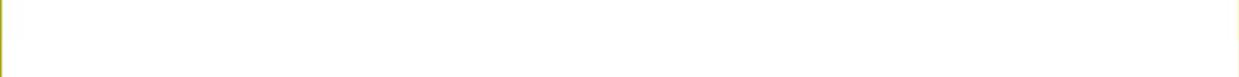




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# Economic Composition of the East Central Region of Minnesota: Industries and Performance



Authored by Brigid Tuck with assistance from Elizabeth Templin  
Presented in partnership with the EDA Center at the University of Minnesota, Crookston



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## ECONOMIC COMPOSITION OF EAST CENTRAL REGION OF MINNESOTA: KEY FINDINGS

To analyze the economic composition of the East Central region of Minnesota, University of Minnesota Extension conducted an analysis of industry outputs, employment and wages, and interdependencies. Following is a report of key findings. This report is presented in partnership with the EDA Center at the University of Minnesota, Crookston.

Professional and business services and manufacturing are the top two drivers of the East Central regional economy in terms of output. Professional and business services create 25 percent of output. Manufacturers create 22 percent of all output. Other key industries include government, construction, and health and social services. Government (including tribal government), professional and business services, and health and social services, are the largest industries, as measured by jobs. A closer analysis revealed the following strengths and concerns.

### REGIONAL STRENGTHS:

- **Overall employment.** The number of jobs in the East Central region grew steadily through the 2000s. The region lost jobs during the Great Recession of 2008-2009. However, since 2010, the region has added jobs and the total number of jobs in 2013 is only 1.5 percent below the peak in 2007.
- **Manufacturing.** The East Central region **added** jobs in the manufacturing industry between 2003 and 2013, despite a decrease in the number of manufacturing jobs across the nation. The 2013 average weekly wage for the manufacturing industry in the East Central region was \$822 or nearly \$200 above the average weekly wage across all industries. Between 2000 and 2013, the average weekly wage in the manufacturing industry in the region grew by approximately 2 percent, after adjusting for inflation.
- **Administrative and support and waste management and remediation services.** This sector was the fastest growing sector in the professional and business services industry. The administrative and support and waste management and remediation services sector grew at a competitive rate. Wages in the sector are relatively strong — higher than the average weekly wage across all industries. The average weekly wage in the sector also grew by an inflation-adjusted 5 percent between 2003 and 2013.

### REGIONAL CONCERNS:

The analysis also revealed areas of potential concern for the region from an economic standpoint. These industries are not as competitive in the region and may warrant additional attention and exploration.

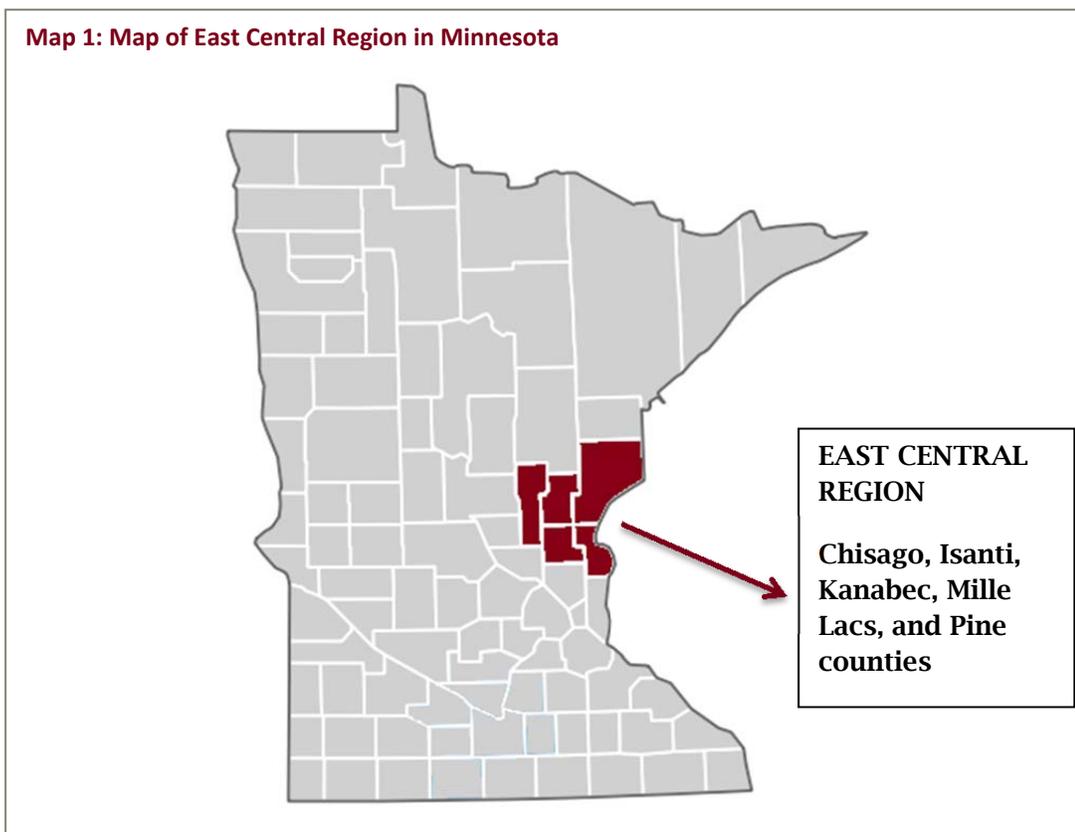
- **Health care and social services.** While the health and social services industry was the fastest growing industry (measured by job growth) between 2003 and 2013, shift-share analysis indicates the industry could have added more jobs. The average weekly wage in the industry in the East Central region fell by nearly 5 percent (after adjusting for inflation) between 2004 and 2013.
- **Construction.** The construction industry in the East Central region shed the most jobs between 2003 and 2013. Nationally, the industry suffered from the effects of the Great Recession, however shift-share analysis indicates the region lost more jobs than would have been expected given those national trends.

