



The **EDACENTER**

at the University of Minnesota Crookston

## Economic Composition of the Headwaters Region of Minnesota: Industries and Performance

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(With Assistance from Rani Bhattacharyya and Merritt Bussiere)



UNIVERSITY OF MINNESOTA | EXTENSION

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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.

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## ECONOMIC COMPOSITION OF HEADWATERS REGION OF MINNESOTA: KEY FINDINGS

To analyze the economic composition of the Headwaters 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.

The Headwaters regional economy is fairly diverse. Top generators of output in the region clearly are professional and business services and manufacturing. Government, construction, health and social services, and trade, however, all contribute a significant share. Top industries in terms of employment include government, trade, and health and social services. It is important to note in this analysis that the government industry includes federal, state, local, and tribal government. A closer analysis revealed the following strengths and concerns.

### REGIONAL STRENGTHS:

- **Job growth.** While the region experienced job losses due to the Great Recession of 2008-2009, the number of jobs in 2013 exceeded the number of jobs of 2008.
- **Health and social services.** The health care and social services industry added the most jobs in the region and grew at rates faster than expected given national and industry trends. Wages in the industry average \$100 more per week than wages across all industries in the region. Job growth between 2003 and 2013 was noted at hospitals, in nursing and residential facilities, and in social assistance. There were minor job losses in ambulatory health care services where a significant decline in the number of doctors in practice offset gains in other segments of the sector.
- **Finance.** The financial and insurance sector is the largest professional and business services sector. Wages grew by 13 percent between 2000 and 2013. Banks are one of the largest sources of output 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.

- **Manufacturing.** The manufacturing industry lost over 1,000 jobs between 2003 and 2013. Approximately half those jobs losses were beyond what would be expected given the decline in manufacturing at the national level. Losses were in a variety of sectors, but hard hit were sectors related to logging, including paper mills and wood preservation.

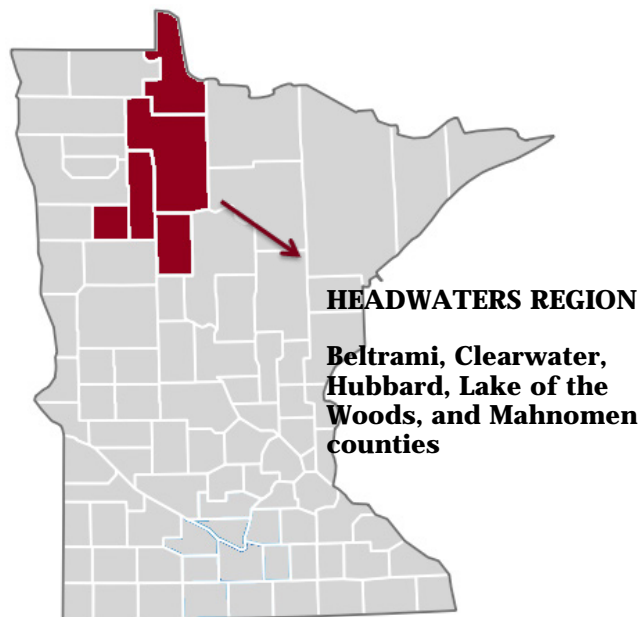
- **Retail trade.** Despite the presence of a regional hub in Beltrami County, the region lost 268 retail trade jobs between 2003 and 2013. These are jobs that, given national and industry trends, should not have been lost. While supercenters and general merchandise stores added jobs, discount department stores, gasoline stations and hardware stores shed jobs. Between 2000 and 2013, wages in the retail trade sector decreased by 2 percent, after adjusting for inflation.

## STUDY BACKGROUND AND OVERVIEW HEADWATERS 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.

Located to the north and to the center of Minnesota, the Headwaters region, represented by the Headwaters Regional Development Commission, is comprised of five counties, including Beltrami, Clearwater, Hubbard, Lake of the Woods, and Mahanomen. Located in Beltrami County, Bemidji is a regional economic hub.

**Map 1: Map of Headwaters Region in 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) to identify concerns for the region. Regional concerns focus on industries that may be underperforming or declining.

