June 30, 2016

Research Report

The Economic Impact of the Canada/Northeastern Minnesota Relationship on the Arrowhead Region of Minnesota

For the
Consulate General of Canada

Bureau of Business and Economic Research

Labovitz School of Business and Economics

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Driven to Discover

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Executive Summary

The Consulate General of Canada contacted the UMD Labovitz School of Business and Economics' research entity, the Bureau of Business and Economic Research (BBER) to study the economic impacts of the trade relationship between Canada and Northeastern Minnesota for the purpose of increasing awareness, understanding, and appreciation of that relationship. More specifically, the BBER was asked to assess the local economic impacts resulting from regional exports to Canada and Canadian Foreign Direct Investment (FDI) in the seven counties of the Arrowhead region.

The economic modeling software used was IMPLAN. Data used was the most recent IMPLAN data, which is for year 2014. Results of modeling are reflected in 2016 dollars.

Inputs for estimating the economic impacts from the Arrowhead region's exports to Canada and Canadian FDI were provided by the Canadian Embassy in Washington, D.C. Data consisted of total exports in U.S. dollars (goods and services) from the Arrowhead region to Canada and Canadian FDI by company, measured by number of employees.

The trade relationship with Canada is critical to the economy of the Arrowhead region. In 2014, goods exports to Canada totaled $405 million, while service exports totaled $35 million. In addition, Canada was directly invested in 20 businesses within the study area as of 2016, and these businesses were responsible for the employment 3,273 workers. A majority of the workers employed by Canadian-owned firms (1,952) work for the Duluth, Missabe & Iron Range Railway.

Summarizing the total impacts from exports, it is estimated that nearly 1,700 jobs were created in the Arrowhead region as a result of total exports to Canada. Of those 1,700 additional jobs, roughly 1,250 were the result of exports of goods. Iron ore exports represented the largest share of goods exported and, therefore, also saw the largest benefits in terms of jobs created. Exports of services to Canada supported roughly 430 jobs, with the lodging industry seeing the largest benefits from that relationship.

In addition, exports to Canada added more than $95 million of employee wages and benefits to the study area, contributed approximately $241 million to the area's gross regional product (roughly 2% of the study area GRP), and increased total output in the study area by $486 million, of which $438 million was from the export of goods and $48 million was from services.

Finally, it is estimated that Canadian FDI in the study area supported over 6,700 jobs in the Arrowhead region, through direct, indirect, and induced effects. Roughly half of the jobs directly supplied by Canadian FDI in the study region were in the Rail Transportation industry, the result of Canadian ownership of the Duluth, Missabe, & Iron Range Railway. Other impacted industries include Management Consulting Services and Support Activities for Transportation.

Roughly $1.3 billion in Output can be tied to Canadian FDI, and the overall economic impact from Canadian FDI in the study area is more than twice as large as the impacts from exports. These findings highlight the importance of Canadian FDI in the region.

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Bureau of Business and Economic Research
Labovitz School of Business and Economics
University of Minnesota Duluth

The Economic Impact of the Canada/Northern Minnesota Relationship on the Arrowhead Region of Minnesota

I. Project Description

Canada and the United States have the largest and most comprehensive trade relationship in the world. The value of the trade and investment relationship between the two nations was estimated to be $1.3 trillion, with an estimated $662.7 billion in trade and an additional $647.3 billion in investment (Office of the United States Trade Representative 2016). According to the Government of Canada (2016), U.S. exports to Canada totaled $338 billion in 2015 with 35 states claiming Canada as the number one export market. Minnesota was one such state, with total goods traded at $13.1 billion and 174,200 Minnesota jobs (5.7% of Minnesota employment as of May 2016[1]) supported by that trade. While these relational facts have been researched, the relationship between Northeastern Minnesota and Canada has not been recently studied.

The Consulate General of Canada in Minneapolis, which represents Canada in five Upper Midwest states, including Minnesota, contacted the UMD Labovitz School of Business and Economics' research entity, the Bureau of Business and Economic Research (BBER) to study the economic impacts of the trade relationship between Canada and Northeastern Minnesota for the purpose of increasing awareness, understanding and appreciation of these important economic ties.

The economic modeling data and software used in the study was IMPLAN 3.1.[2] The study used IMPLAN's economic multiplier analysis and input-output modeling. Data was the most recent IMPLAN county data, which is for year 2014. Results of modeling are presented here as a written report.

The research objectives of this study included the following:

1. Describe the volume and composition of trade (particularly exports) in goods between Canada and northern/northeastern Minnesota—using the Arrowhead Region as defined in the Study Area,
2. Describe trade (particularly exports) in services,
3. Describe Canadian Foreign Direct Investment in the region,
4. Estimate overall regional employment directly due to the trade and investment relationship with Canada,
5. Identify major employers that are either Canadian-owned or where the jobs are directly due to economic activity with Canada and specifically identify where the jobs are held by organized labor,
6. Estimate overall economic impact in the region due to Canadian trade, investment and employment and
7. Work with not only the Canadian Consulate General but also the Canadian Embassy in Washington, D.C., the Iron Range Resources and Rehabilitation Board (IRRRB), the Duluth Seaway Port Authority, and the City of Duluth for data gathering.[3]

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[1] http://www.bls.gov/eag/eag.mn.htm

[2] www.IMPLAN.com

[3] As part of the original scope of this project, the Canadian Consulate intended to organize a meeting with its Duluth partners, including the IRRRB, the Duluth Seaway Port Authority, and the City of Duluth (see Bullet 7), as

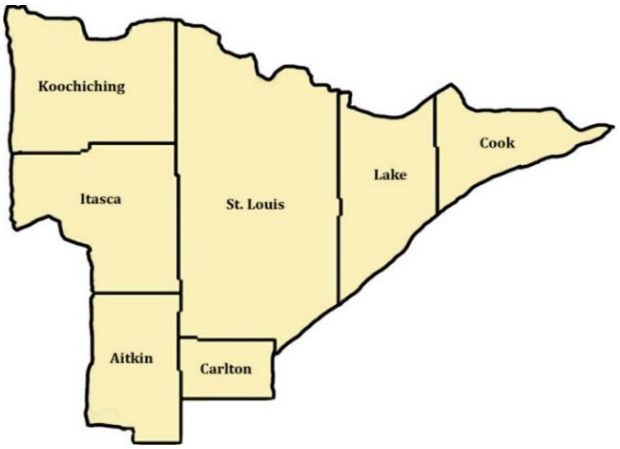
Study Area

The geographic scope for this economic impact analysis was the Arrowhead region of Northeastern Minnesota. Counties included are Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, and St. Louis.

As of July 2015, the seven-county region had a combined population of roughly 325,000 individuals, most of whom (approximately 200,000) resided in St. Louis County. The other counties ranged in population from just over 5,000 residents (Cook County) to roughly 45,000 (Itasca County).

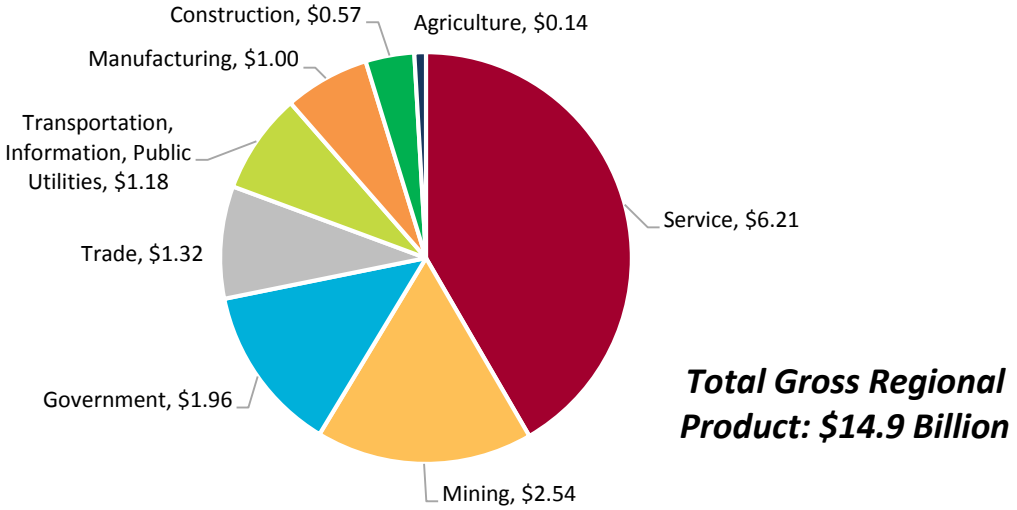
Employment in the study area in 2014 totaled more than 186,000 (IMPLAN 2016). Industries with the highest employment levels included Hospitals, Government, Restaurants, Health Care, Real Estate, Iron Ore Mining, and Wholesale Trade.

Figure 1. MN Arrowhead Counties



SOURCE: BBER, 2016

Figure 2. Contribution to Gross Regional Product, by Sector (in Billions of USD)



SOURCE: IMPLAN, 2016

The Service sector was, by far, the largest contributor to the region's Gross Regional Product (GRP), with a total contribution of more than $6.2 billion in 2014. The Service sector includes Education, Hospitality, Health

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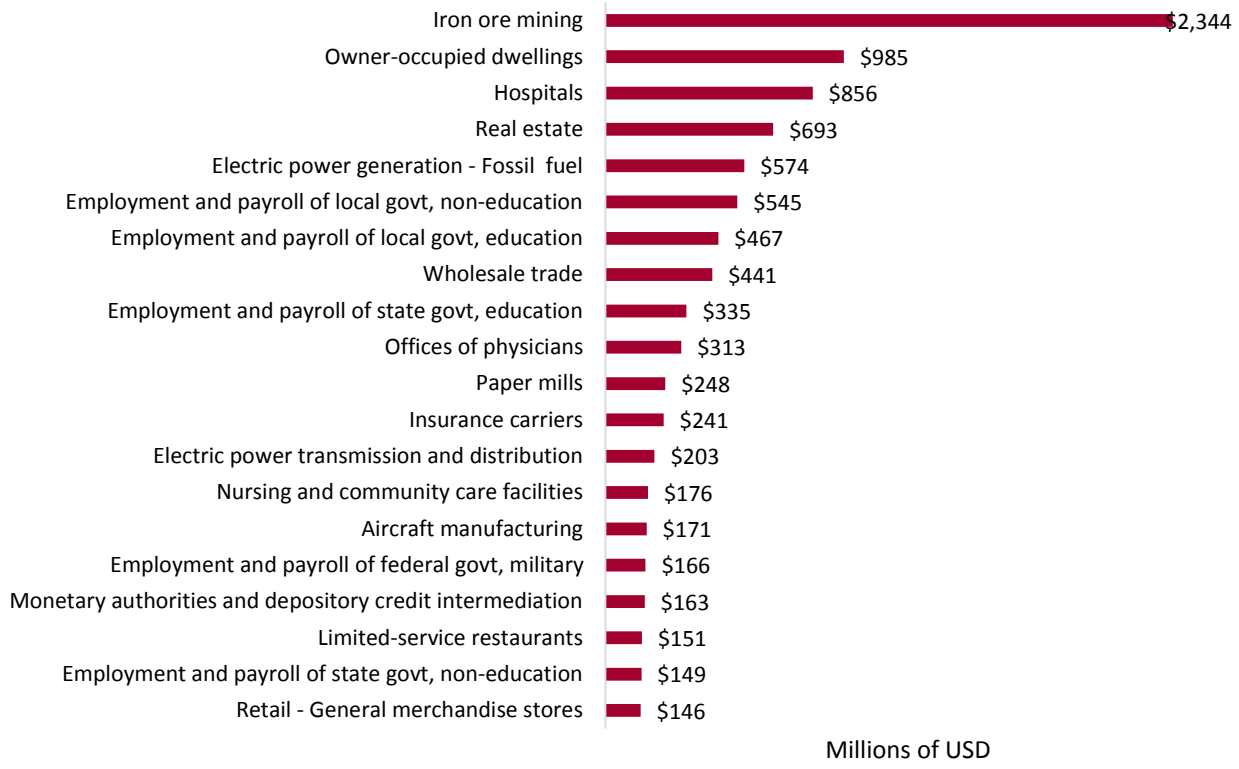
well as the BBER, to identify local jobs that were the result of economic activity with Canada, over and above those directly employed by Canadian-owned companies (see Bullet 5). For example, local business AAR Aircraft Services has a contract with Air Canada in which AAR completes the industry-required servicing of Air Canada's fleet of Airbus A319, A320, and A321 series passenger jets. A large portion of AAR's annual sales is the result of that relationship. Unfortunately, the meeting did not take place, so those research objectives are not included in this report, but AAR and Enbridge jobs numbers were ultimately included in Foreign Direct Investment modeling.