## STUDY BACKGROUND AND OVERVIEW EAST CENTRAL REGION

Minnesota's regions differ in size, social and economic characteristics, history, and geography. These differences influence the economy of the regions, as well as economic development decisions and discussions. Therefore, conversations about Minnesota's economy and its economic future must include discussions of the diverse drivers of economic activity in the state's regions. University of Minnesota Extension, responding to a broader conversation about the role of Greater Minnesota in the state's economy, is producing economic profile reports on 12 Minnesota non-metro regions, as defined by the boundaries of the Regional Development Organizations. This report is provided in partnership with the EDA Center at the University of Minnesota, Crookston.

The East Central region, represented by the East Central Regional Development Commission, is comprised of five counties including Chisago, Isanti, Kanabec, Mille Lacs, and Pine. This region includes Mora, Cambridge, Milaca, Pine City, Hinckley, North Branch, Princeton, Lindstrom, Taylors Falls, and Sandstone.

The Mille Lacs Band of Ojibwe also plays an important role in the regional economy. In this report, the government sector includes United States federal, state, and local government entities. Local government also includes tribal government and tribally-owned enterprises.



The goals of the report are 1) to identify the region's strengths - both industries that are the current core of the economy and emerging industries - and 2) to identify concerns for the region. Regional concerns focus on industries that may be underperforming or declining.

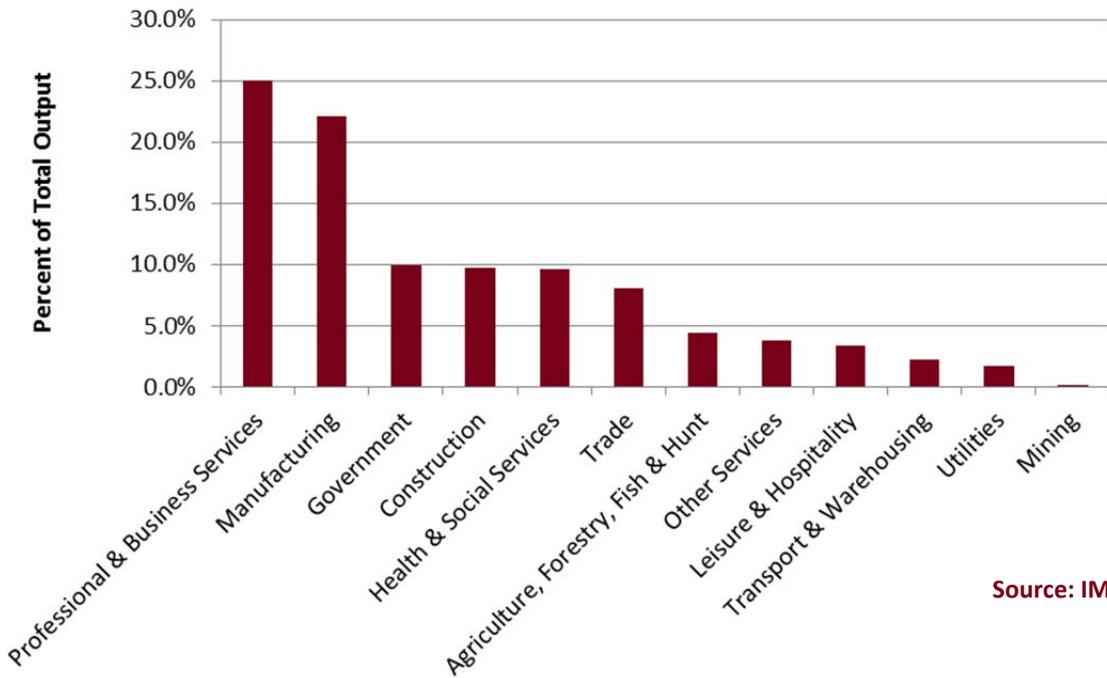
To ascertain which industries are regional strengths and which are potential regional concerns, this report draws from output, employment, and wage data. The first section looks at industry outputs. Output measures the value of sales by industry. Studying output by industry provides perspective on which industries are driving the highest sales in the region. The second section details employment. Studying employment by industry identifies industries that employ the highest number of people in the region. The employment section of this report also discusses wages. The third section of this report looks at economic interdependencies. Examining how sectors interact and connect with each other can provide powerful insights into an economy.

## INDUSTRY OUTPUT

Output is an important factor to consider when assessing the economic composition of a specific geography. Output provides information about the economic activity of a region and also is directly tied to employment.

In 2012, businesses and industries in the East Central region produced \$8.4 billion in goods and services, according to estimates from the IMPLAN economic model. Output in the East Central region accounts for approximately 1 percent of Minnesota’s \$567.8 billion economy and approximately 4 percent of Greater Minnesota’s \$218.8 billion economy. In 2012, according to the IMPLAN model, the professional and business services industry created 25 percent of total output in the East Central region of Minnesota (chart 1). Manufacturing created 22 percent of output. While these two industries account for a significant share of output in the region (47 percent), the regional economy is fairly diverse, as government, construction, health and social services, and trade each contribute about 10 percent of output in the region.

