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# Economic Composition of Northeast Minnesota: Industries and Performance

Authored by Brigid Tuck with assistance from John Bennett and Merritt Bussiere  
Presented in partnership with the EDA Center at the University of Minnesota, Crookston



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## ECONOMIC COMPOSITION OF NORTHEAST MINNESOTA: KEY FINDINGS

To analyze the economic composition of Northeast 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.

The Northeast regional economy has several key drivers. The biggest generators of output in the region are the professional and business services; manufacturing; and mining industries. These industries account for 55 percent of regional output. Industries with the most jobs include health care and social services; professional and business services; and government. A closer analysis revealed the following strengths and concerns.

### REGIONAL STRENGTHS:

- **Professional, technical, and scientific services.** The professional, technical, and scientific services *sector* is one of the fastest growing components of the industry called professional and business services. The sector added more than 600 jobs between 2003 and 2013 in fields such as engineering, research and development, and certified public accounting. Wages – at almost \$400 above the average for the region – are strong and grew at an inflation-adjusted 20 percent between 2000 and 2013.
- **Health care and social assistance.** The health care and social assistance industry is a strength in the region. Hospitals are responsible for a significant share of both output and employment in the region. Wages in the industry are above the average for the region and grew at a modest pace between 2000 and 2003. Interestingly, the Northeast region is growing faster than expected in the number of jobs in specialized nursing care facilities – such as continuing care retirement communities, residential intellectual and development disability facilities, and assisted living facilities for the elderly – while at the same time the Northeast region is growing slower than expected in the number of jobs in traditional nursing care facilities.

### REGIONAL CONCERNS:

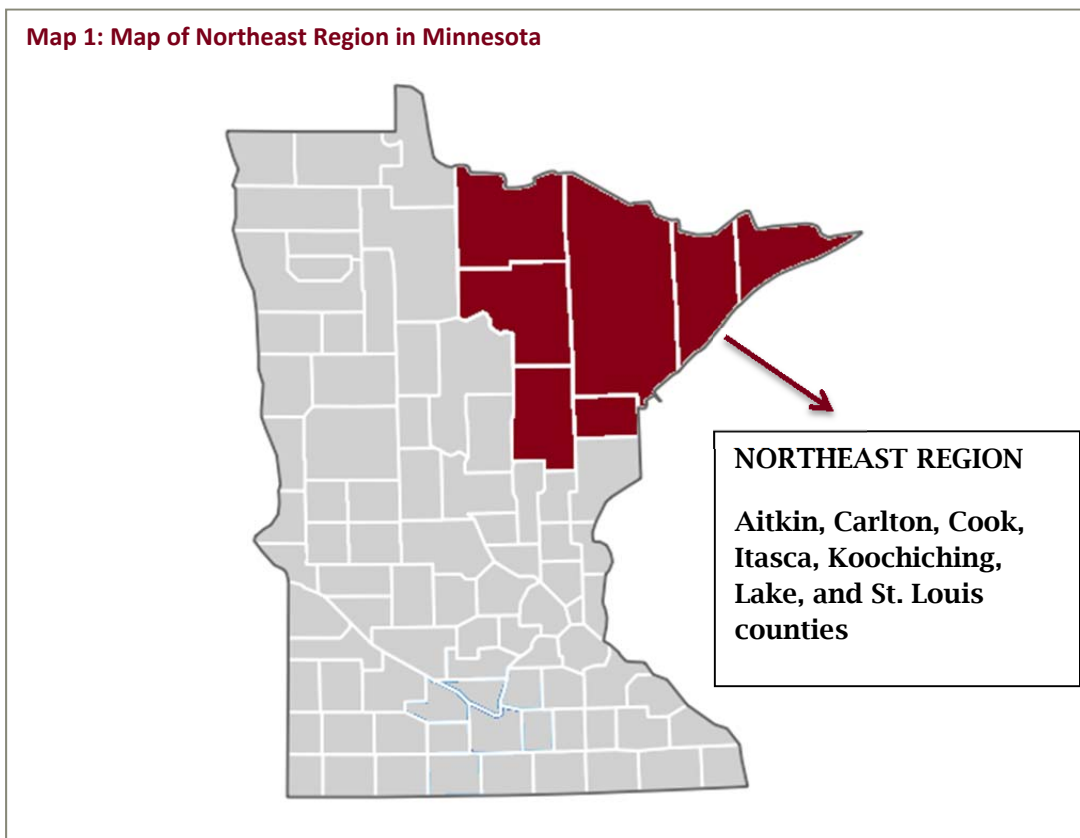
The analysis also revealed areas of potential concern for the region from an economic standpoint. These industries are not as competitive in the region and may warrant additional attention and exploration.

