

# THE ECONOMIC IMPACT OF LOCAL HOCKEY AND CURLING PROGRAMS ON LAKE COUNTY, MINNESOTA

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**BUREAU OF BUSINESS AND  
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## Research Team

**UMD Labovitz School of Business and Economics  
Bureau of Business and Economic Research**

Monica Haynes, Director

Gina Chiodi Gensing, Editor/Writer

Erin Hopkins, Undergraduate Research Assistant

D’Lanie Perry, Undergraduate Research Assistant

Bureau of Business and Economic Research

1318 Kirby Drive, LSBE 330

Duluth, MN 55812

(218) 726-7895

[z.umn.edu/bber](http://z.umn.edu/bber)

### **Project Contact**

Janelle Jones, Executive Director

Lovin’ Lake County

1328 Highway 61

Two Harbors, Mn 55616

[Janelle@lovinlakecounty.com](mailto:Janelle@lovinlakecounty.com)

218-391-5081

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## Executive Summary

The Two Harbors Youth Hockey Association (THYHA) and Silver Bay Youth Hockey (SBYH) are the governing organizations of youth hockey in the cities of Two Harbors and Silver Bay, respectively. Children ages six through 14 are eligible to participate in the two organizations. The sport of curling—both recreational and competitive—is offered to the community by the Two Harbors Curling Club (THCC).

The Bureau of Business and Economic Research (BBER) at the University of Minnesota Duluth’s Labovitz School of Business and Economics was contacted by Lovin’ Lake County—the county’s official marketing organization—to conduct a study on the economic impacts of the THYHA organization, SBYHA organization, and Two Harbors Curling Club and the economic benefits that they provide through their operations and tournaments to Lake County. For this report, Lake County hockey and curling includes all THYHA’s and SBYHA’s youth games and tournaments, the North Shore Storm high school hockey program (which uses both the Lake County and Rukavina arenas), and THCC’s weekly leagues, bonspiels (curling tournaments), and rentals.

The organizations’ representatives provided game and tournament schedules for the most recent season (2021-22) as well as the number of participating teams and the length of each tournament.

In 2021-22, Lake County saw 401 visiting teams, 5,423 players, 988 coaches, and 12,204 spectators during the 2021-22 season because of its youth hockey and curling programs, for a total of 18,615 visitors.

These visitors are thought to have spent over \$2.3 million in the county on lodging, restaurants, gasoline, and other items.

Specifically, THYHA games and tournaments brought 161 teams to Lake County from around the state, equating to nearly 10,000 players, coaches, and spectators. SBYH brought 178 teams, equating to more than 8,000 visitors during the 2021-22 season.

Two Harbors Curling Club is estimated to have generated more than \$100,000 in revenue for the study area economy through hosted tournaments and games during the 2021-22 season.

Table 1 shows the total economic impacts for Lake County hockey games, tournaments, and curling events played within the study area. According to results of modeling, visitors coming to the study area for the purpose of Lake County curling and hockey supported 29 jobs in 2021-22. Visitor spending from hockey and curling tournaments and games also supported over \$800,000 in wages and benefits, nearly \$1.3 million to the study area’s gross regional product, and more than \$2.3 million in output in 2021-22, through direct, indirect, and induced effects.

**Table 1. Total Impact per Organization, in Thousands of Dollars**

Impact	Employment	Labor Income	Value Added	Output
Two Harbors Youth Hockey Association	12	\$333.3	\$533.4	\$980.0
Silver Bay Youth Hockey Association	16	\$436.6	\$704.7	\$1,281.3
Two Harbors Curling Club	1	\$34.5	\$55.4	\$101.1
<b>Total</b>	<b>29</b>	<b>\$804.4</b>	<b>\$1,293.6</b>	<b>\$2,362.6</b>

SOURCE: IMPLAN



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# The Economic Impact of Local Hockey and Curling Programs on Lake County, Minnesota

## Project Description

The North Shore cities of Two Harbors and Silver Bay, which are both located in Lake County, have organizations that offer youth hockey and curling programs. The Two Harbors Youth Hockey Association (THYHA) and Silver Bay Youth Hockey (SBYH) are the governing organizations of youth hockey in the cities of Two Harbors and Silver Bay, respectively. They provide boys and girls ages six through 14 the opportunity to play the sport of hockey in a way that is safe, fun, and competitive while also being educational and affordable. The Two Harbors Curling Club (THCC), which began in 1963, offers the community recreational and competitive options for curling.

