



The EDACENTER

at the University of Minnesota Crookston

## Economic Composition of Northwest Minnesota: Industries and Performance

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UNIVERSITY OF MINNESOTA | EXTENSION

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## Our Mission:

Our mission is to engage university faculty, staff and students with local, county tribal and regional economic development agencies in support of our Minnesota economy. Our focus is to utilize the capacity of the University of Minnesota Crookston in partnership with the broader U of M system and economic development agencies to support job creation, capital investment, business recruitment, and job retention.

To learn more about The EDA Center go to: [www.edacenter.org](http://www.edacenter.org).

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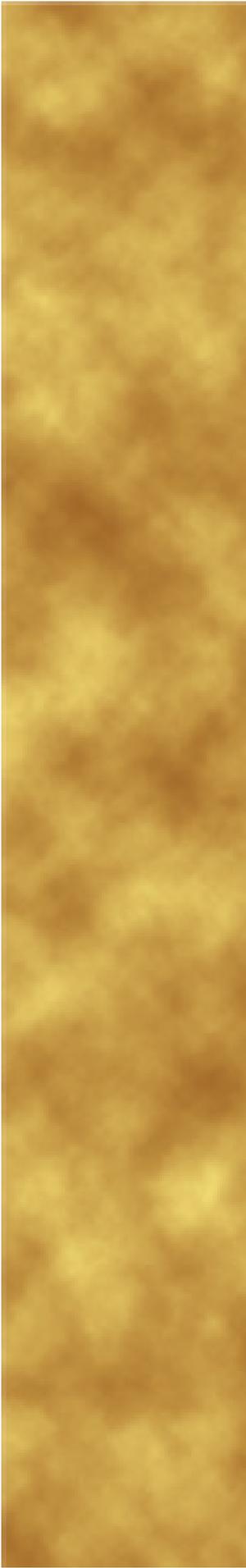
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## ECONOMIC COMPOSITION OF NORTHWEST MINNESOTA: KEY FINDINGS

To analyze the economic composition of Northwest 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.

Three industries primarily drive Northwestern Minnesota's economy -- agriculture, manufacturing, and wholesale trade. These three industries account for 65 percent of total output in the region and 56 percent of all employment. A more in-depth analysis reveals regional strengths and concerns.

### REGIONAL STRENGTHS:

- **Wholesale Trade:** The wholesale trade industry is a core strength for the Northwest Minnesota economy. It is responsible for 10 percent of all output and 16 percent of all employment in the region. It is a growth industry, having added 1,200 jobs over the past 10 years, despite national trends of a shrinking wholesale trade industry. Further, wages are strong in the industry. Overall, average weekly wages are \$200 higher in wholesale trade than across all other industries in the region. Wholesale trade wages in the region have risen at twice the rate as wages in other industries over the past 13 years.
- **Agriculture:** Agriculture continues to be a strong leader in the Northwest region's economy. Agriculture contributes 15 percent of output and 16 percent of employment. Crop production - particularly soybeans, spring wheat, and sugar beets - is the region's main agricultural sector. Polk County leads Minnesota in cash receipts from crop production.
- **Manufacturing:** Despite a loss of jobs between 2003 and 2013, manufacturing remains a critical component of the economy. Manufacturers produce 40 percent of output and employ 15 percent of all workers in the region. The largest manufacturing sectors - transportation equipment and wood windows and doors - lost jobs, but at a slower pace than their respective industries at the national level. Wages remain strong in the industry, growing by 20 percent over the past 13 years. Motor vehicle parts manufacturing, a key input into the transportation manufacturing process, added jobs, indicating supply chain development in the region.

### 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.

- **Retail Trade:** Retail trade in Northwest Minnesota added jobs in a period when retail trade at the national level contracted. This is a positive trend

for the region. However, wages have been stagnant.

- Health Care and Social Assistance: While the health care and social assistance industry was one of the fastest growing industries in the Northwest region, the growth was not as strong as health care and social assistance industry growth at the national level, indicating there may be additional room for job growth.