Care, and Social Services, among other industries. The second largest contributor to GRP was the Mining sector, which contributed more than $2.5 billion to the region's economy in 2014.

Figure 3. Top 20 Industries in Arrowhead Region, by Contribution to GRP (Value Added)



SOURCE: IMPLAN, 2016

IMPLAN provides data on each industry's contribution to the region's GRP, also referred to as value added. Figure 3, above, shows the top twenty industries in the Arrowhead, based on this measurement. Data shown represent the most recent IMPLAN data available, which is for the year 2014. Iron Ore Mining has, by far, the largest contribution of any individual industry. The industry, Owner-Occupied Dwellings, includes imputed rental activity by homeowners. In this case, market rents are used to estimate the value to the property owner. Other major industries, as measured by value added, include Hospitals, Real Estate, and Electric Power Generation from Fossil Fuel. These data are used to provide context for the results of modeling, shown in section IV, Findings.

Input-Output Modeling

This study uses the IMPLAN Group's input-output modeling data and software (IMPLAN version 3.1). The IMPLAN database contains county, state, zip code, and federal economic statistics, which are specialized by region, not estimated from national averages. Using classic input-output analysis in combination with region-specific Social Accounting Matrices and Multiplier Models, IMPLAN provides a highly accurate and adaptable model for its users. IMPLAN data files use the following federal government data sources:

- U.S. Bureau of Economic Analysis Benchmark Input-Output Accounts of the U.S.
- U.S. Bureau of Economic Analysis Output Estimates
- U.S. Bureau of Economic Analysis Regional Economic Information Systems (REIS) Program
- U.S. Bureau of Labor Statistics Covered Employment and Wages (CEW) Program
- U.S. Bureau of Labor Statistics Consumer Expenditure Survey
- U.S. Census Bureau County Business Patterns
- U.S. Census Bureau Decennial Census and Population Surveys
- U.S. Census Bureau Economic Censuses and Surveys
- U.S. Department of Agriculture Census

IMPLAN data files consist of the following components: employment, industry output, value added, institutional demands, national structural matrices, and inter-institutional transfers. Economic impacts are made up of direct, indirect, and induced impacts. The data used was the most recent IMPLAN data available, which is for the year 2014. All data are reported in 2016 dollars. More details on the assumptions and limitations of these models can be found in Appendix B, IMPLAN Assumptions.

II. Background

The purpose of this report is to increase awareness, appreciation, and understanding of the important trade relationship between Northeastern Minnesota (Arrowhead region) and Canada. The report demonstrates the local economic impacts resulting from regional exports to Canada and Canadian Foreign Direct Investment (FDI) in the Arrowhead region. This section summarizes the U.S. and Minnesota relationship with Canadian trade and FDI more broadly. This background provides context for the volume of exports and FDI in the Arrowhead region and also helps to distinguish key regional differences that the Arrowhead region faces.

As noted, the U.S. and Canada have the world's largest bilateral trade and investment partnership. According to the Office of the United States Trade Representative, the value of the trade and investment relationship was estimated to be $1.3 trillion, with an estimated $662.7 billion in trade and an additional $647.3 billion in investment between the two countries. Canada was the United States' largest goods export market in 2015, and Canada was the United States' second largest supplier of goods imports in that same year (Office of the United States Trade Representative 2016).

Minnesota alone has a $13.1 billion bilateral trade relationship with Canada, making Canada the State's largest foreign export market (Government of Canada 2016). In 2015, Minnesota exported $4.4 billion in goods and services to Canada and imported $8.7 billion (Government of Canada 2016). 2015 exports were down from $5.8 billion in 2013 (Department of Employment and Economic Development 2014) and $5.6 billion in 2014 (Department of Employment and Economic Development 2015). In the first quarter of 2016 alone, Minnesota exports to Canada totaled $989 million and represented more than 20% of the state's total export market (Minnesota Department of Employment and Economic Development 2016). Mexico was the second largest market ($555 million), followed by China ($494 million) and Japan ($254 million).

While this report focuses primarily on the impacts of exports from the Arrowhead region to Canada and Canadian FDI in the region, it is also important to note the large influence that imports from Canada have on the area. For example, there is a popular misconception that the biggest oil trade partners to the U.S. are in the Persian Gulf. In reality, Canada is actually the number one U.S. supplier of crude oil (U.S. Energy Information Administration 2016). And energy (Hydroelectricity, Natural Gas, Petroleum, and Electricity) makes up the largest portion of U.S. and Minnesota imports from Canada, by a significant margin

(Government of Canada 2016). In fact, 53% of Minnesota's imports from Canada are in Energy, followed by Agriculture (9%), Forest products (6%), and Chemicals (6%), (Government of Canada 2016). In 2015, the U.S. imported $70 billion worth of mineral fuels from Canada, while Minnesota imported $3.8 billion worth of crude oil from Canada (Government of Canada 2016).

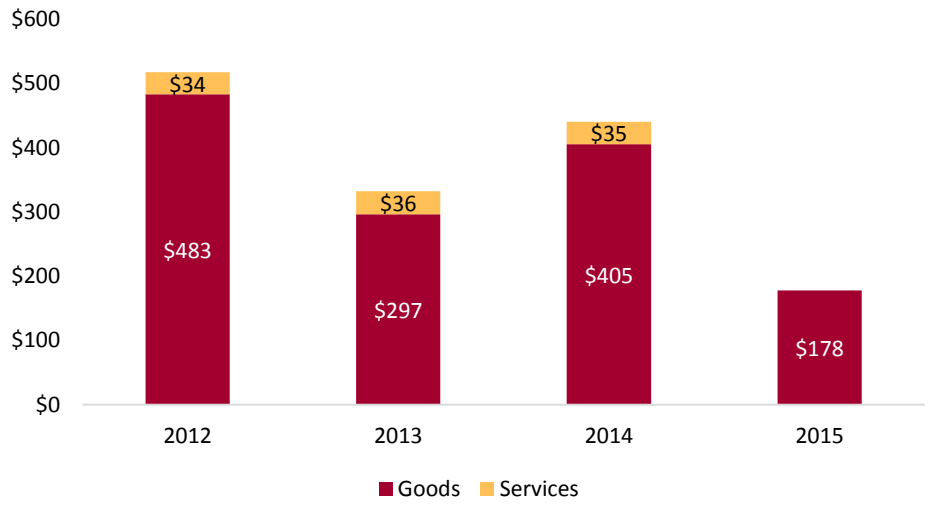
Exports

While exports can consist of both goods and services,[4] goods are typically the dominant form of export. According to the Office of the United States Trade Representative, in 2015, goods exports from the U.S. to Canada totaled $280 billion, while services exports were $57.3 billion. However, service exports have grown significantly worldwide over the past decade and particularly in the U.S. In fact, over the past ten years, U.S. exports of services have more than doubled from $338 billion in 2004 to $743 billion in 2014 (OECD 2016).

According to the Office of the United States Trade Representative, in 2015, the top three largest U.S. goods exports to Canada were Vehicles, Machinery, and Electrical Machinery, while the top exported services from the U.S. to Canada included Travel, Intellectual Property, and Transportation.

The mix of goods and service exports from Minnesota to Canada were slightly different. The top goods industries exported from Minnesota to Canada were in Equipment and Machinery, Transportation, and Agriculture, while the top service industries exported to Canada from Minnesota were Travel, Transportation Services, and Royalties and License Fees (Government of Canada 2016).

Figure 4. Goods and Services Exports from Arrowhead Region to Canada, 2012-2015



SOURCE: CANADIAN EMBASSY, 2016

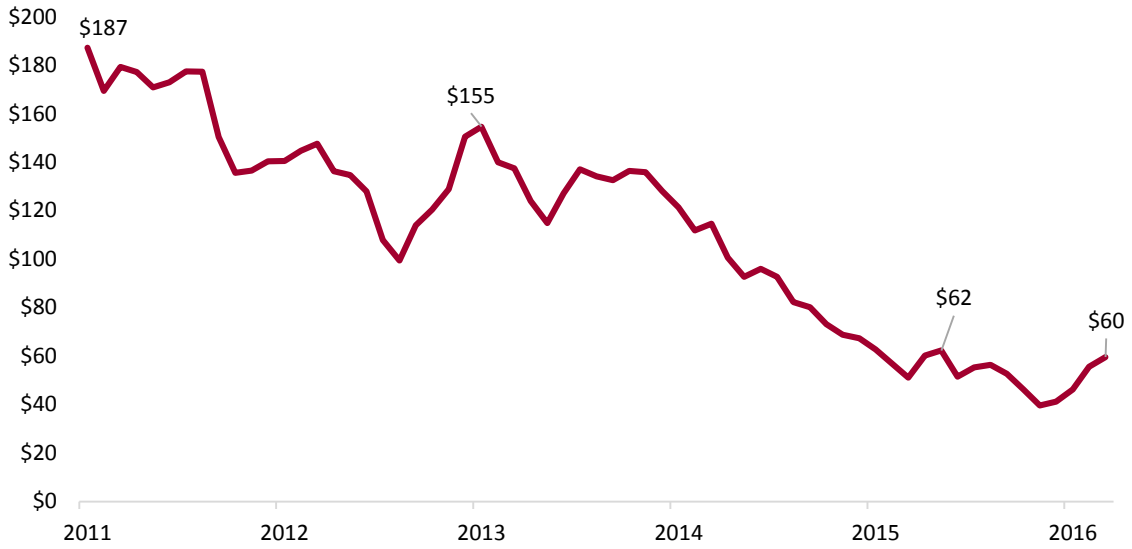
As shown in Figure 4, services made up only 7% of exports from the Arrowhead region to Canada in 2012. By 2014, services had increased slightly as a percentage of exports to 8%.[5] More notably, the total volume of exports fluctuated significantly during the three-year period, driven primarily by large shifts in the total sales volume of goods exports. In 2012, exports of goods from the Arrowhead region to Canada totaled more than

[4] Goods are all finished material products that are bought and sold, and services represent all jobs performed.
[5] As of June 2016, when this report was finalized, services exports for 2015 were not yet available.

$480 million but fell to only $297 million in the following year. 2014 saw a slight recovery, with a total goods export volume of $405 million, but it was lower again in 2015, totaling only $178 million. For perspective, the Arrowhead region's exports accounted for just under 5% of total Minnesota exports to Canada in 2013, while in 2014, the Arrowhead region's exports of goods ($405 million) accounted for over 7% of statewide goods exports.