- **Finance and insurance.** The finance and insurance sector is one of the largest sectors in the professional and business services industry in the Northeast. In real terms, wages in the sector declined by 20 percent between 2000 and 2013 in Northeast Minnesota; meanwhile, the Minnesota statewide average weekly wage in the sector increased by 18 percent. This wage disparity should be explored.
- **Information.** Information is another sector in the professional and business services industry. The number of jobs in the sector declined by 1,111 between 2003 and 2013 in Northeast Minnesota. While the industry did not fare well during the Great Recession of 2008-2009, the declines in the Northeast region were higher than expected.

## STUDY BACKGROUND AND OVERVIEW NORTHEAST 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, in response to a broader conversation about the role of Greater Minnesota in the state's economy, is producing economic profile reports on 12 non-metro Minnesota 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.

Located in Northeast Minnesota, this region is defined by the boundaries of the Arrowhead Regional Development Commission and is comprised of seven counties, including Aitkin, Carlton, Cook, Itasca, Koochiching, Lake and St. Louis. Located in St. Louis County, the metropolitan statistical area of Duluth, with a population of 280,000, is one of the largest cities in Greater Minnesota.



The goals of the report are to 1) identify the region's strengths - both industries that are the current core of the economy and emerging industries - and 2) 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 a 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 Northeast region produced \$27.6 billion in goods and services, according to estimates from the IMPLAN economic model. Output in the Northeast region accounts for approximately 5 percent of Minnesota’s \$567.8 billion economy and 13 percent of Greater Minnesota’s \$218.8 billion economy. In 2012, according to the IMPLAN model, professional and business services created nearly 23 percent of total output in Northeast Minnesota. Manufacturing created just over 16 percent, and mining created just under 16 percent. Together, the three industries account for 55 percent of all output in the region. Health and social services contributes over 10 percent of output. Government, trade, and construction each contribute more than 5 percent.

