

July 15, 2016

Research Report

**The Economic Impact of the Minnesota  
Wilderness Hockey Organization  
on Carlton County**

For the  
Minnesota Wilderness

Bureau of Business and  
Economic Research

**Labovitz School**  
OF BUSINESS AND ECONOMICS  

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## Table of Contents

Table of Figures .....	iii
Table of Tables .....	iii
Executive Summary .....	iv
Introduction .....	1
Study Area .....	1
Input-Output Modeling .....	3
Inputs .....	3
Team Operations .....	4
Visitor Spending.....	7
Findings .....	12
Team Operations .....	13
Visitor Spending.....	15
Conclusion .....	16
References.....	18
Appendix A: Definitions Used in this Report.....	19
Appendix B. IMPLAN Assumptions.....	20

## Table of Figures

Figure 1. Carlton County.....	1
Figure 2. Leisure and Hospitality Industries in Carlton County as Measured by Output, 2014 (in Millions \$) .....	2
Figure 3. Minnesota Wilderness Revenue Sources, 2015 .....	4
Figure 4. Minnesota Wilderness Expenditures by Type, 2015 .....	5
Figure 5. Evening Visitor Spending by Sector .....	9
Figure 6. Overnight Guest Spending by Sector.....	10
Figure 7. Top 15 Industries Impacted by Minnesota Wilderness Operations in Carlton County, by Total Output.....	14
Figure 8. Top 15 Industries Impacted by Wilderness Games in Carlton County, by Total Output.....	15

## Table of Tables

Table 1. IMPLAN Commodity Sectors Used for the Minnesota Wilderness Customized Industry.....	6
Table 2. Minnesota Wilderness Game Attendance Survey Results, 2015-2016 Season .....	7
Table 3. Minnesota Wilderness Attendance Summary, 2015-2016 Season .....	8
Table 4. IMPLAN Industry Sectors Used for the Minnesota Wilderness Visitor Spending .....	11
Table 5. Total Economic Impact of the Wilderness Hockey Organization on Carlton County .....	12
Table 6. Wilderness Operations Impact Details (2015-2016 Season) .....	13
Table 7. Wilderness Games Impact Details (2015-2016 season) .....	15

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# Executive Summary

## ABOUT THE PROJECT

The Minnesota Wilderness hockey team is one of over 20 North American Hockey League Tier II Junior teams. Players are student-athletes in pursuit of collegiate and/or professional hockey careers. The Wilderness is based in Cloquet, Minnesota, which is in Carlton County, and utilizes the rink at Northwoods Credit Union Arena.

The Minnesota Wilderness contacted the Bureau of Business and Economic Research (BBER) at the University of Minnesota Duluth's Labovitz School of Business and Economics to study the economic benefits that this organization has on Carlton County through its operations and games.

Economic impact modeling was done using the IMPLAN modeling software. IMPLAN data uses various federal sources, and the most recent IMPLAN data available is for the year 2014. All impacts are reported in 2016 dollars. Inputs for modeling were provided by industry representatives, as described in the report.

## OPERATIONS IMPACTS ON CARLTON COUNTY

Through the Wilderness hockey organization's operations the county's economy sees an additional 12 jobs in the county. The organization itself employs 6, while 5 jobs are created through the indirect effect, and 1 job was the result of the induced effect. These jobs are not necessarily full-time equivalent jobs but could be full- or part-time, temporary or short-term positions.

Nearly \$350,000 is infused into the county's economy through the Wilderness organization's labor income, which is wages and benefits.

Additionally, the value added effect — additional employee compensation, taxes, and operating surplus from visitor spending — of the organization amounts to roughly \$627,000.

Therefore, the county sees an additional operations output of almost \$1.3 million as a result of the Wilderness organization's operating expenses.

## GAMES/VISITOR SPENDING IMPACTS ON CARLTON COUNTY

The economic impacts of the hockey games, as measured by local spending from fans outside of Carlton County, includes not only the typical hotels and lodging, restaurants and drinking establishments but also retail stores, electric power, gasoline stations, and more.

Visitor spending accounts for an additional 17 employees to the county. As mentioned previously, these are not necessarily full-time equivalent positions.

The total output resulting from increased visitor spending to Carlton County as a result of the Wilderness games is just over \$1.1 million.

In total, Carlton County sees \$2.4 million in additional spending as a result of the Wilderness hockey organization's games and operations.

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# The Economic Impact of the Minnesota Wilderness Hockey Organization on Carlton County

## Introduction

The Minnesota Wilderness hockey team is one of over 20 North American Hockey League (NAHL), Tier II Junior teams. Players are student-athletes in pursuit of collegiate and/or professional hockey careers. The Wilderness is based in Cloquet, Minnesota, which is in Carlton County, and utilizes the rink at Northwoods Credit Union Arena. During the 2015-2016 hockey season, the Wilderness played 30 regular season and 4 playoff games at home. Additionally, the Wilderness organization runs annual team tryouts during late July to early August, and 2016 marks the first year that the tryouts were held at Northwoods Credit Union Arena.

The Minnesota Wilderness contacted the Bureau of Business and Economic Research (BBER) at the University of Minnesota Duluth's Labovitz School of Business and Economics to study the economic benefits that this organization has on Carlton County through its operations and games.

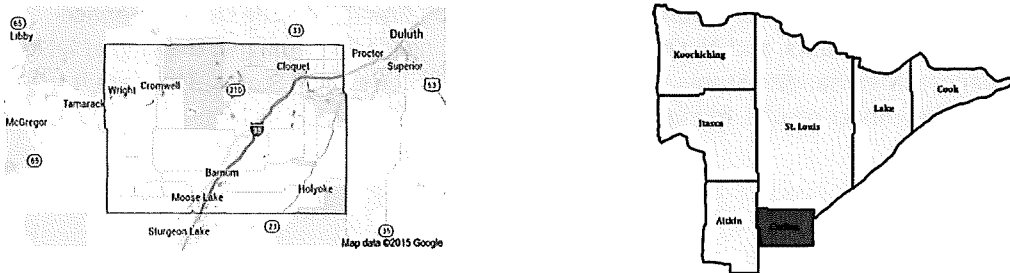
The research objectives of this study included the following:

1. To collect data from the Wilderness Hockey Organization regarding the organization and its operations (including information on annual expenditures, employment, and other relevant spending),
2. To estimate the proportion of Wilderness game spectators that come from outside Carlton County,
3. To estimate spectator spending using information collected from similar research studies, and
4. To provide an economic impact analysis using IMPLAN software.

