufacturing Breweries Wineries	891	15
3141	Carpet & Rug Mills Curtain & Drapery Mills Other Household Textile Product Mills	40	12
3211	NONE		0
3274	Lime Manufacturing Gypsum Product Manufacturing Abrasive Product Manufacturing Cut Stone & Stone Product Manufacturing Mineral Wool Manufacturing	142	2
3279	All Other Miscellaneous Nonmetallic Mineral Product Manufacturing	72	11
3311	Iron & Steel Mills	442	16
3312	Rolled Steel Shape Manufacturing Steel Wire Drawing	841	6
3313	Secondary Smelting and Alloying of Aluminum Aluminum Extruded Product Manufacturing Other Aluminum Rolling & Drawing	200	6
3314	Primary Smelting & Refining Of Nonferrous Metal (Except Copper & Aluminum) Nonferrous Metal (Except Copper & Aluminum) Rolling, Drawing & Extruding	42	3
3333	Automatic Vending Machine Manufacturing Office Machinery Manufacturing Optical Instrument & Lens Manufacturing Photographic & Photocopying Equipment Manufacturing Other Commercial & Service Industry Machinery Manufacturing	738	15
3365	NONE	0	0
3379	Blind & Shade Manufacturing	16	3



4248 (Other)	Wine & Distilled Alcoholic Beverage Merchant Wholesalers	28	9
	Cosmetology & Barber Schools		
	Flight Training		
	Apprenticeship Training		
6115 (Other)	Other Technical & Trade Schools	308	21
	Child & Youth Services		
	Services For The Elderly & Persons With Disabilities		
6241 (Other)	Other Individual & Family Services	3799	199
<b>TOTAL</b>		<b>7559</b>	<b>318</b>

### Index Value -3 (Figure 9)

NAICS	CATEGORY	EMPLOYMENT	# of Companies
3119	Coffee & Tea Manufacturing		
	Mayonnaise, Dressing & Other Prepared Sauce Manufacturing		
	Spice & Extract Manufacturing		
	Perishable Prepared Food Manufacturing		
	All Other Miscellaneous Food Manufacturing	202	9
3132	Broadwoven Fabric Mills		
	Narrow Fabric Mills	88	10
3133	Broadwoven Fabric Finishing Mills		
	Fabric Coating Mills	140	3
	Men's & Boys' Cut & Sew Apparel Contractors		
	Women's & Girls' Cut & Sew Dress Manufacturing		
	Women's & Girls' Cut & Sew Other Outerwear Manufacturing		
	Fur & Leather Apparel Manufacturing		
3152	All Other Cut & Sew Apparel Manufacturing	34	7
	Petroleum Refineries		
	Asphalt Paving Mixture & Block Manufacturing		
	Asphalt Shingle and Coating Materials Manufacturing		
3241	Petroleum Lubricating Oil & Grease Manufacturing	173	10

3253	Fertilizer (Mixing Only) Manufacturing Pesticide and Other Agricultural Chemical Manufacturing Medicinal & Botanical Manufacturing	99	6
3254	Pharmaceutical Preparation Manufacturing Biological Product (Except Diagnostic) Manufacturing	57	11
3271	Vitreous China, Fine Earthenware & Other Pottery Product Manufacturing Ceramic Wall & Floor Tile Manufacturing 'Clay Refractory Manufacturing Nonclay Refractory Manufacturing	89	11
3334	Air Purification Equipment Manufacturing Industrial & Commercial Fan & Blower Manufacturing Heating Equipment (Except Electric & Warm Air Furnaces) Manufacturing Air-Conditioning & Warm Air Heating Equipment & Commercial & Industrial Refrigeration Equipment Manufacturing	218	11
3336	Turbine & Turbine Generator Set Units Manufacturing Speed Changer, Industrial High-Speed Drive & Gear Manufacturing Other Engine Equipment Manufacturing	164	9
3341	Electronic Computer Manufacturing Other Computer Peripheral Equipment Manufacturing	1871	15
3342	Telephone Apparatus Manufacturing Radio & Television Broadcasting & Wireless Communications Equipment Manufacturing	62	11
3343	Other Communications Equipment Manufacturing Audio & Video Equipment Manufacturing	202	5
3366	NONE	0	0
3371	Wood Kitchen Cabinet & Countertop Manufacturing Nonupholstered Wood Household Furniture Manufacturing Metal Household Furniture Manufacturing Institutional Furniture Manufacturing Wood Television, Radio & Sewing Machine Cabinet Manufacturing	503	21

4249 (Other)	Farm Supplies Merchant Wholesalers Book, Periodical & Newspaper Merchant Wholesalers Flower, Nursery Stock & Florists Splys Merchant Wholesalers Tobacco & Tobacco Product Merchant Wholesalers Paint, Varnish & Supplies Merchant Wholesalers Other Miscellaneous Nondurable Goods Merchant Wholesalers	986	126
4543 (Other)	Heating Oil Dealers Liquefied Petroleum Gas (Bottled Gas) Dealers Other Direct Selling Establishments	120	13
4811 (Other)	Scheduled Passenger Air Transportation Deep Sea Passenger Transportation	29	3
4831 (Other)	Coastal & Great Lakes Freight Transportation	27	2
4832 (Other)	NONE	0	0
4851 (Other)	Mixed Mode Transit Systems Taxi Service	344	4
4853 (Other)	Limousine Service	176	33
4854 (Other)	School & Employee Bus Transportation	152	4
4859 (Other)	All Other Transit & Ground Passenger Transportation Other Airport Operations	110	7
4881 (Other)	Other Support Activities For Air Transportation	120	9
4885 (Other)	Freight Transportation Arrangement	257	44
487 (Other)	Scenic & Sightseeing Transportation, Land	9	2
4922 (Other)	Local Messengers & Local Delivery	36	7
6112 (Other)	Junior Colleges	35	2
6113 (Other)	Colleges, Universities & Professional Schools Fine Arts Schools	5075	33
6116 (Other)	Sports & Recreation Instruction Language Schools Exam Preparation & Tutoring Automobile Driving Schools All Other Miscellaneous Schools & Instruction	945	142
<b>TOTAL</b>		<b>12323</b>	<b>570</b>

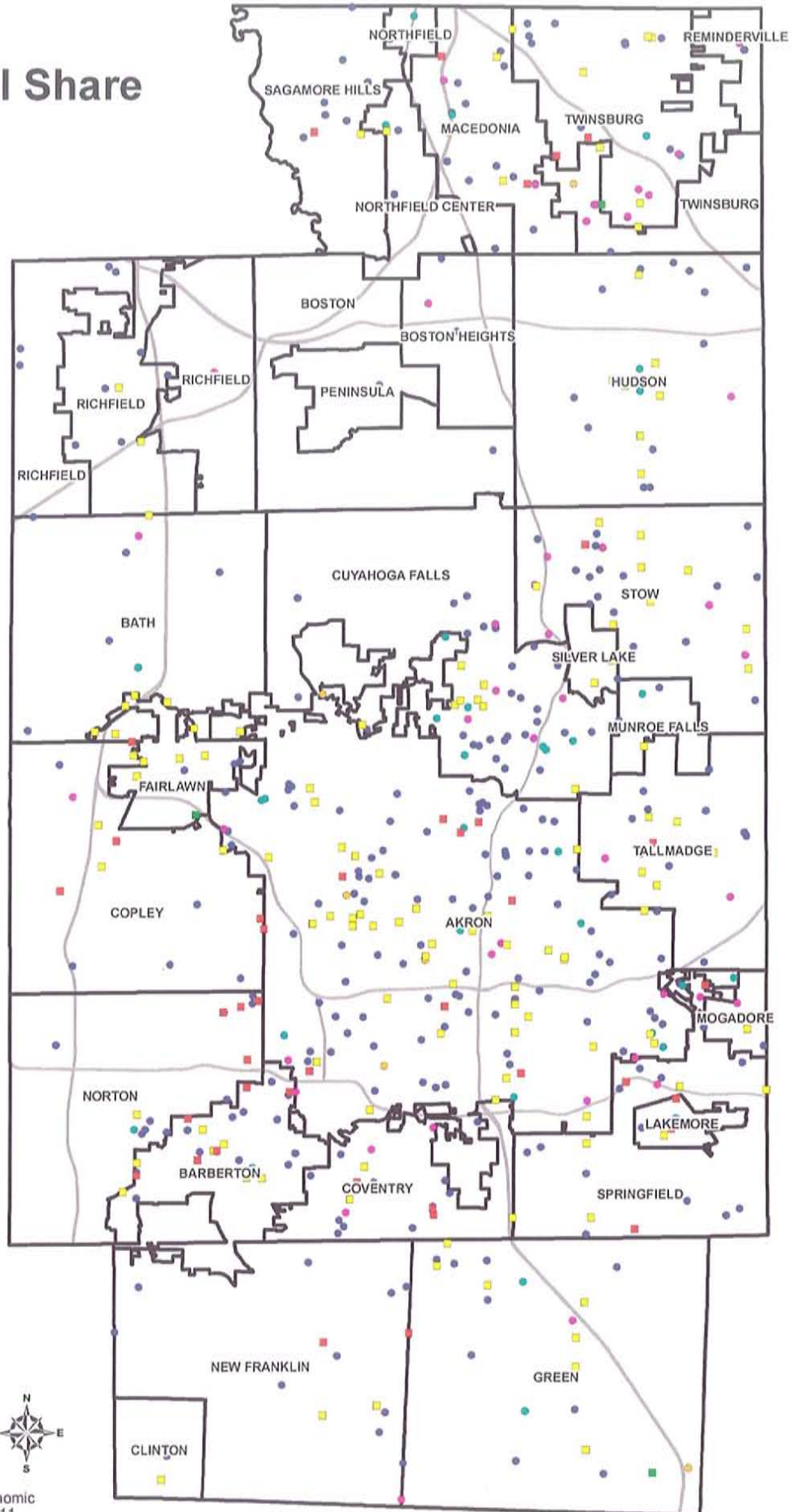
**APPENDIX C**  
**Gain or Loss in National Share**  
**2005 to 2010**

**Gain of 100 to 199**

<b>NAICS</b>	<b>CATEGORY</b>	<b>EMPLOYMENT</b>	<b># of Companies</b>
	Drywall & Insulation Contractors		
	Painting & Wall Covering Contractors		
	Flooring Contractors		
	Tile & Terrazzo Contractors		
	Finish Carpentry Contractors		
2383	Other Building Finishing Contractors	1252	302
	Fluid Milk Manufacturing		
	Dry, Condensed & Evaporated Dairy Product Manufacturing		
3115	Ice Cream & Frozen Dessert Manufacturing	242	7
	Retail Bakeries		
	Commercial Bakeries		
	Frozen Cakes, Pies & Other Pastries Manufacturing		
3118	Cookie & Cracker Manufacturing	845	36
	Polish & Other Sanitation Good Manufacturing		
	Surface Active Agent Manufacturing		
3256	Toilet Preparation Manufacturing	281	9
	Electromedical and Electrotherapeutic Apparatus Manufacturing		
	Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing		
	Automatic Environmental Control Manufacturing For Residential, Commercial & Appliance Use		
	Instruments & Related Products Manufacturing For Measuring, Displaying & Controlling Industrial Process Variables		
	Totalizing Fluid Meter & Counting Device Manufacturing		
	Instrument Manufacturing for Measuring and Testing Electricity and Electrical Signals		
	Analytical Laboratory Instrument Manufacturing		
	Irradiation Apparatus Manufacturing		
3345	Other Measuring & Controlling Device Manufacturing	924	40

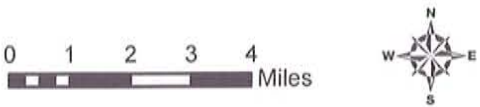
8111 (Other Scheduled Passenger Air Transportation)	29	3
5244 (Other Child Day Care Services)	1687	136
Commercial & Industrial Machinery & Equipment (Except		
8113 (Other Automotive & Electronic) Repair & Maintenance	219	40
<b>TOTAL</b>	<b>5479</b>	<b>573</b>

# Gain in National Share (100-199)



- NAICS 8113
- NAICS 6244
- NAICS 4811
- NAICS 3345
- NAICS 3256
- NAICS 3118
- NAICS 3115
- NAICS 2383

— Street  
 — Highway  
 □ Community Boundary

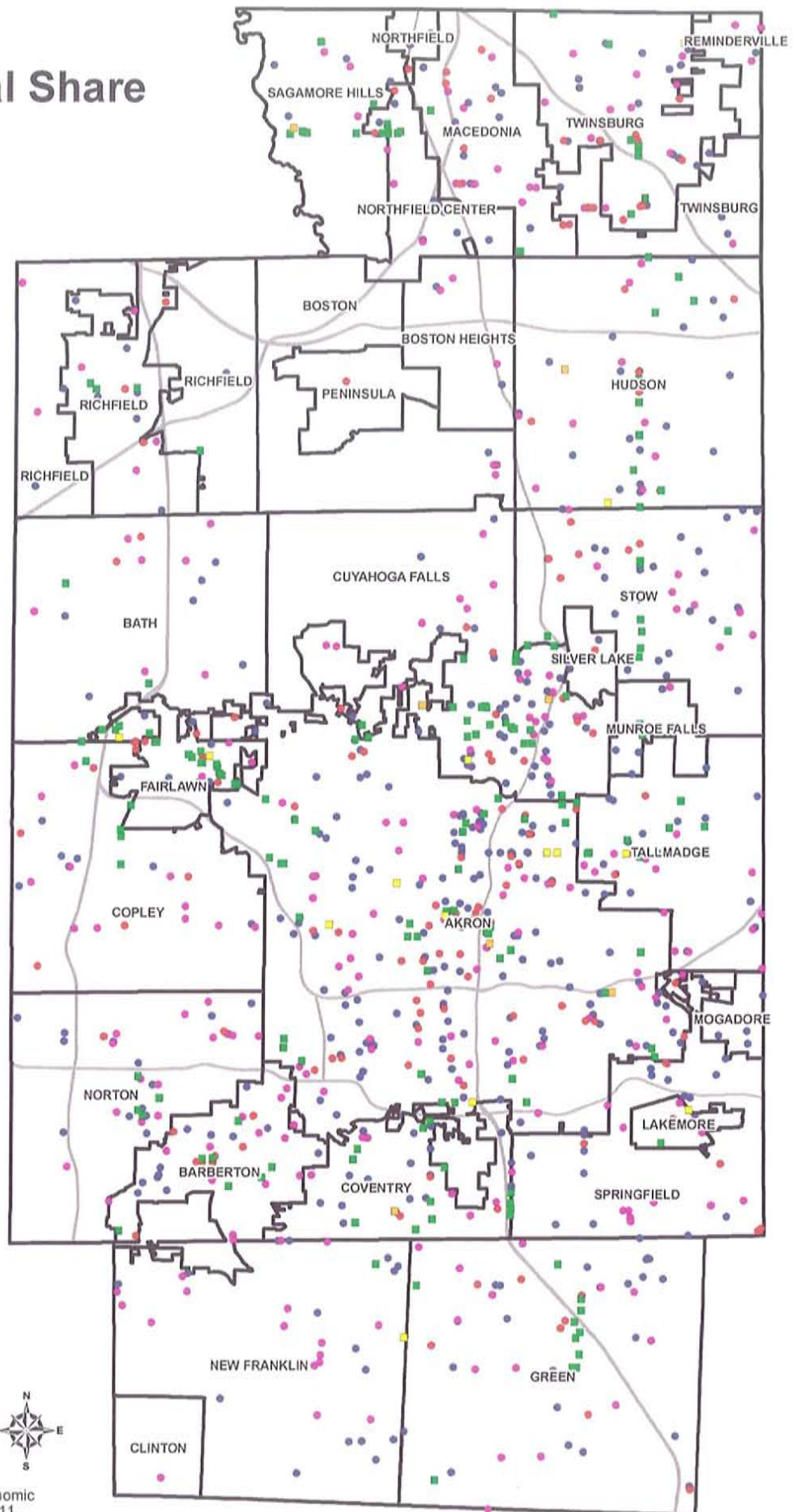


Gain of 200 to 399

NAICS	CATEGORY	EMPLOYMENT	# of Companies
	Electrical Contractors		
	Plumbing, Heating & Air-Conditioning Contractors		
2382	Other Building Equipment Contractors	2812	450
	Site Preparation Contractors		
2389	All Other Specialty Trade Contractors	1629	261
	Commercial Lithographic Printing		
	Commercial Screen Printing		
	Quick Printing		
	Manifold Business Form Printing		
	Book Printing		
	Blankbook, Loose-Leaf Binders & Devices Manufacturing		
	Other Commercial Printing		
	Tradebinding & Related Work		
3231	Prepress Services	1817	164
	Offices Of Chiropractors		
	Offices Of Mental Health Practitioners (Except Physicians)		
	Offices Of Physical, Occupational & Speech Therapists & Audiologists		
	Offices Of Podiatrists		
8213	(Other Offices Of All Other Miscellaneous Health Practitioners	1264	241
8233	(Other Homes For The Elderly	397	7
8243	(Other Vocational Rehabilitation Services	287	16
<b>TOTAL</b>		<b>8206</b>	<b>1139</b>