**Chart 1: Industry Share of Total Output Northeast**

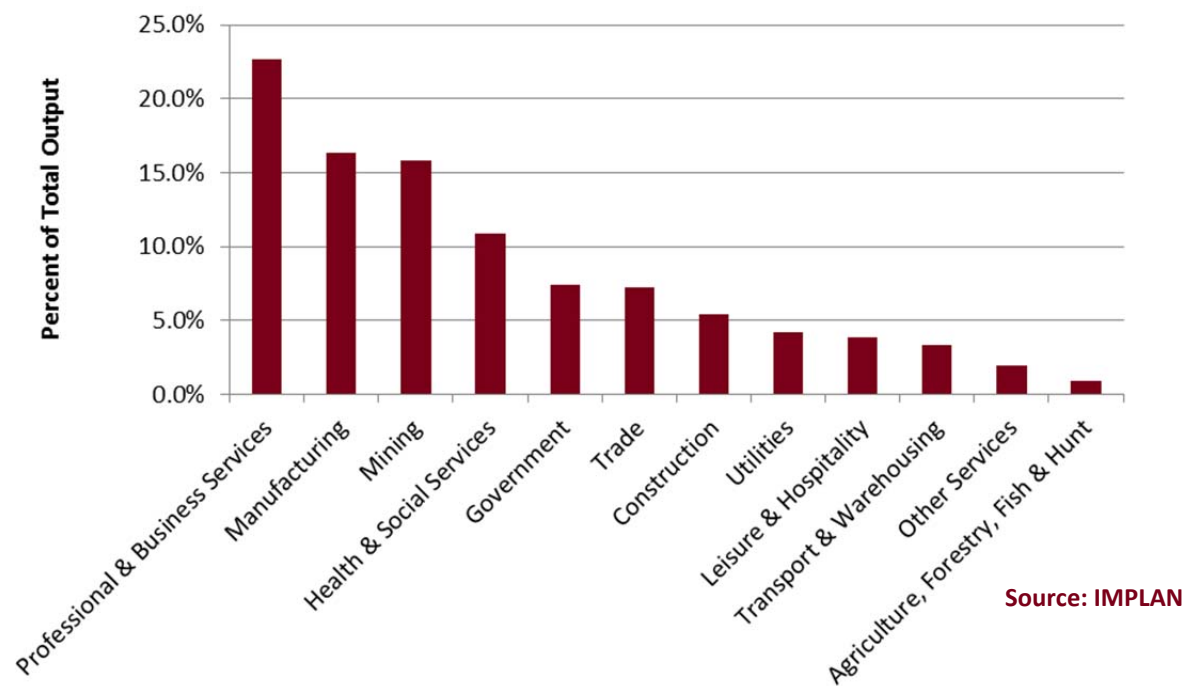


Chart 1 shows output by major industry category, helping to frame discussions about output in the region. However, examining output by sector can be valuable as well. Sectors are a more refined level of analysis. Individual sectors form industries. For example, crop production and animal production are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

Beyond the major industry categories, the top ten *sectors* in the Northeast region produced an estimated \$14.1 billion of output in 2012 (table 1). The mining iron ore sector produced \$3.9 billion in output and is the top producer of output in the region. Paper mills produced \$1.9 billion of output, and private hospitals \$1.6 billion. Of note here is that this data is from 2012, the most current data available. Since 2012, a large paper mill in the region decreased output by approximately \$204 million.<sup>1</sup>

For the majority of the sectors in table 1, high output is driven by high productivity (output per worker). For example, each paper mill employee produces an estimated \$865,000 in output annually. The clear exception in the table is state and local government – education. Government output is linked primarily to the number of employees. Output is not a very adequate measure for the government sector, as government does not make sales in the traditional sense as other industries do. Another exception is food services and drinking places. Output per worker is often lower for service or labor intensive industries, 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 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 full-time.

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

Sector	Total Output (millions)	Output per Worker
Mining iron ore	\$3,906.2	\$786,900
Paper mills	\$1,944.9	\$864,800
Private hospitals	\$1,558.4	\$133,300
Housing market	\$1,535.5	NA
Electric power generation, transmission, and distribution	\$1,112.6	\$706,200
State and local government, education	\$1,038.5	\$60,000
Banking	\$945.2	\$412,00
Insurance carriers	\$775.3	\$262,200
Wholesale trade businesses	\$680.3	\$181,200
Food services and drinking places	\$636.8	\$52,800
Top ten total	\$14,133.7 (51%)	
Total output in region	\$27,622.3	<b>Source: IMPLAN</b>