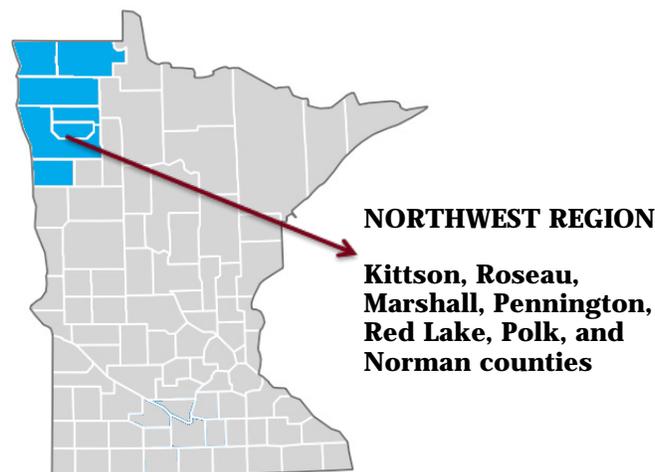
## STUDY BACKGROUND AND OVERVIEW NORTHWEST REGION

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 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 presents economic data and analysis of output, employment, and wages in the Northwest region of Minnesota. It is provided in partnership with the EDA Center at the University of Minnesota, Crookston.

Located at the extreme northwestern corner of Minnesota, this region, represented by the Northwest Regional Development Commission is comprised of seven counties, including Kittson, Marshall, Norman, Pennington, Polk, Red Lake, and Roseau.

Map 1: Map of Northwest Region in Minnesota



This report explores industry outputs, employment, and wages by industry and sector, and industry interdependencies in the region. 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 Northwest region produced \$10.3 billion in goods and services, according to estimates from the IMPLAN economic model. Output in the Northwest region accounts for approximately 2 percent of Minnesota's \$567.8 billion economy and 5 percent of Greater Minnesota's \$218.8 billion economy. In 2012, according to the IMPLAN model, manufacturing created nearly 40 percent of total output in Northwest Minnesota. Agriculture and forestry together created 16 percent and professional and business services created 14 percent. Together, the three industries account for 70 percent of all output in the region.

Chart 1: Industry Share of Total Output Northwest

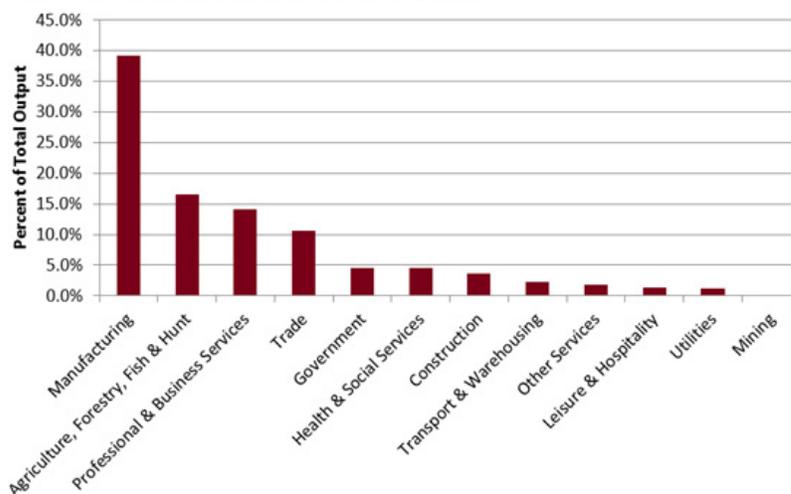


Chart 1 shows output by major industry category helping to frame discussions about output in the region. However, examining output by sector can be valuable as well. Sectors are a more refined level of analysis. Individual sectors form industries. For example, crop production and animal

production are sectors within the industry of agriculture.