# Gain in National Share (200-399)



- NAICS 6243
- NAICS 6233
- NAICS 6213
- NAICS 3231
- NAICS 2389
- NAICS 2382

— Street  
 — Highway  
 □ Community Boundary

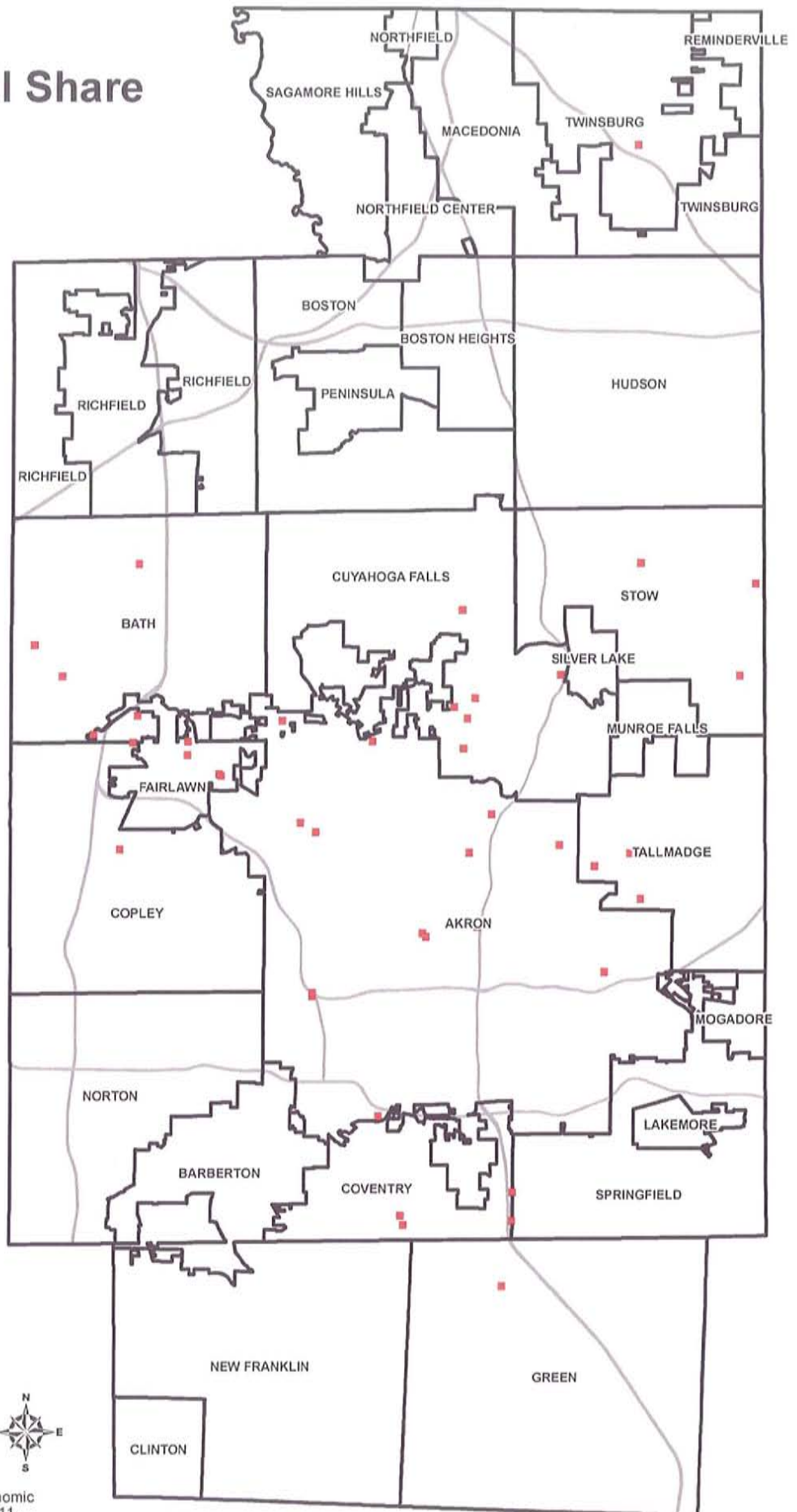
0 1 2 3 4 Miles



Gain of 400 to 699 (Map 6)

NAICS CATEGORY	EMPLOYMENT	# of Companies
5216 (Other Home Health Care Services)	1491	43
<b>TOTAL</b>	<b>1491</b>	<b>43</b>

# Gain in National Share (400-699)



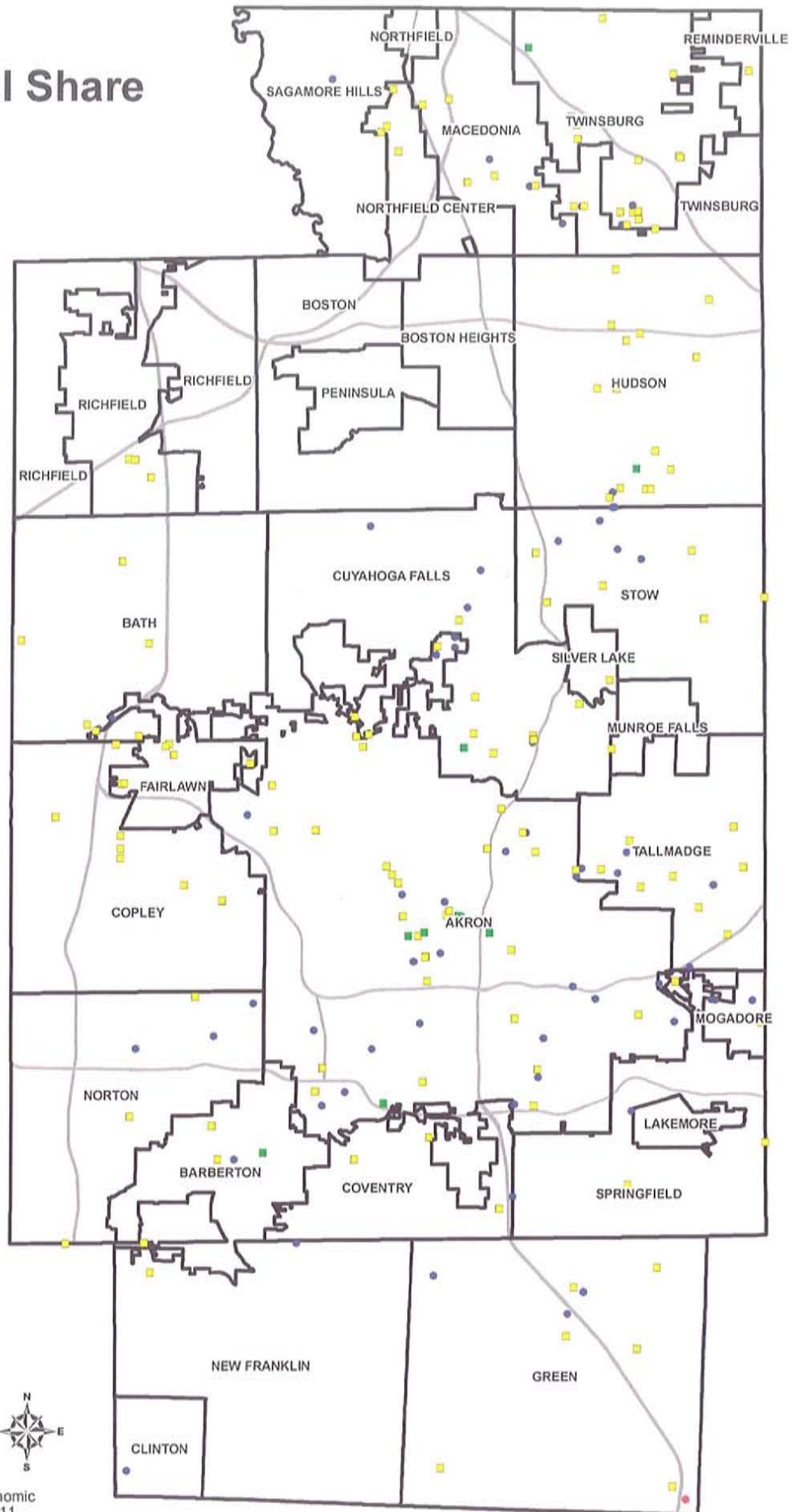
- NAICS 6216
- Street
- Highway
- Community Boundary

0 1 2 3 4 Miles

Gain of 700 or more

NAICS	CATEGORY	EMPLOYMENT	# of Companies
	Unlaminated Plastics Film & Sheet (Except Packaging) Manufacturing		
	Unlaminated Plastics Profile Shape Manufacturing		
	Laminated Plastics Plate, Sheet (Except Packaging) & Shape Manufacturing		
	Polystyrene Foam Product Manufacturing		
	Urethane & Other Foam Product (Except Polystyrene) Manufacturing		
	Plastics Bottle Manufacturing		
	Plastics Plumbing Fixture Manufacturing		
	Resilient Floor Covering Manufacturing		
3261	All Other Plastics Product Manufacturing	2737	69
	Power Boiler & Heat Exchanger Manufacturing		
3324	Metal Can Manufacturing	1840	2
	Photographic Equipment & Supplies Merchant Wholesalers		
	Office Equipment Merchant Wholesalers		
	Computer & Computer Peripheral Equipment & Software Merchant Wholesalers		
	Other Commercial Equipment Merchant Wholesalers		
	Medical, Dental & Hospital Equipment & Supplies Merchant Wholesalers		
	Ophthalmic Goods Merchant Wholesalers		
4234	(Other) Professional Equipment & Supplies Merchant Wholesalers	1443	151
5221	(Other) General Medical & Surgical Hospitals	7229	12
<b>TOTAL</b>		<b>13249</b>	<b>234</b>

# Gain in National Share (700 or more)



- NAICS 6221
- NAICS 4234
- NAICS 3324
- NAICS 3261
- Street
- Highway
- Community Boundary



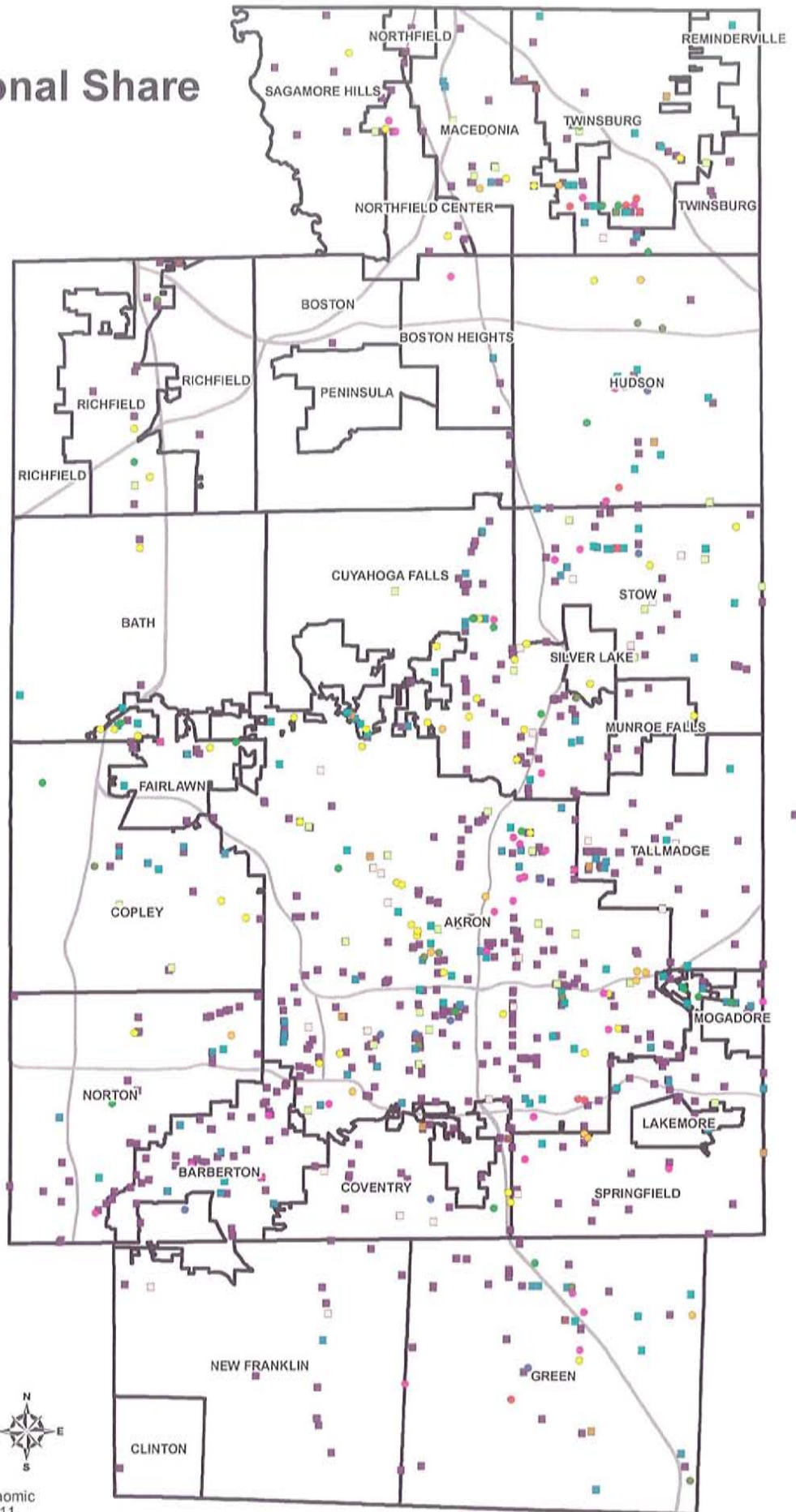
Loss of 100 to 199

NAICS	CATEGORY	EMPLOYMENT	# of Companies
	Corrugated & Solid Fiber Box Manufacturing		
	Fiber Can, Tube, Drum & Similar Products Manufacturing		
	Non-Folding Sanitary Food Container Manufacturing		
	Coated & Laminated Packaging Paper & Plastics Film Manufacturing		
	Coated & Laminated Paper Manufacturing		
	Uncoated Paper & Multiwall Bag Manufacturing		
	Die-Cut Paper & Paperboard Office Supplies Manufacturing		
	Sanitary Paper Product Manufacturing		
3222	All Other Converted Paper Product Manufacturing	669	23
	Paint & Coating Manufacturing		
3255	Adhesive Manufacturing	840	11
	Custom Compounding Of Purchased Resins		
3259	All Other Miscellaneous Chemical Product & Preparation Manufactur	304	17
	Ready-Mix Concrete Manufacturing		
	Concrete Block and Brick Manufacturing		
3273	Other Concrete Product Manufacturing	383	18
	Iron & Steel Forging		
	Nonferrous Forging		
	Metal Stamping		
3321	Powder Metallurgy Part Manufacturing	896	28
	Cutlery & Flatware (Except Precious) Manufacturing		
3322	Hand & Edge Tool Manufacturing	778	13
	Aircraft Manufacturing		
	Aircraft Engine & Engine Parts Manufacturing		
3364	Other Aircraft Parts & Auxiliary Equipment Manufacturing	956	11
	Surgical & Medical Instrument Manufacturing		
	Surgical Appliance & Supplies Manufacturing		
	Dental Equipment & Supplies Manufacturing		
	Ophthalmic Goods Manufacturing		
3391	Dental Laboratories	695	60

**Loss of 100 to 199 (cont'd)**

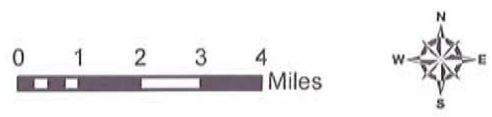
Plastics Materials & Basic Forms & Shapes Merchant Wholesalers			73
1246 (Other Chemical & Allied Products Merchant Wholesalers	950		
1251 (Other NONE		0	
Liquefied Petroleum Gas (Bottled Gas) Dealers			
1543 (Other Direct Selling Establishments	63		10
Used Household & Office Goods Moving			
Specialized Freight (Except Used Goods) Trucking, Local			
1842 (Other Specialized Freight (Except Used Goods) Trucking, Long-Distance	180		35
1921 (Other Couriers	64		7
General Warehousing & Storage			
Refrigerated Warehousing & Storage			
Farm Product Warehousing & Storage			
1931 (Other Warehousing & Storage	649		74
Residential Mental Retardation Facilities			
2322 (Other Residential Mental Health & Substance Abuse Facilities	566		28
General Automotive Repair			
Automotive Exhaust System Repair			
Automotive Transmission Repair			
Other Automotive Mechanical & Electrical Repair & Maintenance			
Automotive Body, Paint & Interior Repair & Maintenance			
Automotive Glass Replacement Shops			
Automotive Oil Change & Lubrication Shops			
Car Washes			
3111 (Other All Other Automotive Repair & Maintenance	2482		589
<b>TOTAL</b>	<b>10475</b>		<b>997</b>

# Decline in National Share (100-199)



- NAICS 3222
- NAICS 3255
- NAICS 3259
- NAICS 3273
- NAICS 3321
- NAICS 3322
- NAICS 3364
- NAICS 3391
- NAICS 4246
- NAICS 4543
- NAICS 4842
- NAICS 4921
- NAICS 4931
- NAICS 6232
- NAICS 8111