Chart 1: Industry Share of Total Output East Central



Source: IMPLAN

Chart 1 shows output by major industry category, helping to frame discussions about output in the region. However, examining output by sector can be valuable as well. Sectors are a more refined level of analysis. Individual sectors form industries. For example, crop production and animal production are sectors within the industry of agriculture.

Beyond the major industry categories, the top ten *sectors* in the East Central region produce an estimated \$3.1 billion of output (table 1). The housing market sector produces just over \$670 million in output. *The housing market sector here largely reflects mortgage payments for housing.*<sup>1</sup> The housing market sector exists in the IMPLAN database used for this analysis because IMPLAN is an input-output model which traces the flow of goods and services in an economy. Households are actors in the local economy and housing is one of a household’s largest expenses. Therefore, there needs to be a system for accounting for those expenditures. Household expenditures for rental units are included in another sector.

The professional and business services industry produced 25 percent of output in the East Central region. The sectors within the industry with high output include monetary authorities and depository credit intermediation activities (\$329.5 million) and real estate establishments (\$292.5 million).

Manufacturing produced 22 percent of output in the region. Within the manufacturing industry, the largest sectors, according to the IMPLAN model, and highlighted in table 1, are “other” plastics manufacturing (\$195.8 million) and “all other” transportation equipment manufacturing (\$175.8 million).

**Table 1: Top Ten Sectors in East Central Region, Sorted by Output**

Sector	Total Output (millions)	Output per Worker
Housing market	\$673.1	N/A
State & local government, non-education	\$347.0	\$49,300
Monetary authorities and depository credit intermediation activities (banks)	\$329.5	\$406,500
Real estate establishments	\$292.5	\$159,700
Construction of other new nonresidential structures	\$271.0	\$140,600
State & local government, education	\$264.2	\$52,500
Nursing and residential care facilities	\$252.6	\$59,800
Offices of physicians, dentists, and other health practitioners	\$234.1	\$107,700
Food services and drinking places	\$204.9	\$50,000
“Other” plastics product manufacturing	\$195.4	\$254,000
Top ten total	\$3,064.3 (36%)	
Total output in region	\$8,442.5	<b>Source: IMPLAN</b>

<sup>1</sup> For most households, expenditures for housing are based on the value of mortgage payments. However, IMPLAN also makes estimates for households that own their house outright. To be clear, the housing market is not a measure of the value of the physical housing stock.

Other top sectors in the region, as measured by output, include state and local government, non-education, and construction of other new nonresidential structures. As mentioned, state and local government, non-education includes both state and local government, as well as tribal government and tribal government operations.

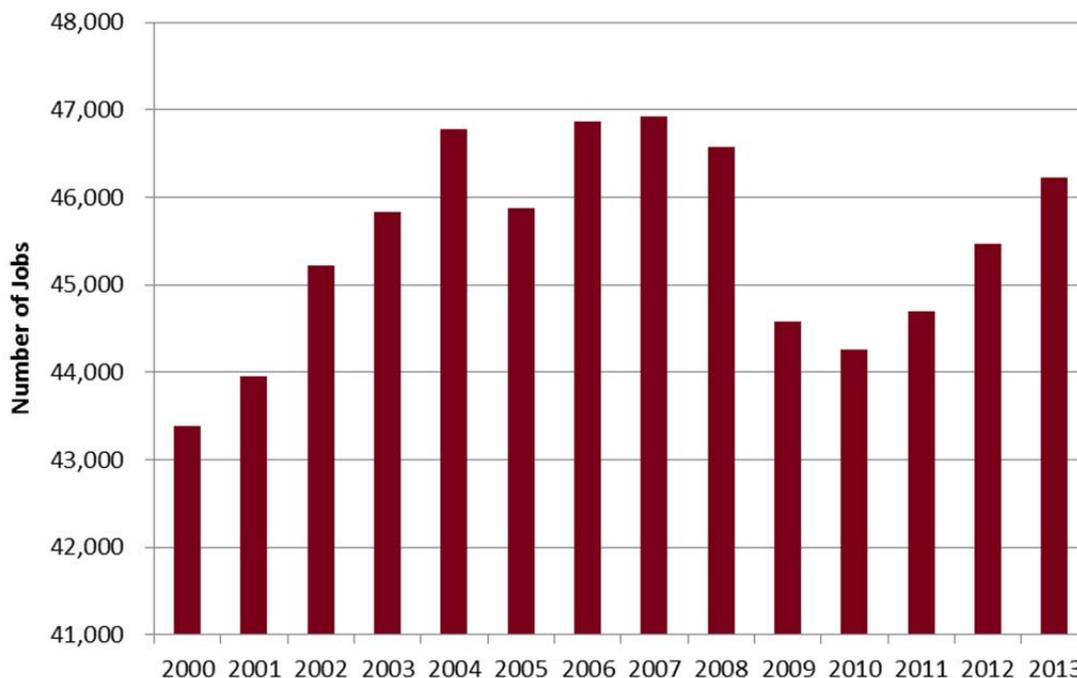
For the majority of the sectors in table 1, high output is driven by high productivity (output per worker). For example, each banking employee produces an estimated \$406,500 in output annually. The clear exceptions in the table are state and local government and food services and drinking places. Government output is linked primarily to the number of employees. Output is not the best measure for the government sector, because government does not make sales in the traditional sense of other industries. Output per worker is also often lower for service or labor intensive industries, such as food services, as it takes more workers to produce output.