Beyond the major industry categories, the top ten sectors in the Northwest region produce an estimated \$7.7 billion of output (table 1). Transportation equipment manufacturing, crop farming, and wholesale trade are the top generators of output in the region. Within the transportation equipment manufacturing sector, all other transportation equipment (the catch-all category for all transportation equipment manufacturing not classified elsewhere) produces \$1.9 billion of output. Within the \$1.6 billion crop farming sector, oilseed farming and grain farming each produce approximately \$530 million of output. Sugarcane and sugar beet farming produce \$396 million of output. Wholesale trade produces \$820 million of output. There are no sectors within the wholesale trade industry.

Northwest Minnesota produces a wide range of crops. Polk County, in 2012, was ranked fourth among all Minnesota counties in terms of total value of agricultural goods sold. Polk County was also first among cash receipts from crop production. Polk County was also first among grain, oilseed, dry beans, and dry peas production of all Minnesota counties. The seven counties in Northwest Minnesota produced nearly 70 percent of all spring wheat in Minnesota. Counties in the Northwest are also ranked in the top ten for the state in production of barley, sugar beets, sunflowers, and dry edible beans.<sup>1</sup>

For the majority of the sectors in table 1, high output is driven by high productivity (output per worker). Each transportation equipment manufacturing employee produces an estimated \$768,000 in output annually. The clear exception in the table is government and government-owned enterprises. Government output is linked primarily to the number of employees. Output is also not a very adequate measure for the government sector, as government does not make sales in the traditional sense of other industries. 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.

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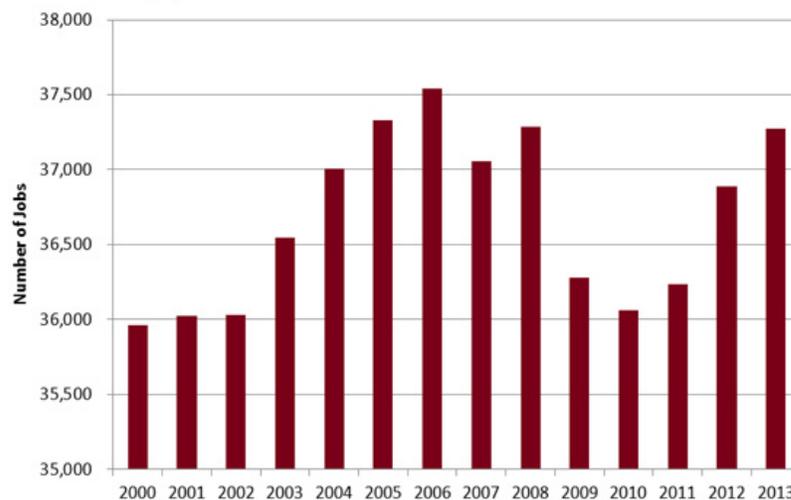
<sup>1</sup> Minnesota Department of Agriculture

TABLE 1: TOP TEN SECTORS IN NORTHWEST REGION, SORTED BY OUTPUT		
Sector	Total Output (millions)	Output per Worker
Transportation equipment manufacturing	\$1,946.5	\$768,443
Crop farming	\$1,558.6	\$189,468
Wholesale trade	\$820.3	\$181,539
Food product manufacturing	\$789.6	\$706,337
Wood products manufacturing	\$565.0	\$196,820
Real estate	\$530.0	\$599,434
Government & government-owned enterprises	\$469.3	\$61,908
Construction	\$373.6	\$139,067
Computer & other electronic manufacturing	\$361.8	\$512,737
Monetary authorities	\$261.5	\$411,581
<b>TOP TEN TOTAL</b>	<b>\$7,676.20</b> <b>(74%)</b>	
<b>TOTAL OUTPUT IN REGION</b>	<b>\$10,236.9</b>	
*Source: IMPLAN		

## EMPLOYMENT AND WAGES

Employment in the region rose and fell between 2000 and 2013 (see chart 2). The number of jobs in Northwest Minnesota grew steadily through the early 2000s from a low of just under 36,000 in 2000 to a high of just over 37,500 in 2006.<sup>2</sup> Employment dipped in 2007 and then decreased consistent with the 2008-2009 Great Recession. The number of jobs has increased since 2010 and is nearly at pre-recession levels. Between 2008 and 2009, the region lost 1,000 jobs, and of those jobs 790 were in the manufacturing industry.