There are a number of reasons for the fluctuation in exports from the region to Canada. Of course, the strength of the U.S. dollar is a contributing factor. Today, $1 United States Dollar (USD) can be exchanged for almost $1.3 Canadian Dollar (CAD), whereas in 2012, the USD and CAD were roughly equal (Bloomberg Markets 2016). The strength of the USD relative to the CAD has made U.S. imports to Canada costlier and in effect has lowered demand for U.S. goods and services.

Figure 5. Price of Iron Ore per Ton, 2011-2016



SOURCE: INDEX MUNDI, 2016

Another reason for the large variation from year to year is the decline in the price of iron ore. The most important commodity exported from the Arrowhead region to Canada is metal ore. However, the fall in the price of iron (Index Mundi 2016) has caused revenue from iron ore exports to fall. Figure 5 shows the price of iron ore from 2011 to 2016. The price was at its peak ($187) in 2011 after the Great Recession. Since that time, the price has fallen steadily, except for a brief spike in 2013. In the time between 2015 and 2016, the price has been fluctuating at about $60 per ton. The large change from the peak price of $187 to the current price of $60 marked a 68% drop in the price of iron ore.

One effect of the decline in the price of iron ore is that iron ore exports to Canada have declined as a proportion of total export revenue. In 2012, Metal Ore made up 56% of the Arrowhead exports to Canada. By 2015, iron ore exports from the Arrowhead region to Canada represented only 34% of exports (Canadian Embassy 2016).

This decline in price has led to a decline in production levels among many of the mines in the Arrowhead region and consequently, a decline in shipping levels. Between 2012 and 2015, the amount of iron ore shipped through the Duluth-Superior Port declined by 21%, according to data from the Duluth Seaway Port

Authority (See Appendix E). However, the relative share of iron ore shipments to Canada has remained fairly steady during that period. In 2015, roughly 27% of all the iron ore that left the Duluth-Superior Port was headed for Canada, compared with 31% in 2012. More details on the impact of iron ore exports to Canada are provided in Chapter III, Inputs.

Foreign Direct Investment

Foreign Direct Investment (FDI) occurs when a company in one country has significant influence over a company from another country.[6] For example, in 2014, Burger King merged with Tim Hortons to form a new Canadian multinational fast food company, Restaurant Brands International. Consequently, all Burger Kings in the United States are now considered to be FDI, as the entity owning Burger King operates outside of the United States. In 2014, Canada had $828.8 billion invested in foreign countries (Statistics Canada 2015). Nearly two-thirds of Canadian FDI resides in the United States and Canada invested $67.3 billion more in the U.S. during 2014 than in 2013 (Statistics Canada 2015).

In Minnesota, foreign companies invested $337 million in the last two years alone (Minnesota Department of Employment and Economic Development 2016). And according to data from Dun and Bradstreet (2016), Canada had operations in 203 Minnesota businesses, making it the most highly invested foreign influence in Minnesota. This data also revealed that, in 2016, nearly 44,000 jobs in Minnesota were dependent on FDI from Canada.

III. Inputs

Inputs for estimating the economic impacts from the Arrowhead region's exports to Canada and Canadian FDI were provided by the Canadian Embassy. Data consisted of total exports in U.S. dollars (goods and services) from the Arrowhead region to Canada, and Canadian FDI by company, measured by number of employees. The research team worked under the assumption that the Canadian Embassy used the most accurate and up-to-date data available for the project. In instances where data was not provided by the Canadian Embassy, the research team relied on IMPLAN estimates and secondary data sources as inputs.

Goods Exports

Goods exports for the years 2012-2015 were categorized by 4-digit NAICS code. The average for the four-year period was used as the direct input for modeling, as the value of exports has fluctuated significantly during that time. Hence, the average was thought to be a more appropriate measure of the typical level of exports. Dollar amounts were then reclassified to the appropriate IMPLAN industry sector.[7] In cases where multiple IMPLAN industries were associated with one NAICS code, the respective percentages were distributed based on the industry's 2014 output level in the study area, according to IMPLAN's database. For example, NAICS code 1111 includes the IMPLAN sectors of oilseed and grain farming. The combined output for the two industries totaled just over $7 million in 2014, 36% of which came from oilseed farming and 64% from grain farming (IMPLAN 2016). The total value of exports for that industry (1111) were distributed based on those ratios.

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[6] According to Investopedia, the generally accepted criteria for significant influence is owning at least 10% of a company's voting stock.

[7] A NAICS to IMPLAN bridge table was used to identify the appropriate IMPLAN industry associated with each NAICS code.

Table 1. Top 20 Arrowhead Industries Exporting Goods to Canada (Millions of USD), 2012-2015

4-digit NAICS code	*Description*	*2012*	*2013*	*2014*	*2015*	*Average (2012-15)*
2122	Metal Ores	$270.0	$113.1	$241.3	$59.8	$171.1
3221	Pulp & Paperboard Mill Products	$31.3	$30.2	$28.3	$19.5	$27.3
3331	Ag & Construction Machinery	$25.6	$22.7	$16.1	$14.8	$19.8
2111	Oil & Gas	$42.2	$10.9	$8.7	$1.1	$15.7
3364	Aerospace Products & Parts	$17.0	$14.2	$18.3	$12.9	$15.6
3251	Basic Chemicals	$11.4	$19.2	$11.9	$8.1	$12.7
3311	Iron, Steel & Ferroalloys	$11.0	$10.4	$8.1	$5.1	$8.6
3222	Converted Paper Products	$5.1	$7.4	$7.8	$4.7	$6.2
3279	Misc. Nonmetallic Minerals	$3.8	$4.5	$3.9	$3.3	$3.9
3272	Glass & Glass Products	$3.7	$3.1	$3.8	$3.5	$3.5
3262	Rubber Products	$2.7	$3.4	$3.2	$1.4	$2.7
3342	Communications Equipment	$3.0	$2.6	$2.5	$2.3	$2.6
3361	Motor Vehicles	$3.6	$2.7	$ 2.8	$1.3	$2.6
3352	Household Appliances	$2.9	$2.8	$2.6	$1.9	$2.5
3369	Misc. Transportation Equipment	$2.0	$2.3	$2.6	$1.7	$2.2
3313	Aluminum	$1.9	$2.2	$2.5	$1.7	$2.1
3259	Misc. Chemical Preparations	$1.8	$2.1	$2.2	$1.9	$2.0
3339	Misc. General Purpose Machinery	$1.4	$2.0	$2.1	$1.7	$1.8
3211	Sawmill & Wood Products	$1.6	$2.0	$1.9	$1.7	$1.8
3273	Cement & Concrete Products	$1.8	$1.8	$1.9	$1.6	$1.8
	All Others	$39.3	$36.9	$33.2	$27.9	$34.3
	Total	$483.2	$296.6	$405.5	$177.8	$340.8

SOURCE: CANADIAN EMBASSY, 2016

Table 1 shows the top twenty industries exporting goods from the Arrowhead region to Canada, based on the average value of exports over the four-year period. The Metal Ores industry was the largest exporter by far, with an average value of more than $170 million in exports between 2012 and 2015. A full list of all industries included in modeling, as well as the average export value for the 2012-2015 period, is included in Appendix C.

Services Exports

Service exports were provided for the years 2012-2014. These exports were also measured in U.S. dollars but not assigned to a specific industry. Rather they were categorized based on the description of the service (e.g. Advertising, Computer software, Travel). The average for the three-year period was used as the direct input for modeling, and dollar values were assigned to the appropriate IMPLAN sector using IMPLAN's sector search feature.

Table 2. Top 20 Arrowhead Industries Exporting Services to Canada (Millions of USD), 2012-2014

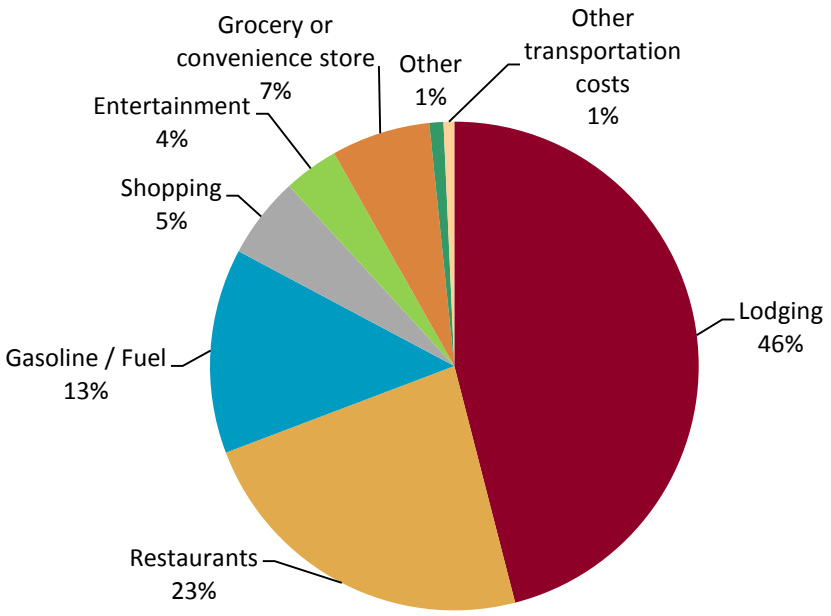
Description	*2012*	*2013*	*2014*	*Average (2012-2014)*
Travel	$19.1	$19.3	$18.6	$19.0
Other Freight & Port Services	$5.0	$4.4	$4.0	$4.5
Insurance Services	$3.5	$3.9	$4.1	$3.8
Installation, Maintenance, and Repair of Equipment	$0.7	$1.8	$2.0	$1.5
Other Financial Services	$1.0	$1.1	$1.1	$1.1
Trademarks	$1.0	$1.1	$1.1	$1.0
Architectural, Engineering, and Other Technical Services	$1.0	$1.0	$0.9	$1.0
Franchise Fees	$0.4	$0.5	$0.5	$0.5
Other BPT	$0.4	$0.4	$0.3	$0.4
Advertising	$0.3	$0.4	$0.3	$0.3
Industrial Processes	$0.3	$0.3	$0.3	$0.3
Telecommunications	$0.2	$0.2	$0.2	$0.2
Industrial Engineering	$0.2	$0.2	$0.2	$0.2
Computer Software	$0.2	$0.2	$0.2	$0.2
Operation Leasing	$0.2	$0.2	$0.2	$0.2
Legal Services	$0.2	$0.2	$0.2	$0.2
Construction	$0.2	$0.1	$0.1	$0.1
Computer and Data Processing Services	$0.1	$0.1	$0.1	$0.1
Passenger Fares	$0.1	$0.1	$0.1	$0.1
Accounting, Auditing, and Bookkeeping	$0.0	$0.1	$0.1	$0.1
All Others	$0.3	$0.3	$0.3	$0.2
Total	$34.4	$35.8	$34.8	$34.9

SOURCE: CANADIAN EMBASSY, 2016

Table 2 shows the top 20 industries in the Arrowhead region that export services to Canada over the time period 2012-2014 based on the average value of exports. Travel was the largest export to Canada with an average value of $19 million, followed by Other Freight & Port Services and Insurance Services. A full list of all industries included in modeling, as well as the average export value for the 2012-2014 period, is included in Appendix D.

One particular industry within service exports that is worthy of noting is travel exports. The average value of travel exports for the three-year period, accounted for almost $19 million. Travel exports, according to the Bureau of Economic Analysis, includes all expenditures by foreign travelers (Canada to Minnesota in this case). These services include food, lodging, recreation, gifts, entertainment, cruise fares, local transportation in the country of travel, and other items incidental to a foreign visit. Thus, the $19 million reported for travel exports could not be assigned solely to one particular IMPLAN industry.