Lovin' Lake County—the official destination marketing organization for Lake County, Minnesota—contacted the Bureau of Business and Economic Research (BBER) at the University of Minnesota Duluth's Labovitz School of Business and Economics to estimate the economic impact of the county's two youth hockey programs and the curling club. The geographic scope for this economic impact analysis is Lake County in Minnesota (see Figure 1). The BBER used visitor spending for the three organizations to model the economic impacts on the county.

The report is organized in the following manner. The Lake County Hockey and Curling section provides the aggregated economic impacts for all three programs, and the remaining three sections show the economic impacts that are attributable to each individual program.

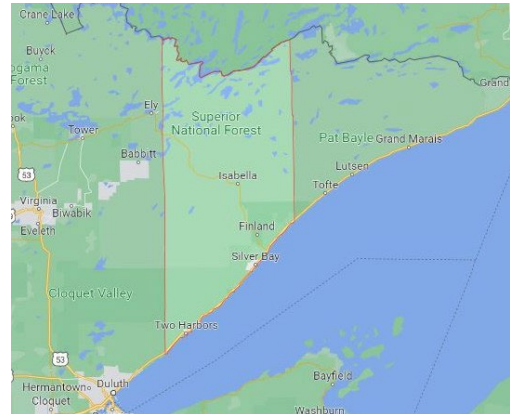
## Lake County Hockey and Curling

This section describes the combined economic impacts of Lake County's youth hockey and curling programs. The three programs provide economic benefits to the county by bringing visitors to the region thereby increasing spending in the local economy. The research team calculated the direct benefits using the total number of tournaments and games for each of the three programs, the number of annual visitors (including players, coaches, and spectators),<sup>1</sup> and estimated spending patterns for each visitor type, based upon duration of stay.

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<sup>1</sup> The economic impact attributable to the Lake County tournaments and games relates only to new money injected into the study area's economy by visiting attendees. Expenditures by study-area residents represent only a recycling of money that already exists in the local economy. Most likely, if local hockey players and their families did not spend their money because of their participation in the local tournaments and games, they would have spent it elsewhere in the study area.

**Figure 1. Two Harbors, Minnesota**



*SOURCE: GOOGLE MAPS*

The direct economic benefits were also used to model the economic impacts—direct, indirect, and induced—of the hockey and curling programs on other supporting local industries. See Figure 2 on page 5.

Throughout the project, the BBER worked closely with each of the three organizations to ensure the accuracy of the assumptions and resulting models.

### ***Direct Benefits***

The Two Harbors Youth Hockey Association (THYHA), Silver Bay Youth Hockey (SBYH), and Two Harbors Curling Club (THCC) provided data on the number of teams that attended each tournament or game and estimated the average number of players, coaches, and spectators that accompanied each team. Using the numbers provided, the BBER projected the total number of visitors for the 2021-22 season, shown in Table 2.

**Table 2. Total Tournament and Game Attendance**

<i>Organization</i>	<i>Teams</i>	<i>Players</i>	<i>Coaches</i>	<i>Spectators</i>	<i>Total Visitors</i>
Two Harbors Youth Hockey Association	161	2,648	475	6,624	9,747
Silver Bay Youth Hockey	178	2,467	513	5,548	8,528
Two Harbors Curling Club	62	308	0	32	340
<b>Total</b>	<b>401</b>	<b>5,423</b>	<b>988</b>	<b>12,204</b>	<b>18,615</b>

*SOURCE: THYHA, SBYHA, THCC*

As shown in the table, Lake County saw 401 visiting teams, 5,423 players, 988 coaches, and 12,204 spectators during the 2021-22 season because of its youth hockey and curling programs, for a total of 18,615 visitors. Detailed tournament and game attendance numbers for each program are shown later in the report.

Depending on the type of game or tournament, visitors typically fall into one of three travel scenarios—overnight, day, or evening—as shown in Table 3 on the following page. Visitors were categorized into one of the three scenarios based on the type of event (e.g., weeknight game, weekend tournament, or bonspiel) and the visiting team’s distance from Lake County.