Chart 2: Total Employment 2000-2013 Northwest Minnesota



Source: QCEW

The highest employment growth industries in the Northwest region between 2003 and 2012 were wholesale trade (added 1,211 jobs); administrative and support and waste and remediation services (added 417 jobs); and health care and social services (added 360 jobs).<sup>3</sup> The industries suffering the most job

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

<sup>3</sup> EMSI

losses during the period in the Northwest include manufacturing (743 lost jobs); government and government-owned enterprises (543 lost jobs); and other services (205 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 the changes in each industry (table 2<sup>4</sup>). 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 industry may not be faring as well as it should. For more on shift-share analysis and how to fully interpret the results, see page 14.

The wholesale trade industry added the most jobs between 2000 and 2013 (1,211 jobs). If the wholesale trade industry in the Northwest had grown at the same overall rate as the national economy in all industries, it would have added 91 jobs (national growth effect). The wholesale industry at the national level, however, shed jobs during the time period. If Northwest’s wholesale trade industry had contracted at the same rate as the wholesale trade industry nationally, then it would have lost 55 jobs (industry mix effect). Since jobs were added, the wholesale trade industry in Northwest Minnesota is considered “competitive.” In other words, the wholesale trade industry in Northwest Minnesota outperformed national and industry trends.

**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>				
Wholesale Trade	1,211	(55)	91	1,176
Administrative and Support and Waste and Remediation Services	417	7	10	400
Health Care and Social Services	360	997	157	(793)
<b>Top 3 Job Loss Industries</b>				
Manufacturing	(743)	(1,732)	254	736
Government and Government-owned Enterprises	(543)	(111)	225	(658)
Other Services	(205)	46	38	(289)
*Source: EMSI				

The health care and social services sector added 360 jobs between 2003 and 2013 in Northwest Minnesota. However, given the rapid growth in the health care and social assistance industry at the national level, Northwest Minnesota should have added 997 jobs (industry mix effect). Given general employment growth across all industries nationally, the health care and social services industry in Northwest should have added 157 jobs (national growth effect). Therefore, the health care and social services industry in Northwest

<sup>4</sup> For an explanation of shift-share analysis, please see the methodology section.

Minnesota is not competitive and is not adding jobs as quickly as national and industry trends would predict. This is a trend that is of note for the region and bears further investigation.

The manufacturing industry in Northwest Minnesota shed 740 jobs during the time period. Manufacturing at a national level suffered from the effects of the Great Recession. Had the manufacturing industry in Northwest Minnesota contracted at the same rate as manufacturing across the United States, Northwest Minnesota should have lost 1,700 jobs (industry mix effect). Therefore, despite job losses, the Northwest region fared better than national and industry trends because it retained 700 jobs that otherwise might have been lost. Thus, Northwest Minnesota is competitive in the manufacturing industry.

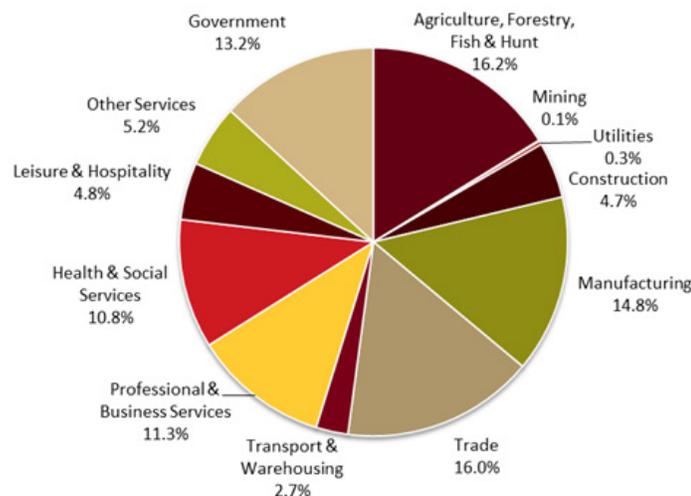
*Key things for economic developers to consider from this employment data:*