## Study Area

The geographic scope for this economic impact analysis is Carlton County, Minnesota.

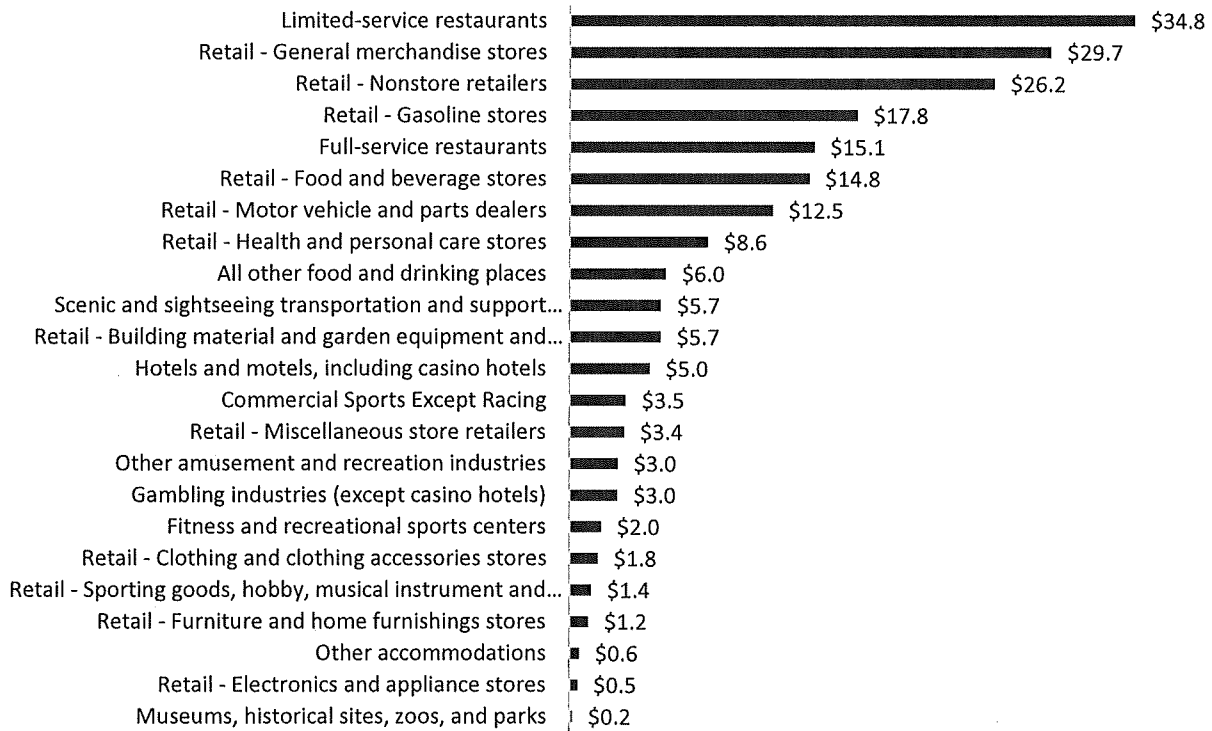
Figure 1. Carlton County



SOURCES: GOOGLE MAPS, BBER

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**Figure 2. Leisure and Hospitality Industries in Carlton County as Measured by Output, 2014 (in Millions \$)**



SOURCE: IMPLAN, 2016

Figure 2 shows the Leisure and Hospitality industries in Carlton County as measured by output. The Wilderness organization itself is categorized in the Fitness and Recreational Sports Centers industry, which saw a total output of \$2.0 million in 2014, as shown above. In addition, the organization brings visitors into Carlton County, and these visitors spend money shopping, eating, and on lodging. Thus, the primary effects that the Wilderness has on the Carlton County economy are anticipated to be in the Leisure and Hospitality industry. As shown above, the largest hospitality industries in Carlton County include Limited-Service Restaurants, Full-Service Restaurants, and All Other Food and Drinking Places. Similarly, the largest leisure industries include General Merchandise Stores, Nonstore Retailers, and Gasoline Stores. This data is included to provide context for the impact results, found later in the report.

## ***Input-Output Modeling***

This study uses the IMPLAN Group's input-output modeling data and software (IMPLAN version 3.1).<sup>1</sup> 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.

## **Inputs**

Inputs required for modeling the economic impacts of the Wilderness Hockey organization included the organization's annual operating expenditures as well as attendance from outside the county and visitor spending estimates at the Wilderness home games, playoff games, and tryout camps.

These data were collected from a variety of sources. Operational impacts were calculated using annual expenditures provided by the organization. Game and camp attendance along with the proportion of attendance from outside the county was collected by the organization using attendance data and surveys of game attendees. This data was combined with information collected from relevant tourism studies and the General Services Administration (GSA) per diem information to determine typical visitor spending. Finally, hotel rate information was collected from local hotel websites. Throughout the project, the BBER worked closely with the Wilderness staff to ensure the accuracy of the assumptions and resulting models.

The following sections provide details on the methods used to determine the inputs for modeling the economic impacts of the Wilderness team operations and visitor spending from fans outside the county.