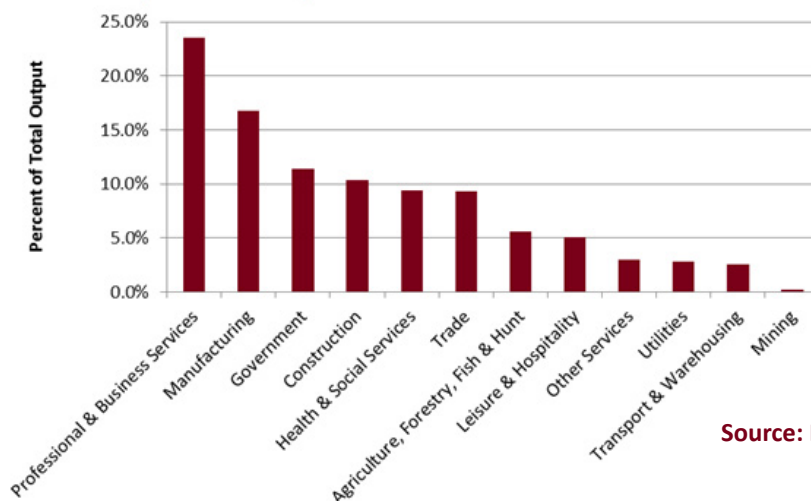
To ascertain which industries are regional strengths and which are potential regional concerns, this report draws from output, employment, and wage data. The first section looks at industry outputs. Output measures the value of sales by industry. Studying output by industry provides perspective as to 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 Headwaters region produced \$4.8 billion in goods and services, according to estimates from the IMPLAN economic model. Output in the Headwaters region accounts for approximately 1 percent of Minnesota's \$567.8 billion economy and approximately 2 percent of Greater Minnesota's \$218.8 billion economy. In 2012, according to the IMPLAN model, professional and business services created nearly 24 percent of total output in the Headwaters region of Minnesota. Manufacturing created just over 16 percent. While professional and business services and manufacturing are clearly drivers of the regional economy, the top three industries account for only 52 percent of all output in the region, highlighting the diversity of the economy. Government and construction both account for over 10 percent of output. Health and social services and trade both account for just under 10 percent of output.

Chart 1: Industry Share of Total Output Headwaters



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 Headwaters region produce an estimated \$1.9 billion of output (table 1). The top ten sectors also reflect the diversity of the regional economy. While professional and business services and manufacturing, when aggregated, create the highest level of output, at a disaggregated level, sectors from these industries do not dominate the list. The top ten sectors in the table come from the industries of professional and business services; government; construction; health care; manufacturing; leisure; and trade.

The housing market sector produces \$366.9 million in output and is the top producer of output in the region. This sector measures the value of housing in the region from the perspective of homeowners – in other words, the housing market sector is a proxy to measure if all homeowners were to pay mortgages. It is not a measure of the value of the housing stock. While the housing market is an important component of many regional economies, its ranking on this list is fairly unusual. One explanation may be the prevalence of seasonal residences. A recent study by University of Minnesota Extension focused on the role of seasonal residents in the Central and West Central lakes area (including Hubbard County) and found nearly one-third of units in the study area were designated for seasonal, occasional, or recreational use.<sup>1</sup>

State and local government - education produces \$297.4 million of output in the Headwaters region. This industry category includes public K-12 institutions along with public higher education institutions. One of the MnSCU system's largest campuses, Bemidji State, is located in Beltrami County. Also included would be tribal colleges, such as the White Earth Tribal and Community College and the federally-sponsored Circle of Life School both in Mahnommen County. Output in the government sector is primarily comprised of payroll, since government does not make sales in the traditional sense. This also affects the level of output per worker shown in table 1.<sup>2</sup>

For the majority of the sectors in table 1, high output is driven by high productivity (output per worker). Each banking employee produces an estimated \$410,000 in output annually. The clear exception in the table is government and government-owned enterprises, as explained above.

Output per worker is also 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.

