

Thunder Bay National Marine Sanctuary: An Analysis of Visitors and Residents at the Great Lakes Maritime Heritage Museum and Alpena Shipwreck Tours



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A diver swims near the wreck of *D.M. Wilson*. Photo: David J. Ruck/NOAA





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Table of Contents

.....	i
Table of Contents	3
Abstract.....	5
Key Words.....	5
Executive Summary	6
CHAPTER 1: INTRODUCTION.....	9
Thunder Bay National Marine Sanctuary.....	9
Sampling Methodology	10
CHAPTER 2: SCREENER RESULTS.....	13
Introduction.....	13
User Activities.....	13
User Satisfaction	14
User Demographics	17
Age	17
Gender.....	17
Group size.....	18
Modes of Transportation	18
Sources of Information.....	18
Importance of the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours	20
Open-Ended Questions.....	20
CHAPTER 3: TESTING FOR DIFFERENCES IN SCREENER AND MAILBACK RESULTS.....	22
Introduction.....	22
Non-Response Bias for Satisfaction Survey.....	22
CHAPTER 4: WEIGHTING DATA BY LOCATION.....	26
CHAPTER 5: PERSON-DAYS.....	29
Outlier Analysis	29
Person-Day Analysis	30
CHAPTER 6: IMPORTANCE/SATISFACTION.....	36
Importance-Satisfaction Mean Ratings	38
Resident Four Quadrant Analysis	45
Visitor Four Quadrant Analysis.....	46
CHAPTER 7: EXPENDITURES	48
Expenditures Per Person-Trip and Total Annual Expenditures.....	48
Expenditures Per Person-Day	49
CHAPTER 8: ECONOMIC CONTRIBUTIONS.....	60
Study Area	60
IMPLAN	60
Economic Contributions by Study Area.....	61
CHAPTER 9: PROFILES OF USERS.....	65



Influence of TBNMS, the Great Lakes Maritime Heritage Center, and/or Alpena	
Shipwreck Tours on Decisions	65
Household Size	66
Age	66
Gender	67
Race	67
Ethnicity.....	67
Income	67
Employment Status	68
LITERATURE CITED.....	69
GLOSSARY OF ACRONYMS.....	70
APPENDIX A: SURVEYS	71
Resident On-Site Survey	71
Visitor On-Site Survey	74
Mailback/Online Survey.....	77



Abstract

This is the technical appendix for the results of surveys conducted in 2018 by the National Marine Sanctuary Foundation at two venues associated with Thunder Bay National Marine Sanctuary: the Great Lakes Maritime Heritage Center (the sanctuary's visitor center) and Alpena Shipwreck Tours (a glass-bottom boat that operates in the sanctuary). Respondents were intercepted at both venues, asked to complete a short survey, and then recruited to complete a longer survey about the importance and satisfaction of various characteristics of their experience, their expenditures, and the activities they did while in the region. Using these data, the economic contributions of those who visited the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours are also estimated.

Key Words

Thunder Bay National Marine Sanctuary, maritime heritage, shipwrecks, economic effect, economic contribution

Executive Summary

In 2018 the National Marine Sanctuary Foundation conducted pilot surveys at two venues associated with Thunder Bay National Marine Sanctuary (TBNMS): the Great Lakes Maritime Heritage Center (the sanctuary's visitor center) and Alpena Shipwreck Tours (a glass-bottom boat that operates in the sanctuary). The survey took place from June 2018 to October 2018. Respondents were intercepted at both venues, asked to complete a short screener survey, and then recruited to complete a longer survey about the importance and satisfaction of various aspects of their experience, their expenditures, and the activities they participated in while in the region. Although the survey does not sample all users of TBNMS, this report does provide a representative snapshot of the larger user population, both residents of the region/study area (Alpena, Presque Isle, and Alcona counties) and visitors to the area.