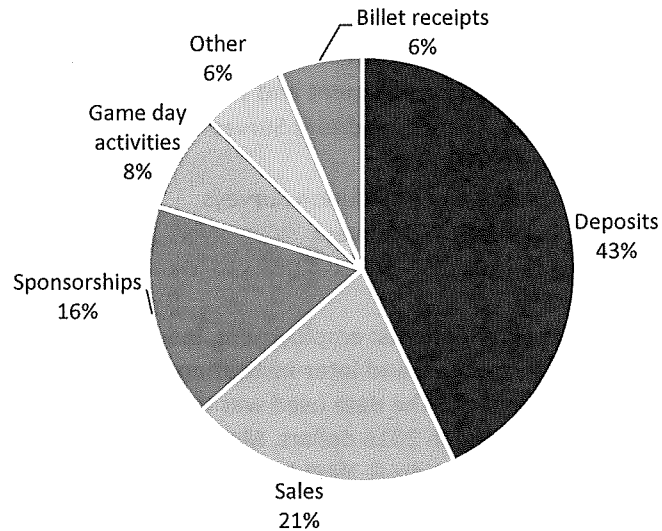
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<sup>1</sup> [www.IMPLAN.com](http://www.IMPLAN.com)

## Team Operations

Operating assumptions required for modeling include employment estimates, payroll and benefit information, and annual expenditures. For this analysis, the Minnesota Wilderness provided budget worksheets for the 2015 calendar year, which included revenue sources, annual expenses, employment numbers, and payroll.

Figure 3. Minnesota Wilderness Revenue Sources, 2015

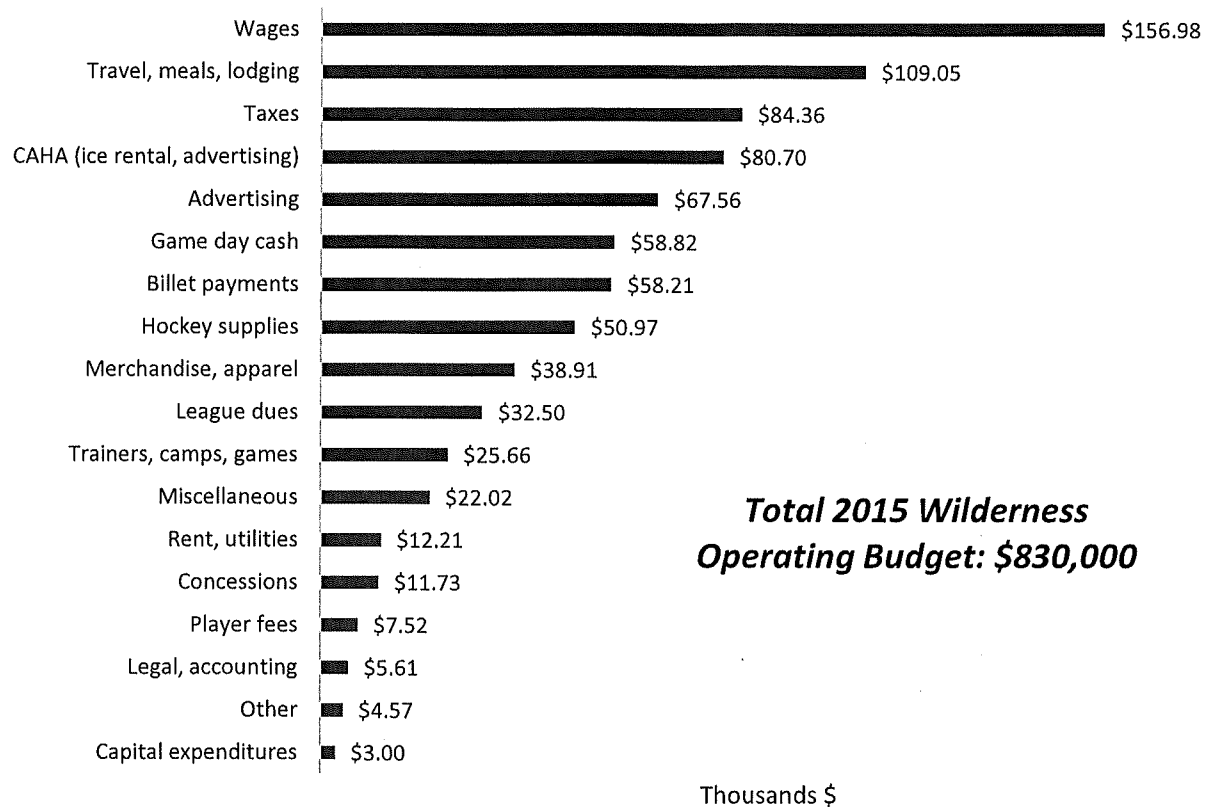


SOURCE: MINNESOTA WILDERNESS

Figure 3 above shows the total revenue earned by the Minnesota Wilderness for the 2015 calendar year. While revenue sources were not used in the impact modeling, they provide a unique perspective on the Minnesota Wilderness as an organization. The largest source of revenue for this non-profit organization came from Investment Deposits, which is the financial contribution made by the team's ownership. Other significant revenue sources include Ticket Sales (21%) and Sponsorships (16%) from companies advertising at the Northwoods Credit Union Arena. Game Day Activities (8%) include game day promotions and game day cash. The category, Other (6%), consists of camp fees and player trades. Lastly, Billet Receipts (6%) are reimbursements made by the players' families to house the team with local families.



**Figure 4. Minnesota Wilderness Expenditures by Type, 2015**



SOURCE: MINNESOTA WILDERNESS

The Minnesota Wilderness’s annual expenditures represent the organization’s economic contribution to Carlton County through wages, equipment, utilities, and other local spending. The economic impacts resulting from the Wilderness operations were calculated using 2015 expenditures provided by the organization. Figure 4 above shows the breakdown of all operational expenditures for the hockey organization by type. The largest expense, by a sizeable margin, comprises the wages for the six employees (two part-time and four full-time). Travel, meals, and lodging was the second highest expense, followed closely by taxes and payments to the Cloquet Amateur Hockey Association (CAHA) for ice rental and advertising.<sup>2,3</sup>

<sup>2</sup> Technically, the portion of the CAHA payment designated for advertising (roughly \$35,000 of the \$80,000 total) did not occur in 2015. However, this payment is one of the organization’s typical annual operating expenses and is included in each year’s budget. In this case, it was simply delayed until 2016. Therefore, the expense was included in the analysis.