1 Pesch, Ryan and Merritt Bussiere (2014). "Profile of Second Homeowners in Central and West Central Minnesota." Retrieved from: <http://www.extension.umn.edu/community/research/>.

2 Government output in this analysis does not include government transfer payments.

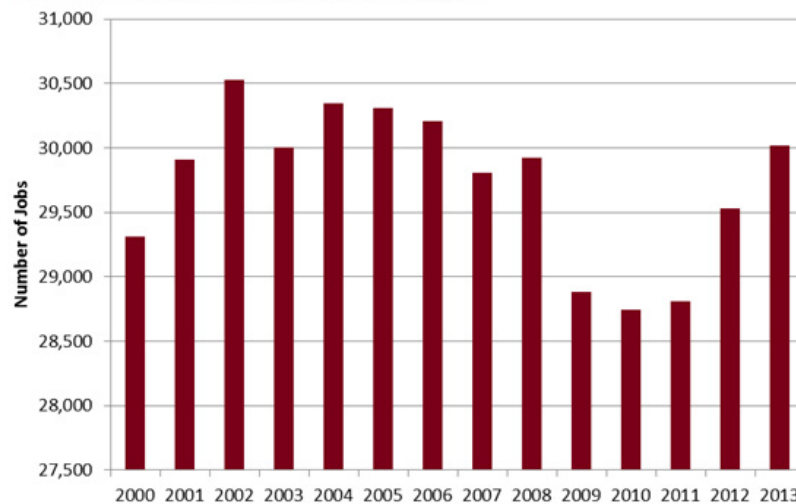


<b>TABLE 1: TOP TEN SECTORS HEADWATERS REGION, SORTED BY OUTPUT</b>		
<b>Sector</b>	<b>Total Output (millions)</b>	<b>Output per Worker</b>
Housing market	\$366.9	NA
State and local government - education	\$297.4	\$59,394
Banking	\$221.0	\$410,426
Construction of other new nonresidential structures	\$164.9	\$144,382
Offices of physicians, dentists, and other health practitioners	\$156.0	\$105,772
Private hospitals	\$152.9	\$128,169
Motor vehicle parts manufacturing	\$151.2	\$518,252
State and local government - non-education	\$128.5	\$51,616
Food services and drinking places	\$127.4	\$50,121
Wholesale trade businesses	\$122.9	\$168,978
<b>TOP TEN TOTAL</b>	<b>\$1,889.1 (39%)</b>	
<b>TOTAL OUTPUT IN REGION</b>	<b>\$4,806.7</b>	
*Source: IMPLAN		

## 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 Headwaters region grew steadily in the early 2000s with a small decline in 2003. The number of jobs decreased consistent with the 2008-2009 Great Recession. The number of jobs in the region has been increasing since 2011. The number of jobs in the Headwaters region is close to recovering to pre-recession levels, however, the total number of jobs is still below the peak in 2002.

Chart 2: Total Employment 2000-2013 Headwaters Region



Source: QCEW

The highest employment growth industries in the Headwaters region between 2003 and 2013 were health care and social assistance (added 1,271 jobs); administrative and support and waste management and remediation services (added 451 jobs); and accommodation and food services (added 244

jobs)<sup>3</sup>. The industries suffering the most job losses during the period in the Headwaters region include manufacturing (1,071 lost jobs); construction (330 lost jobs); and retail trade (268 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 through comparisons to industry and national trends. The analysis provides an interesting interpretation of the changes in each industry (table 2). In this analysis, the primary focus is on the competitive effect. A strongly positive competitive effect indicates particular characteristics of the local economy are driving growth in the region. A strongly negative competitive effect can be interpreted as a warning that the local economy may not be faring as well as it should. For more on shift-share analysis and how to interpret the results, see page 16.