— Street  
 — Highway  
 □ Community Boundary





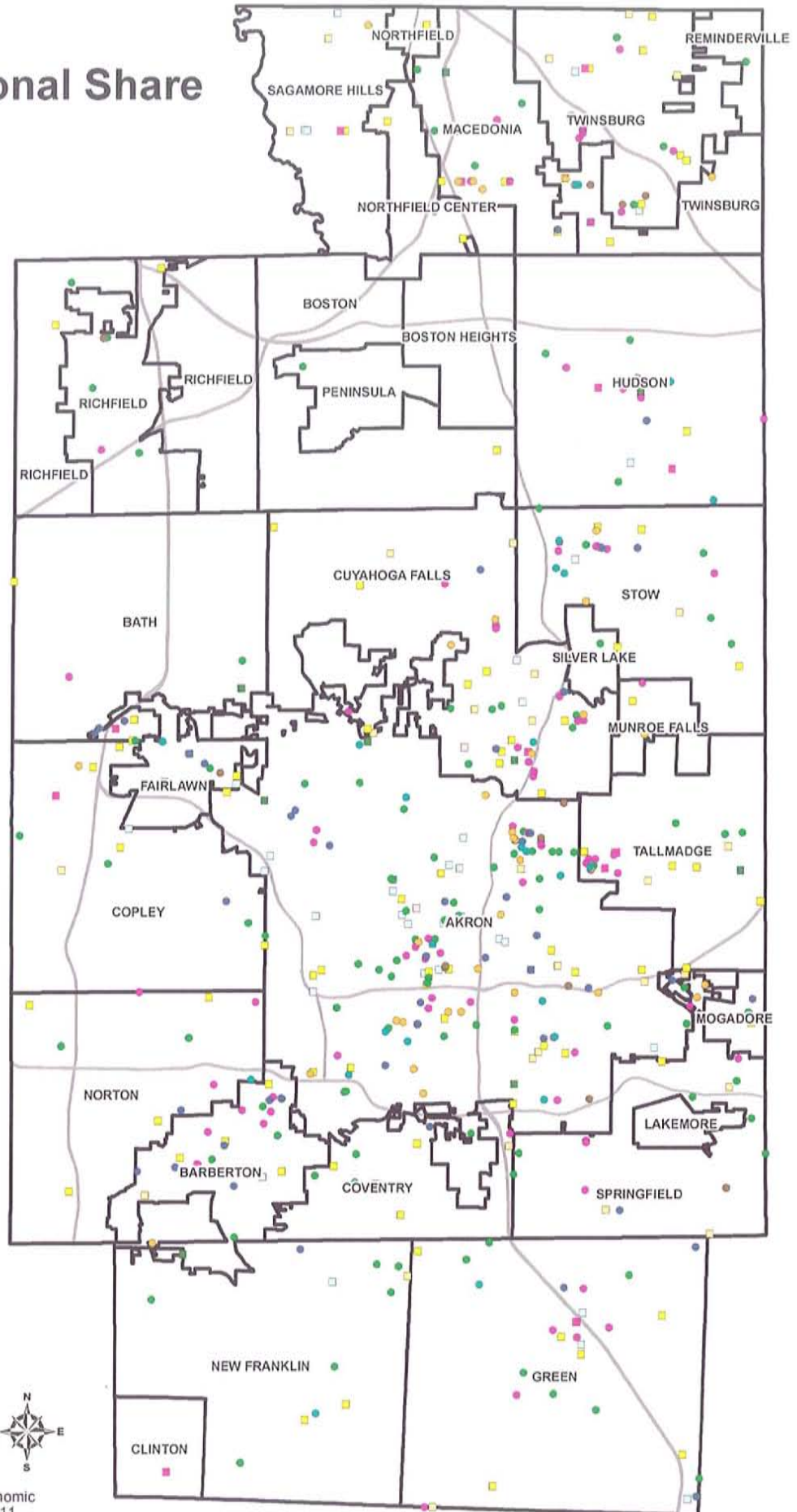
Loss of 200 to 399

NAICS	CATEGORY	EMPLOYMENT	# of Companies
3121	Soft Drink Manufacturing Ice Manufacturing Breweries Wineries	891	15
3252	Plastics Material & Resin Manufacturing Synthetic Rubber Manufacturing Cellulosic Organic Fiber Manufacturing Noncellulosic Organic Fiber Manufacturing	976	28
3262	Tire Manufacturing (Except Retreading) Tire Retreading Rubber and Plastics Hoses and Belting Manufacturing Rubber Product Manufacturing For Mechanical Use All Other Rubber Product Manufacturing	4775	53
3328	Metal Heat Treating Metal Coating, Engraving (Except Jewelry & Silverware) & Allied Services To Manufacturers Electroplating, Plating, Polishing, Anodizing & Coloring	693	43
3335	Industrial Mold Manufacturing Machine Tool (Metal Cutting Types) Manufacturing Machine Tool (Metal Forming Types) Manufacturing Special Die & Tool, Die Set, Jig & Fixture Manufacturing Cutting Tool & Machine Tool Accessory Manufacturing Rolling Mill Machinery & Equipment Manufacturing Other Metalworking Machinery Manufacturing	1489	94

**Loss of 200 to 399 (Cont'd)**

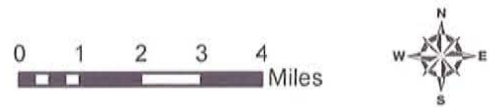
Jewelry (Except Costume) Manufacturing			
Jewelers' Material & Lapidary Work Manufacturing			
Costume Jewelry & Novelty Manufacturing			
Sporting & Athletic Goods Manufacturing			
Doll & Stuffed Toy Manufacturing			
Game, Toy & Children's Vehicle Manufacturing			
Marking Device Manufacturing			
Sign Manufacturing			
Gasket, Packing & Sealing Device Manufacturing			
Musical Instrument Manufacturing			
Fastener, Button, Needle & Pin Manufacturing			
Broom, Brush, and Mop Manufacturing			
3399 All Other Miscellaneous Manufacturing	1264	126	
242 (Other Drugs & Druggists' Sundries Merchant Wholesalers	100		13
General Line Grocery Merchant Wholesalers			
Dairy Product (Except Dried Or Canned) Merchant Wholesalers			
Poultry & Poultry Product Merchant Wholesalers			
Confectionary Merchant Wholesalers			
Fish & Seafood Merchant Wholesalers			
Meat & Meat Product Merchant Wholesalers			
Fresh Fruit & Vegetable Merchant Wholesalers			
244 (Other Other Grocery & Related Products Merchant Wholesalers	1103	94	
248 (Other Wine & Distilled Alcoholic Beverage Merchant Wholesalers	28	9	
4542			
(Other) Vending Machine Operators	187	30	
Family Planning Centers			
Outpatient Mental Health & Substance Abuse Centers			
Kidney Dialysis Centers			
Freestanding Ambulatory Surgical & Emergency Centers			
214 (Other All Other Outpatient Care Centers	1106	43	
223 (Other Specialty (Except Psychiatric & Substance Abuse) Hospitals	133	2	
<b>TOTAL</b>	<b>12745</b>	<b>550</b>	

# Decline in National Share (200-399)



- NAICS 3121
- NAICS 3252
- NAICS 3262
- NAICS 3328
- NAICS 3335
- NAICS 3399
- NAICS 4242
- NAICS 4244
- NAICS 4248
- NAICS 4542
- NAICS 6214
- NAICS 6223

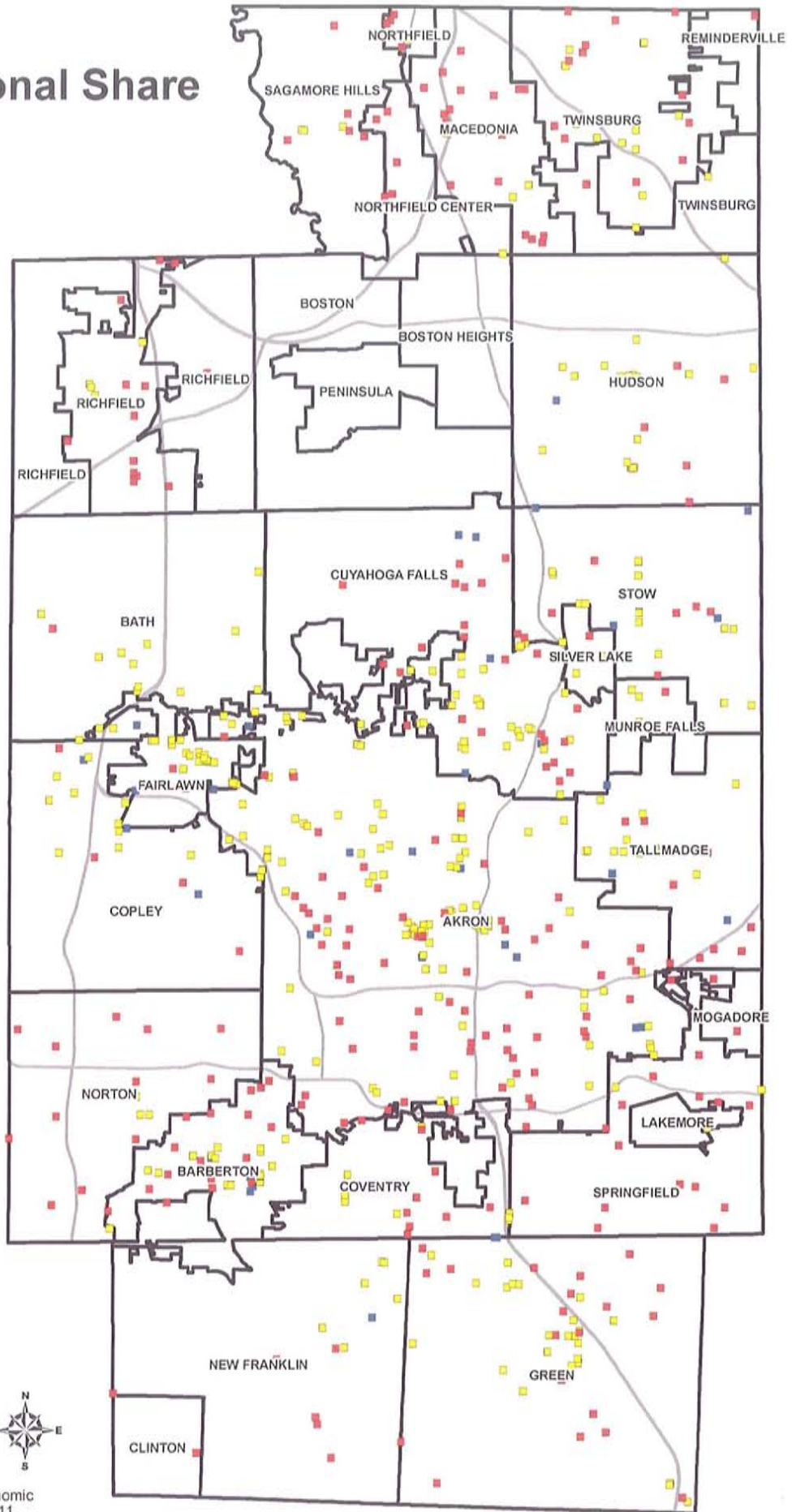
— Street  
 — Highway  
 □ Community Boundary



Loss of 400 to 699

NAICS	CATEGORY	EMPLOYMENT	# of Companies
	General Freight Trucking, Local		
	General Freight Trucking, Long-Distance, Truckload		
4841	(Other General Freight Trucking, Long-Distance, Less Than Truckload	3726	277
8021	Offices Of Physicians (Except Mental Health Specialists)		
8021.1	(Other Offices Of Physicians, Mental Health Specialists	5452	631
8031	(Other Nursing Care Facilities	3268	45
<b>TOTAL</b>		<b>12446</b>	<b>953</b>

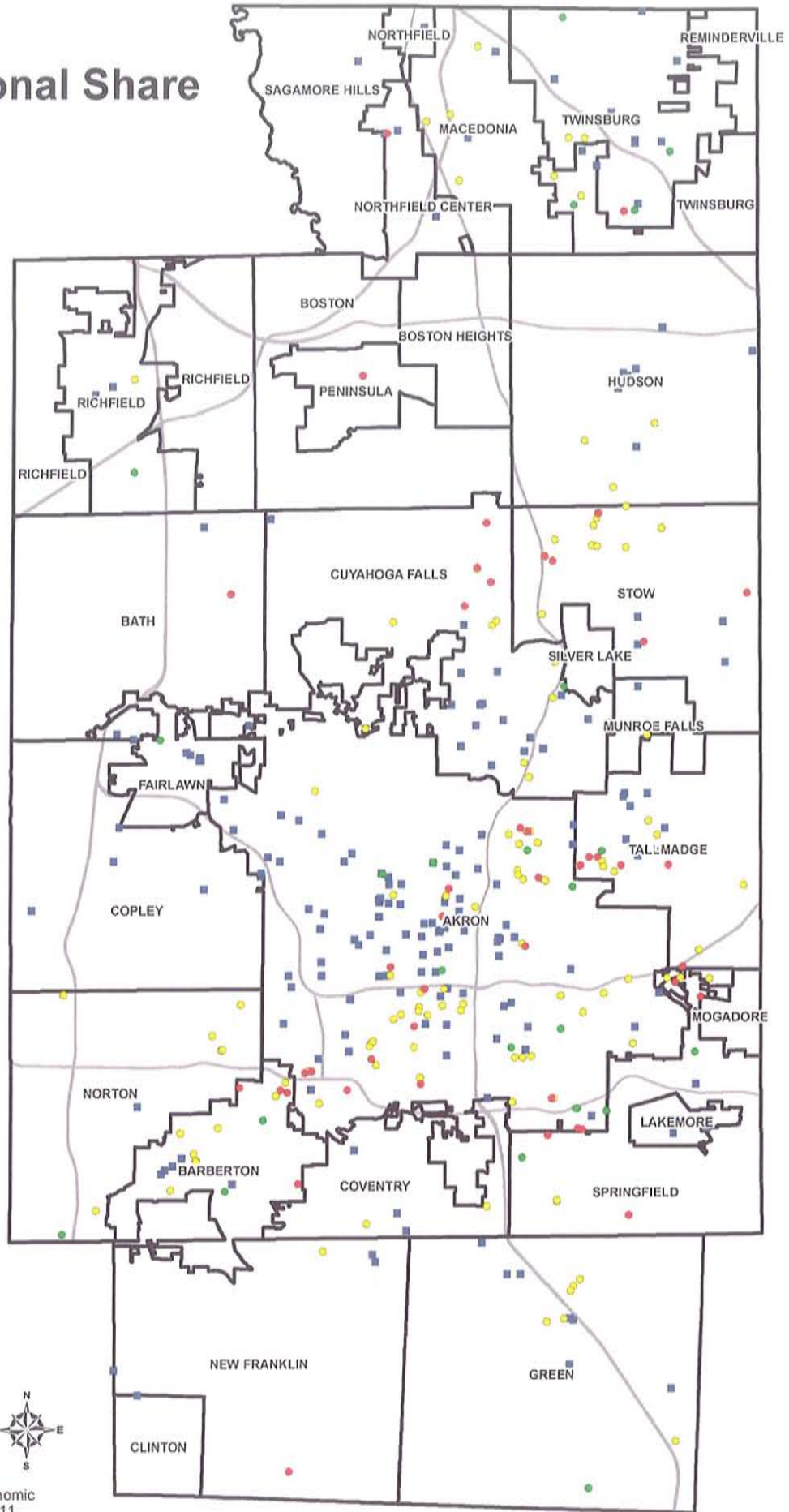
# Decline in National Share (400-699)



Loss of 700 or more

NAICS	CATEGORY	EMPLOYMENT	# of Companies
	Prefabricated Metal Building and Component Manufacturing		
	Fabricated Structural Metal Manufacturing		
	Plate Work Manufacturing		
	Metal Window & Door Manufacturing		
	Sheet Metal Work Manufacturing		
3323	Ornamental & Architectural Metal Work Manufacturing	1187	50
	Machine Shops		
	Precision Turned Product Manufacturing		
3327	Bolt, Nut, Screw, Rivet & Washer Manufacturing	770	127
	Gasoline Engine & Engine Parts Manufacturing		
	Other Motor Vehicle Electrical & Electronic Equipment Manufacturing		
	Motor Vehicle Steering & Suspension Components (Except Spring) Manufacturing		
	Motor Vehicle Metal Stamping		
3363	All Other Motor Vehicle Parts Manufacturing	770	25
	Child & Youth Services		
	Services For The Elderly & Persons With Disabilities		
6241	(Other) Individual & Family Services	3804	200
<b>TOTAL</b>		<b>6531</b>	<b>402</b>

# Decline in National Share (700 or more)



- NAICS 3323
  - NAICS 3327
  - NAICS 3363
  - NAICS 6241
  - Street
  - Highway
  - Community Boundary
- 0 1 2 3 4 Miles

# **APPENDIX D**

## **Innovation Index**

(excerpts from [www.statsamerica.org](http://www.statsamerica.org) website)



Data and analysis tools to support regional competitiveness in a knowledge-based economy. An EDA project.