<sup>3</sup> Game day cash withdrawals include the cash used at concessions, merchandise tables, and ticket booths on game days to provide change to customers. These expenses were not included in modeling as they are deposited again after each game.

It is worth noting that visiting teams' accommodations and meals are paid for in large part by the Wilderness organization. In addition, some local restaurants will cover the cost of visiting teams' meals in exchange for advertising and game day promotions. Therefore, these expenses<sup>4</sup> were included in the team's operations. However, some incidental spending on the part of the visiting teams was included in the visitor spending portion of modeling. More details will be provided in the following section.

IMPLAN classifies the Minnesota Wilderness as a Commercial Sports Except Racing (sector 489) industry. This sector includes businesses, such as baseball clubs, horse racing stables, referees, and umpires. However, the Wilderness's revenue sources and expenditures (e.g. ice rental) are likely to be very different from other businesses and industries within this sector. Rather than use IMPLAN's default spending pattern for this industry (which is developed using an aggregate of all facilities included in sector 489), the BBER modeled the Minnesota Wilderness operations using a technique called Analysis by Parts. This technique, which yields more accurate results, allows the user to specify the amount of commodity inputs, the proportion of local labor income, and the proportion of local purchases.

**Table 1. IMPLAN Commodity Sectors Used for the Minnesota Wilderness Customized Industry**

<i>IMPLAN commodity number</i>	<i>Description</i>
3395	Wholesale trade distribution services
3402	Retail services - Gasoline stores
3403	Retail services- Clothing and clothing accessories stores
3404	Retail services - Sporting goods, hobby, musical instrument and book stores
3406	Retail services - Miscellaneous store retailers
3434	Nondepository credit intermediation and related activities
3440	Real estate buying and selling, leasing, managing, and related services
3447	Legal services
3448	Accounting, tax preparation, bookkeeping, and payroll services
3457	Advertising, public relations, and related services
3465	Business support services
3474	Other educational services
3489	Commercial sports except racing
3496	Other amusement and recreation
3497	Fitness and recreational sports center services
3499	Hotels and motel services, including casino hotels
3501	Full-service restaurant services
3502	Limited-service restaurant services
3503	All other food and drinking place services
5001	Employee compensation
10006	Households 50-75k

*SOURCE: MINNESOTA WILDERNESS AND IMPLAN*

Using the Analysis-by-Parts method, all expenditures provided by the organization were re-categorized as

<sup>4</sup> Roughly \$30,000 in lodging expenses and \$15,000 in meals

IMPLAN commodities to create a customized industry based on an existing budgetary spending pattern.<sup>5</sup> Table 1 on the previous page shows a list of those commodities used to create the customized industry. The majority of the items shown in Table 1 include purchases made by the Wilderness for business services, equipment, rent, and supplies. Employee Compensation (5001) represents the wages paid to the six workers employed by the Minnesota Wilderness. The final item in Table 1, Households 50-75k, was used to represent payments to billet families. Because these payments are being made to households and not private companies, the expense was included as an impact to household spending in the county. This category represents the spending of a “typical” household earning \$50,000-\$75,000.<sup>6</sup>

## Visitor Spending

Inputs required for modeling the impacts of visitor spending include the number visitors attending Wilderness games and camps who came from outside the study area along with each group’s typical local spending. The economic impact attributable to Wilderness games relates only to new money injected into the local economy by visiting fans. Expenditures by Carlton County residents represent only a recycling of money that already exists in the local economy. Most likely, if local fans (from Carlton County) did not spend their money as a result of their participation in the local games, they would have spent it elsewhere in the county. It is for this reason that the analysis is concerned only with visitor spending as a result of the Wilderness games.

First, attendance records for all 2015-2016 regular season and playoff games were collected from the NAHL website. Next, the proportion of guests from outside the county was calculated by randomly surveying a sample of game attendees. Surveys were distributed at three regular season games and one playoff game. In the survey, participants were asked where they were from and if they planned on spending the night. Responses to the surveys were used to estimate the total number of guests from outside the county and overnight guests for the remainder of the season’s games.

**Table 2. Minnesota Wilderness Game Attendance Survey Results, 2015-2016 Season**

Date	Survey Distribution			Survey Results		
	Total Attendance	People Surveyed	Response Rate	Local Fans	Evening Visitors	Overnight Guests
Friday, February 12	1,378	126	9%	42%	41%	17%
Friday, February 26	2,342	75	3%	76%	0%	24%
Friday, March 18	1,432	121	8%	62%	38%	0%
Regular Season Survey Average	1,717	107	7%	60%	26%	14%
Post-season Survey Average <sup>7</sup>	1,315	152	11%	21%	54%	25%

SOURCE: MINNESOTA WILDERNESS ATTENDANCE SURVEY

In total, 322 people responded to the season game survey (107 respondents on average per game), and 152

<sup>5</sup> IMPLAN, 2016

<sup>6</sup> The range of \$50,000-\$75,000 was selected to reflect the median household income in Carlton County (\$53,429 in 2014). Source: American Community Survey Estimates 2010-2014

<sup>7</sup> Post-season estimates were based on surveys of attendees at the Saturday, April 23 playoff game.

responded to the playoff game survey, as shown in Table 2 on the previous page. On average, roughly 14% of regular season attendees indicated that they were staying overnight and 26% stated that they were from outside the county but only staying for the evening.<sup>8</sup> The remainder was local fans from within Carlton County. The playoff games saw a higher share of visitors from outside the county, with 25% of survey participants indicating that they were staying overnight and an additional 54% reporting that they had come from outside Carlton County for the evening. Only 21% of fans surveyed at the post-season game indicated that they had come from within Carlton County.

