



The **EDACENTER**

at the University of Minnesota Crookston

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

Brigid Tuck

(With Assistance from Adeel Ahmed and Merritt Bussiere)



UNIVERSITY OF MINNESOTA | EXTENSION

February 2015

About The EDA Center

The EDA Center at the University of Minnesota Crookston is one of more than 40 university centers nationwide, supported by the Economic Development Administration, U.S. Department of Commerce. The EDA Center conducts applied research, provides direct technical assistance and delivers educational programs to economic development agencies that support the economy of economically-distressed communities throughout Minnesota.

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.

About the Authors

Brigid Tuck is an Economic Impact Analyst at the University of Minnesota Extension Center for Community Vitality.

Adeel Ahmed is an Extension Educator in South Central Minnesota at the University of Minnesota Extension Center for Community Vitality.

Merritt Bussiere is an Extension Educator in North Central Minnesota with the University of Minnesota Extension Center for Community Vitality.



UNIVERSITY OF MINNESOTA | EXTENSION



This document was prepared by the University of Minnesota Crookston under award number 06-66-05709 from the Economic Development Administration, U.S. Department of Commerce. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the Economic Development Administration or the U.S. Department of Commerce.

©2015 The EDA Center at the University of Minnesota Crookston



Acknowledgements

Editors:

Joyce Hoelting, Assistant Director, University of Minnesota Extension Center for Community Vitality

Matt Kane, Program Leader, University of Minnesota Extension Center for Community Vitality

Table of Contents

1. KEY FINDINGS.....	2
Regional Strengths.....	2
Regional Concerns.....	2
2. STUDY BACKGROUND AND OVERVIEW CENTRAL REGION.....	3
3. INDUSTRY OUTPUT.....	4
4. EMPLOYMENT AND WAGES.....	6
Employment and Wages by Industry.....	9
Professional and Business Services.....	10
Trade.....	11
Health Care and Social Assistance.....	12
Manufacturing.....	12
5. LOCAL INTERDEPENDENCIES.....	13
Manufacturing – Household Refrigerator and Home Freezer	12
Professional and Business Services – Finance.....	15
6. METHODOLOGY, DATA, AND SOURCES.....	16
Shift-Share Analysis.....	16
Location Quotients.....	17
7. OTHER DATA RESOURCES.....	18

ECONOMIC COMPOSITION OF CENTRAL REGION OF MINNESOTA: KEY FINDINGS

To analyze the economic composition of the 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.

Manufacturing plus professional and business services are the top two drivers of the Central regional economy in terms of output. Manufacturing creates 27 percent of all output, and the professional and business services industry creates 24 percent. Trade (retail and wholesale) is also a critical component for the Central Minnesota economy. A closer analysis revealed the following strengths and concerns.

REGIONAL STRENGTHS:

- **Health care and social assistance.** Health care was the fastest growing industry in the Central region between 2003 and 2013, adding over 8,500 new jobs. The rate of job growth (54 percent) was above the national health care growth rate, indicating that the Central region may have a competitive advantage in the industry. In addition, average weekly wages in the health care industry are approximately \$100 per week higher than wages in other industries in the region. Wages in the industry grew by an inflation-adjusted 9 percent between 2000 and 2013.
- **Professional and business services.** Management of companies and enterprises was the fastest growing sector within the professional and business services industry, with job growth at 55 percent between 2003 and 2013. The average weekly wage, adjusted for inflation, in the management of companies and enterprises sector grew by 21 percent between 2001 and 2013.
- **Trade.** While Greater Minnesota posted a 2 percent decline in retail trade jobs between 2003 and 2013, the Central Minnesota region grew jobs in the sector by 3 percent. Wholesale trade is one of the top generators of output in the Central region. The number of jobs in wholesale trade, and particularly in the durable goods sector, increased between 2003 and 2013. Between 2000 and 2013, the average weekly wage in the wholesale trade sector increased by slightly less than 2 percent, after adjusting for inflation.

REGIONAL CONCERNS:

The analysis also revealed areas of potential concern for the region from an economic standpoint. These factors may warrant additional attention and exploration.