Respondents intercepted at the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours for the short screener survey were then recruited into a longer survey implemented via mail or SurveyMonkey, an online survey platform. The response rate for the on-site short screener was roughly 90% (992 people intercepted), and roughly 35% (of the 891 respondents who completed the screener and opted into the mail survey) completed the longer survey. Roughly 56% of visitors to the region (Alpena, Presque Isle, and Alcona counties) reported that it was their first time visiting the area and 48% of visitors reported that the Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours had “a lot” of influence on their decision to travel to the region. On average visitors took 1.86 trips annual to the region. About 97.5% of visitors reported that they were “likely” or “very likely” to recommend Alpena Shipwreck Tours and 98.5% of visitors reported they were “likely” or “very likely” to recommend the Great Lakes Maritime Heritage Center. All residents reported they were “likely” or “very likely” to recommend Alpena Shipwreck Tours and Great Lakes Maritime Heritage Center.

A higher portion of residents, 94.6%, are likely or very likely to visit Alpena Shipwreck Tours again compared to 79.5% of visitors. About three-quarters (76.8%) of visitors are likely or very likely to visit the Great Lakes Maritime Heritage Center again, while 98.0% of residents are likely to visit the Great Lakes Maritime Heritage Center again. Over 15% of visitors reported that they were unlikely or very unlikely to visit the Great Lakes Maritime Heritage Center again. After visiting the Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours, roughly 60% of residents indicated they were very likely to learn more about the sanctuary. Slightly less than half, 40%, of visitors indicated they were very likely to learn more about TBNMS. This suggests that the interpretive and educational activities at Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours are successful in engaging users to learn more about TBNMS.

Findings from the longer survey include information about demographics, number of days spent in the region, attitudes and perceptions, and expenditures of respondents. On

average residents of the region spent 7.9 days vacationing in Michigan and 7.3 of those days within the region. Visitors spent 5.5 days vacationing in Michigan and 2.9 of those days in the region. For the sample, the highest participation rate in any activity was visiting the Great Lakes Maritime Heritage Center, at 93.1% of the sample visiting. The second two most common activities were [visiting] beaches/swimming and hiking, with participation rates of 25.9% and 22.4%, respectively. The most common locations to visit were the Great Lakes Maritime Heritage Trail, the New Presque Isle Lighthouse, and the Old Presque Isle Lighthouse with participations rates of 41.6%, 23.3%, and 21.8%, respectively.

Respondents were also asked about the various attributes of their experience in the region, at Great Lakes Maritime Heritage Center and on Alpena Shipwreck Tours. They rated how important and satisfied they were with 26 different items.

The items that visitors ranked as most important were:

- Preservation of lighthouses,
- welcoming and friendly staff at the Great Lakes Maritime Heritage Center, and
- welcoming and friendly staff at Alpena Shipwreck Tours.

The items with the highest level of satisfaction for visitors were;

- The Great Lakes Maritime Heritage Center was engaging to the children in my group,
- welcoming and friendly staff at the Great Lakes Maritime Heritage Center, and
- welcoming and friendly staff at Alpena Shipwreck Tours.

For visitors, welcoming and friendly staff at both the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours was important and they were satisfied with the level of engagement at the Great Lakes Maritime Heritage Center for the children. This is not surprising, as visitors travelled with an average of 2.1 children in their group (compared to 0.8 for residents).

The analytical framework provided in importance-satisfaction analysis allows for a four-quadrant presentation. The four quadrants are formed by first placing the importance measurement on the vertical axis and the satisfaction measurement on the horizontal axis (see Figure 6.1). This allows for interpretation as to the relative importance and relative satisfaction of each item. The use of the four quadrants provides a simple but easy-to-interpret summary of results. The four quadrants are “Concentrate Here,” “Keep up the Good Work,” “Low Priority,” and “Possible Overkill.”