Any visitors coming for a tournament or bonspiel were assumed to be overnight visitors (24-hour visit and three meals) unless they were traveling from the Duluth-Superior region. Teams coming from Duluth-Superior for tournaments were assumed to come to the tournament for a full day (12-hour visit and two meals) but not spend the night, whereas visitors coming from Duluth-Superior for a game were assumed to spend an evening (6-hour visit and half of one meal).

Visitors coming for weekend tournaments were counted once for each day of the tournament. For example, an overnight visitor that spends two 24-hour periods in Lake County would be counted twice. Or a visitor that comes for two full days but does not spend the night would be counted twice in the “Day” category. Hence, the column labeled “visitor days” estimates the total number of days or evenings each visitor spent in Lake County and double-counts individuals who visited Lake County for multiple days.

Therefore, scenarios are:

Overnight: 24-hour visit

Day: 12-hour visit

Evening: 6-hour visit

The research team estimated the total spending per visitor for each instance of travel using similar research

studies done within the study area.<sup>2</sup> Of the three travel scenarios, overnight guests spent the most money during their stay—about \$165 per visit—largely because of spending on lodging. Day visitors spent roughly \$50 per visit, whereas evening visitors spent about \$20.

**Table 3. Current Total Amount Spent per Tournament/Game**

<i>Travel Scenario</i>	<i>Total Visitors</i>	<i>Visitor Days</i>	<i>Spending per Visitor</i>	<i>Total Spending in Thousands</i>
Evening	7,414	8,990	\$19.63	\$176.5
Day	4,681	7,713	\$52.68	\$406.3
Overnight	6,520	10,830	\$163.45	\$1,770.2
Total	18,615	27,533		\$2,353.0

\*Totals may not sum due to rounding

*SOURCE: THYHA, SBYHA, THCC*

By combining tournament, game, and attendance estimates with the three travel scenarios, the research team was able to estimate the total amount of money spent by Lake County hockey and curling visitors during the 2021-22 season. Table 3 above shows, for each travel scenario, the estimated number of visitors, spending per visitor, and the total spent.

In total, during the 2021-22 season, Lake County saw more than 18,000 visitors who spent more than 27,000 days in the county because of its hockey and curling programs. These visitors are thought to have spent more than \$2.3 million in the county on lodging, restaurants, gasoline, and other items.

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<sup>2</sup> Studies used in determining visitor spending can be found in Appendix D, References.



## ***Economic Impacts***

Economic impact analysis tracks an initial economic shock or activity (like the direct spending of visitors to Lake County) through multiple rounds of industry and consumer spending to show the multiplier or ripple effects through a local economy. The initial shock or activity is considered the direct effect, the resulting increase in industry spending is the indirect effect, and the resulting increase in consumer spending is the induced effect. This section summarizes the economic impacts for the Lake County hockey and curling programs, using visitor spending as inputs for modeling. Results are measured in employment, output, labor income, and value added.

The research team used the IMPLAN input-output modeling data and software for modeling economic impacts. The data used was the most recent IMPLAN data available, which is for the year 2019. All data were modeled in the year 2022. All results are shown in thousands of dollars for the year 2022.

Table 4 on the following page shows the economic impacts of visitors to the study area for Lake County hockey and curling related events. The column labeled employment shows the number of jobs<sup>3</sup> that visitor spending supports directly and through indirect and induced effects. In 2021-22, the revenue generated from Lake County events supported 29 jobs in the county, either directly or because of indirect or induced effects.

**Table 4. Economic Impacts from Lake County Hockey and Curling Programs, in Thousands of Dollars**

<i>Impact</i>	<i>Employment</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct	26	\$679.5	\$1,060.4	\$1,841.9
Indirect	2	\$62.4	\$103.1	\$277.2
Induced	2	\$62.5	\$130.1	\$243.5
Total	29	\$804.4	\$1,293.6	\$2,362.6