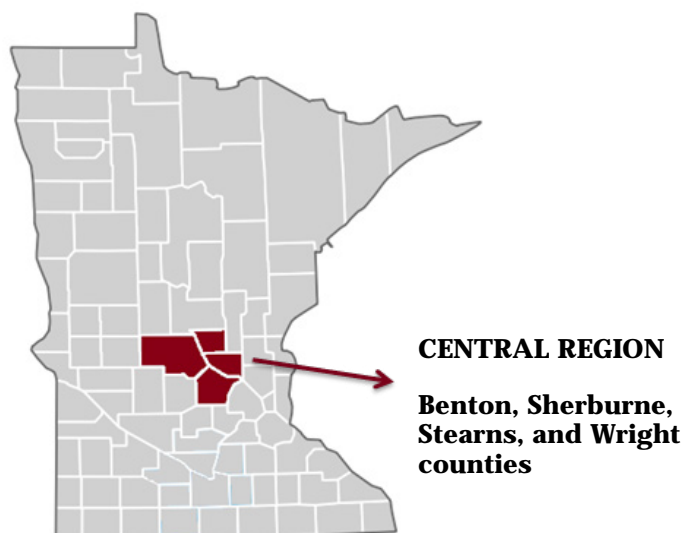
- **Retail trade wages.** While jobs were added in the retail trade sector, wages declined. After adjusting for inflation, the average weekly wage in the retail trade sector in the Central region declined by 11 percent between 2000 and 2013.
- **Construction.** While the construction industry in the Central region fared better than expected given job losses in the industry nationally, it still lost jobs in the Central region. Between 2003 and 2013, the construction industry lost 486 jobs in the Central region. The losses reflect a 5 percent decline in the number of construction jobs in the region.

STUDY BACKGROUND AND OVERVIEW 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, 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 is provided in partnership with the EDA Center at the University of Minnesota Crookston.

The Central region is comprised of four counties including Benton, Sherburne, Stearns and Wright. This region includes one of Greater Minnesota's largest cities: St. Cloud. The City of St. Cloud had a population of 65,842 in 2010. The St. Cloud MSA (including Stearns and Benton counties) had a population of 189,093 as of the 2010 Census (US Census). The region also includes cities within the influence of the Twin Cities metropolitan area in southern Wright and Sherburne counties.

Map 1: Map of Central Region in Minnesota



The goals of this 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. Regional concerns may also highlight trends of note.

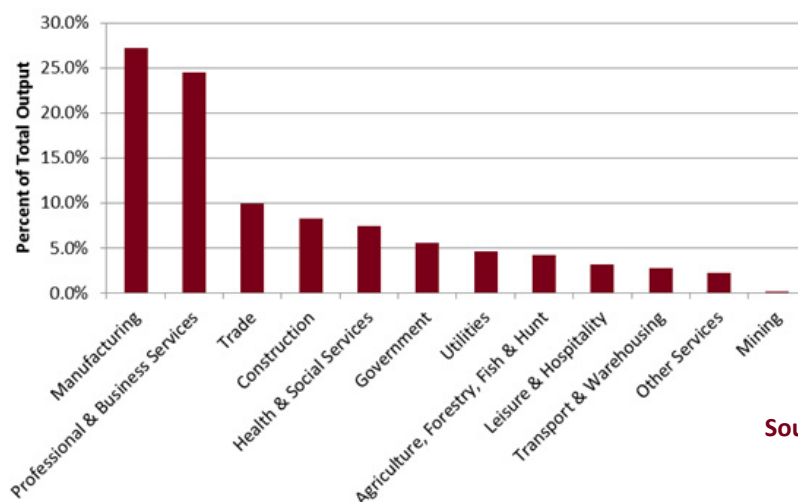
To ascertain which industries are regional strengths and which are potential regional concerns, this report draws from output, employment, and wage data. The first section looks at industry outputs. Output measures the value of sales by industry. Studying output by industry provides a perspective on 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 industries 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 Central region produced \$30.5 billion in goods and services, according to estimates from the IMPLAN economic model. Output in the Central region accounts for approximately 5 percent of Minnesota's \$567.8 billion economy and approximately 14 percent of Greater Minnesota's \$218.8 billion economy. In comparison, Central Minnesota is home to approximately 16 percent of Greater Minnesota's residents. In 2012, according to the IMPLAN model, the manufacturing industry created 27 percent of total output in the Central region of Minnesota. The professional and business services industry created 24 percent of output. While these two industries account for a significant share of output in the region (52 percent), the remaining regional economy is a little more diverse. Trade, construction, and health and social services each account for 5 to 10 percent of the region's output.