For residents, some of the items that were categorized as “Keep up the Good Work” were:

- Visibility of shipwrecks while diving and snorkeling
- Narration on Alpena Shipwreck Tours
- The Alpena Shipwreck Tour was engaging to the children in my group



For visitors, some of the items that also fell into the “Keep up the Good Work” category were:

- Information and stories about shipwrecks and maritime history in museums
- Public access to Lake Huron (trails, boardwalks, beaches, and boat launches)
- Public access to parks and other natural areas

The report also analyzed the expenditures of respondents. The per-person per-day trip expenditures were highest for lodging (\$14.68), followed by food and beverage (\$12.89), sightseeing tours (including Alpena Shipwreck Tours) (\$5.30), and gasoline (\$4.76). Total expenditures in the study region by those who used the Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours are \$32.4 million annually.

Using IMPLAN, an input-output modeling software, this spending can be traced through the local economy to understand how jobs, income, GDP and tax generation are supported. In total, 467 jobs are supported by those who come to the region to visit the Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours annually. Further, \$14.8 million in labor income and \$40.0 million in output is supported by these activities each year. Local, state, and federal tax dollars generated from the spending can also be estimated. Annually, \$4.0 million of local and state tax dollars were generated and \$3.3 million in federal tax dollars were generated. These tax dollars represent all payments to the government (such as payroll taxes, sales taxes, taxes on the production of goods and services, property taxes, etc.).

When considering whether either TBNMS or the Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours had an influence on the respondent’s decision to come to the region, roughly 19.6% of residents reported that neither had an influence on their decision. The rate was slightly lower for visitors; 18.2% indicated that neither influenced their decision to come to the region. This means that for both residents and visitors, over 80% were influenced by at least one of the above to come to the region. This is important when thinking about the economic contributions of users to the region. The sanctuary, Great Lakes Maritime Heritage Center, and/or Alpena Shipwreck Tours influence their decision to come to the region and spend money.

CHAPTER 1: INTRODUCTION

Thunder Bay National Marine Sanctuary

Thunder Bay National Marine Sanctuary is a 4,300 square mile national marine sanctuary located in northwestern Lake Huron. The sanctuary is dedicated to protecting and preserving a nationally-significant collection of shipwrecks. Thunder Bay and the surrounding area have claimed over 200 vessels from fire, ice, collisions, and storms; over 100 shipwrecks have been identified within the sanctuary.

The sanctuary's headquarters is in Alpena, Michigan. The maritime landscape of northeastern Michigan includes hundreds of shipwrecks located within the Lake Huron. The region is composed of a rich maritime culture including lifesaving stations, lighthouses, historic boats and ships, and archaeological features.

NOAA's Great Lakes Maritime Heritage Center is located in Alpena and attracts approximately 60,000 visitors annually. It has exhibits showcasing the rich cultural maritime history of the area, including a full-size replica of the shipwreck *Century*, a theater showing films daily, an archaeological conservation lab, a shipwreck artifact gallery, and a gift shop.

Another attraction centered on the shipwrecks of TBNMS is Alpena Shipwreck Tours. Alpena Shipwreck Tours provides customers with a unique opportunity to view shipwrecks within the sanctuary aboard their glass-bottom boat. The combination of Lake Huron's crystal-clear waters and the glass-bottom boat allow riders to view the shipwrecks from the comfort of a boat without getting wet. Alpena Shipwreck Tours operates from May to October, weather permitting.

Often, those who visit the Great Lakes Maritime Heritage Center also explore the shipwrecks through Alpena Shipwreck Tours. These two activities revolve entirely around the sanctuary and its protected shipwrecks. For that reason, these two activities were selected to survey users to better understand who is using the sanctuary (both directly and indirectly), if and how the sanctuary supports the local economy, and what the users' attitudes and perceptions are toward the sanctuary, its resources, and the local region.

The local region, for the purposes of this report, is composed of Presque Isle, Alpena, and Alcona counties (Figure 1.1). This is consistent with past studies that have used this study area for Thunder Bay National Marine Sanctuary (University of Michigan, 2013). It is worth noting that future work will seek to survey the entire population of users, including those who visit the sanctuary but do not visit the Great Lakes Maritime Heritage Center

or Alpena Shipwreck Tours. It is possible that the users who do not visit these two sites would have different results than what is presented in this report.