The industries with the lowest output per worker in the region include private household services (households providing services to other households, such as cleaning) and agriculture and forestry support services (including custom planting, harvesting, and fertilizer application). Since the model measures one job as one job, regardless of its status as full-time, part-time, or seasonal, these two industries, which have relatively high seasonal and part-time employment, likely have lower output per worker because a significant share of the workers are working less than year-round and less than full-time.

## EMPLOYMENT AND WAGES

The number of jobs in the region rose grew steadily between 2000 and 2004 (chart 2). The number of jobs in the East Central region decreased consistent with the 2008-2009 Great Recession. While jobs in the region have been increasing consistently since 2010, the total number is still about 1.5 percent below the peak in 2007.

**Chart 2: Total Employment 2000-2013 East Central Minnesota**



Source: QCEW

The highest employment growth industries in the East Central region between 2003 and 2013 were health care and social assistance; government (including tribal government); and administrative and support and waste management and remediation services.<sup>2</sup> The industries suffering the most job losses during the period in the East Central region include construction, retail trade, and finance and insurance (table 2).

Shift-share analysis provides an examination of the drivers of growth and decline for a specific industry in a specific region through comparison to industry and national trends. The analysis provides an interesting interpretation of the changes in each industry. In this analysis, the primary focus is on the competitive effect. A strongly positive competitive effect indicates particular characteristics of the local economy are driving growth in the region. A strongly negative competitive effect can be interpreted as a warning that the local economy may not be faring as well as it should. For more on shift-share analysis and how to interpret the results, see page 13.

The health care and social assistance industry added the most jobs between 2003 and 2013 (1,106 jobs). If the health care and social assistance industry in the East Central region had grown at the same overall rate as the national economy in all industries, it would have added 391 jobs (national growth effect). The health care and social assistance industry at the national level also gained jobs during the time period. If the East Central region's health care and social assistance industry had grown at the same rate as the health care and social assistance industry nationally, then it would have added an additional 1,882 jobs (industry mix effect). The balance of these two effects (industry and national growth) predict the East Central region should have added 2,273 health care and social assistance jobs.

**Table 2: Shift-Share Analysis for Growth and Decline Industries<sup>3</sup>**

Industry	Change 2003-2013	Industry Mix Effect	National Growth Effect	Competitive Effect
<b>Top 3 Job Adding Industries</b>				
Health care and social assistance	1,106	1,882	391	(-1,167)
Government	370	(423)	592	201
Administrative and support and waste management and remediation services	354	29	34	292
<b>Top 3 Job Loss Industries</b>				
Construction	(878)	(494)	135	(518)
Retail trade	(417)	(234)	291	(474)
Finance and insurance	(211)	(89)	57	(179)

Source: EMSI

However, since only 1,106 health care and social assistance jobs were added in the region, the health care and social assistance industry in the East Central region posted a negative competitive share effect. In other

<sup>2</sup> EMSI (Economic Modeling Systems, International). [www.economicmodeling.com](http://www.economicmodeling.com).

<sup>3</sup> For an explanation of shift-share analysis, please see the methodology section. Note, the competitive effect totals may not add due to rounding.

words, the health care and social assistance industry in the East Central region did not grow as fast as expected given national and industry trends.<sup>4</sup>

Within the health care and social assistance industry, the sector with the most positive competitive share was the ambulatory health care services sector. Ambulatory health care includes offices of physicians and dentists; outpatient care centers; and home health care. The sector added 1,215 jobs in the East Central region between 2003 and 2013. Of those jobs, 806 were due to the competitive effect. The hospital sector, however, shed 1,174 jobs in the time period, resulting in a negative competitive effect of 1,536 jobs.

After health care and social assistance, government was the industry to add the most jobs between 2003 and 2013. By EMSI's definition, government includes federal, tribal, state, and local government jobs. Publicly-operated educational institutions and publicly-owned hospitals are also included in this category. While the number of federal and state government jobs in East Central Minnesota declined in the time period, local government added 594 jobs. Jobs were added in both local government - non-education, and local government - education. Local government jobs would include tribal government jobs.

The construction industry in the East Central region shed 878 jobs during the time period. The jobs reflect a 31 percent decline in the number of construction jobs in the region. The construction industry was negatively affected by the Great Recession and the job losses were even more than expected given national trends. Job losses in the region were spread across different types of construction. The most jobs were lost by foundation, structure, and building exterior contractors who shed 304 jobs. Building equipment contractors and residential building construction were also hard hit. The sector called "other" specialty trade contractors was the only one within construction to increase the number of jobs, adding 32 jobs in the time period.

The retail trade industry also lost jobs (417) in the East Central region during the time period. The jobs reflect a 7 percent decline in the number of retail trade jobs in the region. The retail trade industry lost jobs nationally, but job losses in the East Central region exceeded the expectations given those losses. Between 2003 and 2013, general merchandise stores (286 jobs) and health and personal care stores (65 jobs) were the only sectors to add jobs. The sectors with the largest number of job losses were food and beverage stores (-271), nonstore retailers (-109), and furniture and home furnishing stores (-108).