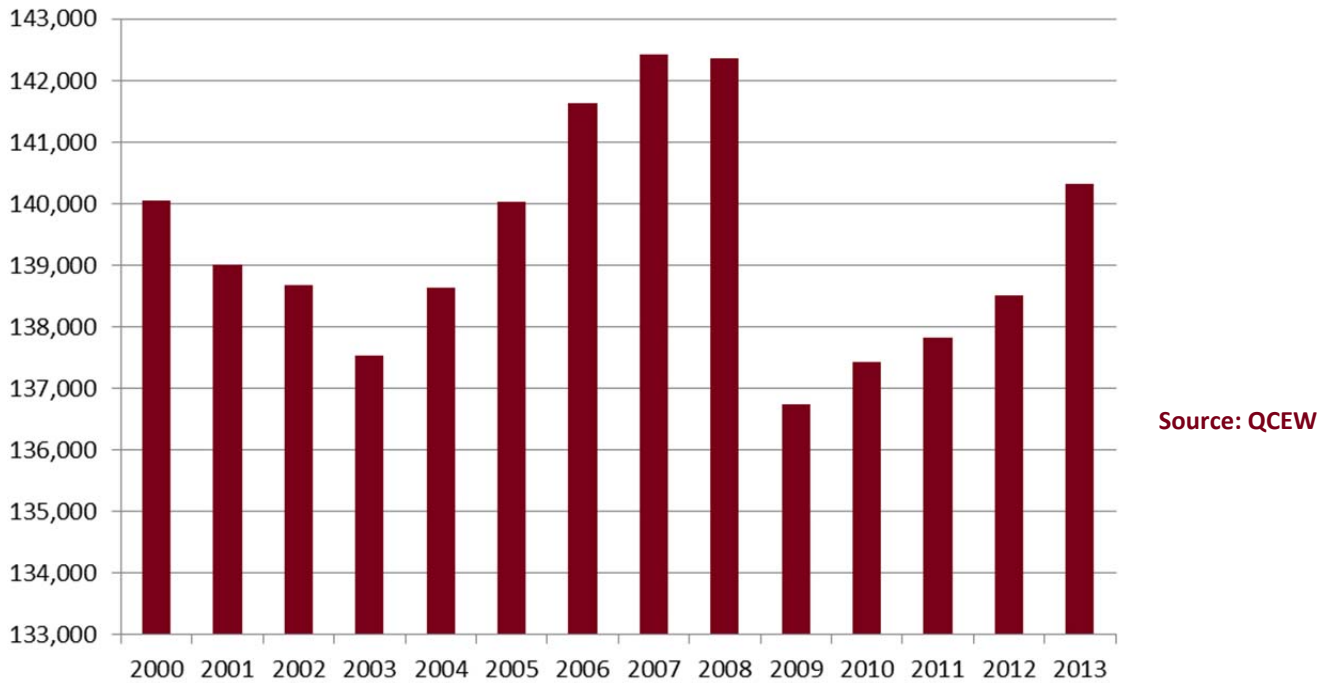
<sup>1</sup> For more, read University of Minnesota Extension’s publication “Economic Emergency Program: International Falls Plant Shutdown” at <http://z.umn.edu/ifalls>.



## EMPLOYMENT AND WAGES

The number of jobs in the region rose and fell between 2000 and 2013 (see chart 2). The number of jobs in Northeast Minnesota fell during the recession in the early 2000s.<sup>2</sup> The number of jobs increased from 2004 to 2008, then employment decreased consistent with the 2008-2009 Great Recession. The number of jobs in the region has been increasing since 2009. The number of jobs in the Northeast region has not recovered to pre-recession levels, although job growth has been consistent.

**Chart 2: Total Employment 2000-2013 Northeast Minnesota**



The highest employment growth industries in the Northeast region between 2003 and 2012 were health care and social assistance (added 7,138 jobs); mining, quarrying, and oil and gas extraction (added 795 jobs); and professional, scientific, and technical services (added 627 jobs).<sup>3</sup> The industries suffering the most job losses during the period in the Northeast region include manufacturing (2,013 lost jobs); information (1,111 lost jobs); and government (1,108 lost jobs). These are shown in table 2.

Shift-share analysis provides an examination of the drivers of growth and decline for a specific industry in a specific region by comparing to industry and national trends. The analysis provides an interesting interpretation of changes in each industry (table 2). In shift-share analysis, the primary focus is on the competitive effect. A strongly positive competitive effect indicates particular characteristics of the local economy that are driving growth in the region. A strongly negative competitive effect can be interpreted as a warning that this part of 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 (7,138 jobs). If the health care and social assistance industry in Northeast had grown at the same overall rate as the national

<sup>2</sup> Covered Employment and Wages (QCEW)

<sup>3</sup> EMSI

economy in all industries, it would have added 1,128 jobs (national growth effect). The health care and social assistance industry at the national level also added jobs during the time period. If the Northeast region's health care and social assistance industry had grown at the same rate as the health care and social assistance industry, then it would have added another 5,430 jobs (industry mix effect). Since even more jobs were added in this industry in the region, the health care and social assistance industry in Northeast Minnesota is considered "competitive." In other words, the health care and social assistance industry in Northeast Minnesota outperformed national and industry trends. Within the health care and social assistance industry, sectors with the most positive competitive share include hospitals and specialized residential care.