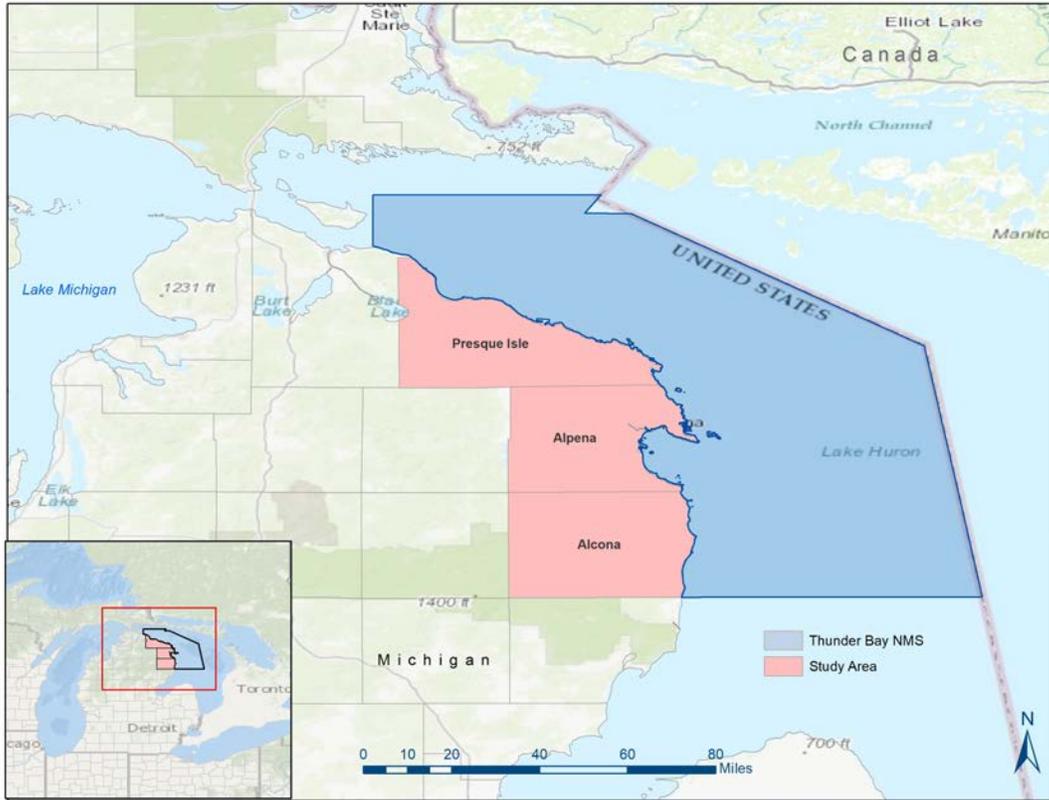


Figure 0.1 Alpena region
 Credit: Developed by National Marine Sanctuary Foundation in ArcGIS

Sampling Methodology

Two student interns conducted the intercept screener survey from June through October 2018. Participants from both Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center were approached and asked to complete the on-site screener (a short survey based upon whether the respondent was a visitor to the region or a resident of the region – see Appendix A for survey language). Respondents were approached randomly, and if the respondents were in a group, the person responsible for paying for the trip was asked to complete the survey. This is because there was a section on the survey that asked the respondent about expenditures on their trip. If the respondents were willing to complete the on-site screener, then the student intern read through the questions and recorded their answers. If the respondent declined, a notation was made to keep track of how many refusals there were. The on-site survey had a completion rate of nearly 90% at

both the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours. Table 1.1 below shows the response rate for the on-site screeners.