\*Totals may not sum due to rounding

*SOURCE: IMPLAN*

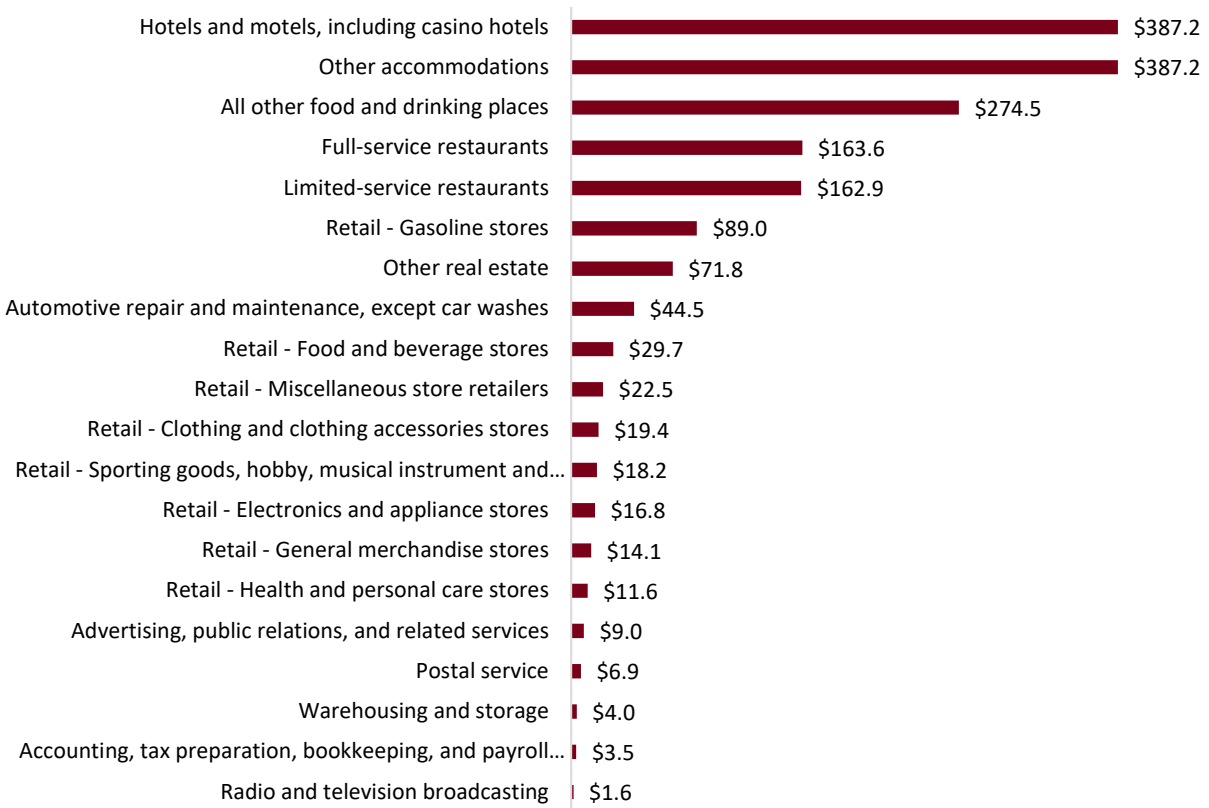
The column labeled labor income is the total of all employee compensation. This includes wages, benefits, and payroll taxes. In 2021-22, the visitor spending from tournaments and games added over \$800,000 in wages and benefits to individuals in the study area, either directly or indirectly. The column labeled value added refers to the contribution to gross regional product (GRP) made by an individual producer, industry, or sector. Value added includes employee compensation, proprietor income, and other property income and taxes. In total, Lake County hockey and curling visitor spending contributed almost \$1.3 million to the study area's GRP in 2021-22. Output, the last column in the table, is the total value of all local production required to sustain activities. In 2021-22, visitor spending contributed more than \$2.3 million in output.<sup>4</sup>

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<sup>3</sup> IMPLAN reports jobs in terms of workers, both full- and part-time, not in terms of FTE.

<sup>4</sup> Due to margining, the direct effects shown in Table 3 are somewhat lower than the direct economic benefits estimated in Tables 3 and 4. In the IMPLAN model, retail industries have margins on their goods, and only a portion of each sale is introduced into the local economy. A retail sales 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.

**Figure 2. Impact Output by Industry, in Thousands of Dollars**



*SOURCE: IMPLAN*

Figure 2 shows the 20 industries that benefit the most from Lake County’s hockey and curling programs, as measured by output (or total spending). Of the top 20 industries in the study area, 14 are related to hospitality and tourism. These industries include restaurants (full service and limited service), food and drinking places, retail (general merchandise, food and beverage, miscellaneous, and clothing stores), and hotels/motels.