The health care and social assistance industry added the most jobs between 2003 and 2013 (1,271 jobs). If the health care and social assistance industry in the Headwaters region had grown at the same overall rate as the national economy in all industries, it would have added 170 jobs (national growth effect). The health care and social assistance industry at the national level also added jobs during the time period. If the Headwaters 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 819 jobs (industry mix effect). Since even more jobs were added in the region, the health care and social assistance industry in the Headwaters region of Minnesota is considered "competitive." In other words, the health care and social assistance industry in the Headwaters region outperformed national and industry trends. Within the health care and social assistance industry, sectors with the most positive competitive share include services for the elderly and persons with disabilities and general medical and surgical hospitals.

In addition to the health care and social assistance industry, the administrative and support and waste management and remediation services industry posted positive competitive effects. Within the industry, job increases were recorded in the sectors of office administrative services (138 new jobs), temporary help services (78 new jobs), solid waste landfills (58 new jobs), and packaging and labeling services (56 new jobs).

The accommodation and food services industry gained 244 jobs. Given trends in the industry and in the national economy, the industry was predicted to add 250 more jobs. The top job gains in the industry were at limited service dining places, drinking places, and "other" traveler accommodations. Two sectors, full service dining places and hotels (except casinos) and motels, both shed jobs and had negative competitive shares. These two industries were responsible for the negative competitive effect for the industry as a whole.

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3 EMSI

**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	1,271	819	170	282
Administrative and Support and Waste Management and Remediation Services	451	11	13	427
Accommodation and Food Services	244	358	136	(250)
<b>Top 3 Job Loss Industries</b>				
Manufacturing	(1,071)	(736)	162	(497)
Construction	(330)	(327)	89	(92)
Retail Trade	(268)	(175)	218	(311)
*Source: EMSI				

The manufacturing industry in the Headwaters region shed 1,071 jobs during the time period. Manufacturing at a national level suffered from the effects of the Great Recession. Had the manufacturing industry in the Headwaters region contracted at the same rate as manufacturing across the United States, the Headwaters region should have lost 736 jobs (industry mix effect). Given the trend of increasing employment across all industries in the United States, the Headwaters region would have been expected to add 162 jobs (national growth effect). Therefore, the competitive share is a negative 497 jobs. In other words, the manufacturing industry in the Headwaters region was not as competitive as it could have been.

The Headwaters region had significant manufacturing job losses between 2003 and 2013 in fruit and vegetable preserving and specialty food manufacturing (-262); veneer, plywood, and engineered wood product manufacturing (-202); pulp paper, and paperboard mills (-168), and semiconductor and other electronic component manufacturing (-159). Offsetting these losses, however, were gains in motor vehicle parts manufacturing (up 96 jobs); other general purpose machinery manufacturing (up 53 jobs), and architectural and structural metals manufacturing (up 44 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 (construction and retail trade) in the Headwaters region also had negative competitive shares. In the construction industry, the largest job losses were residential building construction (-222) and power and communication lines and related structures (-124). Job gains were posted in oil and gas pipeline and related structures (182 jobs) and “all other” specialty trade contractors (32).

4 For an explanation of shift-share analysis, please see the methodology section. Please note, columns may not sum due to rounding in the calculation of competitive share.