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### *Key points for economic developers to consider from this employment data:*

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- Find ways to support competitive industries. This will likely mean engaging industry leaders to discuss the key drivers of economic advantage in this region, such as administrative and support and waste management and remediation services. What factors are giving the East Central region a competitive advantage in this industry? What components of the industry are growing? What can be done to support this growth?
- Certain industries, such as health care, can post job growth, but further analysis indicates the industry could have grown faster. Are there strategies to support additional growth? Other regions in the state have a positive competitive share in health care. How do these regions differ from East Central?
- Industries that did not fare well during the recession fared even worse in the East Central region. Are there opportunities to support these industries? What factors led to these outcomes?

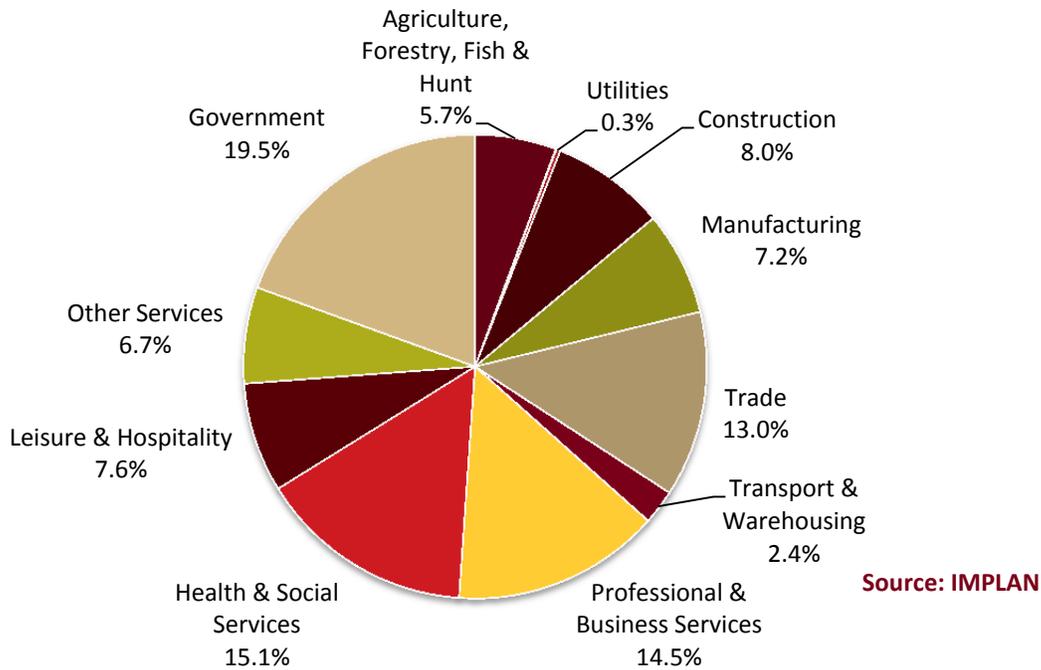
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<sup>4</sup> Note, publicly-owned health care facilities (state, local, and tribal) would be included in the government industry and not in the health care and social assistance industry.

## Employment and Wages by Industry

Employment by industry in the East Central region is depicted in chart 3. The government industry employs 19.5 percent of all workers in the East Central region. Note the government industry includes federal, state, local, and tribal governments, along with government owned-enterprises such as municipal liquor stores. The health and social service industry employs 15.1 percent of all workers. The professional and business services industry employs 14.5 percent of all workers in the region.

**Chart 3: Employment by Industry: East Central Region**



## Government and Government-Owned Enterprises

The largest industry, measured by employment, is government and government-owned enterprises, including tribal government operations. In the IMPLAN model used for this descriptive analysis, all publicly-owned institutions are categorized as government employment, unlike other sources which categorize government employment by the type of activity. Education is a good example here. In the IMPLAN model, all K-12 public education is included in the government industry, while other data sources would categorize it in the education industry. The government and government-owned enterprises industry also includes tribal government; government-owned enterprises that are run as independent businesses (such as municipal liquor stores); and public higher education institutions. Tribally-owned casinos would also be included in this industry.

In the East Central region, local government accounts for 88 percent of all government employment in the region. The sector called “local government – education and hospitals” employs 41 percent of all local government workers with the sector called “local government – non-education and hospitals” employing the

other 59 percent. During the 2003 to 2013 time period, state and federal government slightly decreased the number of employees in the region. Local government employment increased by 594 jobs.

## Health and Social Services

The second largest industry is the health care and social services industry. This industry was the fastest growing in the East Central region between 2003 and 2013. There are four primary sectors within the industry – nursing and residential care; ambulatory health care; hospitals; and social assistance. In 2013, nursing and residential care facilities posted 4,024 jobs; ambulatory health care 2,380 jobs; hospitals 1,604 jobs; and social assistance 1,196 jobs. Three of those sectors grew between 2003 and 2013, but the hospital sector shed 1,174 jobs, reflecting a 42 percent decline.<sup>5</sup> Ambulatory health care services grew at the fastest rate, 104 percent or 1,215 jobs.

The nursing and residential care facilities sector has a location quotient of 3.62. Location quotients indicate the level of concentration of jobs in the region as compared to the nation. In the East Central region, there are more than three times as many jobs in the nursing and residential care facilities sector compared to the national average. (For more on location quotients, see page 14). The number of jobs in the nursing and residential care facilities sector grew by 16 percent between 2003 and 2013. Growth was strongest at residential mental health substance abuse facilities, and at continuing care retirement communities and assisted living facilities for the elderly. Residential mental health and substance abuse facilities have a location quotient of 11.13.