Chart 1: Industry Share of Total Output: Central Minnesota



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 Central Minnesota region produce an estimated \$10.5 billion of output (table 1). The manufacturing industry is responsible for over one-quarter of total output in the region. The top manufacturing sector, as measured by output, is household refrigerator and home freezer manufacturing.

The largest single sector in the region is the housing market (\$1.6 billion in output). *The housing market sector here largely reflects mortgage payments for housing.*¹ Household expenditures for rental units are included in the real estate establishments sector. The real estate establishments sector also includes property managers.

Other top sectors in the region include wholesale trade businesses, electric power generation, transmission and distribution, and monetary authorities and depository credit intermediation activities (banks).

1 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. 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.

TABLE 1: TOP TEN SECTORS IN CENTRAL REGION, SORTED BY OUTPUT		
Sector	Total Output (millions)	Output per Worker
Housing market	\$1,636.7	N/A
Wholesale trade businesses	\$1,396.5	\$188,028
Electric power generation, transmission, and distribution	\$1,351.6	\$708,783
Monetary authorities and depository credit intermediation activities (banks)	\$1,064.2	\$416,079
Household refrigerator and home freezer manufacturing	\$982.0	\$554,572
Real estate establishments	\$923.5	\$162,392
Construction of other new nonresidential structures	\$844.6	\$170,375
Private hospitals	\$798.9	\$137,523
State and local government, education	\$768.2	\$61,595
Food services and drinking places	\$713.3	\$51,991
TOP TEN TOTAL	\$10,479.5 (34%)	
TOTAL OUTPUT IN REGION	\$30,496.4	
*Source: IMPLAN		

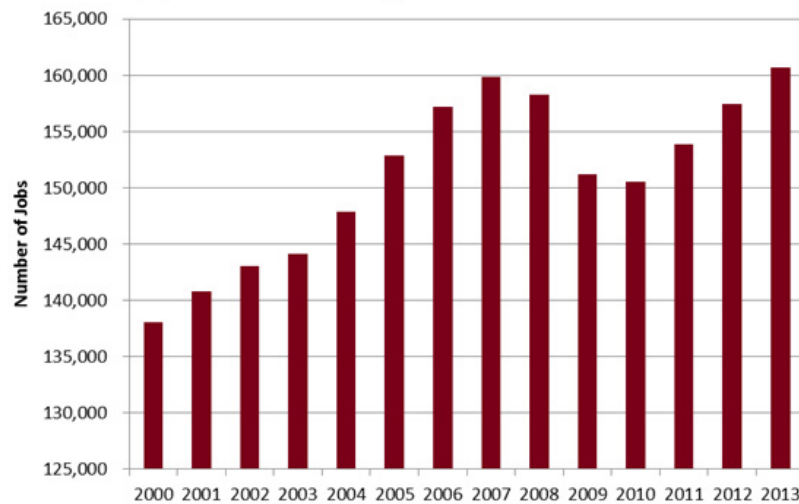
For the majority of the sectors in table 1, high output is driven by high productivity (output per worker). For example, each electric power generation, transmission, and distribution employee produces an estimated \$708,800 in output annually. One clear exception in the table is state and local government. 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. Another clear 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 less than full-time.

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 the Central region grew steadily through the first half of the 2000s, peaking in 2007. The number of jobs in the Central region then declined consistent with the 2008-2009 Great Recession. Since the recession, the number of jobs in the Central region has increased and now exceeds the previous peak in 2007.