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

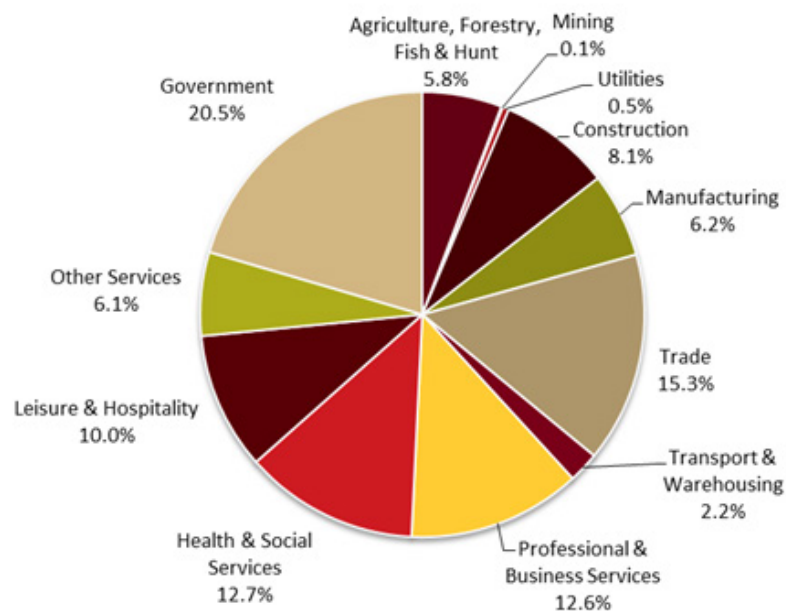
- Find ways to support competitive industries. This will likely mean engaging industry leaders to discuss the key drivers of economic advantage in this region, such as health care. Some regions in Minnesota are experiencing negative competitive shares in the health care industry. What factors are giving the Headwaters region an advantage in this industry? What components of the health care industry are growing? Which are not?
- For some non-competitive industries, it's important to learn more about the key factors. Manufacturing, overall, had a negative competitive share and lost jobs. However, certain sectors within the industry fared well and were competitive. There may be factors to capitalize on in the region to support further growth.
- Certain industries can post job growth, but further analysis indicates the industry could have grown faster. Are there strategies to support additional growth?

### Employment and Wages by Industry

Employment by industry in the Headwaters region is depicted in chart 3. The government and government-owned enterprises industry employs 21 percent of all workers in the Headwaters region. Trade employs 15 percent of all workers, and health and social services employs 13 percent, as does the professional and business services industry.

The diversity of the economy is also reflected in the distribution of employment. The two largest industries are clear, but there is a virtual tie for third place between health and social services, and professional and business services. Trade, as well as leisure and hospitality are above 10 percent.

**Chart 3: Employment by Industry: Headwaters Region**





## Government and Government-Owned Enterprises

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

In the Headwaters region, the sector called “state and local government – education” employs 38 percent of all state and local government workers. The sector called “state and local government – non-education” employs 62 percent of all state and local government workers. During the 2003 to 2013 time period, state and federal government slightly increased the number of employees in the region. Local government employment decreased by 338 jobs.

As mentioned, government and government-owned enterprises includes tribal government activities. The tribal government activities are included in the state and local government figures. The gambling industries sector (primarily tribal casinos) posted 1,115 jobs in 2013. The 2013 average weekly wage in the gambling industries sector was \$514. The majority of the jobs are in Mahanomen County. There are also jobs in the gambling industry in Beltrami County.

## Trade

Of all jobs in the trade industry in the Headwaters region, 89 percent of the jobs are in the retail trade sector and 11 percent are in the wholesale trade sector. Both sectors experienced modest declines in the number of jobs between 2003 and 2013. The number of jobs in the retail trade sector dropped by 268 jobs (a 6 percent decline), and the number of jobs in the wholesale trade sector dropped by 17 jobs (a 3 percent decline).

Within retail trade, the sectors with the highest number of jobs in the Headwaters region include general merchandise stores (1,145 jobs), food and beverage stores (858 jobs), and gasoline stations (505 jobs). Both general merchandise stores and food and beverage stores added jobs between 2003 and 2013 and both posted positive competitive shares.<sup>5</sup> The largest jobs losses between 2003 and 2013 were at gasoline stations (-149 jobs), miscellaneous store retailers (-137 jobs), and building materials and garden equipment and supplies dealers (-102 jobs). The competitive effect was also negative for all three of the sectors. Within retail trade, jobs were added in general merchandise stores (165 new jobs), food and beverage stores (67 new jobs), and sporting goods, hobby, musical instruments, and book stores (8 new

5 For more on retail trade in Bemidji, see Schwartz, B. (2014). “Room for More: A study of Minnesota retail and service businesses that open or expand after the opening of Walmart Supercenters.” The report looks at trends in retail sales versus the approach here of examining job trends. Retrieve at: <http://www.extension.umn.edu/community/research/>.

jobs). All three of these had positive competitive shares in the shift-share analysis.