Table 0.1 Completion rates of screener survey by location

	Alpena Shipwreck Tours	Great Lakes Maritime Heritage Center	Total
Refusal	32	69	101
Completed	286	605	891
Total	318	674	992
Screener Response Rate	89.9%	89.8%	89.8%

If the respondent completed the screener survey, they were then asked to complete a longer version of the survey via either a paper version they would mail back or online via SurveyMonkey. The response rate for the longer completed surveys was higher for residents than visitors. The response rate for the longer survey of those who completed the screener was 34.8%. Additionally, roughly 80% of respondents who completed the longer survey did so online (see Table 1.2).

Table 0.2 Completion rates of long survey by location

	Alpena Shipwreck Tours			Great Lakes Maritime Heritage Center			Total		
	Residents	Visitors	Total	Residents	Visitors	Total	Residents	Visitors	Total
Total Screeners Issued	49	269	318	96	578	674	145	847	992
Completed Screeners	49	237	286	93	512	605	142	749	891
Completed Mail Surveys	6	18	24	6	30	36	13	48	60
Completed Online Surveys	21	49	70	20	129	149	44	205	226
Total Completed Surveys	27	67	94	26	159	185	57	253	310
Completion Rate from Issued Screeners	55.1%	24.9%	29.6%	27.1%	27.5%	27.4%	39.3%	29.9%	31.3%
Completion Rate from Completed Screeners	55.1%	28.3%	32.9%	28.0%	31.1%	30.6%	40.1%	33.8%	34.8%

CHAPTER 2: SCREENER RESULTS

Introduction

This chapter reviews the results of the on-site screener surveys that were given to residents of the region and visitors to the region. The first question asked respondents if they had visited or were planning to visit the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours (Table 2.1). The Great Lakes Maritime Heritage Center had the highest rates of visitation, with roughly 95% of residents and 94% of visitors going or planning to go. V had higher rates of visitation to Alpena Shipwreck Tours relative to residents. Roughly 92% of visitors went to Alpena Shipwreck Tours as compared to 49% of residents ($\chi^2 = 1.27.78$; p value = .0001).

Chi-square tests for differences in distributions of participation/intent to participate were analyzed based upon whether the respondent was a resident or visitor. For the Great Lakes Maritime Heritage Center the chi-square was .0374 with a probability of .9815, indicating there is no statistical difference in the distribution of residents or visitors. There was a statistically different distribution for Alpena Shipwreck Tours; the chi-square test value was 127.78 with a probability of <.0001.

Table 0.1 Great Lakes Maritime Heritage Center or Alpena Shipwreck Tours user

	Response	Residents	Visitors
Visit Great Lakes Maritime Heritage Center (N=814)	I Plan to Today	9.3%	9.2%
	No	5.2%	5.6%
	Yes	85.5%	85.2%
Visit Alpena Shipwreck Tours (N=522)	I Plan to Today	5.8%	24.3%
	No	51.2%	8.3%
	Yes	43.0%	67.4%

User Activities

Visitors were asked if this was their first trip to the region and if not, how many trips they take annually. More than half, 56.2% of respondents (n=362), indicated this was their first trip to the region. The figure below shows how many trips visitors have made within the past twelve months to the region. The average number of trips each visitor takes to the region is 1.86.