Chart 2: Total Employment 2000-2013 Central Region



Source: QCEW

The highest employment growth industries in the Central region between 2003 and 2013 were health care and social assistance; government; and administrative and support and waste management and remediation services.² The industries suffering the most job losses during this period in the Central region include manufacturing, construction, and other services (see 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 the region to industry and national trends. This analysis provides an interesting interpretation of the changes these six industries revealed via the employment change analysis (table 2). In this analysis, the primary focus is on the competitive effect. A strongly positive competitive effect indicates that 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 16.

The health care and social assistance industry added the most jobs between 2003 and 2013 (8,551 jobs). If the health care and social assistance industry in the Central region had grown at the same overall rate as the national economy in all industries, it would have added 768 jobs (national growth effect). The health care and social assistance industry at the national level also gained jobs during the time period. If the 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 3,700 jobs (industry mix effect). The balance of these two effects (national growth and industry mix) predict the Central region should have added 4,468 health care and social assistance jobs, resulting in an overall competitive effect of 4,083 jobs.

Because 8,551 health care and social assistance jobs were added in the region, the health care and social assistance industry in the Central region posted a positive competitive share effect. In other words, the health care and social assistance industry in the Central region grew faster than expected given national and industry trends from 2003 to 2013.

² EMSI International. www.economicmodeling.com.

TABLE 2: SHIFT-SHARE ANALYSIS FOR GROWTH AND DECLINE INDUSTRIES³

Industry	Change 2003-2013	Industry Mix Effect	National Growth Effect	Competitive Effect
Top 3 Job Adding Industries				
Health care and social assistance	8,551	3,700	768	4,083
Government	2,422	(694)	972	2,145
Administrative and support and waste management and remediation services	1,872	251	296	1,325
Top 3 Job Loss Industries				
Manufacturing	(899)	(5,293)	1,167	3,225
Construction	(490)	(1,763)	483	789
Other services (except public administration)	(230)	(389)	253	(93)
*Source: EMSI				

Within the health care and social assistance industry, the sector with the most positive competitive share was the hospital sector. The sector added 2,727 jobs in the Central region between 2003 and 2013; of those jobs, 2,168 were due to the competitive effect.

After health care and social assistance, government was the industry to add the most jobs between 2003 and 2013. By definition, government includes federal, tribal, state, and local government jobs. Publicly-operated educational institutions and publicly-owned hospitals are also included in this category.⁴ The number of jobs in the local government sector grew by 1,400 in the period, mostly in the area of education and hospitals. The number of federal government jobs grew by 537, and the number of state government jobs grew by 485. The competitive effect for the region was positive, indicating the government industry fared well in the Central region.

The manufacturing industry in the Central region shed 899 jobs during the time period. The jobs reflect a modest 4 percent decline in the number of manufacturing jobs in the region. The manufacturing industry nationally was strongly and negatively affected by the Great Recession. Central Minnesota, however, fared better than expected given the national trends, retaining 3,225 jobs that could have been lost. Job losses in the region were spread across various types of manufacturing. The most manufacturing jobs lost were in printing and related support activities, which shed 1,244 jobs. Since then, QuadGraphics, located in St. Cloud, also closed, resulting in the loss of 280 jobs.⁵ Furniture and related product manufacturers lost 563 jobs. Electrical equipment, appliance, and component manufacturers lost 468 jobs. Some

3 For an explanation of shift-share analysis, please see the methodology section. Note, the competitive effect totals may not sum exactly due to rounding.

4 The EMSI database classifies publicly-owned education and hospitals in the government industry. This does differ from the NAICS classification system and also differs from the QCEW data, which classifies public education in the education industry and public hospitals in the health and social assistance industry.

5 For more on the QuadGraphics closure, see MacDonald, Richard A.; Banaian, King; Yamoah, Owusua; Tuck, Brigid; and Ahmed, Adeel, "Economic Emergency Program: St. Cloud Printing Plant Closure" (2014). Special Economic Studies. Paper 1.http://repository.stcloudstate.edu/sopari_ses/1.

manufacturing sectors, however, added jobs during the period. Fabricated metal product manufacturing added 804 jobs, transportation equipment manufacturing added 600 jobs, and machinery manufacturing added 492 jobs.