The 2013 average weekly wage in the retail trade sector in the Headwaters region was \$403. This represents an inflation-adjusted decline of 2 percent from 2000. The average weekly wage in the retail trade sector was nearly \$250 lower than the average weekly wage in all industries in the region. The 2013 average weekly wage was highest in Mahnomen County (\$436) and Beltrami County (\$413). The lowest average weekly wage was in Clearwater County (\$318).

Of all the retail trade jobs, 67 percent of them are located in Beltrami County, in which the regional hub of Bemidji is located. Hubbard County hosts 21 percent of the retail trade jobs in the region. Mahnomen County has the lowest number of jobs in retail trade with 115 jobs. Beltrami County posted job losses between 2003 and 2013, while Hubbard County posted modest job gains.

### Health and Social Services

As discussed, the health and social services industry was a growth industry in the Headwaters region between 2003 and 2013, adding 1,271 jobs. The industry added more jobs than anticipated given national and industry trends. Overall, the location quotient for health and social services in the region is 1.22, indicating the region has slightly more jobs in health care than expected. (For more on location quotients, see page 15).

In 2013, the Headwaters region posted 1,676 jobs at hospitals, 1,154 jobs in nursing and residential care facilities, 983 jobs in social assistance, and 983 jobs in ambulatory health care services. Growth in the number of jobs between 2003 and 2013 was spread across most of those sectors, including 584 new social assistance jobs, 433 new hospital jobs, and 263 new nursing and residential care facilities jobs.

There was a net loss of 9 jobs in ambulatory health care services. However, it is of note that there were 352 jobs lost in offices of physicians. These losses were partially offset by gains in the number of home health care workers (158 new jobs), medical laboratory jobs (75 new jobs), and dentists (69 new jobs). These changes could represent a shift in the health care industry in the Headwaters region.

The 2013 average weekly wage in the health and social service industry in the Headwaters region was \$762, about \$114 per week higher than the average weekly wage across all industries. Wages are highest in ambulatory health care services (\$1,344), followed by hospitals (\$896), social assistance (\$404), and nursing and residential care facilities (\$394).

The majority of the health care and social assistance jobs (66 percent) are located in Beltrami County. Due to data disclosure rules, the average weekly wage in health care and social assistance by county is only available for Beltrami and Lake of the Woods counties. The 2013 average weekly wage was \$843 in Beltrami County and \$682 in Lake of the Woods County.



## Professional and Business Services

Within the professional and business services industry, the two largest sectors, as measured by employment, are finance and insurance (710 jobs) and information (474 jobs). The finance and insurance sector in the Headwaters region lost 13 jobs between 2003 and 2013. The information sector added 22 jobs in the same time period. The information sector at the national level was particularly hit by the Great Recession of 2008-2009, so although the number of jobs added is not large, adding any jobs at a regional level is notable.

In 2013, the average weekly wage in the finance and insurance sector was \$784. This represents a 13 percent increase over 2000 (adjusted for inflation). In 2013, the average weekly wage in the information sector was \$755, which represents a four percent decline from 2001.

The majority of finance and insurance, as well as information jobs, are located in Beltrami County. Hubbard and Lake of the Woods counties both have jobs in the industries.

## 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 significant industries in the Headwaters regional economy – professional and business services; health care and social assistance; and retail trade - and their connections with other industries. Specifically, the analysis will focus on 1) banks, 2) offices of health care practitioners, and 3) general merchandise stores.

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 – Finance

Output multipliers for the finance sectors in the Headwaters region are estimated to range from 1.2 to 2.0. In other words, for every dollar of output generated by the sector (banks, for example), \$0.20 to \$1 are generated in other regional sectors that supply that sector.

Table 3 highlights expenditures by banks (monetary authorities and depository credit intermediation activities). For every dollar spent on inputs, banks are estimated to spend 8.6 percent on securities and investments, 5.1 percent on services from other banks, and 0.9 percent on advertising

and related services. Of the top inputs banks purchase, the following inputs are ones where at least 50 percent of the local demand is filled by local supply: services from other banks; advertising and related services; maintained and repaired nonresidential buildings; eating and drinking places; telecommunications; and accounting, tax preparation, bookkeeping, and payroll services. Several of the top inputs purchased by banks 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 supplying industry location, as location decisions are based on a broad variety of factors.