Hotels and motels (including casino hotels and other accommodations) had the largest output in the study area, with nearly \$400,000 in output supported by the local hockey and curling programs. For reference, the amount of spending that is supported by the Lake County hockey and curling programs represents more than 10% of all revenue in the accommodations industry county-wide.

## Two Harbors Youth Hockey Association

The Two Harbors Youth Hockey Association (THYHA) oversees the operations of the Lake County Arena, which is owned by Lake County and located in Two Harbors. The arena—which was built in 1966 and can accommodate 2,500 spectators—includes one indoor ice sheet and another natural sheet located behind the arena. Additionally, the arena is used for a variety of activities during the off season. This section estimates the economic impacts for THYHA specifically through its games and tournaments.

### ***Direct Benefits***

During the 2021-2022 season, THYHA hosted 10 tournaments and more than 70 games. Combined, these events brought a total of 161 visiting hockey teams to the study area. In addition, the North Shore Storm high school team brings visiting teams to the area for their hosted games. In total, THYHA games and tournaments brought 161 teams to Lake County from around the state, equating to almost 10,000 players, coaches, and spectators.

**Table 5. Current Two Harbors Hockey Tournament and Game Attendance**

<i>Event Category</i>	<i>Teams</i>	<i>Players</i>	<i>Coaches</i>	<i>Spectators</i>	<i>Total Visitors</i>
THYHA Games	34	552	96	1,104	1,752
High School Games	28	560	112	1,120	1,792
Hosted Tournaments	79	1,184	207	3,552	4,943
NLPU Games	12	208	36	416	660
Region Tournaments	8	144	24	432	600
Total	161	2,648	475	6,624	9,747

*SOURCE: THYHA*

THYHA games include the games played by the different levels of youth teams (Mites, Squirts, and Peewees) and the North Shore Storm high school games played at the Two Harbors Arena. Two hosted tournaments are offered for Mites, Peewees, Squirts, and girls (12U and 10U, and one Bantam tournament takes place. Nonleague pick-up games are made up of six different levels: 10U, Squirt B, Girls 12U B, Bantam B, Peewee B1, and Peewee B2. Each category of game or tournament, the number of teams, players, coaches, and spectators that attended each game or tournament is shown in a detailed table in Appendix C, Detailed Inputs. The total number of visitors per event category is shown in the last column in Table 5. In total, the research team estimated that 161 teams, 2,648 players, 475 coaches, and 6,624 spectators came to the study area for Two Harbors’ hockey games or tournaments accounting for almost 10,000 visitors during the 2021-22 season.

Table 6 on the next page shows for each event category the estimated number of visitors, spending per visitor, and the total spent. Tournaments hosted by THYHA brought the largest numbers of visitors from outside the study area and the highest total spending of any of the event categories. Two Harbors hockey is estimated to have generated more than \$1.0 million in revenue for the study area economy through hosted tournaments and games during the 2021-22 season.

**Table 6. Current Total Amount Spent per Tournament/Game**

<i>Event Category</i>	<i>Travel Scenario</i>	<i>Total Visitors</i>	<i>Visitor days</i>	<i>Spending per Visitor</i>	<i>Total Spending in Thousands</i>
THYHA Games	Evening	1,752	1,752	\$19.63	\$34.4
High School Games	Evening	1,536	1,536	\$163.45	\$251.1
	Overnight	256	256	\$19.63	\$5.0
Hosted Tournaments	Day	2,539	4,146	\$52.68	\$218.4
	Overnight	2,404	3,304	\$163.45	\$540.0
NLPU Games	Day	660	660	\$52.68	\$34.8
Region Tournaments	Overnight	450	450	\$163.45	\$73.6
	Day	150	225	\$52.68	\$11.9
Total		9,747	12,329		\$1,169.1

\*Totals may not sum due to rounding

*SOURCE: THYHA, BBER*

### ***Economic Impacts***

Table 7 shows the economic impact of visitors to the study area for THYHA. In 2021-22, the revenue from visitors supported 12 jobs in the study area and added over \$300,000 in wages and benefits. Visitor spending contributed more than \$500,000 to the study area's GRP and almost 1.0 million in output.