Figure 6. Travel Spending by Type of Purchase, According to Relevant Literature



SOURCES: (DAVIDSON-PETERSON ASSOCIATES JUNE 2007- MAY 2008); (VENEGAS 2009); (ERKKILA 2012); (LIECHTY 2010); (TOURISM ECONOMICS 2013)

To determine the appropriate allocations of travel exports, relevant studies focusing on tourism spending (particularly tourism spending in Minnesota's northeast region) were evaluated. Each study's spending estimates were categorized into lodging, restaurants, grocery or convenience stores, gasoline or fuel, other transportation costs, entertainment, shopping, and other expenditures. In each report, the industries were measured as a percentage of total travel expenditures in the area. These percentages were used to develop a "typical" tourist spending pattern (see Figure 6) and allocated to the appropriate IMPLAN sectors based on that spending pattern.

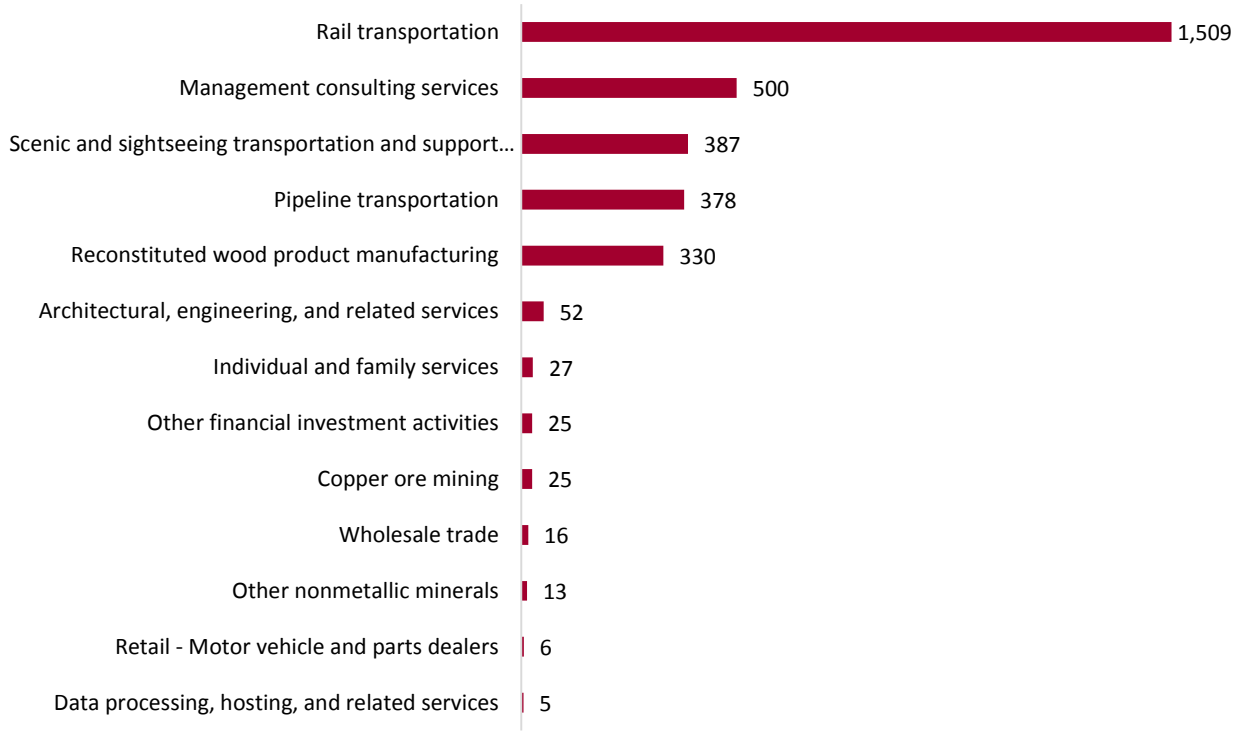
Foreign Direct Investment

To assess the economic impact of FDI by Canada in the Arrowhead region, all Canadian-owned firms were identified using Dun and Bradstreet data provided by the Canadian Embassy.[8] This list was narrowed to only include those firms within the seven counties of the Arrowhead region. The data included the firm name and the number of employees working at each firm. In the Dun and Bradstreet data, each company came

[8] Two companies, AAR and Enbridge Energy, were not included in the Dun and Bradstreet data but have a significant presence in the Arrowhead region. AAR, an aircraft maintenance firm, is technically not a Canadian company but has a large contract with Air Canada. Therefore, a significant portion of its employees are employed as a direct result of its relationship with a Canadian firm. Enbridge Energy is a Canadian firm but its numbers were not included for the Arrowhead region, presumably because its U.S. headquarters are located elsewhere. To rectify these omissions, employment data were collected directly from the two firms and added to the Dun and Bradstreet data for use in modeling FDI. The AAR employees were included in the Scenic and Sightseeing Transportation and Support Activities for Transportation industry sector. Enbridge Energy employees were included in the Pipeline Transportation sector.

assigned with a line of business which described the nature of the business, and this description was used to bridge the companies into IMPLAN codes. By using the number of employees and appropriately classifying each firm by industry in the IMPLAN software, the BBER was able to estimate the economic impact that currently exists as a result of Canadian FDI. FDI was modeled separately from goods and services exports, as the two measures are not mutually exclusive. The reason being, if a Canadian FDI firm located in Minnesota manufactures rubber balls and exports them to Canada, the value would be counted both in FDI (number of employees) and Minnesota exports (value of sales).

Figure 7. Number of Workers Employed by Canadian Operated Firms in the Arrowhead Region, by Sector



SOURCE: DUN AND BRADSTREET, AAR, ENBRIDGE ENERGY

According to Dun & Bradstreet, Canada is directly invested in 20 businesses in the Arrowhead region, boasting 3,273 employees as of 2016. Almost half of these workers are employed in the Rail Transportation industry, as can be seen in Figure 7. Almost all of the employees working in that industry are employed by Duluth, Missabe & Iron Range Railway. This railroad company operates in northern Minnesota and Wisconsin and distributes iron ore and taconite to the Great Lakes ports located in Duluth and Two Harbors. On May 10, 2004, the Canadian National Railway acquired Duluth, Missabe & Iron Range Railway when it purchased the assets of Great Lakes Transportation, the parent company, thereby making it part of Canadian FDI in the region.

IV. Findings

This section provides the direct, indirect, and induced economic impacts resulting from the exports of goods and services from the Arrowhead region to Canada along with the impacts of Canadian FDI in the region. Impacts are measured in employment, output, and value added.

Exports

Table 3. Total Economic Impact of Goods and Services Exports from Arrowhead to Canada (Millions of USD)

Total Effect	*Employment*	*Labor Income*	*Value Added*	*Output*
Services Exports	429	$13.4	$23.3	$48.4
Goods Exports	1,250	$81.7	$217.3	$438.0
Total Exports	1,679	$95.0	$240.7	$486.4

SOURCE: IMPLAN, 2016

Table 3 depicts the combined total economic effects of goods and services exports to Canada from the Arrowhead region. The far left column, labeled Employment, indicates the number of jobs that the Arrowhead region's trade relationship with Canada is estimated to support directly and indirectly. Employment estimates are in terms of jobs, not full-time equivalent employees. The total amount of jobs created for the Arrowhead region as a result of exporting to Canada was estimated to be nearly 1,700. The majority of these jobs are from the exports of goods, particularly from the iron ore mining and paper mill industries.

The second column, labeled Labor Income, depicts all employee compensation, including wages, benefits, and proprietor income. It is estimated that just over $95 million of employee wages and benefits in the study area can be attributed to Canadian exports. The third column, value added, represents the economic impacts of the expenditures by Canadians in the study area that are put specifically towards wages, rents, interest, and profits related to the study area exports. Value added indicates the contribution to GDP made by an individual producer, industry, or sector. The value added for the study area exports of goods and services to Canada is estimated to be nearly $241 million. Lastly, the far right column, labeled output, represents the value of all local production required to sustain activities and is equal to $486 million overall.

It is important to note that though service exports to Canada only make up about 7-8% of the total volume of exports (see Figure 2, page 4) roughly a quarter of the jobs supported by Canadian exports are the result of service exports. This is because, generally, service industries (e.g. Health Care, Hospitality) require more labor per unit of output than do goods-producing industries. This distinction is important because although the total amount of service exports may seem small compared to goods exports, many jobs in the study area come from the service sector.

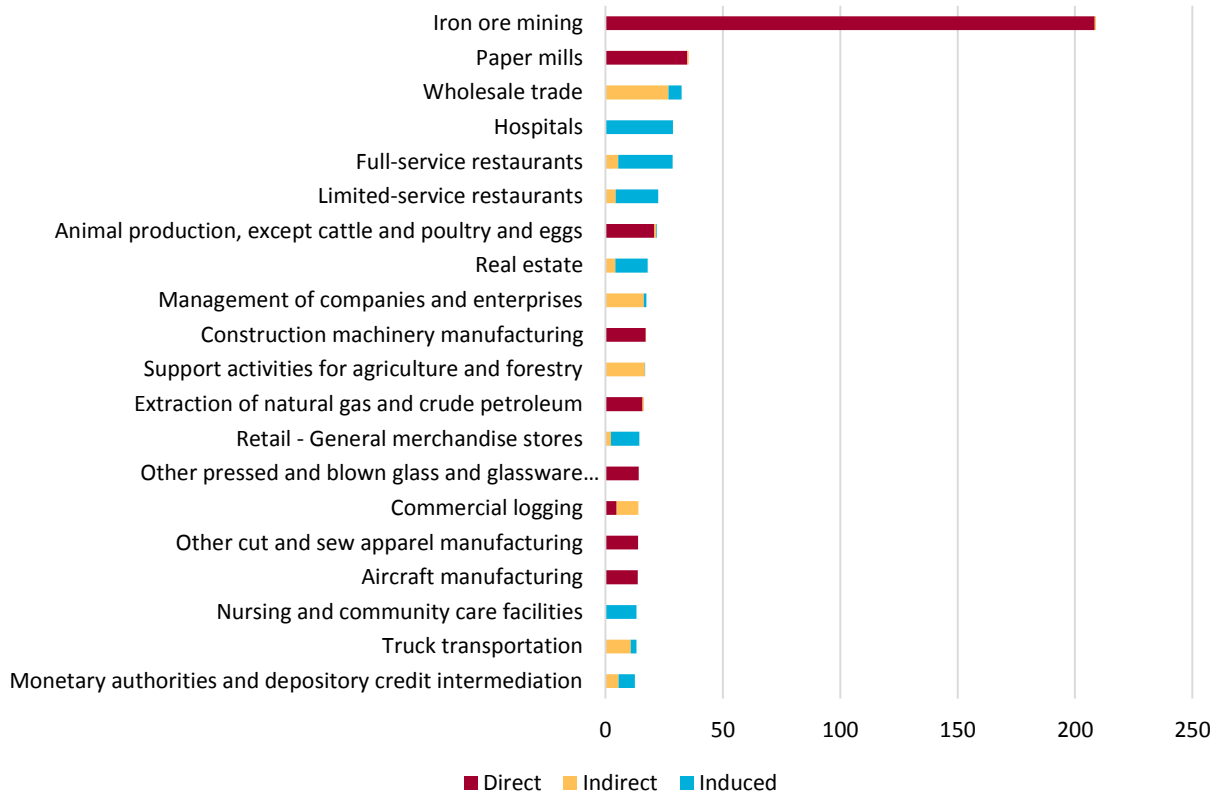
Table 4. Goods Exports Impact Details (Millions of USD)

Impact Type	*Employment*	*Labor Income*	*Value Added*	*Output*
Direct Effect	591	$53.5	$168.0	$340.8
Indirect Effect	286	$14.4	$23.9	$51.5
Induced Effect	374	$13.8	$25.4	$45.7
Total Effect	1250	$81.7	$217.3	$438.0

SOURCE: IMPLAN, 2016

Table 4 shows the detailed economic impacts of goods exports to Canada from the Arrowhead region. In this table, the Total Effects of exports of goods are broken out by impact type: Direct, Indirect, and Induced Effect. The inputs provided by the Canadian Embassy (Table 1, page 7) represent the direct effects and are the basis for quantifying the full economic effects of the project. In this case, the average annual value of all exports (2012-2015), roughly $340 million, represents direct Output. All other direct effects (wages, employment, and value added) were calculated based on the value of Output, using IMPLAN's modeling software. It is estimated that 591 jobs are created each year in the Arrowhead region as a result of more than $340 million in exports to Canada. The Indirect Effect ($51.5 million in industry spending and 286 supported jobs) shows the measurement of increased spending between commercial, government, and service industries as a result of the direct effects. Induced Effect ($45.7 million in household spending and 374 supported jobs) measures the amount of increased spending by residential households as a result of the direct effects. Total Effect is the sum of Direct, Indirect, and Induced Effects.