The construction industry also lost jobs (486) in the Central region during the time period. The jobs represent a 5 percent decline in the number of construction jobs in the region. The construction industry lost jobs nationally, but job losses in the Central region were lower than expected given losses in the industry at the national level. Between 2003 and 2013, the heavy and civil engineering construction sector added 612 jobs. The sectors of specialty trade contractors (-846) and construction of buildings (-252) both lost jobs.

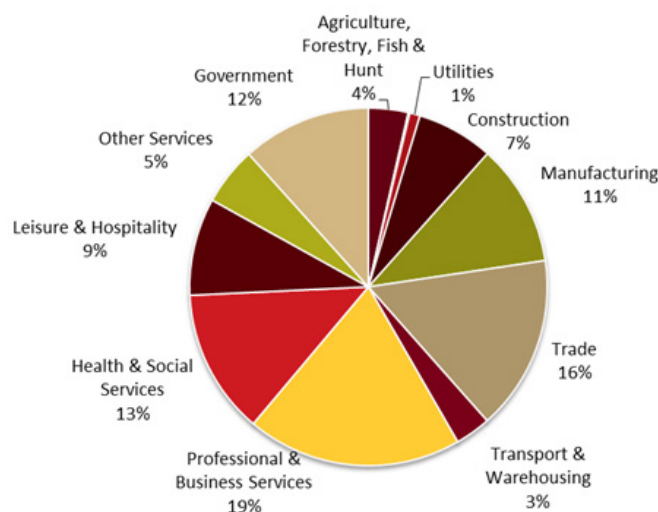
Key things for economic developers to consider from this employment data:

- 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 health and social services. What factors are giving the 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 that did not fare well during the recession fared even worse in the Central region, such as manufacturing. Are there opportunities to support these industries? What factors led to these outcomes? Were the declines a result of one-time changes or longer-term trends?

Employment and Wages by Industry

Employment by industry in the Central region is depicted in chart 3. The professional and business services industry employs 19 percent of workers in the Central region. Trade employs 16 percent and health and social services employs 13 percent. As noted earlier, the health and social services industry is the fastest growing industry in the region.

Chart 3: Employment by Industry: Central Minnesota



Source: IMPLAN

Professional and Business Services

Within the professional and business services industry, the largest sectors, as measured by the number of jobs, include administrative and support and waste management and remediation services (7,996 jobs), finance and insurance (4,373 jobs), and professional, scientific, and technical services (3,568 jobs).

The management of companies and enterprises sector was the fastest growing sector within the industry, growing by 55 percent (368 jobs) between 2003 and 2013. To quote labor market analyst Melauni Jensen, “companies in this industry are involved in holding securities (assets or equity interests), managing other establishments (except government), or both managing and holding securities. This can also include corporate, regional, and subsidiary offices engaged in overseeing and managing other establishments of the company, enterprise, or headquarter locations.”⁶

The number of jobs in the sector increased in all four counties of the Central region. Stearns County has the highest number of jobs in the sector with 421, an increase of 160 jobs from 2003. Wright County has the smallest number of jobs in the sector with 113, an increase of 76 from 2003. However, overall the location quotient for the sector was 0.41. The location quotient measures how concentrated an industry is within a region. A location quotient of less than one indicates the region has a lower concentration of jobs in the sector as compared to the national average. This indicates there may be room for additional growth in this sector. For more on location quotients, please see page 17.

Wages in the management of companies and enterprises sector are strong in the Central region. The 2013 average weekly wage in the sector was \$1,526. Between 2001 and 2013, the average weekly wage in the sector grew by 21 percent, after adjusting for inflation. In comparison, the average weekly wage across all industries in the Central region is \$741 and grew by 4 percent.

Wages of the management of companies and enterprises sector are highest in Stearns County at \$1,955, followed by Wright County at \$1,418, Benton County at \$1,368, and Sherburne County at \$985.

The administrative and support and waste management and remediation services sector (within the professional and business services industry) added the most jobs within the industry, increasing the number of jobs by 1,827 (a 31 percent increase) between 2003 and 2013. Growth was driven by increases in several sub-sectors. The Central region added 797 jobs in the packaging and labeling services sector, 788 jobs in the temporary help services sector, and 350 jobs in the janitorial services sector. The Central region did lose 547 jobs in the professional employer organizations sector during the period.