**Table 7. THYHA Game and Tournament Impact, in Thousands of Dollars**

<i>Impact</i>	<i>Employment</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct	11	\$281.6	\$436.8	\$763.3
Indirect	1	\$25.8	\$42.7	\$115.7
Induced	1	\$25.9	\$54.0	\$101.0
Total	12	\$333.3	\$533.4	\$980.0

\*Totals may not sum due to rounding

*SOURCE: IMPLAN*

# Silver Bay Youth Hockey

The Silver Bay Youth Hockey Association (SBYHA) oversees the operations of the Rukavina Area, which is owned by Lake County and located in Silver Bay. The Rukavina Arena is identical to the arena in Two Harbors with its ice sheets, capacity for seating, and its construction year of 1966. This report section details the estimated economic impacts for SBYHA specifically, through its games and tournaments.

## Direct Benefits

During the 2021-2022 season, SBYHA hosted 13 tournaments, more than 87 games, and a summer league. Combined, these events brought a total of 178 visiting hockey teams to the study area. In addition, the North Shore Storm high school hockey team brings visiting teams to the area for their hosted games. In total, Silver Bay Hockey games and tournaments brought more than 8,000 players, coaches, and spectators.

The inputs required for modeling the current impacts of Silver Bay hockey include the tournament and game schedules, the number of visiting teams (including players, coaches, and spectators) participating in each game and tournament, and estimated spending patterns for each visitor type, based upon duration of stay. Throughout the project, the BBER worked closely with SBYHA to ensure the accuracy of the assumptions and resulting models.

SBYHA provided data on the number of teams that attended each tournament or game and the average number of players, coaches, and spectators for each team. Using the numbers provided, the team estimated the total number of visitors for the 2018-19 season, as shown in [Table 8](#).

**Table 8. Current Silver Bay Hockey Tournament and Game Attendance**

<i>Event Category</i>	<i>Teams</i>	<i>Players</i>	<i>Coaches</i>	<i>Spectators</i>	<i>Total Visitors</i>
SBYH Games	29	373	87	746	1,206
Hosted Tournaments	91	1,184	252	2,982	4,418
High School Games	28	518	84	1,036	1,638
Other Games	30	392	90	784	1,266
Total	178	2,467	513	5,548	8,528

*SOURCE: SBYHA*

SBYHA games include the games played by the different levels of youth teams (Mite, Squirt, Peewee, Bantam, Girls 12U, and Girls 10U). Hosted tournaments consist of two Mite, Squirt, and 12UB as well as one 10U and Peewee B. High school events include the North Shore Storm high school games played at the Rukavina Arena. The last category in the table, Other Games accounts for 30 games played by nine different levels that take place outside of the normal season. For each category of game or tournament, the number of teams, players, coaches, and spectators that attended each game or tournament can be found in Appendix C, Detailed Inputs. The total number of visitors per event category is shown in the last column in Table 8. In total, the research team estimated that 178 teams, 2,467 players, 513 coaches, and 5,548 spectators came to the study area for Silver Bay hockey games or tournaments accounting for more than 8,000 visitors during the 2021-22 season.

By combining tournament and game and attendance estimates with the three travel scenarios, the research team was able to estimate the total amount of money spent by Silver Bay hockey visitors during the 2021-22 season.

Table 9 on the next page shows, for each event category, the estimated number of visitors, spending per visitor, and the total spent. Hosted tournaments bring the largest numbers of visitors from outside the study area and have the highest total spending of any of the event categories. SBYHA hockey is estimated to have generated more than \$1.2 million in revenue for the study area economy through hosted tournaments and games during the 2021-22 season.

**Table 9. Current Total Amount Spent per Tournament/Game**

<i>Event Category</i>	<i>Travel Scenario</i>	<i>Visitors</i>	<i>Visitor Days</i>	<i>Spending per Visitor</i>	<i>Total Spending in Thousands</i>
SBYH Games	Evening	1,206	1,518	\$19.63	\$29.8
Hosted Tournaments	Day	1,232	2,582	\$52.68	\$136.0
	Overnight	3,186	6,372	\$163.45	\$1,041.5
HS Games	Evening	1,638	1,638	\$19.63	\$32.2
Other Games	Evening	1,266	1,266	\$19.63	\$24.8
Total		8,528	13,376		\$1,264.3

\*Totals may not sum due to rounding

SOURCE: SYBHA, BBER

### ***Economic Impacts***

Table 10 shows the economic impact of visitors to the study area for Silver Bay hockey. In 2021-22, the revenue from SBYHA visitors supported 16 jobs in the study area and added more than \$400,000 in wages and benefits. SBYHA visitor spending contributed more than \$700,000 to the study area's GRP and almost \$1.3 million in output.