- home
- tools
- reports
- maps
- about
- sitemap
- contact

**Innovation Index**

 The Index helps you understand your region's innovation performance and potential

- [View Innovation Index](#)
- [Innovation Mapping Tool](#)
- [Learn more »](#)

**Cluster Analysis**

Explore 15 knowledge-based occupation clusters and 17 industry clusters to uncover regional strengths

- [View Occupation Clusters](#)
- [View Industry Clusters](#)

**Investment Analysis**

Understand the regional development process and access tools to help guide public investment decisions

- [View Guidelines for Regional Investment](#)

## Why to Use the Occupation Cluster Data

Occupation cluster analysis is a relatively new approach in regional development that focuses on the knowledge, skills and abilities of the individuals who work in certain jobs.

Working with occupational data can quickly become overwhelming, so to simplify analysis and aid in understanding, the tool focuses on 15 knowledge-based occupation clusters. This provides fast insights into the talent base that drives a local or regional economy. With this tool, economic development professionals can begin to structure effective collaborations with businesses managers, educators, and workforce development professionals.

### Example 1: Identify the Fastest Growing Occupations in a Region

The table below looks at a region in Indiana and identifies those occupations with the strongest percentage change and the largest increase in the number of jobs from 2001 to 2007. Agents and business managers of artists, performers, and athletes had the largest percentage change, but that occupational segment is relatively small. Photographers represent the largest growth category in absolute terms, with 99 new jobs added in that occupational category.

This type of analysis is useful in a number of different ways. By understanding the dynamics of growth within an occupation cluster, an economic development professional can communicate more effectively with educators and workforce development professionals to build a talent pipeline needed to support businesses within the region.

**Fast Growing Occupations in the Arts, Entertainment, Publishing and Broadcasting Cluster in Indiana Economic Growth Region 11**

Arts, Entertainment, Publishing and Broadcasting Cluster	2001	2007	Change,	Percent
Fastest Growing Occupations	Cluster	Cluster	2001-	2001-
	Jobs	Jobs	2007	2007
Total Arts and Entertainment Cluster	3,095	3,348	253	8.2%
Agents & business managers of artists,	19	25	6	31.6%

**Benefits to Practitioners**

Occupation clusters help to:

- Analyze the regional knowledge-based workforce in greater detail.
- Determine how well occupation cluster strengths align with the region's industry cluster strengths.
- Understand the local workforce and educational situation within the broader regional economic development context.
- Bridge the gap between workforce and economic development when constructing a regional economic development strategy.
- Diagnose how well positioned the region is to participate effectively in a knowledge-based innovation economy.

performers, and athletes				
Writers and authors	272	346	74	27.2%
Multi-media artists and animators	76	95	19	25.0%
Set and exhibit designers	28	35	7	25.0%
Choreographers	12	15	3	25.0%
Radio operators	4	5	1	25.0%
Fine artists, including painters, sculptors, and illustrators	71	88	17	23.9%
Fashion designers	28	34	6	21.4%
Interior designers	51	61	10	19.6%
Music directors and composers	137	163	26	19.0%
Art directors	84	99	15	17.9%
Jewelers and precious stone and metal workers	28	33	5	17.9%
Photographers	606	705	99	16.3%
Musicians and singers	225	249	24	10.7%
Camera operators, television, video, and motion picture	10	11	1	10.0%
Interpreters and translators	95	104	9	9.5%
Camera and photographic equipment repairers	11	12	1	9.1%
Graphic designers	274	295	21	7.7%
Editors	118	127	9	7.6%
Desktop publishers	73	78	5	6.8%
Musical instrument repairers and tuners	15	16	1	6.7%

### Example 2: Identifying “Clusters of Opportunity”

Occupation cluster analysis can help identify which clusters of occupations provide the best opportunities for investment and which occupation clusters show a competitive skills advantage in the region.

The table below shows employment growth by cluster, the 2007 location quotient for the cluster and the percent change in the location quotient between 2001 and 2007 in Indiana Economic

Growth Region 11. Twelve occupation clusters showed an increase in employment. Only the skilled production workers cluster had a location quotient higher than 1.2, indicating a concentration of such workers within the region compared to the United States overall.

However, the health care and medical science cluster not only had the highest rate of growth in employment, but had a location quotient of 1.04—an increase of just over 6 percent since 2001. This occupation cluster merits a closer look by policymakers and economic development professionals, and should likely be compared with the regional industry clusters to discern needs for expanded training and development of the skills embedded in the clusters.

**Occupation Clusters of Opportunity in EGR 11**

Occupation Cluster	Employment		
	Growth, 2001-2007	2007 LQ	Change in LQ
Health Care and Medical Science	14.6%	1.04	6.1%
Building, Landscape, and Construction Design	10.9%	0.72	7.5%
Arts, Entertainment, Publishing, and Broadcasting	8.2%	0.63	3.3%
Public Safety and Domestic Security	6.4%	0.69	3.0%
Postsecondary Education and Knowledge Creation	6.3%	0.64	-3.0%
Natural Sciences and Environmental Management	5.0%	0.78	1.3%
Skilled Production Workers: Technicians, Operators, Trades, Installers, and Repairers	4.6%	1.38	1.5%
Primary/Secondary and Vocational Education, Remediation, and Social Services	4.0%	0.84	0.0%
Managerial, Sales, Marketing, and HR	3.4%	0.72	-1.4%
Legal and Financial Services, and Real Estate	2.0%	0.78	-6.0%
Information Technology	1.4%	0.48	2.1%
Personal Services	0.2%	0.84	-8.7%



This project is funded in part by the [U.S. Commerce Department's Economic Development Administration](#). Work was conducted by the [Purdue Center for Regional Development](#), the [Indiana Business Research Center](#) at Indiana University's Kelley School of Business, and [other research partners](#).

Data and analysis tools to support regional competitiveness in a knowledge-based economy. An EDA project.



home | tools | reports | maps | about | sitemap | contact

## Innovation Index

The Index helps you understand your region's innovation performance and potential

- [View Innovation Index](#)
- [Innovation Mapping Tool](#)
- [Learn more »](#)

## Innovation Index Methodology

Developing the Innovation Index began by identifying possible indicators used in previous analyses, as well as researching additional indicators that were theoretically important and available at the county level. This page overviews the rationale behind the selected index variables.



[Learn what's new in the 2010 update of the index](#)

## Human Capital

Variables included in the human capital component index suggest the extent to which a county's population and labor force are able to engage in innovative activities. Counties with high levels of human capital are those with enhanced knowledge that can be measured by high educational attainment, growth in younger age brackets of the workforce (signifying attractiveness to younger generations of workers), and a sizeable number of innovation-related occupations and jobs relative to the overall labor force.

- **Education:** Educational attainment measures the skills and knowledge that contribute to a population's capacity to innovate. The research team was particularly interested in individuals in the labor force with tertiary degrees. Thus, educational attainment was divided into two categories:

1. Some college or an associate's degree
2. Bachelor's degree or higher

The distinction is made to capture the relative importance of a knowledge differential, together with regional distinctions in the types of degrees earned. In many states, educational funding

## Cluster Analysis

Explore 15 knowledge-based occupation clusters and 17 industry clusters to uncover regional strengths

- [View Occupation Clusters](#)
- [View Industry Clusters](#)

## Investment Analysis

Understand the regional development process and access tools to help guide public investment decisions

- [View Guidelines for Regional Investment](#)

mechanisms favor 4-year universities. Elsewhere state policy tends to favor 2-year community colleges and vocational schools. An important educational differential is also present within states and counties where higher concentrations of bachelor's degrees tend to surround metropolitan areas, whereas associate degree concentrations tend to be elevated in more rural counties where fewer residents have the resources or ability to travel to distant four-year institutions. Community colleges and vocational schools are more widely dispersed and proximate to rural residents. They also tend to provide education at a lower cost, with easier access, and tend to offer more flexible course schedules, such as evening or weekend courses. Community colleges are also more likely to cater to a region's economic development needs than larger universities.

- **Population Growth Rate:** A growing population is desirable. But growth in the number of newborns or retirees does little to suggest whether those persons most likely to engage in innovative activities are present. For this reason, population growth rates are confined in this study to ages 25 to 44. The lower bound ensures transient college students typically aged 18 to 21 become less of a factor in influencing the overall rate of growth, whereas the upper bound signifies a point at which a professional's geographic location would likely remain more stable. The 25-to-44 age bracket is likely to be less risk averse and more entrepreneurial. Moreover, population growth in this age bracket suggests the possibility that new residents are likely to expand the innovative and entrepreneurial characteristics of the base community.
- **Occupational Mix:** Certain occupational mixes favor innovative behaviors. The research team defined six technology-based knowledge occupation clusters that are hypothesized to have a higher probability of developing new and innovative ideas, products and processes that drive economic growth:
  1. Information technology
  2. Engineering
  3. Health care and medical science practitioners and scientists
  4. Mathematics, statistics, data and accounting
  5. Natural sciences and environmental management
  6. Postsecondary education and knowledge creation
- **High-Tech Employment:** In addition to knowledge occupation clusters, there are other occupations linked to high-technology firms and activities that either retain opportunities for the home-grown,

skilled and specialized labor force or attract similar workers that are complementary to technology-based knowledge occupations. High-tech firm employment and growth is overwhelmingly found in urban centers, producing a rural-urban technology gap. The high-tech sector is defined by Moody's as comprised of such industries as telecommunications, Internet providers, computer manufacturing, and scientific laboratories, to name a few. Together, the high-tech industry employment and technology-based knowledge occupational data provide a reasonable estimate of the extent to which a county's occupational and industry mix provide either the existing capacity to generate innovative products and processes or the ability to augment local innovative capacity by attracting new firms and new talent.

## Economic Dynamics

The economic dynamics component index measures local business conditions and resources available to entrepreneurs and businesses. Targeted resources such as venture capital funds are input flows that encourage innovation close to home, or that, if not present, can limit innovative activity.

- **Venture Capital Investment:** Venture capital (VC) funds are used to launch new ideas or expand innovative companies. In the United States, VC may be responsible for up to 14 percent of all innovative output activity. VC investment firms are highly selective with their investments to maximize the probability of high returns. The return on VC, and possibly the importance of VC, is diminished somewhat by the fact that the VC investments are typically management-intensive. Looking for VC funding may consume a considerable level of effort by the seeking firm's management, just as VC firms exert considerable effort seeking suitable projects to invest in.
- **Broadband Density:** Broadband provides high-speed Internet connections to businesses and consumers. Several state-level studies have attempted to capture the effect of adding broadband capacity to a region's infrastructure. These studies suggest that broadband capacity has an overwhelmingly positive effect on economic performance. High-speed Internet access ensures that businesses and individuals can collaborate from virtually any location.

The Innovation Index uses 2 measure of broadband density. The first is the number of residential high-speed connections per 1,000

Code	Connections per 1,000 Households
------	-------------------------------------

households. The FCC reports these data in ranges, not as a specific number of connections in a particular county (see below). The midpoint in the range is presented within the index output. For a custom region—an aggregation of two or more counties—the midpoint for the region is calculated as the weighted average of the midpoints of all the counties in the region.

The second measure is the annual average change in number of broadband holding companies. The latter indicator was created because the Federal Communications Commission (FCC) does not have time series data on broadband users. However, a broadband providers time series is available at the ZIP code level, so the base year uses ZIP code level data that has been aggregated to counties.

0	Zero
1	Zero < x <= 200
2	200 < x <= 400
3	400 < x <= 600
4	600 < x <= 800
5	800 < x

- Churn:** Competition is crucial to innovation. Market structures can influence the degree to which innovation is even possible. Specifically, markets with high rates of firm entry have been linked to increased levels of innovation. Conversely, the rate at which businesses shut their doors or reduce their workforce indicates a decrease in economic deadwood. Together the growth and contractions along with births and deaths produce the notion of economic churn, which serves as an indicator of the extent to which innovative and efficient companies replace outdated firms unable to modernize techniques and processes. Churn has been linked to positive employment growth and is not subject to agglomeration effects that often distinguish urban and rural economic structures.
- Business Sizes:** Small firms, it is thought, are highly adaptable and can easily change their processes to incorporate new ideas. In recent years, high merger rates between small and large firms have coincided with increased technological influence of small firms. Some evidence, however, suggests these acquisitions may not be significant sources of innovation for large firms. Theoretically, a higher proportion of large businesses would positively contribute to innovation through the increased availability of funds for research and development, as well as the resources to directly employ scientists rather than hire out research services. Available data, however, do not identify whether, or the degree to which, an establishment is engaged in innovation activities. Moreover, using data on large establishments, defined as establishments with 500 or more employees, may be of limited utility for explaining innovative capacities in rural counties with small

economies. Just the same, because the variable has some theoretical merit, the number of large establishments per 10,000 workers remains in the index.

## Productivity and Employment

The productivity and employment component index describes economic growth, regional desirability, or direct outcomes of innovative activity. Variables in this index suggest the extent to which local and regional economies are moving up the value chain and attracting workers seeking particular jobs.

- **High-Tech Employment Share Growth:** Just as the share of high-tech employment in a county was an important input, the extent to which that share is increasing relative to total employment is an important performance measure. Firms requiring a highly skilled and specialized workforce are drawn to innovative areas. In a similar way, this measure also registers the degree to which home-grown, high-tech firms have expanded their presence. Growth in the share of high-tech employment suggests the increasing presence of innovative activity and signifies that high-tech firms are growing in the county or region both in relative as well as absolute terms.
- **Job Growth-to-Population Growth Ratio:** High employment growth relative to population growth suggests jobs are being created faster than people are moving to a region. Even though the ratio measures the change in level between jobs and population and, therefore, can't be used to compare rates of growth, it can rank order counties or regions in terms of employment performance. A high ratio between these two variables indicates strong employment growth. A negative value signifies that population is growing while employment is declining or vice versa. In cases for which population is declining while employment is increasing, the absolute value of the ratio is used as that would be considered favorable employment performance.
- **Patent Activity:** Newly patented technologies provide an indicator of individuals' and firms' abilities to develop new technologies and remain competitive. The number of patents produced is a commonly used output measure for innovative activities, but the data can mislead. Patent data are coded to distinguish between the residence of the filer and the recorded location of the employer (if the applicant is not a private inventor), but the recorded location of the employer may or may not correspond to the location of the work that produced the patent, especially if the employer is a large,



diversified company with many locations. In addition, the available patent data cover only utility patents and not all patent types. Patent data are recorded from the raw data provided by the U.S. Patent Office and awards patents to any county from which one of the filers reported as their location. This means that for any single patent with more than one filer, a patent may be counted multiple times if filers are located in different counties. Patents can also be an inaccurate indicator of innovation outcomes, particularly in areas where a single firm overwhelms the total patent count, such as Eli Lilly in Indianapolis.

- **Gross Domestic Product:** The final component of the productivity and employment component index is the single most important measure of productivity available—gross domestic product (GDP). The index incorporates both the level of a county's current-dollar GDP per worker today, and also growth in the value over the past decade.

## Economic Well-Being

Innovative economies improve economic well-being because residents earn more and have a higher standard of living. Decreasing poverty rates, increasing employment, in-migration of new residents and improvements in personal income signal a more desirable location to live and point to an increase in economic well-being.

- **Average Poverty Rate:** Innovative economies have greater employment opportunities with higher compensation, thus lowering rates of poverty. Reduced rates of poverty will tend to lag growth in employment opportunities. As a result, the last three years of the most recent data are used. Since a high poverty rate is a negative outcome, the index uses the inverse of the average poverty rate.
- **Average Unemployment Rate:** Innovative economies have greater employment opportunities and lower unemployment rates. Since a high unemployment rate is a negative outcome, the index uses the inverse of average unemployment rate.
- **Net Migration:** Migration measures the extent to which a county or region is broadly appealing and excludes other elements of population dynamics such as fertility rates. While people may migrate into a region for a host of reasons, from employment opportunities to environmental amenities,

migration out of a region almost certainly signals declining economic conditions and the inability to keep the innovative talent that will spawn economic growth in the future.

- **Compensation:** Compensation data convey how much workers make based on their place of work. Likewise, proprietors' income is also based on place of work. Compensation and proprietor's income, therefore, probably provide a strong relationship between the activities of innovation and the rewards of innovation based on the location of innovation.
- **Growth in Per Capita Personal Income:** As an alternative to measuring remuneration based on place of work, per capita personal income (PCPI) measure incomes by place of residence. Because PCPI includes other forms of income in addition to wages, salaries and fringe benefits, it is a more comprehensive measure of well-being. That said, the linkage between where innovation occurs (county of work) and the financial rewards of innovation (county of residence) is less direct.

## State Context

A fifth category, state context, seeks to capture data that are theoretically important but available only at the state level. It is composed of science and engineering graduates from state institutions per 1,000 residents of the state; private R&D by state relative to worker compensation; and total R&D expenditures as a percent of state GDP, the latter being the National Science Foundation measure for "R&D intensity." The state context category is not given as much attention because it is not used for the index calculation and because the indicator becomes diluted if a region crosses state boundaries.