The 2013 average weekly wage in the administrative and support and waste management and remediation support services sector in the Central region was \$527. This is more than \$200 lower than the average weekly wage across all industries in the region. The average weekly wage in the sector increased by an inflation-adjusted 7 percent between 2000 and 2013.

6 Jensen, Melauni. “Industry Highlight: Management of Companies and Enterprises”. May/June 2012. Retrieved at <https://jobs.utah.gov/wi/pubs/trendlines/mayjune12/industryhighlight.pdf>

Trade

In 2013, there were nearly 29,000 trade jobs in the Central region. Over three-fourths of the jobs (77 percent) were in the retail trade sector, with the other one-quarter (23 percent) in the wholesale trade sector. The number of jobs in the retail trade sector grew by a modest 3 percent between 2003 and 2013. The number of jobs in the wholesale trade sector increased by 8 percent in the same period.

The retail trade sector in the Central region performed better than expected given national and industry trends. The retail trade sector was hit particularly hard by the Great Recession of 2008-2009. Based on industry trends, the region should have lost 845 jobs, making the Central region competitive in the sector. The location quotient for retail trade in the Central region is 1.24, indicating the Central region has a higher concentration of retail trade than expected given national averages.

Stearns County is home to almost half of the retail trade jobs in the region. However, Stearns County lost jobs between 2003 and 2013 (-322 jobs). Sherburne County also lost jobs (-258 jobs). Strong growth in the number of retail trade jobs in Wright County offset those losses (+1,172 jobs). Benton County added 43 jobs. Wright County has the highest location quotient at 1.48.

Job gains were highest in the clothing and clothing accessories stores sector (+564), the food and beverage stores sector (+495), and general merchandise stores sector (+381). Job losses were highest in the nonstore retailers sector (-649), gasoline stations (-237), and building material and garden equipment and supplies dealers sector (-198).

The 2013 average weekly wage in the retail trade sector in the Central region was \$461, nearly \$300 per week lower than the average wage across all industries. The 2013 wage represents, after adjusting for inflation, an 11 percent decline from 2000. Wages are fairly consistent across all four counties. Benton County has the highest average weekly wage for retail trade at \$493. Wright County has the lowest at \$428.

The wholesale trade sector in the Central region also performed better than expected given national and industry trends. In particular, the region added the most jobs in the durable goods wholesale sector, with the job count increasing by 10 percent between 2003 and 2013. The location quotient for wholesale trade in the Central region is 0.95, indicating the region has a similar concentration of jobs in the industry as is found at the national level.

As with the retail trade sector, the highest number of jobs in the wholesale trade sector are in Stearns County, home to about one-third of the area's jobs. The number of wholesale trade jobs in Stearns County dropped between 2003 and 2013 by 196. Wright County has the second highest number of jobs in the wholesale trade sector and added 500 jobs between 2003 and 2013. Sherburne County added 242 jobs, and Benton County lost 46 jobs in the period.

Wages in the wholesale trade sector are much higher those in the retail trade sector. In 2013, the average weekly wage in the Central region's wholesale trade sector was \$952. This is over \$200 higher than the average weekly wage

across all industries. The wage in the wholesale trade sector grew by less than 2 percent between 2000 and 2013.

Health Care and Social Assistance

The health care and social assistance industry, while the third largest in terms of total jobs in the Central region, added the highest number of jobs between 2003 and 2013. The Central region created 8,551 new health care and social assistance jobs in the period, representing a 54 percent increase. All sectors in the industry gained jobs. The ambulatory health care services sector added the most jobs (3,351), a 73 percent increase. Included in ambulatory health care services are home health care services (1,469 new jobs) and offices of physicians (738 new jobs). The hospital sector added the second highest number of jobs with 2,727 new jobs.

The location quotient for the health care and social assistance industry overall is 1.16, indicating the Central region is slightly more concentrated in the health care industry than the national average. The location quotient for nursing and residential care facilities, a sector in the industry, is 1.48. Within the nursing and residential care facilities sector, the location quotient for residential intellectual and development disability, mental health, and substance abuse facilities is 2.97. These facilities also added 852 of the 1,246 new nursing and residential care facilities sector's jobs.