While the health care and social assistance industry grew, and grew at a competitive rate, the other two industries with top job gains did not post positive competitive effects. The mining, quarrying, and oil and gas extraction industry for example, gained 795 jobs. Given trends in the industry and in the national economy, the industry was predicted to add 1,500 more jobs. The mining, quarrying, and oil and gas extraction industry grew rapidly during the time period, particularly related to oil and gas extraction in areas like the Bakken oil fields in North Dakota. Sand mining also experienced rapid growth in the United States. Both these trends would factor into the industry mix effect for mining in table 2, however neither of these are major mining sectors in Northeast Minnesota. Iron ore mining, the major mining sector in Northeast Minnesota, posted a positive competitive effect of 368 jobs.

**Table 2: Shift-Share Analysis for Growth and Decline Industries<sup>4</sup>**

Industry	Change 2003-2013	Industry Mix Effect	National Growth Effect	Competitive Effect
<b>Top 3 Job Adding Industries</b>				
Health Care & Social Assistance	7,138	5,430	1,128	581
Mining, Quarrying, & Oil & Gas Extraction	795	2,137	179	(1,521)
Professional, Scientific, and Technical Services	627	575	154	(102)
<b>Top 3 Job Loss Industries</b>				
Manufacturing	(2,013)	(2,391)	527	(149)
Information	(1,111)	(558)	136	(689)
Government	(1,108)	(973)	1,362	(1,496)

Source: EMSI

The manufacturing industry in Northeast Minnesota shed 2,013 jobs during the time period. Manufacturing at a national level suffered from the effects of the Great Recession. Had the manufacturing industry in Northeast Minnesota contracted at the same rate as manufacturing across the United States, Northeast Minnesota should have lost 2,391 jobs (industry mix effect). Given the trend of increasing employment across all industry in the United States, Northeast would have been expected to add 527 jobs (national growth

<sup>4</sup> For an explanation of shift-share analysis, please see the methodology section. The table may not sum due to rounding.

effect). Therefore, the competitive share is a negative 149 jobs. In other words, the manufacturing industry in the Northeast region was not quite as competitive as it could have been. It is worth noting here, however, there are approximately 8,900 manufacturing jobs in the region, thus 149 jobs represents only a small fraction (2 percent) of total employment in that industry.

The Northeast region had significant manufacturing job losses between 2003 and 2013 in veneer, plywood, and engineered wood product manufacturing (-570); pulp paper, and paperboard mills (-526); semiconductor and other electronic component manufacturing (-483); and other nonmetallic mineral product manufacturing (-404). Offsetting these losses, however, were gains in lime and gypsum product manufacturing (up 349 jobs); agricultural, construction, and mining machinery (up 225 jobs); and iron and steel mills and ferroalloy manufacturing (up 224 jobs). The manufacturing sectors adding jobs also all had positive competitive shares, indicating the region may have advantages on which to build these sectors.

The other industries with job losses (information and government) in the Northeast region also had negative competitive shares. In the information industry, the largest job losses were in newspaper, periodical, book, and directory publishers (-557); wireless telecommunication carriers (-297); and wired telecommunication carriers (-107). Job gains were only posted in radio and television broadcasting (11 jobs). In the government industry, there were 835 jobs lost in education and hospitals (local government); 740 jobs lost in federal government (civilian); and 622 jobs lost in local government (excluding education and hospitals). State government added over 1,000 jobs in the region.