**Table 3. Minnesota Wilderness Attendance Summary, 2015-2016 Season**

	<i>Attendance</i>	<i>Local Fans</i>	<i>Evening Visitors</i>	<i>Overnight Guests</i>	
Regular Season (30 games)	Average per Game	1,368	821	362	185
	Total	41,035	24,627	10,845	5,563
Playoffs (4 games)	Average per Game	1,388	292	749	347
	Total	5,553	1,169	2,996	1,338
Total (34 games)	Average per Game	1,370	759	407	204
	Total	46,588	25,796	13,841	6,951

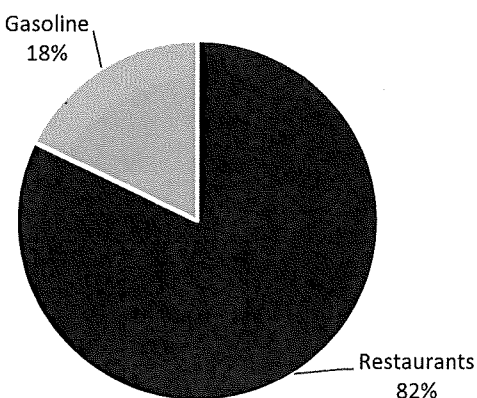
*SOURCE: MINNESOTA WILDERNESS ATTENDANCE SURVEY, NAHL*

The average proportion of local fans, evening visitors, and overnight guests collected from the surveys was used to estimate the percentage of visiting fans for all home games throughout the entire 2015-2016 season. Table 3 shows regular season and playoff attendance estimates based on the survey results.

In order to determine the amount of new spending that the guests at Wilderness hockey games were contributing to the local economy, four spending patterns were developed; one for each type of visitor. Spending by evening visitors was estimated using per diem rates reported by the General Services Administration (GSA). Spending by overnight guests was calculated using a combination of GSA per diem rates, local hotel rates, and typical tourist spending patterns from other relevant literature. In addition, spending by Tryout Camp attendees and visiting teams was calculated using a combination of GSA rates and Wilderness staff estimates.

<sup>8</sup> The three categories shown in Table 2, Local Fans, Evening Visitors, and Overnight Guests, are mutually exclusive. Each survey participant was categorized into only one of these three groups.

Figure 5. Evening Visitor Spending by Sector



SOURCE: BBER

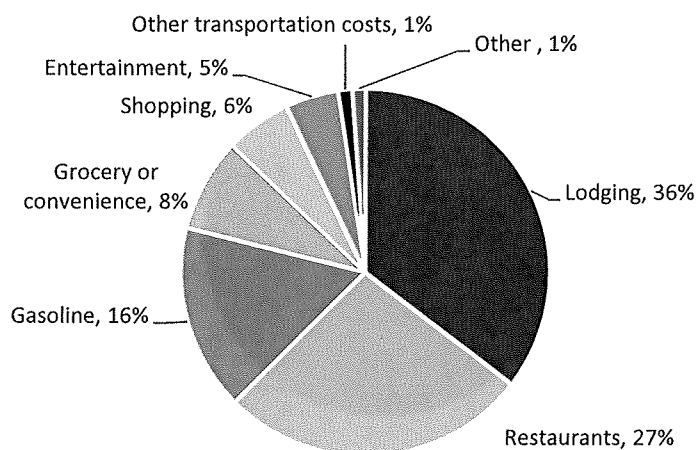
Evening visitor spending (Figure 5) was calculated using GSA per diem rates. The GSA website estimates that people traveling for an entire day spend an average \$51 on meals and other incidental expenses using the standard rate for Minnesota. Of that total, \$23 is allocated for dinner expenses and \$5 for incidentals (e.g. gas). Many fans from outside of the county who are staying just for the evening would likely not spend money locally beyond their attendance at the game. Therefore, it was assumed that 50% of the evening visitors (roughly 7,000 individuals) would spend the GSA estimate of \$28 on dinner and/or gasoline that evening. Using these estimates, the total amount spent by evening visitors would equate to approximately \$195,000 with the majority (82%) going toward meals and the remainder (18%) spent on gasoline, as shown in Figure 5.

Overnight guest spending was calculated using a combination of local lodging rates, GSA rates, and other relevant literature.<sup>9</sup> According to Dave Boitz, General Manager of the Minnesota Wilderness, visitors usually stay in one of two places, the Black Bear Casino Resort or Super 8 Cloquet. To determine the money spent by guests on lodging, the standard room prices of the two options were averaged. A standard room at the Super 8 Cloquet cost \$79, while a standard room at the Black Bear Casino Resort cost \$89, equating to an average price per room of \$84. This price was multiplied by the number of overnight guests (n=6,951) and then divided by two (assuming two guests to each room) to yield the total amount that Wilderness spectators for regular season and playoff games spent on lodging (\$292,000), as shown in Table 4 on the next page. To account for the overnight guest spending beyond lodging, the BBER again used the standard GSA meals and incidental expenditures rate for Minnesota. According to the GSA website, the standard rate for the first and last days of travel is \$38.25. It was assumed that visitors arrived on the game day (first day) and left the following day (last day), so each person staying the night in Carlton County was estimated to spend a total of \$76.50 on meals and other incidentals, outside of their lodging expenses. In total, it was estimated that overnight visitors for regular season and playoff games (n=6,951) spent roughly \$530,000 on meals and incidentals.

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<sup>9</sup> See References for full list of tourism studies used in estimating visitor spending.

**Figure 6. Overnight Guest Spending by Sector**



*SOURCE: BBER*

To determine the appropriate allocations for overnight visitors' expenses, relevant studies focusing on tourism spending (particularly tourism spending in Minnesota's northeast region) were evaluated. Each study's spending estimates were categorized into 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 combined with lodging estimates to develop a "typical" tourist spending pattern (see Figure 6, previous page) and allocated to the appropriate IMPLAN sectors based on that spending pattern.