**TABLE 3: TOP PURCHASES BY BANKS (MONETARY AUTHORITIES AND DEPOSITORY CREDIT INTERMEDIATION) IN THE HEADWATERS MINNESOTA 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
Securities, commodity contracts, investments, and related services	8.6%	No
Monetary authorities and depository credit (banks)	5.1%	Yes
Advertising and related services	0.9%	Yes
Nondepository credit intermediation and related services	0.9%	No
Maintained and repaired nonresidential buildings	0.8%	Yes
Eating and drinking places	0.7%	Yes
Services to building and dwellings	0.4%	No
Telecommunications	0.4%	Yes
Professional, scientific, and technical services	0.3%	No
Accounting, tax preparation, bookkeeping, and payroll services	0.3%	Yes

Source: IMPLAN

### Health Care and Social Assistance -- Offices of Health Practitioners

Multipliers for health care sectors are estimated to range from 1.3 to 1.5. Table 4 shows the top inputs purchased locally by health practitioners, the percent of total input expenditures spent on the item, and the local availability of the item. For every dollar spent on inputs by health practitioners, 5.5 percent is spent on the purchase of pharmaceuticals, 2.9 percent on real estate, and 2.6 percent on insurance.

Health care practitioners are important sources of local demand for real estate (land), medical and diagnostic labs, and banks.<sup>6</sup> These industries and sectors

<sup>6</sup> Local here is the Headwaters region.

with strong connections to health care practitioners are the top industries capturing the 30 to 50 cents of additional economic activity that flows from every dollar of health care practitioner output mentioned above. Second, there may be opportunities for increased local production of pharmaceuticals and insurance, because health care practitioners are purchasing these outputs from outside the region. Again, there may be significant economic reasons that these outputs are produced elsewhere.

**TABLE 4: TOP PURCHASES BY OFFICES OF HEALTH CARE PRACTITIONERS IN THE HEADWATERS 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>
Pharmaceutical preparations	5.5%	No
Real estate	2.9%	Yes
Insurance	2.6%	No
Medical and diagnostic labs	2.1%	Yes
Management, scientific, and technical consulting services	1.9%	No
Banks	1.6%	Yes
Wholesale trade	1.5%	No
Employment services	1.5%	No
Telecommunications	1.1%	Yes
Accounting, tax preparation, bookkeeping, and payroll services	1.1%	Yes
Source: IMPLAN		

### Retail Trade – General Merchandise Stores

The output multipliers for retail trade in the Headwaters region range from 1.4 to 1.5. The top purchases made by general merchandise stores include real estate, advertising and related services, banking services, and electricity (table 5). Those four inputs are also available in adequate supply at a regional level. There appears to be room for more development of warehousing and storage, insurance, and wholesale trade in the region, at least in support of the retail trade industry.

**TABLE 5: TOP PURCHASES BY GENERAL MERCHANDISE STORES IN THE HEADWATERS 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	2.9%	Yes
Advertising and related services	2.5%	Yes
Banks	1.2%	Yes
Electricity and distribution services	0.9%	Yes
Warehousing and storage	0.8%	No
Insurance	0.8%	No
Wholesale trade	0.7%	No
Management of companies and enterprises	0.5%	No
Couriers and messengers	0.5%	Yes
Maintained and repaired nonresidential structures	0.5%	Yes

Source: IMPLAN

These three examples (finance, health care, and retail 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 the Headwaters region of Minnesota. The North American Industry Classification System (NAICS) code was used in the study. The NAICS code is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. This was used to enable uniformity and also for easy data accessibility.