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

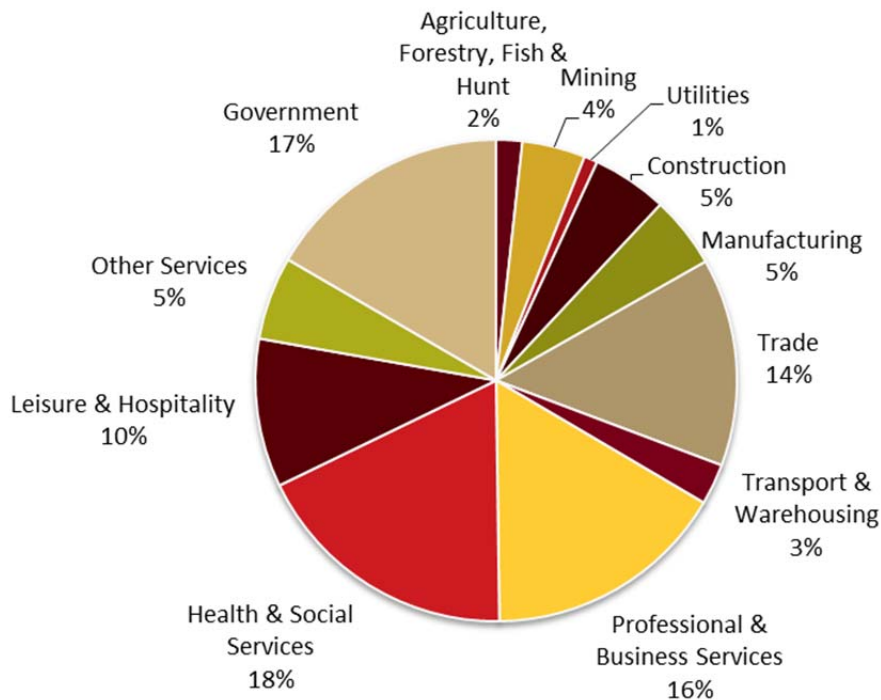
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- Find ways to support competitive industries. This will likely mean engaging industry leaders to discuss the key drivers of economic advantage in this region, such as health care. Many other regions in Minnesota are experiencing negative competitive shares in the health care industry. What factors are giving the Northeast region an advantage in this industry?
- For some non-competitive industries, it's important to learn more about the key drivers. Manufacturing, overall, had a slightly negative competitive share and lost jobs. However, certain sectors within the industry fared well and were competitive. These may be factors to be capitalized upon in the region to support further growth.
- Job losses in an industry can simply reflect national and industry trends and do not necessarily reflect on the Northeast region as a place to do business. For example, paper mills across the nation are closing due to a decline in demand for paper. The downsizing of a paper mill in the region likely is not due to local circumstances.
- The industries with job growth and job decline represent a cross-section of the Northeast regional economy. To fully understand these trends, leaders should consider the diversity of the economy and support growth and development across all industries.

### **Employment and Wages by Industry**

Employment by industry in the Northeast region is depicted in chart 3. The health and social services industry employs 18 percent of all workers in Northeast Minnesota. The government and government-owned enterprises industry employs 17 percent of all workers and the professional and business services industry employs 16 percent.

**Chart 3: Employment by Industry: Northeast Minnesota**



Source: IMPLAN

### Health and Social Services

The health and social services industry employs 18 percent of all workers in Northeast Minnesota. In 2013, there were 30,500 jobs in the industry. Over one-third (38 percent) of the health care jobs are at general medical and surgical hospitals. Hospitals added 3,630 jobs between 2003 and 2013, nearly 2,700 jobs more than expected given national and industry trends. Nursing and residential care facilities employ one-third (33 percent) of health care and social service workers. Interestingly, the number of jobs in specialized nursing care facilities (continuing care retirement communities, residential intellectual and development disability facilities, and assisted living facilities for the elderly) is growing in the region at rates faster than expected given trends, however the number of jobs in traditional skilled nursing facilities is growing at a rate slower than expected.

Wages in the health care and social services industry in the Northeast region have been fairly strong. The average weekly wage in the industry in 2013 was \$819. This is nearly \$60 a week higher than the average weekly wage across all industries in the region. In addition, health care and social services wages rose by an inflation-adjusted 6 percent between 2000 and 2013. Across all industries, wages increased by an inflation-adjusted 3 percent during the period. For the Northeast region, the highest wages are in the ambulatory care sector (doctor and dentist offices) at \$1,350 per week and in the hospital sector at \$1,040 per week. The lowest wages are in nursing and residential care facilities at \$426 per week and social assistance at \$473.

Of the 30,500 health and social services jobs in the region, nearly 18,000 (60 percent) are in St. Louis County. Itasca County has just over 2,000 health care jobs. Health care jobs in St. Louis County are fairly evenly distributed between hospitals, ambulatory care, and nursing and residential care facilities.