**Table 10. SBYHA Game and Tournament Impact, in Thousands of Dollars**

<i>Impact</i>	<i>Employment</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct	14	\$368.8	\$578.2	\$999.7
Indirect	1	\$33.9	\$56.0	\$149.5
Induced	1	\$33.9	\$70.5	\$132.0
Total	16	\$436.6	\$704.7	\$1,281.3

\*Totals may not sum due to rounding

SOURCE: IMPLAN

## Two Harbors Curling Club

The Two Harbors Curling Club (THCC) hosts competitions and bonspiels at the local, state, national, and international levels. It also promotes curling at public schools and community education programs and provides a junior curling program. In 2011, it took ownership of its newly constructed facility from the city. During the 2021-22 season, the THCC hosted four bonspiels, a weekly league, and offered curling club rental. Combined, these brought a total of 340 total players and spectators.

### ***Direct Benefits***

The Two Harbors Curling Club provided data on the number of teams that attended each tournament or game and the average number of players on each team and the spectators that accompany each player. Using the numbers provided, the team estimated the total number of visitors for the 2021-22 season, as shown in Table 11 on the following page.

**Table 11. Current THCC Bonspiel and League Attendance**

<i>Event Category</i>	<i>Teams</i>	<i>Players</i>	<i>Coaches</i>	<i>Spectators</i>	<i>Total Visitors</i>
Weekly Leagues	4	16	0	0	16
Bonspiels	48	192	0	32	224
Rentals	10	100	0	0	100
Total	62	308	0	32	340

*SOURCE: THCC*

Curling club events include weekly leagues, bonspiels, and rentals. For each category of game or bonspiel, the number of teams, players, and spectators that attended each game or bonspiel can be found in Appendix C, Detailed Inputs. The total number of visitors per event category is shown in the last column in Table 11. In total, the research team estimated that 62 teams, 308 players, and 32 spectators came to the study area for THCC's leagues or bonspiels accounting for 340 visitors during the 2021-22 season.

By combining tournament and game and attendance estimates with the three travel scenarios, the research team was able to estimate the total amount of money spent by THCC visitors during the 2021-22 season.

Table 12 shows, for each event category, the estimated number of visitors, spending per visitor, and the total spent. Weekly leagues bring the largest numbers of visitors from outside the study area, while visitors for bonspiels have the highest total spending of any of the event categories. THCC is estimated to have generated more than \$100,000 in revenue for the study area economy through hosted tournaments and games during the 2021-22 season.

**Table 12. Current Total Amount Spent per Bonspiel/Game**

<i>Event Category</i>	<i>Travel Scenario</i>	<i>Total Visitors</i>	<i>Spending per Visitor</i>	<i>Total Spending in Thousands</i>
Weekly Leagues	Evening	1,280	\$19.63	\$25.1
Bonspiels	Overnight	448	\$163.45	\$73.2
Rentals	Day	100	\$52.68	\$5.2
Total		1,828		\$103.6

\*Totals may not sum due to rounding

*SOURCE: THCC, BBER*

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University of Minnesota Duluth*

## ***Economic Impacts***

Table 13 on the next page shows the economic impact of visitors to the study area for the THCC. In 2021-22, the revenue from THCC visitors supported 1 job in the study area and added over \$30,000 in wages and benefits. THCC visitor spending contributed more than \$50,000 to the study area's GRP and more than \$100,000 in output.