## More Information

- [What's New in the 2010 Update](#)
- [Calculating the Innovation Index](#)
- [What the Innovation Index Research Shows](#)
- [How to Use the Innovation Index](#)
- More detailed information about the Innovation Index can be found in the report, *Crossing the Next Regional Frontier: Information and Analytics Linking Regional Competitiveness to Investment in a Knowledge-Based Economy*

- The Innovation Index (Chapter 4)
- Innovation Index Definitions, Calculations and Models (Appendix C)



This project is funded in part by the U.S. Commerce Department's Economic Development Administration. Work was conducted by the [Purdue Center for Regional Development](#), the [Indiana Business Research Center](#) at Indiana University's Kelley School of Business, and other research partners.

This website is maintained by the Indiana Business Research Center | [Privacy Notice](#) | Email questions and comments to [ibrc@iupui.edu](mailto:ibrc@iupui.edu).

# **APPENDIX E**

## **Occupational Clusters**

(excerpts from [www.statsamerica.org](http://www.statsamerica.org) website)

## Appendix E: Occupation Cluster Definitions

The following tables provide the standard occupational classification (SOC) codes and names for the 15 knowledge-based occupation clusters, as well as Job Zones 1 and 2.

### Managerial, Sales, Marketing and HR

SOC	SOC Name
11-1011	Chief executives
11-1021	General and operations managers
11-2011	Advertising and promotions managers
11-2021	Marketing managers
11-2022	Sales managers
11-2031	Public relations managers
11-3011	Administrative services managers
11-3031	Financial managers
11-3041	Compensation and benefits managers
11-3042	Training and development managers
11-3049	Human resources managers, all other
11-3061	Purchasing managers
11-3071	Transportation, storage, and distribution managers
11-9051	Food service managers
11-9071	Gaming managers
11-9081	Lodging managers
11-9131	Postmasters and mail superintendents
11-9141	Property, real estate, and community association managers
13-1022	Wholesale and retail buyers, except farm products
13-1071	Employment, recruitment, and placement specialists
13-1072	Compensation, benefits, and job analysis specialists
13-1081	Logisticians
13-1111	Management analysts
13-1121	Meeting and convention planners
19-3021	Market research analysts
19-3022	Survey researchers
27-3031	Public relations specialists
35-1011	Chefs and head cooks
41-1012	First-line supervisors/managers of non-retail sales workers
41-3011	Advertising sales agents

SOC	SOC Name
41-3031	Securities, commodities, and financial services sales agents
41-4011	Sales representatives, wholesale and manufacturing, technical and scientific products
41-4012	Sales representatives, wholesale and manufacturing, except technical and scientific products
41-9031	Sales engineers
43-1011	First-line supervisors/managers of office and administrative support workers
43-4161	Human resources assistants, except payroll and timekeeping

## Skilled Production Workers: Technicians, Operators, Trades, Installers & Repairers

SOC	SOC Name
11-3051	Industrial production managers
11-9021	Construction managers
17-2141	Mechanical engineers
17-3012	Electrical and electronics drafters
17-3027	Mechanical engineering technicians
37-1011	First-line supervisors/managers of housekeeping and janitorial workers
47-1011	First-line supervisors/managers of construction trades and extraction workers
47-2022	Stonemasons
47-2031	Carpenters
47-2051	Cement masons and concrete finishers
47-2073	Operating engineers and other construction equipment operators
47-2111	Electricians
47-2152	Plumbers, pipefitters, and steamfitters
47-4021	Elevator installers and repairers
49-1011	First-line supervisors/managers of mechanics, installers, and repairers
49-2092	Electric motor, power tool, and related repairers
49-2093	Electrical and electronics installers and repairers, transportation equipment
49-2094	Electrical and electronics repairers, commercial and industrial equipment
49-2095	Electrical and electronics repairers, powerhouse, substation, and relay
49-2096	Electronic equipment installers and repairers, motor vehicles
49-2098	Security and fire alarm systems installers
49-3011	Aircraft mechanics and service technicians
49-3023	Automotive service technicians and mechanics
49-3031	Bus and truck mechanics and diesel engine specialists
49-3041	Farm equipment mechanics
49-3042	Mobile heavy equipment mechanics, except engines

SOC	SOC Name
49-3051	Motorboat mechanics
49-3052	Motorcycle mechanics
49-9012	Control and valve installers and repairers, except mechanical door
49-9021	Heating, air conditioning, and refrigeration mechanics and installers
49-9031	Home appliance repairers
49-9041	Industrial machinery mechanics
49-9042	Maintenance and repair workers, general
49-9044	Millwrights
49-9051	Electrical power-line installers and repairers
49-9092	Commercial divers
49-9097	Signal and track switch repairers
51-1011	First-line supervisors/managers of production and operating workers
51-2041	Structural metal fabricators and fitters
51-4012	Numerical tool and process control programmers
51-4032	Drilling and boring machine tool setters, operators, and tenders, metal and plastic
51-4035	Milling and planing machine setters, operators, and tenders, metal and plastic
51-4041	Machinists
51-4061	Model makers, metal and plastic
51-4062	Patternmakers, metal and plastic
51-4111	Tool and die makers
51-7011	Cabinetmakers and bench carpenters
51-7032	Patternmakers, wood
51-8012	Power distributors and dispatchers
51-8013	Power plant operators
51-8021	Stationary engineers and boiler operators
51-8092	Gas plant operators
51-9195	Molders, shapers, and casters, except metal and plastic
53-1021	First-line supervisors/managers of helpers, laborers, and material movers, hand
53-1031	First-line supervisors/managers of transportation and material-moving machine and vehicle operators
53-5031	Ship engineers
53-6051	Transportation inspectors
53-7021	Crane and tower operators

## Health Care and Medical Science (Aggregate)

SOC	SOC Name
11-9061	Funeral directors
11-9111	Medical and health services managers
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation
19-1041	Epidemiologists
19-1042	Medical scientists, except epidemiologists
19-3031	Clinical, counseling, and school psychologists
21-1011	Substance abuse and behavioral disorder counselors
21-1012	Educational, vocational, and school counselors
21-1013	Marriage and family therapists
21-1014	Mental health counselors
21-1015	Rehabilitation counselors
21-1021	Child, family, and school social workers
21-1022	Medical and public health social workers
21-1023	Mental health and substance abuse social workers
21-1092	Probation officers and correctional treatment specialists
29-1011	Chiropractors
29-1021	Dentists, general
29-1022	Oral and maxillofacial surgeons
29-1023	Orthodontists
29-1024	Prosthodontists
29-1031	Dietitians and nutritionists
29-1041	Optometrists
29-1051	Pharmacists
29-1069	Physicians and surgeons
29-1071	Physician assistants
29-1081	Podiatrists
29-1111	Registered nurses
29-1121	Audiologists
29-1122	Occupational therapists
29-1123	Physical therapists
29-1124	Radiation therapists
29-1125	Recreational therapists
29-1126	Respiratory therapists
29-1127	Speech-language pathologists
29-2011	Medical and clinical laboratory technologists
29-2021	Dental hygienists



SOC	SOC Name
29-2031	Cardiovascular technologists and technicians
29-2032	Diagnostic medical sonographers
29-2033	Nuclear medicine technologists
29-2034	Radiologic technologists and technicians
29-2051	Dietetic technicians
29-2053	Psychiatric technicians
29-2054	Respiratory therapy technicians
29-2055	Surgical technologists
29-2056	Veterinary technologists and technicians
29-2061	Licensed practical and licensed vocational nurses
29-2071	Medical records and health information technicians
29-2081	Opticians, dispensing
29-2091	Orthotists and prosthetists
31-2011	Occupational therapist assistants
31-2021	Physical therapist assistants
31-9092	Medical assistants
31-9094	Medical transcriptionists
39-4011	Embalmers
49-9062	Medical equipment repairers
51-9082	Medical appliance technicians

### Health Care and Medical Science (Medical Practitioners and Scientists)

SOC	SOC Name
11-9061	Funeral directors
11-9111	Medical and health services managers
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation
19-1041	Epidemiologists
19-1042	Medical scientists, except epidemiologists
29-1011	Chiropractors
29-1021	Dentists, general
29-1022	Oral and maxillofacial surgeons
29-1023	Orthodontists
29-1024	Prosthodontists
29-1031	Dietitians and nutritionists
29-1041	Optometrists
29-1069	Physicians and surgeons
29-1071	Physician assistants

SOC	SOC Name
29-1081	Podiatrists
29-1121	Audiologists
29-1126	Respiratory therapists
29-2081	Opticians, dispensing
29-2091	Orthotists and prosthetists
39-4011	Embalmers

### Health Care and Medical Science (Medical Technicians)

SOC	SOC Name
29-1051	Pharmacists
29-1124	Radiation therapists
29-2011	Medical and clinical laboratory technologists
29-2021	Dental hygienists
29-2031	Cardiovascular technologists and technicians
29-2032	Diagnostic medical sonographers
29-2033	Nuclear medicine technologists
29-2034	Radiologic technologists and technicians
29-2051	Dietetic technicians
29-2054	Respiratory therapy technicians
29-2055	Surgical technologists
29-2056	Veterinary technologists and technicians
29-2071	Medical records and health information technicians
31-9092	Medical assistants
31-9094	Medical transcriptionists
49-9062	Medical equipment repairers
51-9082	Medical appliance technicians

### Health Care and Medical Science (Therapy, Counseling, Nursing and Rehabilitation)

SOC	SOC Name
19-3031	Clinical, counseling, and school psychologists
21-1011	Substance abuse and behavioral disorder counselors
21-1012	Educational, vocational, and school counselors
21-1013	Marriage and family therapists
21-1014	Mental health counselors
21-1015	Rehabilitation counselors
21-1021	Child, family, and school social workers

SOC	SOC Name
21-1022	Medical and public health social workers
21-1023	Mental health and substance abuse social workers
21-1092	Probation officers and correctional treatment specialists
29-1111	Registered nurses
29-1122	Occupational therapists
29-1123	Physical therapists
29-1125	Recreational therapists
29-1127	Speech-language pathologists
29-2053	Psychiatric technicians
29-2061	Licensed practical and licensed vocational nurses
31-2011	Occupational therapist assistants
31-2021	Physical therapist assistants

## Mathematics, Statistics, Data and Accounting

SOC	SOC Name
11-3021	Computer and information systems managers
11-3031	Financial managers
13-1023	Purchasing agents, except wholesale, retail, and farm products
13-2011	Accountants and auditors
13-2031	Budget analysts
13-2051	Financial analysts
13-2061	Financial examiners
15-1021	Computer programmers
15-1061	Database administrators
15-2011	Actuaries
15-2021	Mathematicians
15-2031	Operations research analysts
15-2041	Statisticians
15-2091	Mathematical technicians
19-3011	Economists
43-9011	Computer operators
43-9111	Statistical assistants

## Legal and Financial Services and Real Estate

SOC	SOC Name
13-1031	Claims adjusters, examiners, and investigators
13-1032	Insurance appraisers, auto damage
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation
13-1051	Cost estimators
13-1071	Employment, recruitment, and placement specialists
13-2021	Appraisers and assessors of real estate
13-2041	Credit analysts
13-2052	Personal financial advisors
13-2053	Insurance underwriters
13-2071	Loan counselors
13-2072	Loan officers
13-2081	Tax examiners, collectors, and revenue agents
13-2082	Tax preparers
23-1011	Lawyers
23-1021	Administrative law judges, adjudicators, and hearing officers
23-1023	Judges, magistrate judges, and magistrates
23-2011	Paralegals and legal assistants
23-2091	Court reporters
23-2092	Law clerks
23-2093	Title examiners, abstractors, and searchers
25-4011	Archivists
25-4031	Library technicians
33-9021	Private detectives and investigators
41-3021	Insurance sales agents
41-3031	Securities, commodities, and financial services sales agents
41-9021	Real estate brokers
43-3011	Bill and account collectors
43-3021	Billing and posting clerks and machine operators
43-3031	Bookkeeping, accounting, and auditing clerks
43-3051	Payroll and timekeeping clerks
43-3061	Procurement clerks
43-4011	Brokerage clerks
43-4031	Court, municipal, and license clerks
43-4041	Credit authorizers, checkers, and clerks
43-4061	Eligibility interviewers, government programs
43-4071	File clerks

SOC	SOC Name
43-4121	Library assistants, clerical
43-4131	Loan interviewers and clerks
43-6011	Executive secretaries and administrative assistants
43-6012	Legal secretaries

## Information Technology

SOC	SOC Name
15-1031	Computer software engineers, applications
15-1032	Computer software engineers, systems software
15-1041	Computer support specialists
15-1051	Computer systems analysts
15-1071	Network and computer systems administrators
15-1081	Network systems and data communications analysts
17-2061	Computer hardware engineers
17-3023	Electrical and electronic engineering technicians
17-3024	Electro-mechanical technicians
25-9011	Audio-visual collections specialists
27-4011	Audio and video equipment technicians
27-4012	Broadcast technicians
49-2011	Computer, automated teller, and office machine repairers
49-2021	Radio mechanics
49-2022	Telecommunications equipment installers and repairers, except line installers
49-2091	Avionics technicians

## Natural Sciences and Environmental Management

SOC	SOC Name
11-9121	Natural sciences managers
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation
17-1021	Cartographers and photogrammetrists
17-3031	Surveying and mapping technicians
19-1011	Animal scientists
19-1013	Soil and plant Scientists
19-1021	Biochemists and biophysicists
19-1022	Microbiologists
19-1023	Zoologists and wildlife biologists

SOC	SOC Name
19-1029	Biological scientists, all other
19-1031	Conservation scientists
19-1032	Foresters
19-2021	Atmospheric and space scientists
19-2041	Environmental scientists and specialists, including health
19-2042	Geoscientists, except hydrologists and geographers
19-2043	Hydrologists
19-4041	Geological and petroleum technicians
19-4091	Environmental science and protection technicians, including health
19-4093	Forest and conservation technicians
33-2022	Forest fire inspectors and prevention specialists
45-4011	Forest and conservation workers

## Agribusiness and Food Technology

SOC	SOC Name
11-9011	Farm, ranch, and other agricultural managers
11-9012	Farmers and ranchers
13-1021	Purchasing agents and buyers, farm products
19-1012	Food scientists and technologists
19-4011	Agricultural and food science technicians
19-4021	Biological technicians
19-4031	Chemical technicians
25-9021	Farm and home management advisors
29-1131	Veterinarians
37-3012	Pesticide handlers, sprayers, and applicators, vegetation
45-1099	Supervisors, farming, fishing, and forestry workers
45-2011	Agricultural inspectors
45-2021	Animal breeders
45-4023	Log graders and scalers
51-8031	Water and liquid waste treatment plant and system operators

## Primary/Secondary and Vocational Education, Remediation and Social Services

SOC	SOC Name
11-9031	Education administrators, preschool and child care center/program

SOC	SOC Name
11-9032	Education administrators, elementary and secondary school
11-9151	Social and community service managers
13-1073	Training and development specialists
19-4061	Social science research assistants
21-1091	Health educators
21-1093	Social and human service assistants
21-2011	Clergy
21-2021	Directors, religious activities and education
23-1022	Arbitrators, mediators, and conciliators
25-2011	Preschool teachers, except special education
25-2012	Kindergarten teachers, except special education
25-2021	Elementary school teachers, except special education
25-2022	Middle school teachers, except special and vocational education
25-2023	Vocational education teachers, middle school
25-2031	Secondary school teachers, except special and vocational education
25-2032	Vocational education teachers, secondary school
25-2041	Special education teachers, preschool, kindergarten, and elementary school
25-2042	Special education teachers, middle school
25-2043	Special education teachers, secondary school
25-3011	Adult literacy, remedial education, and GED teachers and instructors
25-9031	Instructional coordinators
25-9041	Teacher assistants
27-2022	Coaches and scouts
27-2023	Umpires, referees, and other sports officials
29-9091	Athletic trainers
39-9032	Recreation workers
39-9041	Residential advisors
43-4111	Interviewers, except eligibility and loan

## Building, Landscape and Construction Design

SOC	SOC Name
17-1011	Architects, except landscape and naval
17-1012	Landscape architects
17-1022	Surveyors
17-3011	Architectural and civil drafters
17-3012	Electrical and electronics drafters

SOC	SOC Name
17-3013	Mechanical drafters
17-3022	Civil engineering technicians
17-3031	Surveying and mapping technicians
19-3051	Urban and regional planners
19-4061	Social science research assistants
47-4011	Construction and building inspectors
51-7031	Model makers, wood

## Engineering and Related Sciences

SOC	SOC Name
11-9041	Engineering managers
17-2011	Aerospace engineers
17-2021	Agricultural engineers
17-2031	Biomedical engineers
17-2041	Chemical engineers
17-2051	Civil engineers
17-2071	Electrical engineers
17-2072	Electronics engineers, except computer
17-2081	Environmental engineers
17-2111	Health and safety engineers, except mining safety engineers and inspectors
17-2112	Industrial engineers
17-2121	Marine engineers and naval architects
17-2131	Materials engineers
17-2151	Mining and geological engineers, including mining safety engineers
17-2161	Nuclear engineers
17-2171	Petroleum engineers
17-3021	Aerospace engineering and operations technicians
17-3023	Electrical and electronic engineering technicians
17-3025	Environmental engineering technicians
17-3026	Industrial engineering technicians
19-2011	Astronomers
19-2012	Physicists
19-2031	Chemists
19-2032	Materials scientists
19-4041	Geological and petroleum technicians
19-4051	Nuclear technicians