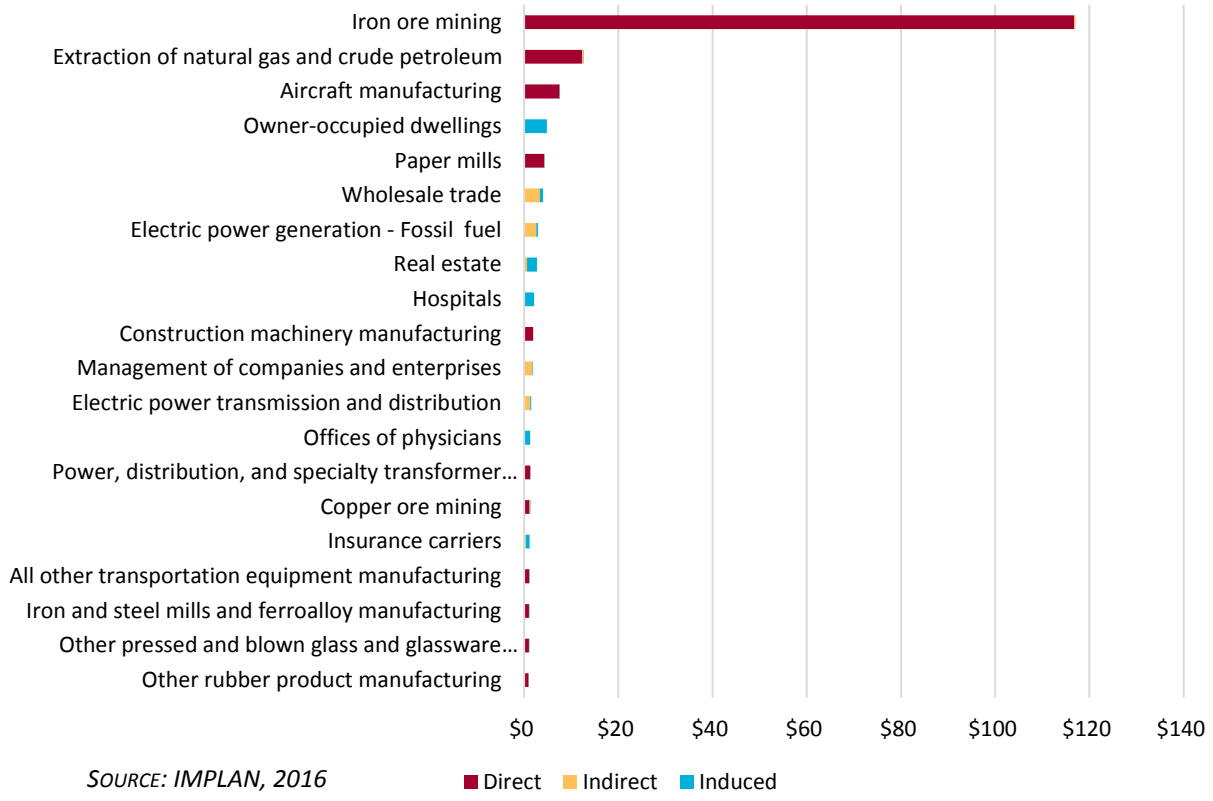
Figure 8. Top 20 Industries Impacted by Goods Exports to Canada, by Employment



SOURCE: IMPLAN, 2016

As shown in Figure 8, iron ore mining is the industry that is most impacted by the trade relationship with Canada in terms of employment, by a significant margin. More than 200 jobs are supported in iron ore mining annually as a result of trade with Canada. Canadians import metal ore more than any other Arrowhead good, and this spending stimulates the mining industry. The second most impacted industry, in terms of employment, is Paper Mills. Roughly 40 jobs are supported in that industry annually as a result of exports to Canada. Interestingly, the third industry shown in the figure is Wholesale Trade, even though that industry does not export to Canada. Impacts are primarily indirect, the result of increased inter-industry spending, presumably from the Iron Ore Mining and Paper Mill industries. In fact, of the top twenty industries where employment is most impacted by goods exports to Canada, eleven industries do not directly export but still benefit from increased local exports through indirect and induced spending.

Figure 9. Top 20 Industries Impacted by Goods Exports to Canada, by Contribution to GRP (Millions of USD)



SOURCE: IMPLAN, 2016

Figure 9 shows the top industries impacted by the export of goods to Canada, as measured by increased value added spending. As mentioned previously, value added is a measure of the impacting industry's contribution to the local community; it includes wages, rents, interest, and profits. It is also the best measure of how much the industry or project increases the local economy, as measured by Gross Regional Product. The figure shows that Iron Ore Mining adds the most value to the study area at just over $117 million, followed by Extraction of Natural Gas and Crude Petroleum ($13 million), and Aircraft Manufacturing ($7.5 million).

Comparing the results shown in Figure 9 to the total contribution of each industry region-wide (Figure 3, Page 3), there are some notable highlights that should be mentioned. First, the contribution made to GRP from the Iron Ore industry as a result of exports to Canada was roughly $117 million, as seen in Figure 9, while the industry as a whole contributed more than $2.3 billion in 2014. This suggests that roughly 5% of the industry's contribution to the region was the result of exports to Canada. Similarly, the contribution made by the Aircraft Manufacturing industry as a result of exports to Canada was roughly $7.5, while the industry contribution as a whole was about $171 million in 2014. Therefore, it is estimated that more than 4% of the industry's GRP contribution was the result of exports to Canada. Other industries whose local contribution to GRP depends significantly on their trade relationship with Canada include Extraction of Natural Gas and Crude Petroleum (10%), Construction Machinery Manufacturing (5%), and Paper Mills (2%).

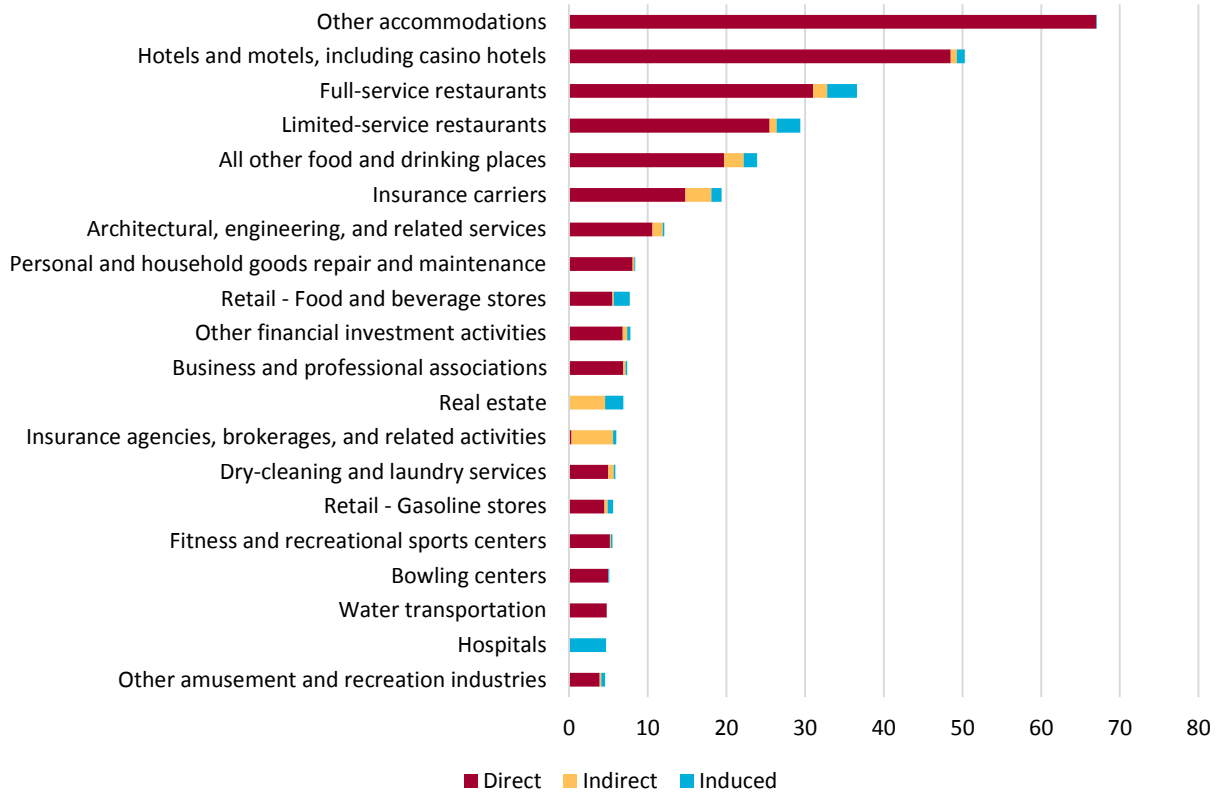
Table 5. Service Exports Impact Detail (Millions of USD)

Impact Type	*Employment*	*Labor Income*	*Value Added*	*Output*
Direct Effect	297	$8.4	$14.5	$31.1
Indirect Effect	71	$2.7	$4.6	$9.8
Induced Effect	61	$2.3	$4.2	$7.5
Total Effect	429	$13.4	$23.3	$48.4

SOURCE: IMPLAN, 2016

Detailed impacts resulting from exports of services to Canada are shown in Table 5. Service exports represent a smaller, but substantial, portion of the total economic impacts. It is estimated that the direct impact of service exports to Canada ($31 million) would equate to roughly 300 additional workers in the study area, $8.4 million dollars in new wages, and $14.5 million in additional value added spending. These direct effects, through increased industry and household spending contribute to a total effect, annually, of 429 workers, $13 million worth of Labor Income, and $48 million in additional spending.