**Table 13. THCC League, Bonspiel, and Rental Impact, in Thousands of Dollars**

<i>Impact</i>	<i>Employment</i>	<i>Labor Income</i>	<i>Value Added</i>	<i>Output</i>
Direct	1	\$29.2	\$45.4	\$78.9
Indirect	0	\$2.7	\$4.4	\$12.0
Induced	0	\$2.7	\$5.6	\$10.5
Total	1	\$34.5	\$55.4	\$101.4

\*Totals may not sum due to rounding

*SOURCE: IMPLAN*



## Appendix A. Definitions Used in this Report

**Analysis by parts:** The process of splitting or parsing an impact analysis issue into smaller and more specific parts. This technique allows the user to specify the amount of commodity inputs, the proportion of local labor income, and the proportion of local purchases.

**Backward linkages:** The interconnection of an industry to other industries from which it purchases its inputs 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.

**Bonspiel:** A tournament in the sport of curling

**Direct effect:** Initial new spending in the study area resulting from the project

**Economic impact:** The effect of an event on the economy in a specified area, ranging from a single neighborhood to the entire globe. It usually measures changes in business revenue, business profits, personal wages, and/or jobs.

**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.

**Expenditure:** The amount of money spent

**Gross Regional Product (GRP):** The market value of all goods and services produced in a region in a certain time frame (typically a year)

**IMPLAN:** A software system that uses a backward-linkage model which allows a user to develop models that can estimate the economic impact of different varieties such as when a new firm enters a study area, recreation and tourism, development, and more.

**IMPLAN Sector:** Sectors are a way of describing a specific industry. All versions of the sectors are based on NAICS codes.

**Indirect effect:** The additional inter-industry spending from the direct impact. For example, increased sales in linen supply firms resulting from more motel sales would be an indirect effect of visitor spending.

**Induced effect:** The impact of additional household expenditures resulting from the direct and indirect impact. For example, motel employees spend the income they earn from increased tourism on housing, utilities, groceries and other consumer goods.

**Industry:** A group of businesses based on their related primary business activities

**Input:** Information or data that can be operated on by any process or system

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

**Output:** The value of local production required to sustain activities

**Spending pattern:** A set of data describing a particular set of goods and services an individual is likely to buy

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

## Appendix B. Input-Output Modeling

### *Data Sources*

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 2019. All data are reported in 2022 dollars.

Economic impacts are made up of direct, indirect, and induced impacts. The following are suggested assumptions for accepting the impact model: 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.

Regional data for the impact models for value added, employment, and output are supplied by IMPLAN for this impact. Employment assumptions were provided to the model to enable construction of the impact model. From these data, social accounts, production, absorption, and byproducts information were generated from the national level data and was incorporated into the model. All region study definitions and impact model assumptions were agreed on before work with the models began.

### *Modeling Assumptions*

The following are suggested assumptions for accepting the impact model:<sup>5</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

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<sup>5</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)

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.

**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.

**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.

**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 improvements in 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.

**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. Detailed Inputs

A different spending pattern was developed for each travel scenario, as shown in Table 14. Spending patterns were estimated using data from similar research studies done within the study area<sup>6</sup> and reviewed by members of THYHA, SBYHA, and THCC for accuracy.

**Table 14. Spending Pattern for Each Travel Scenario, Averaged per Person**

	<i>OVERNIGHT</i>	<i>DAY</i>	<i>EVENING</i>
Lodging	\$71.51	\$ -	\$ -
Restaurants	\$40.28	\$26.86	\$6.71
Grocery or convenience	\$4.22	\$2.11	\$1.06
Gasoline/fuel	\$23.37	\$11.69	\$5.84
Other transportation costs	\$4.58	\$2.29	\$1.15
Shopping	\$13.14	\$6.57	\$3.29
Miscellaneous spending	\$6.34	\$3.17	\$1.59
Total spending	\$163.45	\$52.68	\$19.63

\*Totals may not sum due to rounding

*SOURCE: BBER*

The largest expense for overnight guests is lodging, which represents roughly half of their total spending. The restaurant category represents the largest portion of day visitors' spending. Keep in mind that actual spending by individual visitors can vary significantly from this estimate due to choices in lodging, restaurants, retail stores, etc. and that the estimates in the table represent the average of all visitors.

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<sup>6</sup> Studies used in determining visitor spending can be found in Appendix D, References.

## Appendix D. References

- Erkkila, Daniel L. and Xinyi Qian, "Assessing the Annual Economic Impact of the Grand Rapids IRA Civic Center." (2015) <https://conservancy.umn.edu/handle/11299/169869>
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