Wages in the health and social service industry are slightly higher than the average wage across all industries. In 2013, the average weekly wage in the health and social services industry was \$713 while the average weekly wage across all industries was \$636. However, the average weekly wage in the health and social services industry declined after adjusting for inflation, by approximately 5 between 2004 and 2013.

Employment in the health care and social services industry is spread across the five counties of the region. The most jobs are in Chisago (3,776 jobs) and Isanti (2,551 jobs) counties. Mille Lacs County has 1,760 jobs, Pine County has 836 jobs, and Kanabec County has 375 jobs.

Wages for 2013 in the health care and social assistance sector were highest in Chisago County at \$762 a week. The average weekly wage in Mille Lacs County as \$575 and was \$524 in Pine County. Data are not available for other counties due to data disclosure rules.<sup>6</sup>

## Professional and Business Services

Within the professional and business services industry, the largest sectors in the East Central region, measured by employment include administrative and support and waste management and remediation services (1,050 jobs); finance and insurance (972 jobs); professional, scientific, and technical services (801 jobs); and information (389 jobs).

From 2003 to 2013, the fastest rate of growth was recorded in the administrative and support and waste management and remediation services sector. The addition of 354 jobs in that sector represents an increase of 51 percent between 2003 and 2013. Interestingly, according to the EMSI database, the growth in the number of jobs in this sector has been spread across four counties in the region. Pine County added the most new jobs in this sector, increasing employment by 125 jobs. Mille Lacs County added 81 new jobs, Chisago

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<sup>5</sup> Fairview Northland Medical Center is located in Princeton. The City of Princeton has portions located in Mille Lacs County (part of the East Central region) and portions located in Sherburne County (part of the Central region). Changes in the location of the hospital in Princeton may have resulted in a shift of jobs between counties.

<sup>6</sup> To protect individual business privacy, at least 3 businesses must report in a category for the data to be publicly released.

County added 35 jobs, and Isanti County added 68 jobs. Chisago County has the highest number of jobs in this sector.

The 2013 average weekly wage in the administrative and support and waste management and remediation services sector was \$677. This is approximately \$40 more than the average weekly wage across all industries in the region (\$636). It represents a 5 percent increase (adjusted for inflation) over the wage in 2000.

The professional, scientific, and technical services sector in the East Central region also grew during the period. The sector added 232 new jobs, a growth rate of 41 percent. The most jobs (90) were added in the management, scientific, and technical consulting services category. The second highest number of jobs (57) was added in the “other” professional, scientific, and technical services category. Job growth in this sector was highest in Mille Lacs County (added 184 jobs); Chisago County (added 55 jobs); Pine County (added 23 jobs); and Isanti County (added 9 jobs). Kanabec County lost 39 jobs.

The 2013 average weekly wage in the professional, scientific, and technical services sector was \$891. This is approximately \$250 more per week than the average weekly wage across all industries in the East Central region. The average weekly wage grew by 12 percent between 2008 and 2013, after adjusting for inflation.

## Manufacturing

Manufacturing accounts for 7 percent of employment in the East Central region. It is one of the largest sources of output in the region, so it bears discussion. Notably, between 2003 and 2013, the manufacturing industry in the East Central region **added** 175 new jobs. Manufacturing, at the national level, was one of the industries most negatively affected by the Great Recession, so the addition of new jobs is of note. The East Central region posted a competitive share of over 1,000 jobs, meaning given national industry trends, it should have lost 1,000 jobs.

The East Central region added jobs in the printing and related support activities sector (180 jobs), the transportation equipment sector (160 jobs), and the plastics and rubber products sector (53 jobs) among others. All three of the sectors posted positive competitive shares. The jobs gains were offset, in part, by losses in the computer and electronic product sector (-196 jobs), the electrical equipment, appliance, and component sector (-92 jobs), and the furniture and related product sector (-57 jobs).

According to the EMSI database, Chisago County had the most jobs in 2013 (2,237 jobs) followed by Isanti County (1,529 jobs), Mille Lacs County (852 jobs), Kanabec County (522 jobs), and Pine County (236 jobs). Chisago, Isanti, and Kanabec counties added jobs between 2003 and 2013. Mille Lacs County lost 355 jobs and Pine County lost 65 jobs.

The 2013 average weekly wage for the manufacturing industry in the East Central region was \$822 or nearly \$200 above the average weekly wage across all industries. Between 2000 and 2013, the average weekly wage in the manufacturing industry in the region grew by nearly 2 percent, after adjusting for inflation.

## LOCAL INTERDEPENDENCIES

Beyond studying basic structure, examining how sectors interact with each other can provide powerful insights into an economy. Input-output models have been developed to estimate how sectors connect within a region. This section of the report will examine two significant industries in the East Central regional economy — professional and business services and manufacturing — and their connections with other industries. Specifically, the analysis will focus on 1) finance (banking) and 2) plastic products manufacturing. These are two of the largest sectors within their respective industries as measured by output.

Multipliers include both indirect and induced effects. The discussion here focuses on indirect effects. Indirect effects are generated when a firm purchases inputs (goods and services) from other business establishments, which in turn purchase the goods and services that those supplier businesses need to produce their output. These are often referred to as supply chain effects. Induced effects are generated when employees of a local industry spend their wages in the region.