As mentioned previously, the Wilderness organization holds a four-day tryout camp each summer, which draws potential players and their families. 2016 marks the first year that the tryouts were held at Northwoods Credit Union Arena. For modeling the impacts of this event, the Wilderness organization provided estimates on the number of campers (and their guests) and their length of stay. In total, more than one hundred skaters attended the main camp in August 2016, 86 of whom were from out of town. Each player was estimated to have brought approximately one guest, for a total of 172 out-of-town visitors. Wilderness staff indicated that 28 of those players stayed for three nights and 58 players stayed for four. As with the other visitor spending patterns, spending by training camp participants was modeled using GSA per diem rates. However, GSA rates were adjusted to account for the longer length of stay. In total, visitors to the tryout camp spent roughly \$63,000, 42% of which (\$26,544) went toward lodging expenses and the remainder toward meals and incidentals.

**Table 4. IMPLAN Industry Sectors Used for the Minnesota Wilderness Visitor Spending**

<i>IMPLAN Industry Code</i>	<i>Description</i>	<i>Overnight Visitor Spending</i>	<i>Evening Visitor Spending</i>	<i>Training Camp Spending</i>	<i>Visiting Team Spending</i>	<i>Total Visitor Spending</i>
499	Hotels and motels, inc. casino hotels	\$291,932	--	\$26,544	--	\$318,476
402	Retail - Gasoline stores	\$134,993	\$34,704	\$9,312	\$1,875	\$180,884
501	Full-service restaurants	\$74,168	\$53,213	\$5,105	--	\$132,486
502	Limited-service restaurants	\$74,168	\$53,213	\$5,105	--	\$132,486
503	All other food and drinking places	\$74,168	\$53,213	\$5,105	\$1,875	\$134,361
400	Retail - Food and beverage stores	\$67,890	--	\$4,666	\$1,875	\$74,431
405	Retail - General merchandise stores	\$48,268	--	\$3,327	\$1,875	\$53,470
495	Gambling industries (except casino hotels)	\$19,228	--	\$1,329	--	\$20,557
496	Other amusement & rec. industries	\$19,228	--	\$1,329	--	\$20,557
406	Retail - Miscellaneous store retailers	\$9,811	--	\$669	--	\$10,480
504	Automotive repair and maint, except car washes	\$9,811	--	\$669	--	\$10,480
	<b>Total</b>	<b>\$823,667</b>	<b>\$194,343</b>	<b>\$63,162</b>	<b>\$7,500</b>	<b>\$1,088,672</b>

SOURCE: BBER

Finally, while the majority of visiting team expenses (i.e. lodging, meals) are covered by the Wilderness organization, there are some incidental expenses that were included in modeling, such as retail, groceries, and convenience items. The Wilderness organization estimated that each visiting team will spend around \$500 while in town for an annual estimated total of \$7,500.<sup>10</sup> Table 4 on the previous page shows the full list of IMPLAN sectors and the estimated visitor spending for each sector, based on the information collected from the Wilderness surveys, GSA per diem information, and other relevant literature on tourist spending. These estimates represent the direct inputs used for modeling the impacts of the Wilderness Hockey team's regular and post-season games for the 2015-2016 season. Results of modeling are shown in the following section.

<sup>10</sup> Source: Wilderness representatives

## Findings

This section describes the direct, indirect, and induced economic impacts resulting from the Wilderness Hockey organization's games and operations in Carlton County. Impacts are measured in employment, output, and value added.

**Table 5. Total Economic Impact of the Wilderness Hockey Organization on Carlton County**

<i>Impact Type</i>	<i>Employment</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Operations	12	\$349,973	\$626,939	\$1,286,002
Games	17	\$321,361	\$536,557	\$1,124,210
Total Effect	29	\$671,334	\$1,163,496	\$2,410,212

*SOURCE: IMPLAN, 2016*

Table 5 depicts the combined total economic effects of the Wilderness games and operations on Carlton County. The far left column, Employment, is an estimate of the number of new jobs created and supported by the team's games and operations. It is important to note that this estimate is in terms of jobs created and does not necessarily represent full-time equivalent employees. These jobs may include full- or part-time, temporary, or short-term positions. From the results produced by this analysis, an estimated total of 29 new jobs in Carlton County can be attributed to spending by the Wilderness organization, with 12 coming from the team's operational spending and an additional 17 jobs resulting from increased visitor spending at the team's games and tryout camp.

Labor Income, the column to the right of Employment, is the estimated compensation of all employees, including wages, benefits, and proprietor income. During the 2015-2016 hockey season, this model estimated that the Wilderness organization contributed roughly \$671,000 to wages and benefits in the county, of which almost \$350,000 was the result of the team's operational expenditures and the remainder was the result of increased visitor spending from fans and the team's regular and post-season games and camp.

The next column, labeled Value Added, represents the estimated contribution to the county's gross regional product (GRP) made by an individual producer, industry, or sector. This impact includes additional employee compensation, taxes on production and imports, and gross operating surplus across the local economy due to visitors' spending. In the 2015-2016 season the Wilderness Hockey team contributed nearly \$1.2 million in Value Added impact to Carlton County's economy, with more than \$626,000 coming from the organization's operations, and an additional \$537,000 from visitor spending at the team's games.

The far right column shows Output, the total value of all local industry production. According to modeling results, it is estimated that the organization increased local output by a total of approximately \$2.4 million.