SOC	SOC Name
27-1021	Commercial and industrial designers
51-8011	Nuclear power reactor operators

## Personal Services Occupations

SOC	SOC Name
25-3021	Self-enrichment education teachers
31-9011	Massage therapists
35-2013	Cooks, private household
39-1021	First-line supervisors/managers of personal service workers
39-5011	Barbers
39-5012	Hairdressers, hairstylists, and cosmetologists
39-5092	Manicurists and pedicurists
39-5094	Skin care specialists
39-6021	Tour guides and escorts
39-6022	Travel guides
39-9011	Child care workers
39-9031	Fitness trainers and aerobics instructors
41-3041	Travel agents
49-9064	Watch repairers

## Arts, Entertainment, Publishing and Broadcasting

SOC	SOC Name
13-1011	Agents and business managers of artists, performers, and athletes
27-1011	Art directors
27-1013	Fine artists, including painters, sculptors, and illustrators
27-1014	Multi-media artists and animators
27-1022	Fashion designers
27-1024	Graphic designers
27-1025	Interior designers
27-1027	Set and exhibit designers
27-2012	Producers and directors
27-2031	Dancers
27-2032	Choreographers
27-2041	Music directors and composers
27-2042	Musicians and singers

SOC	SOC Name
27-3011	Radio and television announcers
27-3021	Broadcast news analysts
27-3022	Reporters and correspondents
27-3041	Editors
27-3042	Technical writers
27-3043	Writers and authors
27-3091	Interpreters and translators
27-4013	Radio operators
27-4014	Sound engineering technicians
27-4021	Photographers
27-4031	Camera operators, television, video, and motion picture
27-4032	Film and video editors
43-9031	Desktop publishers
43-9081	Proofreaders and copy markers
49-2097	Electronic home entertainment equipment installers and repairers
49-9061	Camera and photographic equipment repairers
49-9063	Musical instrument repairers and tuners
51-5021	Job printers
51-5022	Prepress technicians and workers
51-6092	Fabric and apparel patternmakers
51-9071	Jewelers and precious stone and metal workers
51-9195	Molders, shapers, and casters, except metal and plastic

## Public Safety and Domestic Security

SOC	SOC Name
13-1061	Emergency management specialists
17-2111	Health and safety engineers, except mining safety engineers and inspectors
19-4092	Forensic science technicians
29-9011	Occupational health and safety specialists
29-9012	Occupational health and safety technicians
33-1011	First-line supervisors/managers of correctional officers
33-1012	First-line supervisors/managers of police and detectives
33-1021	First-line supervisors/managers of fire fighting and prevention workers
33-2011	Fire fighters
33-2021	Fire inspectors and investigators
33-3012	Correctional officers and jailers

SOC	SOC Name
33-3021	Detectives and criminal investigators
33-3031	Fish and game wardens
33-3051	Police and sheriff's patrol officers
33-3052	Transit and railroad police
53-2011	Airline pilots, copilots, and flight engineers
53-2012	Commercial pilots
53-2021	Air traffic controllers
53-2022	Airfield operations specialists
53-5021	Captains, mates, and pilots of water vessels
53-6041	Traffic technicians
53-6051	Transportation inspectors

## Postsecondary Education and Knowledge Creation

SOC	SOC Name
11-9033	Education administrators, postsecondary
15-2021	Mathematicians
15-2041	Statisticians
19-2011	Astronomers
19-2012	Physicists
19-2031	Chemists
19-3011	Economists
19-3032	Industrial-organizational psychologists
19-3041	Sociologists
19-3091	Anthropologists and archeologists
19-3092	Geographers
19-3093	Historians
19-3094	Political scientists
25-1099	Postsecondary teachers
25-4012	Curators
25-4013	Museum Technicians and Conservators
25-4021	Librarians

## Job Zone 2

SOC	SOC Name
13-1041	Compliance officers, except agriculture, construction, health and safety, and transportation
27-1012	Craft artists
27-1023	Floral designers
27-1026	Merchandise displayers and window trimmers
27-2011	Actors
27-2021	Athletes and sports competitors
27-2042	Musicians and singers
27-3012	Public address system and other announcers
29-2012	Medical and clinical laboratory technicians
29-2041	Emergency medical technicians and paramedics
29-2052	Pharmacy technicians
31-1011	Home health aides
31-1012	Nursing aides, orderlies, and attendants
31-1013	Psychiatric aides
31-2012	Occupational therapist aides
31-2022	Physical therapist aides
31-9091	Dental assistants
31-9093	Medical equipment preparers
31-9095	Pharmacy aides
31-9096	Veterinary assistants and laboratory animal caretakers
33-2011	Fire fighters
33-3011	Bailiffs
33-3041	Parking enforcement workers
33-9011	Animal control workers
33-9031	Gaming surveillance officers and gaming investigators
33-9032	Security guards
35-1012	First-line supervisors/managers of food preparation and serving workers
35-2012	Cooks, institution and cafeteria
35-2014	Cooks, restaurant
35-3011	Bartenders
37-1012	First-line supervisors/managers of landscaping, lawn service, and groundskeeping workers
37-2021	Pest control workers
37-3013	Tree trimmers and pruners
39-1011	Gaming supervisors
39-1012	Slot key persons
39-2011	Animal trainers

SOC	SOC Name
39-2021	Nonfarm animal caretakers
39-3011	Gaming dealers
39-3012	Gaming and sports book writers and runners
39-3021	Motion picture projectionists
39-3092	Costume attendants
39-4021	Funeral attendants
39-5091	Makeup artists, theatrical and performance
39-6012	Concierges
39-6031	Flight attendants
39-6032	Transportation attendants, except flight attendants and baggage porters
39-9011	Child care workers
39-9021	Personal and home care aides
41-1011	First-line supervisors/managers of retail sales workers
41-2012	Gaming change persons and booth cashiers
41-2022	Parts salespersons
41-2031	Retail salespersons
41-9011	Demonstrators and product promoters
41-9022	Real estate sales agents
41-9041	Telemarketers
41-9091	Door-to-door sales workers, news and street vendors, and related workers
43-2011	Switchboard operators, including answering service
43-2021	Telephone operators
43-3021	Billing and posting clerks and machine operators
43-3041	Gaming cage workers
43-3071	Tellers
43-4021	Correspondence clerks
43-4031	Court, municipal, and license clerks
43-4041	Credit authorizers, checkers, and clerks
43-4051	Customer service representatives
43-4081	Hotel, motel, and resort desk clerks
43-4141	New accounts clerks
43-4151	Order clerks
43-4171	Receptionists and information clerks
43-4181	Reservation and transportation ticket agents and travel clerks
43-5011	Cargo and freight agents
43-5021	Couriers and messengers
43-5031	Police, fire, and ambulance dispatchers

SOC	SOC Name
43-5032	Dispatchers, except police, fire, and ambulance
43-5041	Meter readers, utilities
43-5051	Postal service clerks
43-5052	Postal service mail carriers
43-5053	Postal service mail sorters, processors, and processing machine operators
43-5061	Production, planning, and expediting clerks
43-5071	Shipping, receiving, and traffic clerks
43-5081	Stock clerks and order fillers
43-5111	Weighers, measurers, checkers, and samplers, recordkeeping
43-6013	Medical secretaries
43-6014	Secretaries, except legal, medical, and executive
43-9021	Data entry keyers
43-9022	Word processors and typists
43-9041	Insurance claims and policy processing clerks
43-9051	Mail clerks and mail machine operators, except postal service
43-9061	Office clerks, general
43-9071	Office machine operators, except computer
45-1099	Supervisors, farming, fishing, and forestry workers
45-2091	Agricultural equipment operators
47-2011	Boilermakers
47-2021	Brickmasons and blockmasons
47-2031	Carpenters
47-2042	Floor layers, except carpet, wood, and hard tiles
47-2043	Floor sanders and finishers
47-2044	Tile and marble setters
47-2053	Terrazzo workers and finishers
47-2071	Paving, surfacing, and tamping equipment operators
47-2072	Pile-driver operators
47-2081	Drywall and ceiling tile installers
47-2082	Tapers
47-2121	Glaziers
47-2131	Insulation workers, floor, ceiling, and wall
47-2132	Insulation workers, mechanical
47-2141	Painters, construction and maintenance
47-2142	Paperhangers
47-2151	Pipelayers
47-2161	Plasterers and stucco masons

SOC	SOC Name
47-2171	Reinforcing iron and rebar workers
47-2181	Roofers
47-2211	Sheet metal workers
47-2221	Structural iron and steel workers
47-3012	Helpers, carpenters
47-3013	Helpers, electricians
47-3015	Helpers, pipelayers, plumbers, pipefitters, and steamfitters
47-4031	Fence erectors
47-4041	Hazardous materials removal workers
47-4051	Highway maintenance workers
47-4061	Rail-track laying and maintenance equipment operators
47-4091	Segmental pavers
47-5012	Rotary drill operators, oil and gas
47-5013	Service unit operators, oil, gas, and mining
47-5021	Earth drillers, except oil and gas
47-5031	Explosives workers, ordnance handling experts, and blasters
47-5041	Continuous mining machine operators
47-5042	Mine cutting and channeling machine operators
47-5051	Rock splitters, quarry
47-5061	Roof bolters, mining
47-5071	Roustabouts, oil and gas
47-5081	Helpers, extraction workers
49-3021	Automotive body and related repairers
49-3022	Automotive glass installers and repairers
49-3043	Rail car repairers
49-3053	Outdoor power equipment and other small engine mechanics
49-3091	Bicycle repairers
49-3092	Recreational vehicle service technicians
49-9011	Mechanical door repairers
49-9043	Maintenance workers, machinery
49-9045	Refractory materials repairers, except brickmasons
49-9052	Telecommunications line installers and repairers
49-9091	Coin, vending, and amusement machine servicers and repairers
49-9094	Locksmiths and safe repairers
49-9095	Manufactured building and mobile home installers
49-9096	Riggers
49-9098	Helpers—Installation, maintenance, and repair workers

SOC	SOC Name
51-2011	Aircraft structure, surfaces, rigging, and systems assemblers
51-2021	Coil winders, tapers, and finishers
51-2022	Electrical and electronic equipment assemblers
51-2023	Electromechanical equipment assemblers
51-2031	Engine and other machine assemblers
51-2091	Fiberglass laminators and fabricators
51-2092	Team assemblers
51-2093	Timing device assemblers, adjusters, and calibrators
51-3011	Bakers
51-3021	Butchers and meat cutters
51-3091	Food and tobacco roasting, baking, and drying machine operators and tenders
51-3092	Food batchmakers
51-3093	Food cooking machine operators and tenders
51-4011	Computer-controlled machine tool operators, metal and plastic
51-4021	Extruding and drawing machine setters, operators, and tenders, metal and plastic
51-4022	Forging machine setters, operators, and tenders, metal and plastic
51-4023	Rolling machine setters, operators, and tenders, metal and plastic
51-4031	Cutting, punching, and press machine setters, operators, and tenders, metal and plastic
51-4033	Grinding, lapping, polishing, and buffing machine tool setters, operators, and tenders, metal and plastic
51-4034	Lathe and turning machine tool setters, operators, and tenders, metal and plastic
51-4051	Metal-refining furnace operators and tenders
51-4052	Pourers and casters, metal
51-4071	Foundry mold and coremakers
51-4072	Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic
51-4081	Multiple machine tool setters, operators, and tenders, metal and plastic
51-4121	Welders, cutters, solderers, and brazers
51-4122	Welding, soldering, and brazing machine setters, operators, and tenders
51-4191	Heat treating equipment setters, operators, and tenders, metal and plastic
51-4192	Lay-out workers, metal and plastic
51-4193	Plating and coating machine setters, operators, and tenders, metal and plastic
51-4194	Tool grinders, filers, and sharpeners
51-5011	Bindery workers
51-5012	Bookbinders
51-5023	Printing machine operators
51-6011	Laundry and dry-cleaning workers
51-6041	Shoe and leather workers and repairers
51-6042	Shoe machine operators and tenders



SOC	SOC Name
51-6051	Sewers, hand
51-6052	Tailors, dressmakers, and custom sewers
51-6061	Textile bleaching and dyeing machine operators and tenders
51-6062	Textile cutting machine setters, operators, and tenders
51-6063	Textile knitting and weaving machine setters, operators, and tenders
51-6064	Textile winding, twisting, and drawing out machine setters, operators, and tenders
51-6091	Extruding and forming machine setters, operators, and tenders, synthetic and glass fibers
51-6093	Upholsterers
51-7041	Sawing machine setters, operators, and tenders, wood
51-7042	Woodworking machine setters, operators, and tenders, except sawing
51-8091	Chemical plant and system operators
51-8093	Petroleum pump system operators, refinery operators, and gaugers
51-9011	Chemical equipment operators and tenders
51-9012	Separating, filtering, clarifying, precipitating, and still machine setters, operators, and tenders
51-9021	Crushing, grinding, and polishing machine setters, operators, and tenders
51-9023	Mixing and blending machine setters, operators, and tenders
51-9031	Cutters and trimmers, hand
51-9032	Cutting and slicing machine setters, operators, and tenders
51-9041	Extruding, forming, pressing, and compacting machine setters, operators, and tenders
51-9051	Furnace, kiln, oven, drier, and kettle operators and tenders
51-9061	Inspectors, testers, sorters, samplers, and weighers
51-9071	Jewelers and precious stone and metal workers
51-9081	Dental laboratory technicians
51-9083	Ophthalmic laboratory technicians
51-9111	Packaging and filling machine operators and tenders
51-9121	Coating, painting, and spraying machine setters, operators, and tenders
51-9122	Painters, transportation equipment
51-9123	Painting, coating, and decorating workers
51-9131	Photographic process workers
51-9132	Photographic processing machine operators
51-9141	Semiconductor processors
51-9191	Cementing and gluing machine operators and tenders
51-9192	Cleaning, washing, and metal pickling equipment operators and tenders
51-9193	Cooling and freezing equipment operators and tenders
51-9194	Etchers and engravers
51-9195	Molders, shapers, and casters, except metal and plastic
51-9196	Paper goods machine setters, operators, and tenders

SOC	SOC Name
51-9197	Tire builders
53-1011	Aircraft cargo handling supervisors
53-3011	Ambulance drivers and attendants, except emergency medical technicians
53-3021	Bus drivers, transit and intercity
53-3022	Bus drivers, school
53-3032	Truck drivers, heavy and tractor-trailer
53-3033	Truck drivers, light or delivery services
53-4021	Railroad brake, signal, and switch operators
53-4031	Railroad conductors and yardmasters
53-4041	Subway and streetcar operators
53-5011	Sailors and marine oilers
53-5022	Motorboat operators
53-7011	Conveyor operators and tenders
53-7031	Dredge operators
53-7032	Excavating and loading machine and dragline operators
53-7033	Loading machine operators, underground mining
53-7041	Hoist and winch operators
53-7051	Industrial truck and tractor operators
53-7062	Laborers and freight, stock, and material movers, hand
53-7063	Machine feeders and offbearers
53-7071	Gas compressor and gas pumping station operators
53-7072	Pump operators, except wellhead pumpers
53-7073	Wellhead pumpers
53-7081	Refuse and recyclable material collectors
53-7111	Shuttle car operators
53-7121	Tank car, truck, and ship loaders

## Job Zone 1

SOC	SOC Name
33-9091	Crossing guards
33-9092	Lifeguards, ski patrol, and other recreational protective service workers
35-2011	Cooks, fast food
35-2015	Cooks, short order
35-2021	Food preparation workers
35-3021	Combined food preparation and serving workers, including fast food
35-3022	Counter attendants, cafeteria, food concession, and coffee shop

SOC	SOC Name
35-3031	Waiters and waitresses
35-3041	Food servers, nonrestaurant
35-9011	Dining room and cafeteria attendants and bartender helpers
35-9021	Dishwashers
35-9031	Hosts and hostesses, restaurant, lounge, and coffee shop
37-2011	Janitors and cleaners, except maids and housekeeping cleaners
37-2012	Maids and housekeeping cleaners
37-3011	Landscaping and groundskeeping workers
39-3031	Ushers, lobby attendants, and ticket takers
39-3091	Amusement and recreation attendants
39-3093	Locker room, coatroom, and dressing room attendants
39-6011	Baggage porters and bellhops
41-2011	Cashiers, except gaming
41-2021	Counter and rental clerks
41-9012	Models
43-5081	Stock clerks and order fillers
45-2041	Graders and sorters, agricultural products
45-2092	Farmworkers and laborers, crop, nursery, and greenhouse
45-2093	Farmworkers, farm and ranch animals
45-3011	Fishers and related fishing workers
45-4021	Fallers
45-4022	Logging equipment operators
47-2041	Carpet installers
47-2061	Construction laborers
47-3011	Helpers, brickmasons, blockmasons, stonemasons, and tile and marble setters
47-3014	Helpers, painters, paperhangers, plasterers, and stucco masons
47-4071	Septic tank servicers and sewer pipe cleaners
47-5011	Derrick operators, oil and gas
49-3093	Tire repairers and changers
49-9093	Fabric menders, except garment
51-3022	Meat, poultry, and fish cutters and trimmers
51-3023	Slaughterers and meat packers
51-6021	Pressers, textile, garment, and related materials
51-6031	Sewing machine operators
51-7021	Furniture finishers
51-9022	Grinding and polishing workers, hand
51-9198	Helpers—Production workers