- 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 wholesale trade and manufacturing.
- For some non-competitive industries, it's important to learn more about the key drivers. Specialized health care, for example, may be concentrating in regional centers in Grand Forks and Fargo.
- Job losses in an industry, such as manufacturing, can simply reflect national and industry trends and do not necessarily reflect on the Northwest as a place to do business.

### Employment and Wages by Industry

Employment by industry in the Northwest region is depicted in chart 3. The industry called agriculture, forestry, fishing, and hunting employs 16.2 percent of all workers in Northwest Minnesota. The trade industry - wholesale and retail combined - employs 16.0 percent of all workers and manufacturing employs 14.8 percent. In Northwest Minnesota, two of its biggest employment industries - trade and manufacturing- are performing competitively, although the number of manufacturing jobs overall has been declining.

**Chart 3: Employment by Industry: Northwest**



## Agriculture, Forestry, Fishing, and Hunting

The agriculture, forestry, fishing, and hunting industry is the largest employment industry in Northwest Minnesota. At the more detailed sector level of analysis, sugar beet production and grain farming account for two-thirds of total agricultural employment, with each industry employing approximately one-third of the workers. Crop production has been a strength for the region. Job growth was positive between 2003 and 2013, and shift-share analysis shows that job growth was in part due to competitive share.

One way to measure the strength of an industry in a region is to consider the location quotient, which compares an industry or sector in the region to a larger area of study. The location quotient is 5.9 for crop production, indicating Northwest Minnesota has five times as many jobs in the industry as compared to the state average. The higher the location quotient, the higher the concentration of employment is in the area. For more on location quotients, see page 15.

## Trade

The trade industry employs the second highest percentage of employees in Northwest Minnesota. Wholesale trade, a competitive industry in the Northwest as identified above, is one component of the trade industry. Retail trade, the other component of the trade industry, also added jobs between 2003 and 2013. Those jobs were primarily the result of competitive conditions in Northwest Minnesota. Thus, one of the major industries in Northwest Minnesota, as measured by employment, has grown and at a competitive pace since 2003.

Wholesale trade employs 54 percent of all workers in the trade industry in the region. Employment in wholesale trade has grown by 66 percent since 2000. Wages in the sector have also been increasing. Wage growth (as measured by the average weekly wage) was strong between 2000 and 2013. In 2000, the industry paid \$702 (inflation-adjusted to 2013 dollars) in average weekly wages. By 2013, the industry paid \$943 per week, a 34 percent increase. In comparison, average weekly wages across all industries in the region only increased by 17 percent in the same time period. The wage of \$943 per week is also \$200 above the average weekly wage across all industries of \$733. Growth in the wholesale trade industry is reinforced by the location quotient. The location quotient in 2013 for wholesale trade was 2.4, indicating the Northwest region employs more than twice as many people in the wholesale trade industry as the state.

Much of the wholesale trade employment (71 percent) is located in Pennington County. Not surprisingly, then, average weekly wages in the industry are highest in Pennington County (\$966). The lowest average weekly wages for the wholesale trade industry are in Roseau County (\$613).

Retail trade employs 46 percent of all workers in the trade industry. Employment and wage growth in the retail industry has not been as strong as in the wholesale trade industry. The number of retail jobs grew by approximately 140 jobs between 2003 and 2013 in spite of declines in the retail industry across the United States. Job growth was recorded in general merchandise stores; sporting goods; hobby, book, and music stores; and gasoline stations. All other types of retail stores decreased employment in the

period. The location quotient for retail trade in Northwest Minnesota is 0.94, indicating the region has employment in the industry that is about on par with the state average. In real terms, wages in the retail trade sector remained flat between 2000 and 2013. The average weekly wage in the industry in 2000 was \$409 (adjusted for inflation to 2013 dollars). In 2013, the average weekly wage was \$410.