Figure 10. Top 20 Industries Impacted by Service Exports to Canada, by Employment

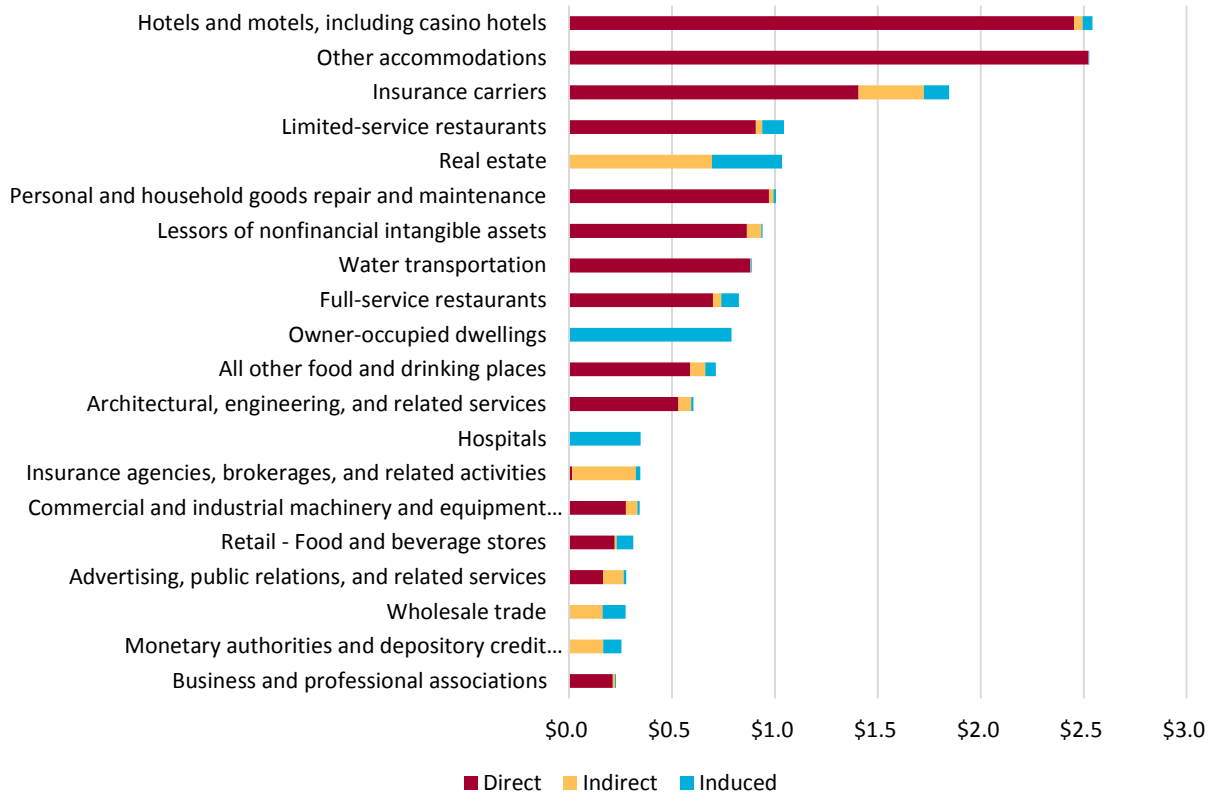


SOURCE: IMPLAN, 2016

Figure 10 shows the top 20 industries in the study area impacted by exports of services to Canada, as measured by employment. It is worth mentioning that the top five (as well as half of the top twenty)

industries all fall into the broad category of tourism. Tourism was the largest exported service to Canada at $19 million, and even after breaking down its components into their respective industries, it is clear to see that tourism drives the service export industry to Canada. Based on typical tourist spending patterns, it is estimated that the majority of the impacts resulting from service exports would be felt in the lodging and restaurant industries.

Figure 11. Top 20 Industries Impacted by Service Exports to Canada, by Contribution to GRP (Millions of USD)



SOURCE: IMPLAN, 2016

Figure 11 highlights the value added by Arrowhead industries that export services to Canada. Again, many tourism-related industries (e.g. lodging, restaurants) see significant impacts from service exports to Canada (i.e. Canadian tourists). Other impacted industries include Insurance Carriers, Real Estate, and Personal and Household Goods Repair.

Because travel is such a significant contributor to the total service exports, it is important to provide some context for this category. As noted previously, Canadian travelers to the Arrowhead region spent roughly $19 million annually, between 2012 and 2014. By comparison, a study conducted in 2008 (Davidson-Peterson Associates June 2007- May 2008) estimated that the expenditures from all travelers to the Northeast region of the state contributed roughly $1.6 billion in new spending. This would suggest that Canadian tourists represent about 1% of all traveler spending in the Arrowhead region. However, as a portion of overnight and out-of-state travelers, Canadian tourists represent a much larger share of visitors and overall spending. According to the same study, Canadian travelers represented between 5% and 10% of all overnight guests,

according to lodging and resort owners. Finally, a 2013 study conducted by Tourism Economics for the State of Minnesota found that Canadian and overseas travelers spent more per trip than domestic travelers. According to their findings, international markets accounted for only 1.8% of all travelers to Minnesota but 8.2% of total traveler spending.

Foreign Direct Investment

Foreign Direct Investment (FDI) was modeled separately from exports so as to not double count impacts. As previously stated, if a Canadian FDI company in the Arrowhead region were to export to Canada, the value would be included in Canadian-owned FDI and Arrowhead exports. As a result, modeling results from Exports and FDI are not mutually exclusive and, consequently, cannot be summed. Results are shown here in Table 6.

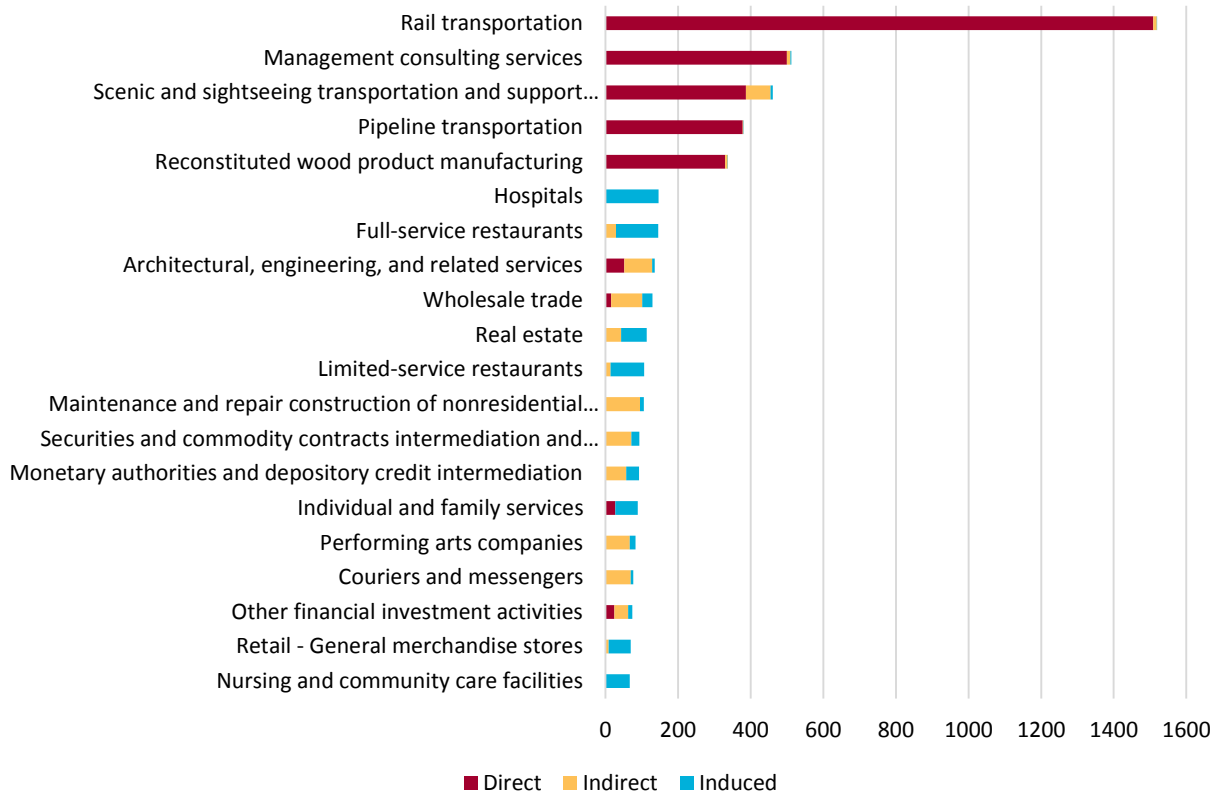
Table 6. FDI Impact Detail (Millions of USD)

Impact Type	*Employment*	*Labor Income*	*Value Added*	*Output*
Direct Effect	3,273	$278.3	$347.4	$862.6
Indirect Effect	1,575	$66.1	$98.7	$213.1
Induced Effect	1,890	$69.8	$128.7	$231.3
Total Effect	6,738	$414.3	$574.7	$1,307.0

SOURCE: IMPLAN, 2016

Findings suggest that 3,273 supported jobs and over $862 million in expenditures can be directly tied to Canadian FDI in the Arrowhead region. Indirectly, over 1,500 jobs are supported by FDI and $99 million in additional value added spending is the result of that relationship. Lastly, the Induced Effect of FDI supports 1,890 jobs in the study area and adds $70 million to Labor Income. Note that the impacts in the study area resulting from Canadian FDI are much larger than the impacts from exports. FDI is estimated to create roughly 6,700 jobs and more than $1.3 billion in Output, compared to 1,700 jobs and $486 million in output from exports. Canadian FDI also contributes more than twice as much value added to the study area as compared with exports. Clearly, Canadian FDI is a critical part of the Arrowhead regional economy.

Figure 12. Top 20 Industries Impacted by Canadian FDI, by Employment

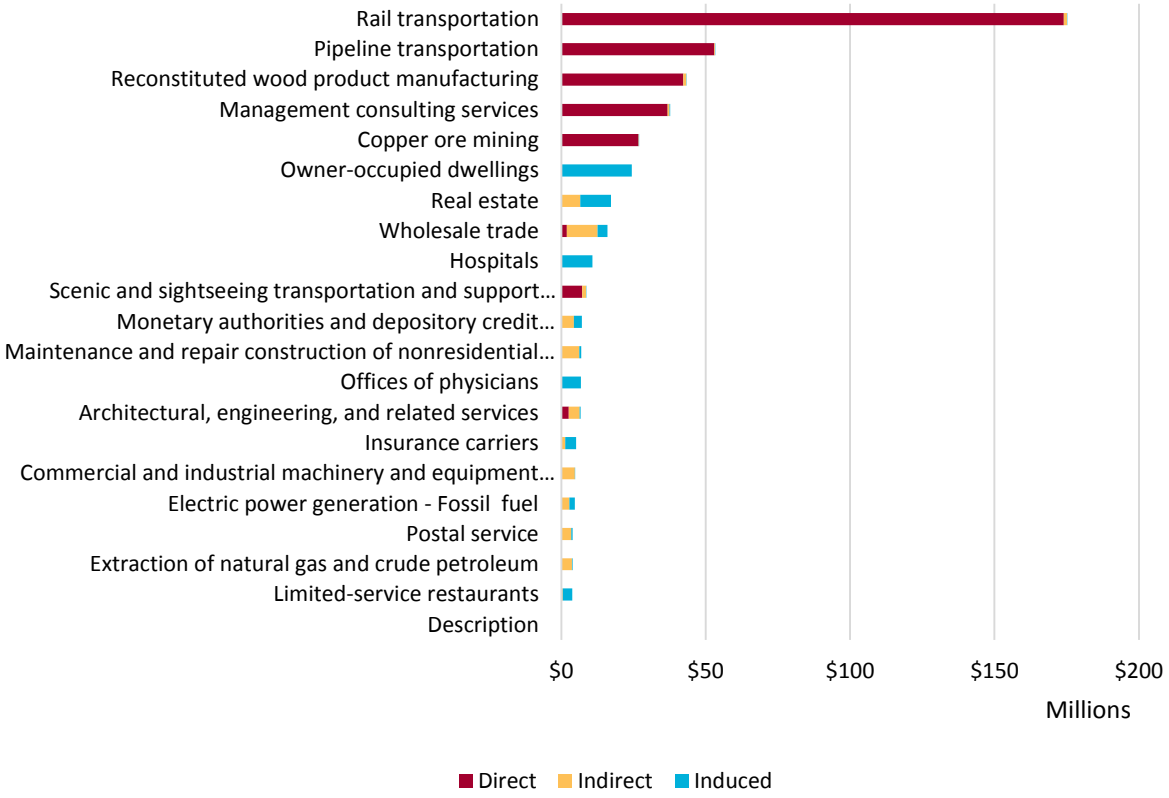


SOURCE: IMPLAN, 2016

Not surprisingly, most jobs directly supplied by Canadian FDI in the study region are in the Rail Transportation industry, as shown in Figure 12 above. As mentioned earlier, nearly half of all Canadian FDI jobs are supported by the Duluth, Missabe & Iron Range Railway.[9] Other impacted industries, in terms of employment, are Management Consulting Services, Scenic and Sightseeing Transportation and Support Activities for Transportation (e.g. AAR), and Pipeline transportation (e.g. Enbridge Energy).