The 2013 average weekly wage in the health care and social assistance industry in the Central region was \$840, or about \$100 above the average across all industries. Wages in the industry grew by 9 percent between 2000 and 2013. Wages are highest in Stearns County at \$1,014 per week in 2013. Wages are lowest in Sherburne County at \$605 per week.

Stearns County is home to slightly more than half (54 percent) of the health care and social assistance jobs in the Central region. Stearns County also added the most jobs between 2003 and 2013 (3,859). Benton County has the fewest jobs in the region; however, the number of jobs in the industry nearly doubled in the county between 2003 and 2013.

Manufacturing

The manufacturing industry in the Central region lost jobs during the time period of 2003 to 2013, as highlighted previously. However, the competitive effect was positive, indicating the region retained jobs that were vulnerable as a result of the Great Recession of 2008-2009. The Central region posted the highest competitive effect shares in the fabricated metal product manufacturing sector, the transportation equipment manufacturing sector, and the plastics and rubber products manufacturing sector.

In 2013, the highest numbers of manufacturing jobs in the Central region were in the fabricated metal manufacturing sector (4,083), the food manufacturing sector (3,777), and the furniture and related product manufacturing sector (1,859). The fabricated metal manufacturing sector includes machine shops; architectural and structural metals; and forging and stamping. Large employers included in the food manufacturing sector are companies involved in animal slaughtering and processing; bakeries and tortillas manufacturing; and "other" food manufacturing.

Overall, the location quotient for the manufacturing industry in the Central regions is 1.62, showing a concentration of jobs in the industry for Central Minnesota. The highest location quotients are in the furniture and related product manufacturing sector at 4.33, the nonmetallic mineral product manufacturing sector at 3.46, and the electrical equipment, appliance, and component manufacturing sector at 3.17.

In 2013, Stearns County accounted for nearly half of all manufacturing jobs in the region. The number of manufacturing jobs in Stearns County declined by 10 percent between 2003 and 2013. Approximately one-quarter of all manufacturing jobs in 2013 were located in Wright County, an increase of 8 percent from 2003. Benton and Sherburne County each had about 13 percent of manufacturing jobs. The number of manufacturing jobs in Benton County fell by 11 percent, while Sherburne County's increased by 15 percent.

The 2013 average weekly wage in the manufacturing industry in the Central region was \$884, as compared to \$741 across all industries. The average weekly wage in the manufacturing industry increased by slightly more than 2 percent between 2000 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 two significant industries in the Central regional economy - manufacturing, and professional and business services - and their connections with other industries. Specifically, the analysis will focus on 1) household refrigerator and home freezer manufacturing, and 2) finance. These are the 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 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.

Manufacturing - Household Refrigerator and Home Freezer

Output multipliers for the electronic equipment and component manufacturing sectors (which includes household refrigerator and home freezer manufacturing) in the Central region are estimated to range from 1.3 to 1.5. In other words, for every dollar of output generated by the sector (household refrigerator and home freezer manufacturing, for example), \$0.30 to \$0.50 are generated in other regional sectors that supply that sector.

Table 3 highlights expenditures by household refrigerator and home freezer manufacturers. For every dollar spent on inputs, household refrigerator and home freezer manufacturers are estimated to spend 10.9 percent on plastics materials and resins, 9.7 percent on iron and steel and ferroalloy products, and 7.8 percent on wholesale trade. Since the household refrigerator and home freezer manufacturing industry produces \$982.0 million of output in the region, this translates into household refrigerator and home freezer manufacturers buying \$87.8 million of product from plastics materials and resins manufacturers.