### **Professional and Business Services**

The professional and business services industry employs 16 percent of all workers in Northeast Minnesota. Within the industry, the sectors with the most jobs are finance and insurance (4,820 jobs); professional, scientific, and technical services (3,823 jobs); and administrative and support and waste management and remediation services (3,516 jobs). Other sectors in the industry include information, real estate, management of companies and enterprises, and educational services (private).

The highest rates of job creation for the region between 2003 and 2013 were in the educational services sector (37 percent growth), real estate sector (27 percent growth), and professional, scientific, and technical services sector (20 percent growth). The highest rates of job losses in the period were in the publishing industry sector (53 percent decline)<sup>5</sup>, the telecommunications sector (51 percent decline), and the motion picture and sound recording sector (45 percent decline).

The professional, scientific, and technical services sector was one of the fastest growing sectors in the Northeast region, adding 627 jobs. Shift share analysis shows the sector had the potential to add another 100 jobs. Growth in the sector was driven in part by growth in the number of engineering services jobs (567 new jobs), research and development (205 new jobs), and certified public accountants (89 new jobs). These job gains were offset in part by losses in law offices (175 lost jobs), architectural services (156 lost jobs), and title abstract and settlement services (117 lost jobs).

Wages are relatively high in the professional, scientific, and technical services sector. In 2013, the sector's average weekly wage in Northeast Minnesota was \$1,138, which is nearly \$400 a week higher than the average weekly wage across all industries. Wages in the sector grew by an inflation-adjusted 20 percent between 2000 and 2013, while wages across all sectors only grew by 2 percent.

Finance and insurance is another sector of the professional and business services industry. Northeast wages in this industry, although higher than the regional average across all industries, are not as robust as wages in the professional, scientific, and technical services sector. In 2013, the average weekly wage in the finance and insurance industry was \$883. Wages in the sector did not keep pace with inflation and in inflation-adjusted terms are actually down 20 percent from 2000. During the same time period, the average weekly wage in Minnesota for the finance and insurance industry increased by 18 percent.

While all counties in the region are home to professional and business service jobs, St. Louis County has the highest concentration of jobs (20,600). Itasca and Carlton counties also have a fair number of jobs in this industry.

### **Mining**

While the mining and quarrying industry employs 4 percent of all workers in the Northeast region, it is responsible for nearly 16 percent of total output. The predominant mining sector in the region is iron ore mining with 4,300 jobs. The sector of support activities for metal mining has 111 jobs in the region. Other types of mining include construction sand and gravel mining (41 jobs) and copper and nickel ore mining (24 jobs).

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<sup>5</sup> Publishing industry here does not include internet publishing.

Mining wages are relatively high. In 2013, the average weekly wage in the mining industry in Northeast Minnesota was \$1,708, or \$950 higher than the average weekly wage across all industries. Wages in the industry grew at an inflation-adjusted rate of 29 percent between 2003 and 2013.

## **Leisure and Hospitality**

St. Louis County, home to Duluth, Minnesota, is clearly an economic hub for the region. The industries covered above (health and social services; professional and business services; and mining) are core industries in the region with a substantial presence in St. Louis County. For the other counties in the region, another major industry is leisure and hospitality. In Northeast Minnesota, there are 15,869 jobs in the leisure and hospitality industry. Of that total, 5,440 jobs are in the counties outside of St. Louis County. In those counties, leisure and hospitality is the fourth largest industry (following government, health and social services, and trade). Thus, it warrants a brief discussion here.

There are three main sectors within the leisure and hospitality industry - accommodations; food service; and arts, entertainment, and recreation. The number of jobs in the food service sector in the Northeast grew by 306 between 2003 and 2013. However, national and industry trends indicate it should have added another 1,700 jobs. The arts, entertainment, and recreation sector added 87 jobs in the time period. The accommodation sector lost 249 jobs, mostly due to the competitive effect. Outside of St. Louis County, all three sectors lost jobs between 2003 and 2013.