In Northwest Minnesota, the highest numbers of retail trade workers are located in Polk (1,400), Pennington (960), and Roseau (700) counties. The other counties in the region have less than 200 workers each in the industry. Average weekly wages are highest in the retail trade sector in Mahnomen County (\$436). The lowest average weekly wages are in Kittson County (\$350).

### Manufacturing

The manufacturing industry employs 14.8 percent of all workers in Northwest Minnesota. Employment in the manufacturing industry declined slightly between 2000 and 2003. It grew from 2004 to 2006, but then declined until 2010. In 2010, the industry began growing again, but only by about 200 jobs per year. Employment is still about 1,000 jobs short of the high in 2006. As mentioned earlier, the growth in the number of jobs in the region was driven primarily by competitive forces. While employment declined it did so at a rate slower than the manufacturing industry in the United States. The average weekly wage in the manufacturing industry in the region in 2013 was \$981. In 2000, the average weekly wage for the industry was \$815 (in inflation-adjusted dollars). This represents a 20 percent increase during the period.

The three biggest manufacturing sectors are wood products manufacturing (wood windows and doors); transportation equipment (other transportation equipment); and food product manufacturing (beet sugar processing). The wood windows and doors sector lost 500 jobs between 2003 and 2013. The wood windows and doors sector in the United States suffered from the Great Recession, therefore, industry trends indicate the industry in Northwest Minnesota should have lost 1,100 jobs. Given these trends, the region remained competitive in the wood windows and doors sector. The wood windows and doors sector location quotient is 18.6.

The sector labeled as “other” transportation equipment shed just over 400 jobs, all resulting from decreases in the other transportation industry at the national level. Its location quotient is 58.0. The average weekly wage in the transportation equipment manufacturing sector in 2013 was \$1,120 in Northwest Minnesota.

Beet sugar processing gained 170 jobs despite declines in the sugar processing industry at that national level. Its location quotient is 18.4. The average weekly wage in the food product manufacturing sector in 2013 was \$1,120 in Northwest Minnesota.

Within the manufacturing industries, the sectors of ventilation, heating, air conditioning, and commercial refrigeration manufacturing added 277 jobs; motor vehicle parts manufacturing added 139 jobs; and machine shops added 86 jobs between 2003 and 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 three main drivers of the Northwest economy - agriculture, manufacturing, and wholesale trade - and their connections with other sectors. Specifically, the analysis will focus on 1) grain farming and 2) transportation equipment manufacturing. These are the two largest sectors within their respective industries as measured by output. Wholesale trade will be measured as one industry.

Multipliers include both indirect and induced 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. The discussion here focuses on indirect effects.

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.

### Agriculture

Output multipliers for the agricultural sectors in the Northwest region are estimated to range from 1.3 to 1.9. In other words, for every dollar of output generated by the sector (corn farming, for example), \$0.30 to \$0.90 cents are generated in other regional sectors that supply that sector.

Table 3 highlights expenditures by grain farm operations. For every dollar spent on inputs, grain farm operations are estimated to spend 11 percent on real estate (land), 10 percent on fertilizer, and 10 percent on agricultural support services. Land is a fixed commodity, so all demand is satisfied locally. However, the region does not produce fertilizer or agricultural support services in high enough quantities to satisfy the local demand. Therefore, grain farm operations are importing those items from elsewhere.