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

## Shift-Share Analysis

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

- **National Growth:** National growth indicates how many jobs a local economy would have gained (or lost) as a result of the growth (or decline) of employment at the national level. For example, consider a local economy with 100,000 jobs at the beginning of the time period. If during the period under consideration, the number of jobs in the United States grew by a rate of 2 percent, then at the end of the time period under consideration, the local economy would be expected to have 102,000 jobs.
- **Industrial Mix:** Industrial mix indicates how many jobs a particular industry within the local economy would have gained (or lost) if the local industry grew (or declined) at a rate similar to the industry as a whole in the United States. For example, if 1,000 people were employed in the finance industry in the local economy at the beginning of the period, and the finance industry as a whole in the U.S. grew at a rate of 10 percent, then at the end of the time period under consideration, the local finance industry would be expected to have 1,100 jobs.
- **Competitive Share:** Competitive share is the remainder of change in employment for the region examined. From our example, region's employment should have grown by 2,100 jobs, looking at overall national growth and then growth in the finance industry itself. If the local economy actually grew by 3,100 jobs in the finance industry, then 1,000 jobs were added because the local economy grew faster than expected, given national and industry trends. Conversely, if the local economy grew by only 1,000 jobs, then the economy was not as competitive as it should have been, given national and industry trends.
- **Percent Competitive Share:** This is the percent of total jobs that are sourced from competitive share. A competitive share of 80 percent would indicate that 80 percent of the jobs during the time period were derived from the competitive share, rather than from national and industry trends.

## Location Quotients

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



## OTHER DATA RESOURCES

Source	Link	Description
Harvard Business School and the U.S. Economic Development Administration	<a href="http://www.clustermapping.us/">http://www.clustermapping.us/</a>	Open data on regional industry clusters and economies, with analysis available for states, economic areas, metropolitan and micropolitan areas, counties, and customized regions based on counties. Data offers insights into performance, business environment and demographics.
Wilder Foundation	<a href="http://www.mncompass.org">www.mncompass.org</a>	Comprehensive data source for Minnesota counties and cities. In collaboration with the Initiative Foundations and others, Minnesota Compass has added data about smaller cities.
MN Demographers Office	<a href="http://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/index.jsp">http://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/index.jsp</a>	Go here for population estimates by EDR, County, and City/Townships. 2013 Estimates are available.
MN Land Economics	<a href="http://www.landeconomics.umn.edu/">http://www.landeconomics.umn.edu/</a>	Go here for information about land sales, land values, property taxes, soil type, etc. The database can be used to get information at the local, county, and state levels.
Headwaters Economics	<a href="http://headwaterseconomics.org/tools/eps-hdt">http://headwaterseconomics.org/tools/eps-hdt</a>	Generate your own socioeconomic profiles from federal data sources, by using the EPS-HDT Tool. The attached guidebook presents the data and provides a step by step walk-through on how to think about it.
DEED Data Tools	<a href="http://mn.gov/deed/data/data-tools/index.jsp">http://mn.gov/deed/data/data-tools/index.jsp</a>	DEED provides access to several data tools such as labor market data, unemployment data, and many others. Most labor market data can be accessed through the labor market portal: <a href="https://apps.deed.state.mn.us/lmi/rws/">https://apps.deed.state.mn.us/lmi/rws/</a>
University of Wisconsin Extension	<a href="http://fyi.uwex.edu/downtown-market-analysis/understanding-the-market/demographics-and-lifestyle-analysis/">http://fyi.uwex.edu/downtown-market-analysis/understanding-the-market/demographics-and-lifestyle-analysis/</a>	Learn more about demographic and lifestyle analysis
University of Wisconsin Extension	<a href="http://cced.ces.uwex.edu/files/2013/02/Resource-Documents-Total-12.pdf">http://cced.ces.uwex.edu/files/2013/02/Resource-Documents-Total-12.pdf</a>	Discover useful links to sources of information for economic developers
OnTheMap	<a href="http://onthemap.ces.census.gov/">http://onthemap.ces.census.gov/</a>	Mapping tool from the census. Use this understand where people live vs work
University of Wisconsin-Madison, Michigan Tech University, University of New Hampshire	<a href="http://www.netmigration.wisc.edu/">http://www.netmigration.wisc.edu/</a>	Use this to learn about - and visualize - migration patterns for U.S. counties.





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