## Team Operations

Table 6. Wilderness Operations Impact Details (2015-2016 Season)

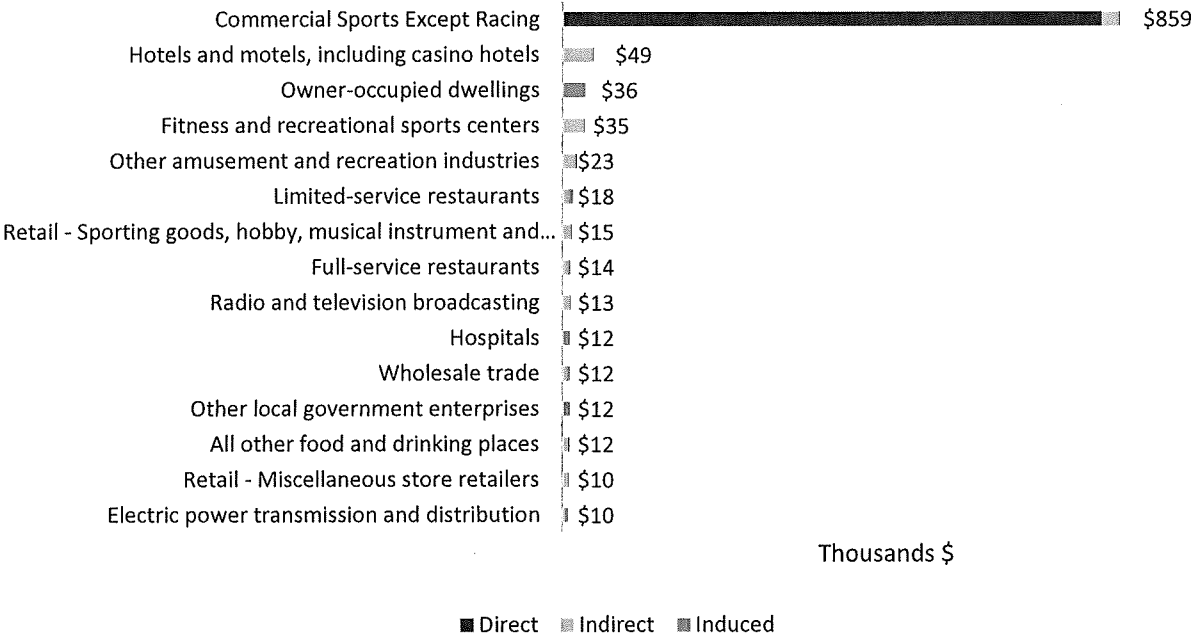
<i>Impact Type</i>	<i>Employment</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct Effect	6	\$234,870	\$418,039	\$830,393
Indirect Effect	5	\$71,656	\$120,821	\$281,567
Induced Effect	1	\$43,447	\$88,079	\$174,042
Total Effect	12	\$349,973	\$626,939	\$1,286,002

SOURCE: IMPLAN, 2016

Table 6 shows the detailed economic impacts of the Wilderness Hockey team's operating expenses on Carlton County. The inputs provided by the Wilderness Hockey organization (Figure 4, page 5) represent the direct effects and are the basis for quantifying the full economic effects of the project. In this case, the average annual operating budget for the team in 2015, roughly \$830,000, represents direct Output, as shown above in Table 6. The six Wilderness staff and their wages and payroll taxes (\$235,000) are represented as direct employment and labor income.

It is estimated that 12 jobs are supported each year in Carlton County as a result of the organization's operations. The Indirect Effect (\$282,000 in industry spending and 5 supported jobs) shows the measurement of increased spending between commercial, government, and service industries as a result of the direct effects. Induced Effect (\$174,000 in household spending and 1 job) 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 7. Top 15 Industries Impacted by Minnesota Wilderness Operations in Carlton County, by Total Output**



SOURCE: IMPLAN, 2016

Figure 7 shows the top 15 industries impacted by operations of the Minnesota Wilderness. Commercial Sports Except Racing is the industry most impacted, as the organization’s direct expenditures fall into that category. Other impacted industries included Hotels and Motels, Owner-Occupied Dwellings, and Fitness and Recreational Sports Centers.

Comparing these results to Figure 2 (page 2), showing total output for all Leisure and Hospitality industries in Carlton County, it is possible to see the relative impact that the Wilderness has on each industry, as compared with overall output county-wide. Overall, the economy of Carlton County sees \$3.5 million in output from the Commercial Sports industry, while an estimated \$859,000 of that total is the result of the Wilderness organization, as shown in Figure 7. Therefore, it is estimated that the Wilderness organization was responsible for nearly 25% of the total output for the industry in Carlton County.

## Visitor Spending

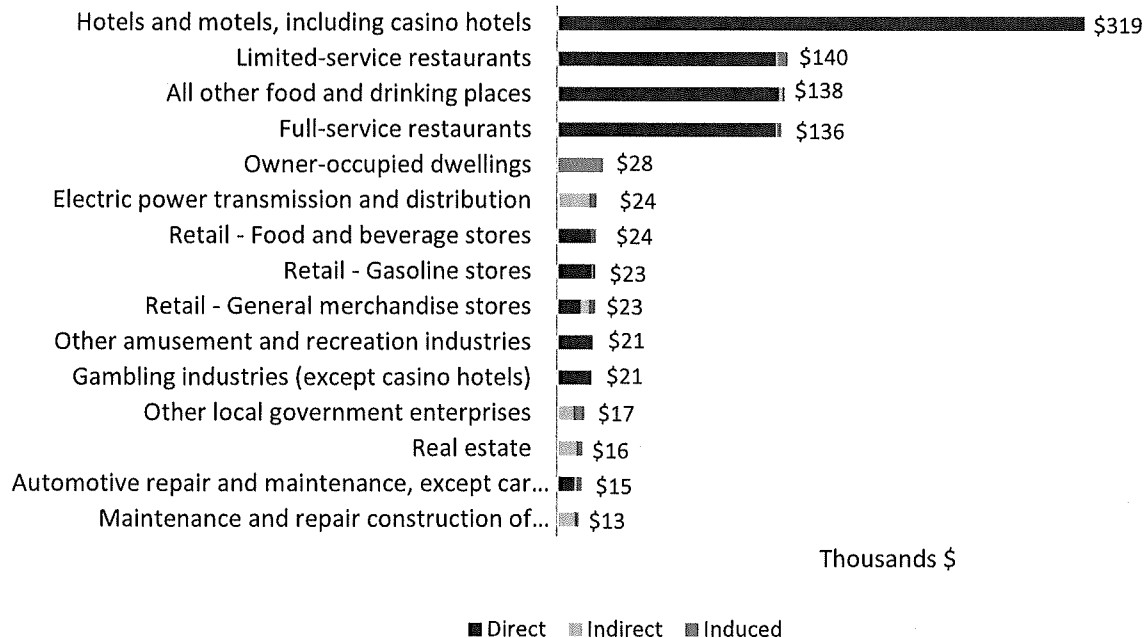
**Table 7. Wilderness Games Impact Details (2015-2016 season)**