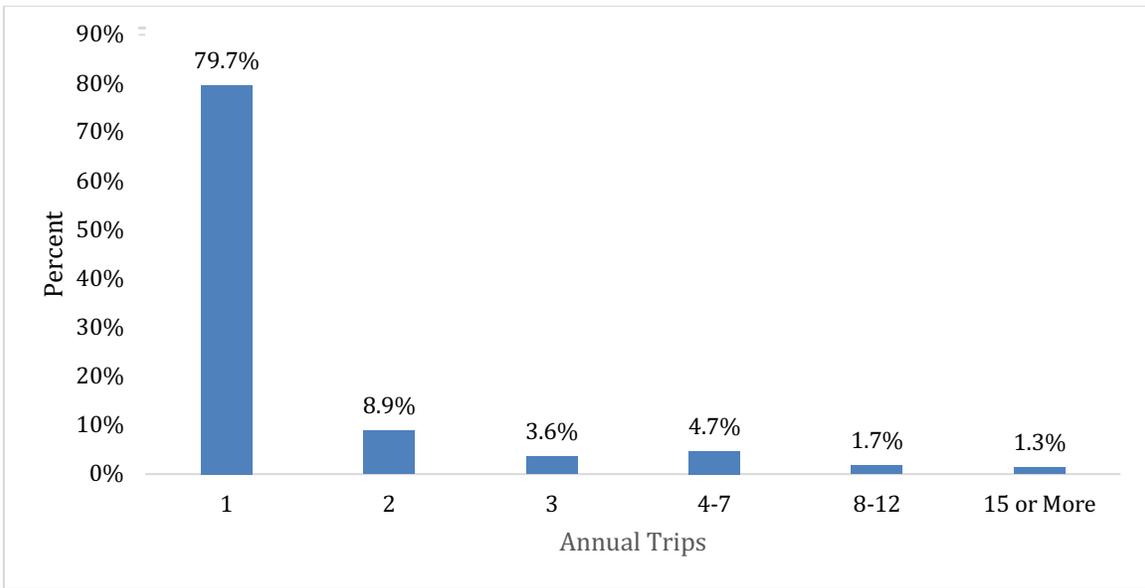


Figure 0.1 Visitor trips within the past 12 months to the Alpena region

User Satisfaction

The screener also asked residents and visitors a series of questions that revolve around their satisfaction. The first set of questions asked about whether they would recommend Alpena Shipwreck Tours or the Great Lakes Maritime Heritage Center (Table 2.2). All the residents were likely or very likely to recommend Alpena Shipwreck Tours; 97.5% of visitors were likely to very likely to recommend Alpena Shipwreck Tours.

Table 0.2 Recommend Alpena Shipwreck Tours by visitor status

	Percent		Frequency	
	Resident	Visitor	Resident	Visitor
Very Unlikely	0.0%	0.4%	0	1
Unlikely	0.0%	0.8%	0	2
Likely	12.2%	21.2%	9	50
Very Likely	87.8%	76.3%	65	180
Don't Know	0.0%	1.3%	0	3
Total	100%	100%	74	236

Both residents and visitors also had high rates of recommendation for the Great Lakes Maritime Heritage Center. Again, 100% of residents were likely or very likely to recommend the Great Lakes Maritime Heritage Center. Most visitors, 98.5%, were likely or very likely to recommend the Great Lakes Maritime Heritage Center.

Table 0.3 Recommend Great Lakes Maritime Heritage Center by visitor status

	Percent		Frequency	
	Resident	Visitor	Resident	Visitor
Very Unlikely	0.0%	0.2%	0	1
Unlikely	0.0%	0.4%	0	2
Likely	8.1%	18.3%	12	99
Very Likely	91.9%	80.2%	137	434
Don't Know	0.0%	0.9%	0	5
Total Answer	100.0%	100.0%	149	541

A higher portion of residents, 94.6%, are likely or very likely to visit Alpena Shipwreck Tours again compared to 79.5% of visitors (Table 2.4). This makes sense as there is a larger investment of time and money for visitors to come to the region. A small portion of visitors, 13.2%, were unlikely or very unlikely to visit Alpena Shipwreck Tours again.

Table 0.4 Visit Alpena Shipwreck Tours again by visitor status

	Percent		Frequency	
	Resident	Visitor	Resident	Visitor
Very Unlikely	1.4%	3.0%	1	7
Unlikely	2.7%	10.2%	2	24
Likely	27.0%	35.7%	20	84
Very Likely	67.6%	43.8%	50	103
Don't Know	1.4%	7.2%	1	17
Total Answer	100.0%	100.0%	74	235

About three-quarters (76.8%) of visitors are likely or very likely to visit the Great Lakes Maritime Heritage Center again, while 98.0% of residents are likely to visit the Great Lakes Maritime Heritage Center again (Table 2.5). Over 15% of visitors reported that they were unlikely or very unlikely to visit the Great Lakes Maritime Heritage Center again.