TABLE 3: TOP PURCHASES BY HOUSEHOLD REFRIGERATOR AND HOME FREEZER MANUFACTURING FACILITIES IN THE CENTRAL REGION, PERCENT OF TOTAL EXPENDITURES, AND LOCAL AVAILABILITY

Input	Percent of Input Expenditures	More than 50% of Demand Available from Suppliers within the Northeast Region
Plastics materials and resins	10.9%	No
Iron and steel and ferroalloy products	9.7%	No
Wholesale trade	7.8%	Yes
Plastics packaging materials and unlaminated films and sheets	7.6%	No
Air conditioning, refrigeration, and warm air heating equipment	4.6%	No
Motor and generation	4.5%	No
Crowned and stamped metals	3.0%	Yes
Management of companies and enterprises	2.7%	No
Semiconductor and related devices	2.7%	No
Relay and industrial controls	2.2%	No
Source: IMPLAN		

According to the IMPLAN model, the top two supplies that household refrigerator and home freezer manufacturers purchase (plastics materials and resins, and iron and steel and ferroalloy products), 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. Wholesale trade and crowned and stamped metals are available from local suppliers.

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 and transportation routes. Once a potential industry is identified for potential development, further research should be conducted. For example, a market analysis for the good or service in question will look at the technical requirements of the input: quality, convenience, price, transport costs, and so forth. Should there indeed be a specific market opportunity; a business plan should be developed to more specifically analyze feasibility, production, and financing.

Professional and Business Services – Finance

Multipliers for financial sectors in the Central region are estimated to range from 1.3 to 1.9. Table 4 shows the top inputs purchased locally by nondepository credit intermediation and related businesses,⁷ the percent of total input expenditures spent on the item, and the local availability of the item. For every dollar spent on inputs by nondepository credit intermediation and related services businesses, 14.4 percent is spent on insurance agencies, brokerages, and related services; 9.1 percent on services from monetary authorities and depository credit intermediation; and 5.3 percent on securities, commodity contracts, investments, and related services.

Nondepository credit intermediaries are important sources of local demand for insurance agencies; monetary authorities and depository credit intermediaries; and securities, commodity contracts, investments, and related services.⁸ These sectors with strong connections to nondepository credit intermediaries are the top industries capturing the 30 to 90 cents of additional economic activity that flows from every dollar of finance output mentioned above.

TABLE 4: TOP PURCHASES BY NONDEPOSITORY CREDIT INTERMEDIATION AND RELATED SERVICES BUSINESSES IN THE CENTRAL 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
Insurance agencies, brokerages, and related services	14.4%	Yes
Monetary authorities and depository credit intermediation	9.1%	Yes
Securities, commodity contracts, investments and related services	5.3%	Yes
Advertising and related services	2.8%	Yes
Nondepository credit intermediation and related services	2.0%	No
Real estate buying and selling, leasing, managing, and related services	2.0%	Yes
Management of companies and enterprises	1.6%	No
Telecommunications	1.2%	No
Restaurant, bar, and drinking places services	0.9%	Yes
Business support services	0.9%	Yes

Source: IMPLAN

These two examples (household refrigerator and home freezer manufacturing and finance) 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.

⁷ Nondepository credit intermediaries serve as intermediaries between savers and borrows, but do not accept time deposits. Examples include credit card lenders, sales financing, and real estate credit.

⁸ Local here is the Central 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 Central region of Minnesota.⁹ 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.

⁹ Note: at this time, the Central Minnesota region does not have a federally-designated Regional Development Organization.

- **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	http://www.clustermapping.us/	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	www.mncompass.org	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	http://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/index.jsp	Go here for population estimates by EDR, County, and City/Townships. 2013 Estimates are available.
MN Land Economics	http://www.landeconomics.umn.edu/	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	http://headwaterseconomics.org/tools/eps-hdt	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	http://mn.gov/deed/data/data-tools/index.jsp	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: https://apps.deed.state.mn.us/lmi/rws/
University of Wisconsin Extension	http://fyi.uwex.edu/downtown-market-analysis/understanding-the-market/demographics-and-lifestyle-analysis/	Learn more about demographic and lifestyle analysis
University of Wisconsin Extension	http://cced.ces.uwex.edu/files/2013/02/Resource-Document-Total-12.pdf	Discover useful links to sources of information for economic developers
OnTheMap	http://onthemap.ces.census.gov/	Mapping tool from the census. Use this understand where people live vs work
University of Wisconsin-Madison, Michigan Tech University, University of New Hampshire	http://www.netmigration.wisc.edu/	Use this to learn about - and visualize - migration patterns for U.S. counties.



The EDA CENTER

at the University of Minnesota Crookston