SOC	SOC Name
53-3031	Driver/sales workers
53-3041	Taxi drivers and chauffeurs
53-6011	Bridge and lock tenders
53-6021	Parking lot attendants
53-6031	Service station attendants
53-7061	Cleaners of vehicles and equipment
53-7064	Packers and packagers, hand

**APPENDIX F**  
**Shift/Share Data File**  
**(Generated by TeamNEO)**

Employment

NAICS(4) Description: Geography Dec-2005 Dec-2010 Dec-2015 LQ 2005 LQ 2010 LQ 2015 SS 05-10 SS 10-15 LQ 05 LQ 10 LQ 15 SS 05-10 SS 10-15 Index

2381	Foundation, Structure, and Building Exterior Contractors,	Summit	1.72	1.09	1.20	0.78	0.80	0.78	-25.25	-43.97	0.00	0.00	0.00	-1.00	-1.00	-2.00
2382	Building Equipment Contractors,	Summit	3.21	3.13	3.61	0.82	0.86	0.94	335.56	-145.84	0.00	0.00	0.00	1.00	-1.00	0.00
2383	Building Finishing Contractors,	Summit	1.48	1.08	1.14	0.73	0.86	0.84	118.48	-57.87	-1.00	0.00	0.00	1.00	1.00	-1.00
2389	Other Specialty Trade Contractors,	Summit	1.20	1.29	1.57	0.87	1.27	1.24	368.63	-62.78	0.00	0.00	0.00	1.00	1.00	0.00
3111	Animal Food Manufacturing,	Summit	0.07	0.09	0.09	0.67	0.87	0.90	17.03	1.40	-1.00	0.00	0.00	1.00	1.00	1.00
3112	Grain and Oilseed Milling,	Summit	0.06	0.08	0.08	0.51	0.71	0.74	20.89	1.89	-1.00	-1.00	-1.00	1.00	1.00	-1.00
3113	Sugar and Confectionery Product Manufacturing,	Summit	0.02	0.02	0.02	0.12	0.15	0.15	2.32	0.55	-1.00	-1.00	-1.00	1.00	1.00	-1.00
3114	Fruit and Vegetable Preserving and Specialty Food Manufact.	Summit	0.07	0.12	0.12	0.19	0.37	0.38	58.15	1.70	-1.00	-1.00	-1.00	1.00	1.00	-1.00
3115	Dairy Product Manufacturing,	Summit	0.21	0.33	0.34	0.78	1.28	1.31	117.12	0.60	0.00	0.00	0.00	1.00	1.00	2.00
3116	Animal Slaughtering and Processing,	Summit	0.06	0.07	0.08	0.05	0.08	0.08	17.63	0.24	-1.00	-1.00	-1.00	1.00	1.00	-1.00
3117	Seafood Product Preparation and Packaging,	Summit	0.00	0.00	0.00	0.03	0.04	0.05	0.70	0.03	-1.00	-1.00	-1.00	1.00	1.00	-1.00
3118	Bakeries and Tortilla Manufacturing,	Summit	0.45	0.56	0.58	0.79	1.05	1.07	119.30	2.18	0.00	0.00	0.00	1.00	1.00	2.00
3119	Other Food Manufacturing,	Summit	0.04	0.07	0.08	0.12	0.22	0.22	30.29	-1.44	-1.00	-1.00	-1.00	1.00	1.00	-3.00
3121	Beverage Manufacturing,	Summit	0.49	0.23	0.24	1.45	0.71	0.70	-262.78	-9.24	0.00	-1.00	-1.00	-1.00	-1.00	-4.00
3122	Tobacco Manufacturing,	Summit	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-1.00	-1.00	-1.00	-	-	-
3131	Fiber, Yarn, and Thread Mills,	Summit	0.00	0.00	0.00	0.04	0.05	0.05	0.25	-0.10	-1.00	-1.00	-1.00	1.00	0.00	-2.00
3132	Fabric Mills,	Summit	0.07	0.06	0.05	0.33	0.56	0.54	23.24	-2.77	-1.00	-1.00	-1.00	-1.00	-1.00	-3.00
3133	Textile and Fabric Finishing and Fabric Coating Mills,	Summit	0.06	0.04	0.05	0.50	0.60	0.60	6.04	-1.30	-1.00	-1.00	-1.00	1.00	1.00	-3.00
3141	Textile Furnishings Mills,	Summit	0.04	0.02	0.01	0.21	0.15	0.14	-8.20	-0.99	-1.00	-1.00	-1.00	-1.00	0.00	-4.00
3149	Other Textile Product Mills,	Summit	0.02	0.02	0.02	0.12	0.17	0.17	5.30	-0.23	-1.00	-1.00	-1.00	1.00	0.00	-2.00
3151	Apparel Knitting Mills,	Summit	0.00	0.00	0.00	0.01	0.01	0.01	0.16	-0.01	-1.00	-1.00	-1.00	1.00	0.00	-2.00
3152	Cut and Sew Apparel Manufacturing,	Summit	0.06	0.05	0.05	0.14	0.20	0.19	12.33	-2.87	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
3159	Apparel Accessories and Other Apparel Manufacturing,	Summit	0.01	0.01	0.01	0.26	0.38	0.37	2.69	-0.39	-1.00	-1.00	-1.00	1.00	0.00	-2.00
3161	Leather and Hide Tanning and Finishing,	Summit	0.00	0.00	0.00	0.06	0.08	0.08	0.13	-0.05	-1.00	-1.00	-1.00	1.00	0.00	-2.00
3162	Footwear Manufacturing,	Summit	0.01	0.01	0.01	0.40	0.38	0.36	-0.99	-0.95	-1.00	-1.00	-1.00	0.00	0.00	-3.00
3169	Other Leather and Allied Product Manufacturing,	Summit	0.01	0.01	0.01	0.27	0.30	0.29	0.36	-0.48	-1.00	-1.00	-1.00	1.00	0.00	-2.00
3211	Sawmills and Wood Preservation,	Summit	0.04	0.02	0.02	0.15	0.09	0.09	-11.42	-0.95	-1.00	-1.00	-1.00	-1.00	0.00	-4.00
3212	Veneer, Plywood, and Engineered Wood Product Manufactur	Summit	0.08	0.03	0.03	0.31	0.25	0.23	-9.94	-2.74	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
3219	Other Wood Product Manufacturing,	Summit	0.16	0.07	0.07	0.24	0.19	0.19	-22.25	-2.37	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
3221	Pulp, Paper, and Paperboard Mills,	Summit	0.19	0.12	0.11	0.64	0.54	0.52	-28.79	-5.93	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
3222	Converted Paper Product Manufacturing,	Summit	0.89	0.58	0.55	1.27	1.04	0.99	-166.93	-35.15	0.00	0.00	0.00	0.00	-1.00	-2.00
3331	Printing and Related Support Activities,	Summit	1.59	1.53	1.56	1.20	1.59	1.56	312.45	-61.84	0.00	1.00	1.00	1.00	1.00	2.00
3241	Petroleum and Coal Products Manufacturing,	Summit	0.05	0.02	0.02	0.22	0.09	0.09	-32.90	0.48	-1.00	-1.00	-1.00	-1.00	-1.00	-3.00
3251	Basic Chemical Manufacturing,	Summit	0.46	0.46	0.49	1.50	1.69	1.86	32.45	34.81	1.00	1.00	1.00	1.00	1.00	5.00
3252	Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Fill	Summit	0.70	0.38	0.38	3.16	2.17	2.29	-204.66	14.11	1.00	1.00	1.00	-1.00	-1.00	3.00
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufac	Summit	0.04	0.04	0.04	0.54	0.55	0.59	-1.50	2.51	-1.00	-1.00	-1.00	-1.00	-1.00	-3.00
3254	Pharmaceutical and Medicine Manufacturing,	Summit	0.19	0.16	0.19	0.32	0.30	0.33	-18.93	16.50	-1.00	-1.00	-1.00	-1.00	-1.00	-3.00
3255	Paint, Coating, and Adhesive Manufacturing,	Summit	0.55	0.32	0.33	4.00	2.92	3.12	-141.07	15.29	1.00	1.00	1.00	-1.00	1.00	3.00
3256	Soap, Cleaning Compound, and Toilet Preparation Manufactu	Summit	1.31	1.31	1.40	5.63	6.83	7.60	175.71	118.66	1.00	1.00	1.00	1.00	1.00	5.00
3259	Other Chemical Product and Preparation Manufacturing,	Summit	0.60	0.34	0.32	2.82	2.17	2.41	-123.53	26.83	1.00	1.00	1.00	-1.00	-1.00	3.00
3261	Plastics Product Manufacturing,	Summit	2.25	2.65	2.90	1.73	2.67	2.80	841.78	86.54	1.00	1.00	1.00	1.00	1.00	5.00
3262	Rubber Product Manufacturing,	Summit	1.92	1.09	1.11	5.59	4.58	4.73	-305.97	16.34	1.00	1.00	1.00	-1.00	-1.00	3.00
3271	Clay Product and Refractory Manufacturing,	Summit	0.01	0.03	0.03	0.05	0.45	0.42	30.32	-2.56	-1.00	-1.00	-1.00	1.00	1.00	-3.00
3272	Glass and Glass Product Manufacturing,	Summit	0.05	0.04	0.04	0.24	0.25	0.24	-1.02	-2.46	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
3273	Cement and Concrete Product Manufacturing,	Summit	0.32	0.13	0.13	0.66	0.38	0.36	-109.34	-12.63	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
3274	Lime and Gypsum Product Manufacturing,	Summit	0.01	0.01	0.01	0.32	0.23	0.22	-3.08	-0.92	-1.00	-1.00	-1.00	-1.00	0.00	-4.00
3279	Other Nonmetallic Mineral Product Manufacturing,	Summit	0.14	0.07	0.07	0.89	0.51	0.49	-55.56	-4.36	0.00	-1.00	-1.00	-1.00	-1.00	-4.00
3311	Iron and Steel Mills and Ferroalloy Manufacturing,	Summit	0.16	0.10	0.10	0.81	0.63	0.62	-35.24	-4.14	0.00	-1.00	-1.00	-1.00	-1.00	-4.00
3312	Steel Product Manufacturing from Purchased Steel,	Summit	0.02	0.01	0.01	0.12	0.11	0.11	-1.49	-0.45	-1.00	-1.00	-1.00	-1.00	0.00	-4.00
3313	Alumina and Aluminum Production and Processing,	Summit	0.11	0.02	0.02	0.75	0.22	0.22	-63.01	-1.36	0.00	-1.00	-1.00	-1.00	-1.00	-4.00



NAICS(4) Description: Employment

NAICS(4)	Description:	Geography	Dec-2005	Dec-2010	Dec-2015	LQ 2005	LQ 2010	LQ 2015	SS 10-15	LQ 05	LQ 10	LQ 15	SS 05-10	SS 10-15	Index	
4242	Drugs and Druggists' Sundries Merchant Wholesalers,	Summit	0.34	0.12	0.13	0.78	0.30	0.31	-202.73	0.00	-1.00	-1.00	-1.00	-1.00	1.00	-2.00
4243	Apparel, Piece Goods, and Notions Merchant Wholesalers,	Summit	0.06	0.04	0.04	0.21	0.15	0.14	-19.30	-3.12	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
4244	Grocery and Related Product Merchant Wholesalers,	Summit	1.65	1.41	1.54	1.15	1.02	1.03	-268.76	0.00	0.00	0.00	0.00	0.00	-1.00	-2.00
4245	Farm Product Raw Material Merchant Wholesalers,	Summit	0.14	0.11	0.11	0.93	0.73	0.75	-95.75	1.08	0.00	-1.00	-1.00	-1.00	1.00	-2.00
4246	Chemical and Allied Products Merchant Wholesalers,	Summit	0.82	0.64	0.64	3.06	2.65	2.60	-135.79	1.00	1.00	1.00	1.00	1.00	-1.00	1.00
4247	Petroleum and Petroleum Products Merchant Wholesalers,	Summit	0.14	0.09	0.09	0.69	0.51	0.49	-40.63	-4.94	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
4248	Beer, Wine, and Distilled Alcoholic Beverage Merchant Wholesalers,	Summit	0.32	0.11	0.13	1.08	0.35	0.35	-251.50	3.67	0.00	-1.00	-1.00	-1.00	-1.00	-4.00
4249	Miscellaneous Nondurable Goods Merchant Wholesalers,	Summit	0.21	0.21	0.21	0.28	0.33	0.33	21.61	-2.85	-1.00	-1.00	1.00	1.00	-1.00	-3.00
4251	Wholesale Electronic Markets and Agents and Brokers,	Summit	1.74	1.85	2.27	1.15	1.14	1.14	-108.34	0.00	0.00	0.00	0.00	0.00	-1.00	-2.00
4542	Vending Machine Operators,	Summit	0.52	0.14	0.12	5.05	1.82	1.92	-271.71	4.36	1.00	1.00	1.00	-1.00	1.00	3.00
4543	Direct Selling Establishments,	Summit	0.22	0.04	0.04	0.73	0.15	0.16	-157.07	0.61	-1.00	-1.00	-1.00	-1.00	1.00	-3.00
4811	Scheduled Air Transportation,	Summit	0.08	0.25	0.21	0.08	0.31	0.29	179.79	-21.46	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
4812	Nonscheduled Air Transportation,	Summit	0.09	0.13	0.13	0.99	1.45	1.37	36.70	-10.62	0.00	0.00	0.00	1.00	-1.00	0.00
4821	Rail Transportation,	Summit	0.14	0.12	0.12	0.29	0.28	0.26	-12.50	-9.21	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
4831	Deep Sea, Coastal, and Great Lakes Water Transportation,	Summit	0.00	0.00	0.00	0.02	0.02	0.02	-0.10	-0.10	-1.00	-1.00	0.00	0.00	0.00	-3.00
4832	Inland Water Transportation,	Summit	0.00	0.00	0.00	0.04	0.03	0.03	-0.42	-0.25	-1.00	-1.00	0.00	0.00	0.00	-3.00
4841	General Freight Trucking,	Summit	4.09	3.13	3.02	2.04	1.86	1.81	-467.91	-149.30	1.00	1.00	1.00	-1.00	-1.00	1.00
4842	Specialized Freight Trucking,	Summit	0.64	0.44	0.44	0.74	0.60	0.58	-135.24	-20.46	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
4851	Urban Transit Systems,	Summit	0.03	0.05	0.05	0.34	0.57	0.53	17.58	-4.99	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
4852	Interurban and Rural Bus Transportation,	Summit	0.00	0.01	0.01	0.10	0.20	0.19	3.54	-0.76	-1.00	-1.00	1.00	1.00	-1.00	-3.00
4853	Taxi and Limousine Service,	Summit	0.04	0.07	0.07	0.31	0.52	0.49	25.97	-4.52	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
4854	School and Employee Bus Transportation,	Summit	0.09	0.18	0.21	0.26	0.49	0.46	84.40	-20.17	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
4855	Charter Bus Industry,	Summit	0.01	0.01	0.01	0.10	0.25	0.24	7.45	-0.53	-1.00	-1.00	-1.00	1.00	0.00	-2.00
4859	Other Transit and Ground Passenger Transportation,	Summit	0.03	0.08	0.10	0.23	0.54	0.51	44.15	-6.05	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
486	Pipeline Transportation,	Summit	0.11	0.09	0.09	1.37	1.22	1.17	-17.08	-5.05	0.00	0.00	0.00	-1.00	-1.00	-2.00
487	Scenic and Sightseeing Transportation,	Summit	0.00	0.00	0.00	0.08	0.08	0.08	-0.62	-0.16	-1.00	-1.00	0.00	0.00	0.00	-3.00
4881	Support Activities for Air Transportation,	Summit	0.06	0.06	0.06	0.21	0.23	0.22	2.55	-3.17	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
4882	Support Activities for Rail Transportation,	Summit	0.03	0.03	0.03	0.69	0.67	0.59	-2.61	-4.12	-1.00	-1.00	-1.00	-1.00	-1.00	-5.00
4883	Support Activities for Water Transportation,	Summit	0.01	0.01	0.01	0.06	0.07	0.07	0.41	-0.20	-1.00	-1.00	-1.00	1.00	0.00	-2.00
4884	Support Activities for Road Transportation,	Summit	0.15	0.19	0.21	0.94	1.19	1.11	32.89	-19.28	0.00	0.00	0.00	1.00	-1.00	0.00
4889	Freight Transportation Arrangement,	Summit	0.22	0.24	0.24	0.60	0.69	0.66	20.22	-14.47	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
4899	Other Support Activities for Transportation,	Summit	0.06	0.06	0.05	0.93	1.10	1.02	6.20	-5.12	0.00	0.00	0.00	1.00	-1.00	0.00
4921	Couriers and Express Delivery Services,	Summit	1.21	1.00	0.96	1.13	1.07	1.02	-112.28	-58.55	0.00	0.00	0.00	-1.00	-1.00	-2.00
4922	Local Messengers and Local Delivery,	Summit	0.02	0.06	0.06	0.16	0.72	0.63	47.94	-9.09	-1.00	-1.00	1.00	-1.00	-1.00	-3.00
4931	Warehousing and Storage,	Summit	1.43	1.43	1.60	1.18	1.14	1.10	-118.66	-94.63	0.00	0.00	0.00	0.00	-1.00	-2.00
6111	Elementary and Secondary Schools,	Summit	1.59	1.65	1.68	0.93	0.97	0.95	-10.21	-67.14	0.00	0.00	0.00	-1.00	-1.00	-2.00
6112	Junior Colleges,	Summit	0.04	0.04	0.04	0.18	0.24	0.22	9.23	-5.97	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
6113	Colleges, Universities, and Professional Schools,	Summit	0.80	0.92	0.97	0.28	0.30	0.29	8.47	-33.96	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
6114	Business Schools and Computer and Management Training,	Summit	0.13	0.16	0.14	0.84	1.13	1.12	36.32	-4.76	0.00	0.00	0.00	1.00	-1.00	0.00
6115	Technical and Trade Schools,	Summit	0.21	0.17	0.18	0.99	0.70	0.61	-81.58	-29.42	0.00	-1.00	-1.00	-1.00	-1.00	-4.00
6116	Other Schools and Instruction,	Summit	0.28	0.39	0.44	0.54	0.66	0.62	53.46	-38.61	-1.00	-1.00	-1.00	1.00	-1.00	-3.00
6117	Educational Support Services,	Summit	0.15	0.21	0.30	0.93	1.00	0.87	3.92	-48.35	0.00	0.00	0.00	1.00	-1.00	0.00
6211	Offices of Physicians,	Summit	4.97	4.99	5.49	1.16	1.10	1.09	-515.95	-200.04	0.00	0.00	0.00	-1.00	-1.00	-2.00
6212	Offices of Dentists,	Summit	1.59	1.66	1.79	1.00	1.02	1.00	-48.06	-67.86	0.00	0.00	0.00	-1.00	-1.00	-2.00
6213	Offices of Other Health Practitioners,	Summit	1.37	1.98	2.41	1.22	1.48	1.44	288.94	-110.53	0.00	0.00	0.00	1.00	-1.00	0.00
6214	Outpatient Care Centers,	Summit	1.26	1.13	1.31	1.31	1.04	1.02	-354.19	-57.67	0.00	0.00	0.00	1.00	-1.00	-2.00
6215	Medical and Diagnostic Laboratories,	Summit	0.36	0.34	0.39	0.88	0.80	0.80	-50.68	-8.40	0.00	0.00	0.00	-1.00	-1.00	-2.00
6216	Home Health Care Services,	Summit	1.64	2.68	3.34	0.98	1.28	1.25	533.06	-153.82	0.00	0.00	0.00	1.00	-1.00	0.00
6219	Other Ambulatory Health Care Services,	Summit	0.77	0.96	1.13	1.83	1.99	1.94	32.81	-51.00	1.00	1.00	1.00	1.00	-1.00	3.00
6221	General Medical and Surgical Hospitals,	Summit	12.78	14.64	15.77	1.53	1.70	1.69	881.40	-471.76	1.00	1.00	1.00	1.00	-1.00	3.00