Wages in the leisure and hospitality industry are lower than the average across all industries. The 2013 average weekly wage in the leisure and hospitality industry in the Northeast was \$268. This reflects a decline in wages once adjusted for inflation. With inflation adjustment, average weekly wages in the region decreased by 6 percent from 2000 to 2013.

## **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 Northeast regional economy - professional and business services and health care — and their connections with other sectors. Specifically, the analysis will focus on 1) insurance carriers and 2) hospitals. These are the two large 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 through the spending 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 – Insurance Carriers**

Output multipliers for the insurance and financial sectors in the Northeast region are estimated to range from 1.3 to 1.7. In other words, for every dollar of output generated by the sector (insurance carriers, for example), \$0.30 to \$0.70 cents are generated in other regional sectors that supply that sector.

Table 3 highlights expenditures by insurance carriers. For every dollar spent on inputs in the region, insurance carriers are estimated to spend 27.4 percent on insurance agencies, brokerages and related services; 2.1 percent on insurance carriers<sup>6</sup>; and 1.4 percent on securities, commodity contracts, investments and related services. Of the top inputs insurance carriers purchase -- banking; advertising and related services; and accounting, tax preparation, bookkeeping, and payroll services -- are the only inputs where at least 50 percent of the local demand is filled by local supply. Several of the top inputs purchased by insurance carriers are not available in full supply from local sources. This may indicate opportunities to increase local supply of these goods and services.

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.

**Table 3: Top Purchases by Insurance Carriers in the Northeast 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 Northeast Region</b>
Insurance agencies, brokerages, and related services	27.4%	No*
Insurance carriers	2.1%	No
Securities, commodity contracts, investments, and related services	1.4%	No*
Monetary authorities and depository credit (banks)	0.9%	Yes
Funds, trusts, and other financial instruments	0.9%	No
Legal services	0.7%	No*
Advertising and related services	0.6%	Yes
Accounting, tax preparation, bookkeeping, and payroll services	0.5%	Yes
Printed materials	0.5%	No
Travel arrangement and reservations	0.4%	No

**Source: IMPLAN**

\*Local supply is at least 40 percent of local demand

<sup>6</sup> The insurance industry is fairly integrated. Insurance agencies and brokers (i.e. Minnesota Health Insurance Network) sell the insurance products (i.e. health insurance) that are underwritten by the insurance carriers (i.e. Health Partners). Sales between the two sectors would represent the complicated transactions in providing insurance to the public.



## Health Care and Social Assistance -- Hospitals

Multipliers for health care sectors are estimated to range from 1.3 to 1.6. Table 4 shows the top inputs purchased locally by hospitals, the percent of total input expenditures spent on the item, and the local availability of the item (table 4). For every dollar spent on inputs by hospitals, 8.5 percent is spent on the purchase of real estate, 3.2 percent on pharmaceuticals, and 2.9 percent at medical and diagnostic labs.

Hospitals are important sources of local demand for real estate (land), medical and diagnostic testing labs, and electric companies.<sup>7</sup> These industries and sectors with strong connections to hospitals are the top industries capturing the 30 to 60 cents of additional economic activity that flows from every dollar of hospital output mentioned above. There may be opportunities for increased local production of pharmaceuticals and in-vitro diagnostic substances, because hospitals are purchasing these outputs from outside the region

**Table 4: Top Purchases by Hospitals in the Northeast 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 Northeast Region</b>
Real estate	8.5%	Yes
Pharmaceutical preparations	3.2%	No
Medical and diagnostic testing labs	2.9%	Yes
Management of companies and enterprises	2.4%	No
In-vitro diagnostic substances	2.2%	No
Insurance	2.0%	No
Employment services	1.9%	No
Securities, commodity contracts, investments, and related services	1.5%	No
Wholesale trade	1.5%	No
Electricity and distribution	1.2%	Yes

Source: IMPLAN

These two examples (insurance and health care) 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

<sup>7</sup> Local here is the Northeast region.



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 Northeast 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

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	<a href="http://www.netmigration.wisc.edu">http://www.netmigration.wisc.edu</a>	Use this to learn about - and visualize -

Wisconsin-Madison, Michigan Tech University, University of New Hampshire	<a href="#">/</a>	migration patterns for U.S. counties.
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