[9] In total, the railroad industry employs 1,952 workers in the Arrowhead region. However, not all of these employees were categorized in IMPLAN's Rail Transportation sector. Many workers employed by Canadian-owned rail companies were described as working in "Management Services". Hence, those employees were placed into the corresponding IMPLAN category of Management Services to better reflect the impacts associated with their profession. This explains why direct employment in the Rail Transportation sector is measured at 1,509, not 1,952.

Figure 13. Top 20 Industries Impacted by Canadian FDI, by Contribution to GRP (Millions of USD)



SOURCE: IMPLAN, 2016

Figure 13 shows the value added by Canadian FDIs in the study area. Rail Transportation contributes nearly $180 million in value added spending to the Arrowhead region's GRP. This is nearly four times as much as the next highest industries, including Pipeline Transportation, Reconstituted Wood Product Manufacturing, and Management Consulting Services. FDI by Canada in the study area has more value added than either goods or service exports to Canada.

NOTE - Readers are also encouraged to remember the UMD Labovitz School's BBER was asked to supply an economic impact analysis only. Any subsequent policy recommendations should be based on the "big picture" of total impact.

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Appendix A. Definitions Used in This Report

Backward Linkages: The interconnection of an industry to other industries from which it purchases its inputs in order to produce its output. It is measured as the proportion of intermediate consumption to the total output of the sector (direct backward linkage) or to the total output multiplier (total backward linkage). An industry has significant backward linkages when its production of output requires substantial intermediate inputs from many other industries.[10]

Direct Effect: Initial new spending in the study area resulting from the project.

Employment: Estimates (from U.S. Department of Commerce secondary data) are in terms of jobs, not in terms of full-time equivalent employees. Therefore, these jobs may be temporary, part-time, or short-term.

Gross Output: The value of local production required to sustain activities.

Indirect Effect: The additional inter-industry spending from the direct impact.

Induced Effect: The impact of additional household expenditures resulting from direct and indirect impact.

Labor Income: All forms of employment income, including employee compensation (wages and benefits) and proprietor income.

Leakages: Any payments made to imports or value added sectors that do not in turn re-spend the dollars within the region.

Multipliers: Total production requirements within the Study Area for every unit of production sold to Final Demand. Total production will vary depending on whether Induced Effects are included and the method of inclusion. Multipliers may be constructed for output, employment, and every component of value added.

Value Added: A measure of the impacting industry's contribution to the local community; it includes wages, rents, interest, and profits.

Appendix B. IMPLAN Assumptions

The following are suggested assumptions for accepting the impact model:[11]

Backward-Linkages: IMPLAN is a backward-linkage model, meaning that it measures the increased demand on industries that produce intermediate inputs as a result of increases in production. However, if an industry increases production, there will also be an increased supply of output for other industries to use in their production. Models that measure this type of relationship are called forward-linkage models. To highlight this concept, consider the example of a new sawmill beginning its operations in a state. The increased production as a result of the sawmill's operations will increase the demand for lumber, creating an increase in activity in the logging industry, as well as other supporting industries such as electric transmission and distribution. IMPLAN's results will include those impacts, but will exclude effects on any wood product manufacturers located nearby that might be impacted by the newly available supply of lumber.

Fixed Production Patterns: Input-output (I-O) models assume inputs are used in fixed proportion, without any substitution of inputs, across a wide range of production levels. This assumes that an industry must double its inputs (including purchases and employment) to double its output. In many instances, an industry will increase output by offering overtime, improving productivity, or improvements in technology.

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[10] IMPLAN, 2015

[11] Bureau of Economic Analysis https://www.bea.gov/papers/pdf/WP_IOMIA_RIMSII_020612.pdf

Industry Homogeneity: I-O models typically assume that all firms within an industry have similar production processes. Any industries that fall outside the typical spending pattern for an industry should be adjusted using IMPLAN's Analysis-by-Parts technique.

Fixed Prices and No Supply Constraints: IMPLAN is a fixed-price model. This means that the modeling software assumes no price adjustment in response to supply constraints or other factors. In other words, the model assumes that firms can increase their production as needed and are not limited by availability of labor or inputs and that firms in the local economy are not operating at full capacity.

Employment: IMPLAN input-output is a production-based model, and employment numbers (from U.S. Department of Commerce secondary data) treat both full- and part-time individuals as being employed.

Leakages: A small area can have a high level of leakage. Leakages are any payments made to imports or value added sectors, which do not in turn re-spend the dollars within the region. What's more, a study area that is actually part of a larger functional economic region will likely miss some important linkages. For example, workers who live and spend outside the study area may actually hold local jobs.

Appendix C. Goods Exports

Table 7. Goods Exports from Arrowhead Region to Canada, in USD (Average 2012-2015)

4-Digit NAICS code	*Description*	*Value of Exports (Average, 2012-2015)*
1111	Oilseeds & Grains	$113,911
1112	Vegetables & Melons	$928,031
1113	Fruits & Tree Nuts	$83,367
1114	Greenhouse & Nursery Products	$54,301
1119	Misc. Crops	$317,906
1121	Cattle	$24,915
1122	Swine	$3,555
1123	Poultry & Eggs	$291,695
1129	Misc. Animal Products	$820,491
1132	Forestry Products	$487,752
1133	Timber & Logs	$488,877
1141	Marine Products	$28,013
2111	Oil & Gas	$15,721,478
2122	Metal Ores	$171,075,032
2123	Nonmetallic Minerals	$411,524
3111	Animal Foods	$9,657
3112	Grain & Oilseed Milling Products	$457,096
3113	Sugar & Confectionery Products	$43,243
3114	Preserves & Specialty Foods	$130,858
3115	Dairy Products	$23,319
3116	Meat Products	$174,499
3117	Prepared Seafood Products	$5,164
3118	Bakery & Tortilla Products	$133,069
3119	Misc. Foods	$51,222
3121	Beverages	$48,231
3131	Fibers, Yarns & Threads	$52
3132	Fabrics	$8,702
3133	Finished & Coated Textile Fabrics	$834
3141	Textile Furnishings	$216,807
3149	Misc. Textile Products	$954,233
3151	Knit Apparel	$10,343
3152	Apparel	$1,570,335
3159	Apparel Accessories	$139,202
3161	Leather & Hides	$5,197
3162	Footwear	$183,040
3169	Misc. Leather Products	$39,441
3211	Sawmill & Wood Products	$1,794,217
3212	Veneer, Plywood & Engineered Wood	$1,549,036
3219	Misc. Wood Products	$1,540,017
3221	Pulp & Paperboard Mill Products	$27,320,344
3222	Converted Paper Products	$6,242,109
3231	Printed Matter & Related Products	$46,857
3241	Petroleum & Coal Products	$556,987
3251	Basic Chemicals	$12,667,084
3252	Resins & Synthetic Fibers	$88,003
3253	Pesticides & Fertilizers	$832,380
3254	Pharmaceuticals & Medicines	$290,179

3255	Paints, Coatings & Adhesives	$345,674
3256	Soaps, Cleaning Agents & Toiletries	$1,082,107
3259	Misc. Chemical Preparations	$1,971,783
3261	Plastics Products	$1,479,936
3262	Rubber Products	$2,671,265
3271	Clay & Refractory Products	$94,431
3272	Glass & Glass Products	$3,509,394
3273	Cement & Concrete Products	$1,755,454
3274	Lime & Gypsum Products	$27,385
3279	Misc. Nonmetallic Minerals	$3,867,708
3311	Iron, Steel & Ferroalloys	$8,633,416
3312	Products From Purchased Steel	$19,157
3313	Aluminum	$2,087,295
3314	Nonferrous Metals	$1,025,406
3315	Foundry Products	$644,210
3321	Crowns, Closures & Seals	$112,195
3322	Cutlery & Handtools	$150,057
3323	Architectural & Structural Metals	$602,558
3324	Boilers, Tanks & Containers	$171,885
3325	Hardware	$1,193,246
3326	Springs & Wire Products	$143,438
3327	Bolts, Nuts & Misc. Turned Prods	$91,727
3329	Misc. Fabricated Metal Products	$1,678,077
3331	Ag & Construction Machinery	$19,804,416
3332	Industrial Machinery	$338,824
3333	Comm. & Serv. Industry Machinery	$319,805
3334	HVAC & Refrigeration Equipment	$1,020,009
3335	Metalworking Machinery	$524,680
3336	Engines & Turbines	$231,983
3339	Misc. General Purpose Machinery	$1,806,028
3342	Communications Equipment	$2,605,746
3343	Audio & Video Equipment	$1,164,153
3344	Semiconductors & Components	$195,147
3345	Navigational & Meas. Instruments	$169,243
3346	Magnetic & Optical Media	$233,307
3351	Electric Lighting Equipment	$168,754
3352	Household Appliances	$2,522,806
3353	Electrical Equipment	$1,714,004
3359	Electrical Equipment & Components	$1,199,387
3361	Motor Vehicles	$2,605,126
3362	Motor Vehicle Bodies & Trailers	$62,983
3363	Motor Vehicle Parts	$908,119
3364	Aerospace Products & Parts	$15,609,303
3365	Railroad Rolling Stock	$302,757
3366	Ships & Boats	$899,350
3369	Misc. Transportation Equipment	$2,154,379
3371	Household & Institutional Furniture	$432,457
3372	Office Furniture & Fixtures	$168,390
3379	Furniture Related Products	$105
3391	Medical Equipment & Supplies	$403,822
3399	Misc. Manufactured Commodities	$558,884
9100	Scrap Products	$1,291,651
TOTAL		$340,756,024

SOURCE: CANADIAN EMBASSY, 2016

Appendix D. Service Exports

Table 8. Service Exports from Arrowhead Region to Canada, in USD (Average 2012-2014)

Description	*Value of Exports (Average, 2012-2014)*
Travel	$19,000,753
Other Freight & Port Services	$4,478,616
Insurance Services	$3,815,788
Installation, Maintenance, and Repair of Equipment	$1,518,923
Other Financial Services	$1,060,058
Trademarks	$1,032,073
Architectural, Engineering, and Other Technical Services	$958,952
Franchise Fees	$460,184
Other BPT	$367,364
Advertising	$323,461
Industrial Processes	$274,535
Telecommunications	$233,155
Industrial Engineering	$220,240
Computer Software	$216,595
Operation Leasing	$210,147
Legal Services	$173,504
Construction	$131,245
Computer and Data Processing Services	$92,191
Passenger Fares	$67,986
Accounting, Auditing, and Bookkeeping	$62,878
Management and Consulting Services	$48,400
Other Intangibles	$44,529
Securities Transactions	$42,276
Management and Advisory Services	$38,556
Air Freight & Port Services	$35,356
Credit-Related Services	$23,797
Research and Development and Testing Services	$20,982
Ocean Freight & Port Services	$15,774
Sound Recording	$11,195
Database and Information Services	$3,921
Film & Television Distribution	$3,598
Broadcasting and Recording of Live Events	$96
TOTAL	$34,987,127

SOURCE: CANADIAN EMBASSY, 2016

Appendix E. Duluth Seaway Port Authority Data

PORT OF DULUTH-SUPERIOR MARINE TONNAGE REPORT - JANUARY 2016 & SEASON FINAL 2015 (In Short Tons of 2,000 lbs.)