NAICS(4)	Description:	Geography	Employment										Index			
			Dec-2005	Dec-2010	Dec-2015	LQ 2005	LQ 2010	LQ 2015	SS 05-10	LQ 05	LQ10	LQ15		SS 05-10	SS 10-15	
6222	Psychiatric and Substance Abuse Hospitals,	Summit	0.28	0.31	0.35	1.49	1.50	1.47	-13.56	-12.00	0.00	0.00	0.00	-1.00	-1.00	-2.00
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals,	Summit	0.67	0.52	0.65	2.09	1.32	1.31	-345.49	-15.45	1.00	0.00	0.00	-1.00	-1.00	-1.00
6231	Nursing Care Facilities,	Summit	4.15	3.79	3.89	1.29	1.18	1.14	-571.12	-182.92	0.00	0.00	0.00	-1.00	-1.00	-2.00
6232	Residential Mental Retardation, Mental Health and Substance	Summit	1.16	1.22	1.35	1.15	1.09	1.05	-129.98	-70.83	0.00	0.00	0.00	-1.00	-1.00	-2.00
6233	Community Care Facilities for the Elderly,	Summit	1.88	2.60	3.07	1.50	1.85	1.81	393.06	-130.24	0.00	1.00	1.00	1.00	-1.00	2.00
6239	Other Residential Care Facilities,	Summit	0.36	0.37	0.38	1.08	1.11	1.09	-8.04	-13.95	0.00	0.00	0.00	-1.00	-1.00	-2.00
6241	Individual and Family Services,	Summit	1.91	1.76	2.27	1.02	0.75	0.74	-757.98	-64.46	0.00	-1.00	-1.00	-1.00	-1.00	-4.00
6242	Community Food and Housing, and Emergency and Other Rel	Summit	0.27	0.36	0.40	1.02	1.32	1.29	68.78	-17.98	0.00	0.00	0.00	1.00	-1.00	0.00
6243	Vocational Rehabilitation Services,	Summit	0.34	0.71	0.75	0.44	0.86	0.84	330.07	-26.39	-1.00	0.00	0.00	1.00	-1.00	-1.00
6244	Child Day Care Services,	Summit	1.26	1.55	1.69	0.78	0.92	0.90	163.94	-62.44	0.00	0.00	0.00	1.00	-1.00	0.00
8111	Automotive Repair and Maintenance,	Summit	2.99	2.59	2.78	1.65	1.66	1.73	-113.36	66.27	1.00	1.00	1.00	-1.00	1.00	3.00
8112	Electronic and Precision Equipment Repair and Maintenance,	Summit	0.24	0.21	0.23	1.14	1.13	1.19	-12.51	8.16	0.00	0.00	0.00	-1.00	1.00	0.00
8113	Commercial and Industrial Machinery and Equipment (except	Summit	0.49	0.69	0.81	1.42	1.99	2.08	173.62	18.50	0.00	0.00	0.00	-1.00	1.00	0.00
TOT	Total Payroll Employment (including non-BLS sectors),	Summit	284.45	264.94	287.23	1.00	1.00	1.00			0.00	1.00	1.00	1.00	1.00	4.00



NAICS(4)	Description	Geography	Employment	Dec-2005	Dec-2010	Dec-2015	LQ 2005	LQ 2010	LQ 2015	SS 05-10	SS 10-15	LQ 05	LQ10	LQ15	SS 05-10	SS 10-15	Index
3314	Nonferrous Metal (except Aluminum) Product	7 counties	0.87	0.72	0.69	1.17	1.24	1.20	1.20	4.25	-42.94	0.00	0.00	0.00	1.00	1.00	0.00
3315	Forging and Stamping,	7 counties	5.93	3.64	3.43	3.50	3.15	3.04	3.04	-634.80	-212.92	1.00	1.00	1.00	1.00	-1.00	-1.00
3321	Cutlery and Handtool Manufacturing,	7 counties	6.17	4.35	4.15	5.38	4.91	4.67	4.67	-705.97	-317.87	1.00	1.00	1.00	1.00	-1.00	-1.00
3322	Architectural and Structural Metals Manufactur	7 counties	1.80	1.50	1.29	3.09	3.74	3.69	3.69	187.45	-50.39	1.00	1.00	1.00	1.00	1.00	1.00
3323	Boiler, Tank, and Shipping Container Manufactur	7 counties	4.30	3.12	3.18	1.04	0.96	0.97	0.97	-462.82	-49.34	0.00	0.00	0.00	0.00	-1.00	-1.00
3324	Hardware Manufacturing,	7 counties	1.63	2.86	2.95	1.73	3.34	3.25	3.25	1286.95	-152.81	1.00	1.00	1.00	1.00	1.00	1.00
3325	Spring and Wire Product Manufacturing,	7 counties	1.46	0.97	0.87	2.40	2.27	2.26	2.26	36.57	-16.19	1.00	1.00	1.00	1.00	1.00	1.00
3326	Machine Shops, Turned Product, and Screw, Nut	7 counties	9.32	6.24	6.74	2.61	1.98	1.89	1.89	-2491.51	-465.02	1.00	1.00	1.00	1.00	-1.00	-1.00
3328	Coating, Engraving, Heat Treating, and Allied	7 counties	5.26	3.38	3.26	3.52	2.89	2.80	2.80	-976.90	-191.28	1.00	1.00	1.00	1.00	-1.00	-1.00
3329	Other Fabricated Metal Product Manufacturing,	7 counties	10.97	10.14	10.35	3.76	4.28	4.33	4.33	688.09	-126.40	1.00	1.00	1.00	1.00	-1.00	-1.00
3331	Agriculture, Construction, and Mining Machinery	7 counties	1.72	1.48	1.76	0.80	0.71	0.70	0.70	-297.81	-64.73	0.00	0.00	0.00	0.00	-1.00	-1.00
3332	Industrial Machinery Manufacturing,	7 counties	2.24	1.68	1.59	1.75	1.79	1.77	1.77	-55.22	-55.76	1.00	1.00	1.00	1.00	-1.00	-1.00
3333	Commercial and Service Industry Machinery	7 counties	1.09	0.76	0.72	0.95	0.86	0.88	0.88	-124.31	-1.65	0.00	0.00	0.00	0.00	-1.00	-1.00
3334	Ventilation, Heating, Air-Conditioning, and	7 counties	2.12	1.69	1.61	1.34	1.46	1.47	1.47	49.64	-26.57	0.00	0.00	0.00	0.00	-1.00	-1.00
3335	Metalworking Machinery Manufacturing,	7 counties	5.67	4.79	4.45	3.19	3.19	3.15	3.15	-290.05	-152.79	1.00	1.00	1.00	1.00	-1.00	-1.00
3336	Engine, Turbine, and Power Transmission Equipm	7 counties	1.27	1.16	1.28	1.26	1.29	1.28	1.28	-38.19	-42.63	0.00	0.00	0.00	0.00	-1.00	-1.00
3339	Other General Purpose Machinery Manufacturin	7 counties	6.24	5.35	5.36	2.24	2.39	2.36	2.36	37.05	-194.50	1.00	1.00	1.00	1.00	-1.00	-1.00
3341	Computer and Peripheral Equipment Manufactu	7 counties	0.50	0.41	0.38	0.24	0.26	0.24	0.24	17.21	-39.48	1.00	1.00	1.00	1.00	-1.00	-1.00
3342	Communications Equipment Manufacturing,	7 counties	0.56	0.86	0.76	0.38	0.72	0.66	0.66	378.71	-89.84	1.00	1.00	1.00	1.00	-1.00	-1.00
3343	Audio and Video Equipment Manufacturing,	7 counties	0.03	0.92	0.02	0.10	0.15	0.14	0.14	10.11	-2.49	1.00	1.00	1.00	1.00	-1.00	-1.00
3344	Semiconductor and Other Electronic Component	7 counties	1.03	0.92	0.85	0.22	0.26	0.24	0.24	89.01	-81.86	1.00	1.00	1.00	1.00	-1.00	-1.00
3345	Navigation, Measuring, Electromedical, and Co	7 counties	3.63	3.21	3.51	0.80	0.81	0.76	0.76	-119.03	-307.29	0.00	0.00	0.00	0.00	-1.00	-1.00
3346	Manufacturing and Reproducing Magnetic and	7 counties	0.32	0.33	0.26	0.69	1.35	1.29	1.29	150.83	-18.92	1.00	1.00	1.00	1.00	-1.00	-1.00
3351	Electric Lighting Equipment Manufacturing,	7 counties	1.37	0.67	0.60	2.17	1.48	1.44	1.44	-369.34	-32.49	1.00	1.00	1.00	1.00	-1.00	-1.00
3352	Household Appliance Manufacturing,	7 counties	1.82	0.99	0.97	2.07	1.62	1.57	1.57	-350.64	-51.32	1.00	1.00	1.00	1.00	-1.00	-1.00
3353	Electrical Equipment Manufacturing,	7 counties	4.04	3.96	4.06	2.57	2.84	2.82	2.82	158.17	-118.67	1.00	1.00	1.00	1.00	-1.00	-1.00
3359	Other Electrical Equipment and Component	7 counties	1.88	1.50	1.45	1.34	1.29	1.25	1.25	-138.56	-92.16	0.00	0.00	0.00	0.00	-1.00	-1.00
3361	Motor Vehicle Manufacturing,	7 counties	2.00	1.24	1.21	0.78	0.91	0.97	0.97	107.89	48.83	0.00	0.00	0.00	0.00	1.00	1.00
3362	Motor Vehicle Body and Trailer Manufacturing,	7 counties	1.27	0.95	1.08	0.72	0.87	0.84	0.84	116.36	61.26	1.00	1.00	1.00	1.00	1.00	1.00
3363	Motor Vehicle Parts Manufacturing,	7 counties	15.26	6.28	6.53	2.18	1.49	1.62	1.62	-3436.51	384.28	1.00	1.00	1.00	1.00	-1.00	-1.00
3364	Aerospace Product and Parts Manufacturing,	7 counties	2.48	2.10	2.70	0.53	0.45	0.58	0.58	-512.64	554.45	1.00	1.00	1.00	1.00	-1.00	-1.00
3365	Railroad Rolling Stock Manufacturing,	7 counties	0.03	0.01	0.01	0.10	0.06	0.06	0.06	-7.75	-0.78	1.00	1.00	1.00	1.00	-1.00	-1.00
3366	Ship and Boat Building,	7 counties	0.21	0.13	0.16	0.13	0.10	0.11	0.11	-46.17	8.50	1.00	1.00	1.00	1.00	-1.00	-1.00
3369	Other Transportation Equipment Manufacturing,	7 counties	0.40	0.21	0.27	0.99	0.60	0.65	0.65	-157.79	14.26	0.00	0.00	0.00	0.00	-1.00	-1.00
3371	Household and Institutional Furniture and	7 counties	2.04	1.46	1.54	0.51	0.66	0.69	0.69	246.32	38.18	1.00	1.00	1.00	1.00	1.00	1.00
3372	Office Furniture (including Fixtures) Manufactur	7 counties	1.30	0.87	0.91	0.95	0.95	0.94	0.94	-50.26	-27.91	0.00	0.00	0.00	0.00	-1.00	-1.00
3379	Other Furniture Related Product Manufacturing,	7 counties	0.19	0.15	0.17	0.36	0.44	0.45	0.45	21.76	-0.25	1.00	1.00	1.00	1.00	-1.00	-1.00
3391	Medical Equipment and Supplies Manufacturing,	7 counties	3.14	3.12	3.25	1.01	1.05	1.03	1.03	-63.97	-156.12	0.00	0.00	0.00	0.00	-1.00	-1.00
3399	Other Miscellaneous Manufacturing,	7 counties	4.88	3.80	3.42	1.36	1.44	1.45	1.45	1.83	-51.83	0.00	0.00	0.00	0.00	-1.00	-1.00
4231	Motor Vehicle and Motor Vehicle Parts and	7 counties	4.05	3.52	3.73	1.14	1.15	1.20	1.20	-182.11	72.71	0.00	0.00	0.00	0.00	-1.00	-1.00
4232	Furniture and Home Furnishing Merchant	7 counties	1.16	1.18	1.20	0.99	1.27	1.31	1.31	202.72	12.82	0.00	0.00	0.00	0.00	1.00	1.00
4233	Lumber and Other Construction Materials	7 counties	2.33	1.64	1.71	0.89	0.88	0.91	0.91	-125.69	29.30	0.00	0.00	0.00	0.00	1.00	1.00
4234	Professional and Commercial Equipment and	7 counties	7.11	7.01	7.29	1.08	1.18	1.24	1.24	254.71	144.93	0.00	0.00	0.00	0.00	1.00	1.00
4235	Metal and Mineral (except Petroleum) Merchan	7 counties	4.18	3.39	3.42	3.28	3.06	3.16	3.16	-466.14	30.59	1.00	1.00	1.00	1.00	-1.00	-1.00
4236	Electrical and Electronic Goods Merchant	7 counties	4.75	4.44	4.47	1.34	1.41	1.48	1.48	-31.02	93.28	0.00	0.00	0.00	0.00	-1.00	-1.00
4237	Hardware, and Plumbing and Heating Equipme	7 counties	4.14	3.44	3.72	1.64	1.59	1.69	1.69	-316.80	143.81	1.00	1.00	1.00	1.00	-1.00	-1.00
4238	Machinery, Equipment, and Supplies Merchant	7 counties	11.05	9.70	10.35	1.62	1.57	1.64	1.64	-941.42	245.69	1.00	1.00	1.00	1.00	-1.00	-1.00
4239	Miscellaneous Durable Goods Merchant	7 counties	3.88	3.41	3.75	1.34	1.27	1.32	1.32	-399.05	58.01	0.00	0.00	0.00	0.00	-1.00	-1.00
4241	Paper and Paper Product Merchant	7 counties	2.12	1.65	1.66	1.35	1.28	1.35	1.35	-197.33	52.62	0.00	0.00	0.00	0.00	-1.00	-1.00