Table 0.5 Visit Great Lakes Maritime Heritage Center again by visitor status

	Percent		Frequency	
	Resident	Visitor	Resident	Visitor
Very Unlikely	0.0%	1.7%	0	9
Unlikely	1.3%	13.9%	2	75
Likely	14.8%	28.7%	22	155
Very Likely	83.2%	48.1%	124	260
Don't Know	0.7%	7.6%	1	41
Total Answer	100.0%	100.0%	149	540

After visiting the Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours, roughly 60% of residents indicated they were very likely to learn more about the sanctuary (Table 2.6). Only 40% of visitors indicated they were very likely to learn about TBNMS. However, the overwhelming majority of both visitors and residents were likely or very likely to learn about the sanctuary.

Table 0.6 Learn more about TBNMS by visitor status

	Percent		Frequency	
	Resident	Visitor	Resident	Visitor
Very Unlikely	1.2%	0.8%	2	5
Unlikely	4.7%	13.1%	8	84
Likely	33.5%	39.3%	57	253
Very Likely	59.4%	40.3%	101	259
Don't Know	1.2%	6.5%	2	42
Total Answer	100.0%	100.0%	170	643

Respondents were also asked how likely they were to go diving/snorkeling or paddling. Most visitors, 58.8%, were unlikely or very unlikely to engage in the activity (Table 2.7). The rate was slightly lower for residents: 40.9% indicated they were unlikely or very unlikely to go diving/snorkeling or paddling. It is possible that the rates of likely or very likely are lower relative to the other questions in this section because of the cost associated with these activities.

Table 0.7 Diving/snorkeling/paddling by visitor status

	Percent		Frequency	
	Resident	Visitor	Resident	Visitor
Very Unlikely	22.8%	42.3%	39	272
Unlikely	18.1%	16.5%	31	106
Likely	24.0%	19.9%	41	128
Very Likely	28.7%	15.4%	49	99
Don't Know	6.4%	5.9%	11	38
Total Answer	100.0%	100.0%	171	643

Lastly, respondents were asked how satisfied they were with the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours. All of the resident respondents were very much satisfied with the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours. Nearly all visitors were very much satisfied with the Great Lakes Maritime Heritage Center (97.2%) and Alpena Shipwreck Tours (99.1%) (Table 2.8 and 2.9). Only one visitor indicated being not at all satisfied with the Great Lakes Maritime Heritage Center.

Table 0.8 Level of satisfaction with the Great Lakes Maritime Heritage Center by visitor status

	Resident	Visitor	Resident	Visitor
	Percent		Frequency	
Very much	100.0%	97.2%	111	413
Somewhat	0.0%	2.4%	0	10
A little	0.0%	0.2%	0	1
Not at all	0.0%	0.2%	0	1
Total	100.0%	100.0%	111	425

Table 0.9 Level of satisfaction with Alpena Shipwreck Tours by visitor status

	Resident	Visitor	Resident	Visitor
	Percent		Frequency	
Very much	100.0%	99.1%	74	229
Somewhat	0.0%	0.4%	0	1
A little	0.0%	0.4%	0	1
Not at all	0.0%	0.0%	0	0
Total	100.0%	100.0%	74	231

User Demographics

Age

Respondents were also asked about their age. Nearly half the visitors (48.5%) to Alpena Shipwreck Tours or the Great Lakes Maritime Heritage Center were over 60 years; the percentage of residents in that category was slightly lower, at 38.0%. Residents also had a higher percentage of the 18-30 year demographic, 19.3%, compared to 6.7% of visitors belonging to that age group.