	JANUARY 2015	2016	YEAR TO DATE 2014	YEAR TO DATE 2015
TOTAL CANADIAN	**344,404**	**200,881**	**6,340,389**	**4,924,782**
Canadian Exports	**288,526**	**200,881**	**5,821,362**	**4,437,000**
Coal & Coke	0	0	418,589	478,711
Grain & By-Products for Transshipment	0	0	44,131	141,493
Iron Ore & Concentrates	288,526	200,881	5,341,336	3,807,632
Misc. Bulk	0	0	17,306	0
Other	0	0	0	9,165
Canadian Imports	**55,878**	**0**	**519,027**	**487,782**
Dry Bulk	55,878	0	499,617	479,645
Grain & By-Products	0	0	19,409	0
Other	0	0	0	8,136
TOTAL DOMESTIC	**832,506**	**406,645**	**28,420,747**	**26,624,540**
Domestic Receipts	**7,320**	**0**	**4,005,111**	**3,529,925**
Coal & Coke	0	0	248,459	105,842
Dry Bulk	0	0	293,845	389,715
Iron Ore & Concentrates	7,320	0	71,312	0
Limestone	0	0	3,391,495	3,034,368
Domestic Shipments	**825,186**	**406,645**	**24,415,636**	**23,094,615**
Coal & Coke	428,166	66,158	11,767,996	12,672,132
Grain, Bulk	0	0	190,080	222,463
Iron Ore & Concentrates	394,568	338,957	12,379,201	10,111,198
Liquid Bulk	2,452	1,530	65,098	88,823
Other	0	0	13,261	0
TOTAL OVERSEAS	**0**	**0**	**2,791,666**	**1,318,602**
Overseas Exports	0	0	**2,752,085**	**1,225,665**
Coal & Coke	0	0	1,692,309	155,223
General Cargo	0	0	0	4,536
Grain & By-Products	**0**	**0**	1,049,817	1,055,320
Misc. Bulk	0	0	9,959	10,585
Overseas Imports	0	0	**39,581**	**92,937**
General Cargo	0	0	18,194	76,939
Other	0	0	21,387	15,997
TOTAL WATERBORNE COMMERCE	**1,176,910**	**607,526**	**37,552,802**	**32,867,924**

	JANUARY 2015	2016	YEAR TO DATE 2014	YEAR TO DATE 2015
US Flag Arrivals	**16**	**7**	**568**	**520**
Canadian Flag Arrivals	**11**	**6**	**254**	**158**
Subtotal Lake Arrivals	**27**	**13**	**822**	**678**
Overseas Vessel Arrivals	**0**	**0**	**79**	**79**
TOTAL VESSEL ARRIVALS	**27**	**13**	**901**	**757**

PORT OF DULUTH-SUPERIOR MARINE TONNAGE REPORT - JANUARY 2013 & SEASON FINAL 2012 (In Short Tons of 2,000 lbs.)

	JANUARY 2012	JANUARY 2013	YEAR TO DATE 2011	YEAR TO DATE 2012
TOTAL CANADIAN	**424,859**	**226,916**	**6,708,871**	**6,493,171**
Canadian Exports	**368,560**	**205,841**	**6,194,703**	**6,141,380**
Coal & Coke	0	0	830,351	515,567
Grain & By-Products for Transshipment	0	0	247,252	42,509
Iron Ore & Concentrates	368,560	205,841	5,069,782	5,553,003
Misc. Bulk	0	0	47,318	30,290
Other	0	0	0	9
Canadian Imports	**56,300**	**21,075**	**514,168**	**351,791**
Dry Bulk	56,300	21,075	431,082	351,706
Grain & By-Products	0	0	83,086	0
Other	0	0	0	85
TOTAL DOMESTIC	**748,505**	**668,206**	**29,035,743**	**28,018,923**
Domestic Receipts	0	0	**3,830,169**	**3,349,605**
Coal & Coke	0	0	326,885	252,242
Dry Bulk	0	0	292,176	295,494
Limestone	0	0	3,211,108	2,801,869
Domestic Shipments	**748,505**	**668,206**	**25,205,574**	**24,669,318**
Coal & Coke	169,731	57,538	12,769,701	12,242,441
Grain, Bulk	0	0	307,480	325,297
Iron Ore & Concentrates	576,857	607,406	12,059,200	12,033,994
Liquid Bulk	1,917	3,263	69,193	67,586
TOTAL OVERSEAS	**0**	**0**	**1,356,940**	**2,160,957**
Overseas Exports	0	0	**1,332,733**	**2,117,922**
Coal & Coke	0	0	367,775	1,371,538
General Cargo	0	0	0	18,698
Grain & By-Products	0	0	878,157	697,541
Misc. Bulk	0	0	86,800	30,145
Overseas Imports	0	0	**24,207**	**43,036**
General Cargo	0	0	24,207	25,933
Other	0	0	0	17,103
TOTAL WATERBORNE COMMERCE	**1,173,364**	**895,123**	**37,101,554**	**36,673,052**

	JANUARY 2012	JANUARY 2013	YEAR TO DATE 2011	YEAR TO DATE 2012
US Flag Arrivals	15	14	596	614
Canadian Flag Arrivals	13	7	228	231
Subtotal Lake Arrivals	**28**	**21**	**824**	**845**
Overseas Vessel Arrivals	0	0	70	68
TOTAL VESSEL ARRIVALS	**28**	**21**	**894**	**913**

PORT OF DULUTH-SUPERIOR MARINE TONNAGE REPORT - JANUARY 2014 & SEASON FINAL 2013 (In Short Tons of 2,000 lbs.)

	JANUARY		YEAR TO DATE	
	2013	2014	2012	2013
TOTAL CANADIAN	**226,916**	**146,869**	**6,493,171**	**5,368,820**
Canadian Exports	**205,841**	**146,869**	**6,141,380**	**4,829,145**
Coal & Coke	0	0	515,567	560,874
Grain & By-Products for Transshipment	0	0	42,509	59,470
Iron Ore & Concentrates	205,841	146,869	5,553,003	4,208,801
Misc. Bulk	0	0	30,290	0
Other	0	0	9	0
Canadian Imports	**21,075**	**0**	**351,791**	**539,675**
Dry Bulk	21,075	0	351,706	468,792
Grain & By-Products	0	0	0	70,884
Other	0	0	85	0
TOTAL DOMESTIC	**668,206**	**389,464**	**28,018,923**	**28,904,266**
Domestic Receipts	0	0	**3,349,605**	**3,931,971**
Coal & Coke	0	0	252,242	421,159
Dry Bulk	0	0	295,494	362,709
Limestone	0	0	2,801,869	3,148,103
Domestic Shipments	**668,206**	**389,464**	**24,669,318**	**24,972,296**
Coal & Coke	57,538	158,845	12,242,441	12,490,885
Grain, Bulk	0	0	325,297	288,473
Iron Ore & Concentrates	607,406	229,774	12,033,994	12,128,200
Liquid Bulk	3,263	844	67,586	64,739
TOTAL OVERSEAS	**0**	**0**	**2,160,957**	**2,427,931**
Overseas Exports	0	0	**2,117,922**	**2,384,596**
Coal & Coke	0	0	1,371,538	1,418,131
General Cargo	0	0	8,617	0
Grain & By-Products	0	0	697,541	901,170
Misc. Bulk	0	0	40,225	65,295
Overseas Imports	0	0	**43,036**	**43,335**
General Cargo	0	0	25,933	7,830
Other	0	0	17,103	35,505
TOTAL WATERBORNE COMMERCE	**895,123**	**536,333**	**36,673,052**	**36,701,017**

	JANUARY		YEAR TO DATE	
	2013	2014	2012	2013
US Flag Arrivals Canadian	14	7	615	600
Flag Arrivals	7	5	231	212
Subtotal Lake Arrivals	**21**	**12**	**846**	**812**
Overseas Vessel Arrivals	0	0	68	67
TOTAL VESSEL ARRIVALS	**21**	**12**	**914**	**879**

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PORT OF DULUTH-SUPERIOR MARINE TONNAGE REPORT - JANUARY 2015 & SEASON FINAL 2014 (In Short Tons of 2,000 lbs.)

	JANUARY		YEAR TO DATE	
	2014	2015	2013	2014
TOTAL CANADIAN	**146,869**	**344,404**	**5,368,820**	**6,340,389**
Canadian Exports	**146,869**	**288,526**	**4,829,145**	**5,821,362**
Coal & Coke	0	0	560,874	418,589
Grain & By-Products for Transshipment	0	0	59,470	44,131
Iron Ore & Concentrates	146,869	288,526	4,208,801	5,341,336
Misc. Bulk	0	0	0	17,306
Canadian Imports	**0**	**55,878**	**539,675**	**519,027**
Dry Bulk	0	55,878	468,792	499,617
Grain & By-Products	0	0	70,884	19,409
TOTAL DOMESTIC	**389,464**	**832,506**	**28,904,266**	**28,420,747**
Domestic Receipts	**0**	**7,320**	**3,931,971**	**4,005,111**
Coal & Coke	**0**	**0**	421,159	248,459
Dry Bulk	**0**	**0**	362,709	293,845
Iron Ore & Concentrates	0	7,320	0	71,312
Limestone	**0**	**0**	3,148,103	3,391,495
Domestic Shipments	**389,464**	**825,186**	**24,972,296**	**24,415,636**
Coal & Coke	158,845	428,166	12,490,885	11,767,996
Grain, Bulk	**0**	**0**	288,473	190,080
Iron Ore & Concentrates	229,774	394,568	12,128,200	12,379,201
Liquid Bulk	844	2,452	64,739	65,098
Other	0	0	0	13,261
TOTAL OVERSEAS	**0**	**0**	**2,427,931**	**2,791,666**
Overseas Exports	0	0	**2,384,596**	**2,752,085**
Coal & Coke	0	0	1,418,131	1,692,309
Grain & By-Products	0	0	901,170	1,049,817
Misc. Bulk	0	0	65,295	9,959
Overseas Imports	0	0	**43,335**	**39,581**
General Cargo	0	0	7,830	18,194
Other	0	0	35,505	21,387
TOTAL WATERBORNE COMMERCE	**536,333**	**1,176,910**	**36,701,017**	**37,552,802**

	JANUARY		YEAR TO DATE	2013
	2014	2015	2014	
US Flag Arrivals	7	15	600	568
Canadian Flag Arrivals	5	11	212	254
Subtotal Lake Arrivals	**12**	**26**	**812**	**822**
Overseas Vessel Arrivals	0	0	67	79
TOTAL VESSEL ARRIVALS	**12**	**20**	**879**	**901**

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