**TABLE 3: TOP PURCHASES BY GRAIN FARMING OPERATIONS IN THE NORTHWEST MINNESOTA REGION, PERCENT OF TOTAL EXPENDITURES, AND LOCAL AVAILABILITY**

Input	Percent of Input Expenditures	More than 50% of Demand Available from Suppliers within the Northwest Region
Real estate	11%	Yes
Fertilizer	10%	No
Agricultural support services	10%	No
Petroleum products	8%	No
Banks	8%	Yes
Grains	8%	Yes
Pesticides and other chemicals	7%	No
Wholesale trade	3%	Yes
Maintenance and repair of buildings	1%	Yes
Truck transportation	1%	Yes
*Source: IMPLAN		

Table 3 helps illustrate two points. First, grain farm operations are important sources of local demand for real estate (land), banking institutions, other grain operators (seed suppliers), and wholesale trade operations.<sup>5</sup> These industries and sectors with strong connections to grain farming are the top regional industries capturing 30 to 90 cents of additional economic activity that flows from every dollar of agricultural output mentioned above. Second, there may be opportunities for increased local production of fertilizer, agricultural support services, and pesticides, because grain farmers are purchasing significant levels of these outputs from outside the region. Pursuing economic development based on possible opportunities for supply chain development is one economic development approach. Before moving forward, however, 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 could be 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 and transportation routes.

**Manufacturing**

Multipliers for food product manufacturing sectors are estimated to range from 1.1 to 1.3. Table 4 shows the top inputs purchased locally by the sector called other transportation equipment manufacturing, the percent of total input expenditures spent on the item, and the local availability of the item.

For every dollar spent on inputs in the other transportation equipment manufacturing process, 14 percent is spent on the purchase of motor vehicle parts. In Northwest Minnesota this means other transportation equipment manufacturers purchase over \$160 million of motor vehicle parts. To the extent that these parts are produced locally, this drives high sales for local producers. Interestingly, motor vehicle parts manufacturing was one the few manufacturing sectors that grew in the Northwest during the time period, perhaps driven by demand from the other transportation equipment

<sup>5</sup> Local here is the Northwest region.

manufacturing industry.

**TABLE 4: TOP PURCHASES BY OTHER TRANSPORTATION EQUIPMENT MANUFACTURING FACILITIES IN THE NORTHWEST 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 Northwest Region</b>
Motor vehicle parts manufacturing	14%	No
Wholesale trade	5%	Yes
Other fabricated metals	5%	No
Iron and steel manufacturing	5%	No
All other transportation equipment	4%	Yes
Other rubber products	4%	No
Plastics packaging materials	4%	No
Management of companies and enterprises	2%	No
Other engine equipment	2%	No
Paints and coatings	2%	No
*Source: IMPLAN		

### Wholesale Trade

Output multipliers for wholesale trade in the Northwest region are estimated to range from 1.2 to 1.4. Table 5 shows the top inputs purchased locally by the wholesale trade industry, the percent of total input expenditures spent on the item, and the local availability of the item.

For every dollar spent on inputs, wholesale trade operations are estimated to spend four percent on wholesale trade (in other words, the industry interacts with itself)<sup>6</sup>, three percent on advertising and related services, and three percent on the management of the enterprise. Telecommunications is often a local service, so wholesale trade businesses in the region can purchase at least 50 percent of those services locally. However, the region does not produce advertising or insurance to satisfy the local demand. Therefore, wholesale trade operations are importing those items from elsewhere.

<sup>6</sup> This may have to do with the region and local distribution of wholesale trade. For example, local elevators in each community may gather the grain harvest and then sell to a larger wholesale trade operation which moves the grain out of the region.

**TABLE 5: TOP PURCHASES BY WHOLESALE TRADE FACILITIES IN THE NORTHWEST 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 Northwest Region</b>
Wholesale trade	4%	Yes
Advertising and related services	3%	No
Management of companies and enterprises	3%	No
Couriers and messengers	2%	Yes
Real estate and real estate management	2%	No
Insurance	1%	No
Management, scientific, and technical consulting	1%	Yes
Warehousing and storage	1%	No
Petroleum products	1%	No
Telecommunications	1%	Yes
*Source: IMPLAN		

These examples (grain farming, other transportation equipment, and wholesale trade) 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 Northwest 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
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-Document-Total-12.pdf">http://cced.ces.uwex.edu/files/2013/02/Resource-Document-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.



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