Multipliers are driven by the amount of purchases a sector makes from other sectors. Understanding what inputs are necessary for the production of a good or service, and the extent to which those inputs are produced locally, can provide insights into the potential for economic development from the sector.

### Professional and Business Services — Finance

Multipliers for financial sectors in the East Central region are estimated to range from 1.2 to 1.7. Table 3 shows the top inputs purchased locally by banks (monetary authorities and depository credit intermediation services), the percent of total input expenditures spent on the item, and the local availability of the item. For every dollar spent on inputs by banks, 8.6 percent is spent on securities, commodity contracts, investments and related services; 5.1 percent on services from other banks; and 0.9 percent on advertising and related services.

**Table 3: Top Purchases by Banks (Monetary Authorities and Depository Credit Intermediation Services) in the East Central Minnesota Region, Percent of Total Expenditures, and Local Availability**

<b>Input</b>	<b>Percent of Input Expenditures</b>	<b>More than 50% of Demand Available from Suppliers within the East Central Region</b>
Securities, commodity contracts, investments, and related services	8.6%	No
Monetary authorities and depository credit intermediation services (banks)	5.1%	Yes
Advertising and related services	0.9%	Yes
Nondepository credit intermediation and related services	0.9%	No
Maintained and repaired nonresidential buildings	0.8%	Yes
Eating and drinking places	0.7%	Yes
Services to building and dwellings	0.4%	Yes
Telecommunications	0.4%	No
Professional, scientific, and technical services	0.3%	Yes
Accounting, tax preparation, bookkeeping, and payroll services	0.3%	No

Source: IMPLAN

Banks are important sources of local demand for other banks<sup>7</sup>. Advertising and related services and maintained and repaired nonresidential buildings are also important sources of local demand.<sup>8</sup> These sectors with strong connections to banks are the top sectors for capturing the 20 to 70 cents of additional economic activity that flows from every dollar of banking output mentioned above. There may be opportunities for increased local production of securities, commodity contracts, investments, and related services and nondepository credit intermediation and related services, because banks are purchasing these outputs from outside the region.

Pursuing economic development based on possible opportunities for supply chain development is one economic development approach. However, before moving forward, decision-makers should: 1) take a scan of the industry, as it could be that the suppliers are located just outside the region as defined for this study and therefore considered local, and 2) explore the reasons for the current industry location, as location decisions are based on a broad variety of factors including proximity to supplies, transportation routes, and specialization and economies of scale.

### Manufacturing — Plastics Product Manufacturing

Output multipliers for the plastics product manufacturing sectors in the East Central region are estimated to range from 1.1 to 1.2. In other words, for every dollar of output generated by the sector (“other” plastics manufacturing, for example), \$0.10 to \$0.20 are generated in other regional sectors that supply that sector.

**Table 4: Top Purchases by “Other” Plastics Product Manufacturing Facilities in the East Central Minnesota Region, Percent of Total Expenditures, and Local Availability**

<b>Input</b>	<b>Percent of Input Expenditures</b>	<b>More than 50% of Demand Available from Suppliers within the East Central Region</b>
Plastics material and resins	29.7%	No
Plastic packaging material	3.2%	No
Wholesale trade	2.8%	No
Management of companies and enterprises	1.8%	No
Banks	1.4%	Yes
Electricity	1.4%	Yes
Professional, scientific, and technical services	1.2%	Yes
Refried petroleum products	1.2%	Yes
Plastics and rubber industry machinery	1.1%	No
Chemical products and preparations	1.1%	Yes

Source: IMPLAN

<sup>7</sup> Banks often make transactions with each other to provide services to clients.

<sup>8</sup> Local here is the East Central region.

Table 4 highlights expenditures by “other” plastics product manufacturers. For every dollar spent on inputs, “other” plastics product manufacturers are estimated to spend 29.7 percent on plastics materials and resins, 3.2 percent on plastics packaging and materials, and 2.8 percent on wholesale trade. Since the “other” plastics product manufacturing sector produces \$195.8 million of output in the region, this translates into “other” plastics product manufacturers buying \$39.5 million of product from plastics materials and resins manufacturers.

According to the IMPLAN model, the top three supplies that “other” plastics product manufacturers purchase (plastics materials and resins; plastic packaging materials; and wholesale trade), are not available in adequate local supply (defined here as 50 percent of demand being available from suppliers in the region). This may indicate opportunities to increase local supply of these goods and services. Banking, electricity, and professional, scientific, and technical services are available from local suppliers.

These two examples (finance and plastics manufacturing) demonstrate the importance of economic interdependencies and interactions in the region. In general, industries that purchase from local suppliers tend to have higher economic impacts in the region.

## **METHODOLOGY, DATA, AND SOURCES**

This report presents the economic characteristics of the region and an analysis of industries, income, employment, and local interdependencies. Three data sources were accessed in the preparation of the report. One data source is the IMPLAN database. IMPLAN is an input-output model developed by MIG, Inc. The database compiles a variety of sources to provide data on output, employment, and labor income by county for 440 economic sectors. A second data source is the Quarterly Census of Employment and Wages (QCEW) data provided by the Minnesota Department of Employment and Economic Development. This data is used, when necessary, to compliment or clarify the IMPLAN data. Finally, data from Economic Modeling Specialists International (EMSI) is presented in this report. The EMSI data in this report is derived from QCEW data; however, EMSI provides simple tools for performing calculations, such as shift-share analysis, on the data.