<i>Impact Type</i>	<i>Employment</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct Effect	15	\$245,507	\$404,307	\$829,690
Indirect Effect	1	\$42,707	\$64,954	\$161,771
Induced Effect	1	\$33,147	\$67,296	\$132,749
Total Effect	17	\$321,361	\$536,557	\$1,124,210

SOURCE: IMPLAN, 2016

Detailed impacts resulting from the Wilderness Hockey games and camps are shown in Table 7. Impacts from increased visitor spending represent a slightly smaller portion of the total economic impacts. It is estimated that the direct impact of increased visitor spending in the county as a result of the team's home games (\$830,000)<sup>11</sup> would equate to roughly 15 additional workers in the study area, \$246,000 in new wages, and \$404,000 in additional value added spending. These direct effects, through increased industry and household spending contribute to a total effect, annually, of 17 workers, \$321,000 in new wages, and \$1.1 million in additional spending.

**Figure 8. Top 15 Industries Impacted by Wilderness Games in Carlton County, by Total Output**



SOURCE: IMPLAN, 2016

<sup>11</sup> Retail spending is subject to margining and is the reason that the total direct spending shown in Table 7 is different than what was originally seen in Table 4, page 11. For more information on margins, see the "Margins" definition in Appendix A.

Figure 8 on the previous page shows the top 15 industries impacted by visitor spending in Carlton County, by total output. The industries in red (e.g. Hotels and Motels, Full- and Limited-Service Restaurants, All Other Food and Drinking Places) all represent direct spending by visitors to Carlton County as a result of Wilderness Hockey games. These industries are primarily in the Hospitality and Retail sectors. The remaining industries most impacted by Wilderness games (e.g. Owner-Occupied Dwellings, Electric Power Transmission, Other Local Government, Real Estate) ranked high because of the indirect and induced spending from visitors. This shows the impact the ripple effect of direct spending can have on backward-linked industries and on an economy as a whole.

## Conclusion

During the 2015-16 season, the Minnesota Wilderness hockey team hosted 30 regular season games and four playoff games between September and May. On average, each game drew more than 1,300 fans, local and visiting, along with coaches, parents, and other family members, many from outside Carlton County. In total, it is estimated that combined attendance at all regular and post-season games topped 46,000 during the 2015-2016 season. In addition, the team employed six staff members and had an annual operating budget of roughly \$830,000.

Using inputs from the organization and other external sources, including relevant tourism studies and the GSA's per diem rates, the BBER estimated that the team increased local output in Carlton County by a total of approximately \$2.4 million. Of that total impact, \$1.3 million was the result of the team's operations and over \$1.1 million came from new spending by fans attending the team's regular and post-season games.

In addition, 29 new jobs were created by the organization directly and indirectly. Roughly half of these jobs came from operational spending, in industries such as Fitness and Recreational Sports and Retail. The other half, resulting from visitor spending, was created primarily in industries related to Leisure and Hospitality, including Hotels, Restaurants, and Bars.

The direct impacts of the Wilderness operations are slightly larger than the direct impacts from its games and the economic multipliers are larger as well, meaning they have a larger ripple effect through the economy. The Wilderness's operational spending contributed \$830,000 directly to the county's economy and resulted in an overall effect of \$1.28 million, which equates to an economic output multiplier of 1.54. This means that every dollar the Wilderness organization spent through its operations generated \$1.54 in the local economy: the original dollar and an additional \$0.54. Comparatively, the multiplier for visitor spending resulting from the team's games is 1.35. Similarly, the Wilderness organization employs six individuals, and an additional 6 jobs are created as a result of indirect or induced spending from the organization. This equates to an employment multiplier of 2.0. Comparatively, the employment multiplier from visitor spending was 1.2. This highlights the impact that the organization has in the county, over and above the benefits that the region sees from the team's games.

A sizeable portion of the revenue in some local leisure and hospitality industries can be attributed to the Wilderness organization and its visiting fans. As shown, Wilderness operations contributed roughly \$859,000 in spending to the Commercial Sports industry, and this value represented nearly 25% of the total output for that industry in Carlton County. Similarly, visitor spending on the part of Wilderness fans contributed roughly \$319,000 in the lodging industry, or about 6% of the \$5 million lodging industry in the study area, and \$414,000 in new spending at local restaurants, or about 1% of the local restaurant industry.

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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.<sup>12</sup>

**Billet:** A residence of a non-family member used for temporary housing.

**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.

**Margins:** The value of the wholesale and retail trade services provided in delivering commodities from producers' establishments to purchasers. Margin is calculated as sales receipts less the cost of the goods sold. It consists of the trade margin plus sales taxes and excise taxes that are collected by the trade establishment. (BEA)

**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.

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<sup>12</sup> IMPLAN, 2016

## Appendix B. IMPLAN Assumptions

The following are suggested assumptions for accepting the impact model:<sup>13</sup>

**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 assumption assumes that an industry must double its inputs (including both purchases and employment) to double its output. In many instances, an industry will increase output by offering overtime, improving productivity, or technology.

**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.

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<sup>13</sup> Bureau of Economic Analysis [https://www.bea.gov/papers/pdf/WP\\_IOMIA\\_RIMSII\\_020612.pdf](https://www.bea.gov/papers/pdf/WP_IOMIA_RIMSII_020612.pdf)