The boundaries of service of the Regional Development Commission were used for this study’s definition of the East Central region of Minnesota. The North American Industry Classification System (NAICS) code was used in the study. The NAICS code is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. This was used to enable uniformity and also for easy data accessibility.

Finally, data was analyzed with input from Extension Educators in the region and findings were compiled into the report.

### **Shift-Share Analysis**

The results of shift-share analysis are presented in this report. Shift-share analysis is a powerful tool for understanding the drivers of economic change in an industry. Shift-share analysis parses economic change (here employment changes) into three components: national growth, industrial mix, and competitive share.

- **National Growth:** National growth indicates how many jobs a local economy would have gained (or lost) as a result of the growth (or decline) of employment at the national level. For example, consider a local economy with 100,000 jobs at the beginning of the time period. If during the period under consideration, the number of jobs in the United States grew by a rate of 2 percent, then at the end of the time period under consideration, the local economy would be expected to have 102,000 jobs.
- **Industrial Mix:** Industrial mix indicates how many jobs a particular industry within the local economy would have gained (or lost) if the local industry grew (or declined) at a rate similar to the industry as a whole in the United States. For example, if 1,000 people were employed in the finance industry in the

local economy at the beginning of the period, and the finance industry as a whole in the U.S. grew at a rate of 10 percent, then at the end of the time period under consideration, the local finance industry would be expected to have 1,100 jobs.

- **Competitive Share:** Competitive share is the remainder of change in employment for the region examined. From our example, region’s employment should have grown by 2,100 jobs, looking at overall national growth and then growth in the finance industry itself. If the local economy actually grew by 3,100 jobs in the finance industry, then 1,000 jobs were added because the local economy grew faster than expected, given national and industry trends. Conversely, if the local economy grew by only 1,000 jobs, then the economy was not as competitive as it should have been, given national and industry trends.
- **Percent Competitive Share:** This is the percent of total jobs that are sourced from competitive share. A competitive share of 80 percent would indicate that 80 percent of the jobs during the time period were derived from the competitive share, rather than from national and industry trends.

## Location Quotients

This analysis reports the location quotient for certain industries. Location quotients are used in determining the concentration of a particular industry or sector in a region compared to a larger study area. In this analysis, the location quotient for the region versus the state is reported. If, say, 30 percent of employment in a region is in health care, while at the state only 15% of employment is in health care, then the location quotient would be 2, indicating that the region has twice as much employment in health care than the state as a whole.

## OTHER DATA RESOURCES

These data resources were not accessed in this report; however, they provide additional information that may be useful in considerations of the economic characteristics of a region.

Source	Link	Description
Harvard Business School and the U.S. Economic Development Administration	<a href="http://www.clustermapping.us/">http://www.clustermapping.us/</a>	Open data on regional industry clusters and economies, with analysis available for states, economic areas, metropolitan and micropolitan areas, counties, and customized regions based on counties. Data offers insights into performance, business environment and demographics.
Wilder Foundation	<a href="http://www.mncompass.org">www.mncompass.org</a>	Comprehensive data source for Minnesota counties and cities. In collaboration with the Initiative Foundations and others, Minnesota Compass has added data about smaller cities.
MN Demographers Office	<a href="http://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/index.jsp">http://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/index.jsp</a>	Go here for population estimates by EDR, County, and City/Townships. 2013 Estimates are available.
MN Land Economics	<a href="http://www.landeconomics.umn.edu/">http://www.landeconomics.umn.edu/</a>	Go here for information about land sales, land values, property taxes, soil type, etc. The database can be used to get information

		at the local, county, and state levels.
Headwaters Economics	<a href="http://headwaterseconomics.org/tools/eps-hdt">http://headwaterseconomics.org/tools/eps-hdt</a>	Generate your own socioeconomic profiles from federal data sources, by using the EPS-HDT Tool. The attached guidebook presents the data and provides a step by step walk-through on how to think about it.
DEED Data Tools	<a href="http://mn.gov/deed/data/data-tools/index.jsp">http://mn.gov/deed/data/data-tools/index.jsp</a>	DEED provides access to several data tools such as labor market data, unemployment data, and many others. Most labor market data can be accessed through the labor market portal: <a href="https://apps.deed.state.mn.us/lmi/rws/">https://apps.deed.state.mn.us/lmi/rws/</a>
University of Wisconsin Extension	<a href="http://fyi.uwex.edu/downtown-market-analysis/understanding-the-market/demographics-and-lifestyle-analysis/">http://fyi.uwex.edu/downtown-market-analysis/understanding-the-market/demographics-and-lifestyle-analysis/</a>	Learn more about demographic and lifestyle analysis
University of Wisconsin Extension	<a href="http://cced.ces.uwex.edu/files/2013/02/Resource-Documents-Total-12.pdf">http://cced.ces.uwex.edu/files/2013/02/Resource-Documents-Total-12.pdf</a>	Discover useful links to sources of information for economic developers
OnTheMap	<a href="http://onthemap.ces.census.gov/">http://onthemap.ces.census.gov/</a>	Mapping tool from the census. Use this understand where people live vs work
University of Wisconsin-Madison, Michigan Tech University, University of New Hampshire	<a href="http://www.netmigration.wisc.edu/">http://www.netmigration.wisc.edu/</a>	Use this to learn about - and visualize - migration patterns for U.S. counties.