Table 0.10 Age of screener respondents

Age Category	Resident (N=171)	Visitor (N=645)	All
18-30	19.3%	6.7%	9.3%
31-40	14.6%	12.6%	13.0%
41-50	16.4%	14.7%	15.1%
51-60	11.7%	17.5%	16.3%
60+	38.0%	48.5%	46.3%

Gender

The table below presents the gender of respondents to the survey. The majority of residents and visitors who completed the screener were women. Of residents, nearly two-thirds were women that completed the screener.

Table 0.11 Gender of screener respondents

Gender	Resident	Visitor	All
Female	65.1%	56.9%	58.7%
Male	34.9%	43.1%	41.3%

Group size

The number of adults and children (under the age of 18) was also reported by screener respondents. The average party size was larger for visitors (6.3) compared to residents (3.4). Further, 53.5% of residents reported no children in their party and 72.4% of visitors reported no children in their group. Although visitors are more likely to travel without children, when they do, they are traveling with 1.3 more children than residents on average.

Table 0.12 Screener party size

	Residents	Visitors
Number of Adults	2.6	4.1
Number of Kids (under 18 years)	0.8	2.1
Total Party Size	3.4	6.3

Modes of Transportation

Visitors were also asked what their mode of transportation was to visit the region. The major of visitors used their personal vehicles to visit the region (78.5%). The next most frequent mode of accessing the region was tours (5.5%). The table below shows the full results.

Table 0.13 Visitor mode of transportation

Mode of Transportation	Frequency	Percent
Personal Auto	543	78.5%
Tours	38	5.5%
Flights	35	5.1%
Personal RV	35	5.1%
Rented Auto/RV	21	3.0%
Boat	10	1.4%
Other	10	1.4%
Total	692	100.0%

Sources of Information

The largest share of visitors learn about the sanctuary prior to their visit from referral (or word of mouth). One quarter of visitors reported learning about TBNMS by referral. The

next most common way to learn about the sanctuary was from different Alpena sources. Table 2.14 shows the sources of information used by visitors. The category, Alpena sources, were used by the 15.7% of visitors. The majority used the Alpena website. The Pure Michigan website was used by 7.5% of visitors and 1.7% of visitors learned about the sanctuary from Alpena Shipwreck Tours. Of those who learned about the sanctuary from Alpena Shipwreck Tours, 88.5% reported they used the website and 11.5% reported learning from a brochure.

Table 0.14 Visitor sources of information about TBNMS prior to visiting Alpena, Michigan

Source	Percentage (N=644)
AAA	2.4%
Alpena Sources	15.7%
Alpena Shipwreck Tours	1.7%
Billboards/Road Signs	1.0%
Brochures/Booklets/Flyers	4.6%
Chamber of Commerce	0.3%
Educational Presentations & Trade Shows	0.8%
Google Search	3.2%
Online Search (Unspecified)	1.3%
Other (Including Social Media)	7.0%
Print Ad in Magazine or Newspaper	3.3%
Prior Visit	10.8%
Pure Michigan Site	7.5%
Radio	1.0%
Referral	25.0%
TBNMS/NOAA Resources	8.5%
Tour Bus/Guide/Company Resources	2.7%
Trip Advisor/Under the Radar	3.1%

Table 0.15 Alpena sources of information

Source	Percent
Website	86.4%
Magazines	5.8%
Visitors Center	6.5%
Marina	1.3%

Importance of the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours

Visitors were asked how much influence either the Great Lakes Maritime Heritage Center or Alpena Shipwreck Tours had on their travel plans to Alpena (Table 2.16). Slightly less than half, 43%, of visitors reported that the Great Lakes Maritime Heritage Center was the primary reason or very much influenced their travel plans to Alpena. Roughly one-third, 32%, of visitors reported that Alpena Shipwreck Tours was the primary reason or very much influenced their travel plans to Alpena.

Table 0.16 Influence of Great Lakes Maritime Heritage Center or Alpena Shipwreck Tours on visitor travel plans to Alpena

Influence	Great Lakes Maritime Heritage Center (N=637)	Alpena Shipwreck Tours (N=626)
Not At All	42.1%	59.6%
A Little	4.0%	1.6%
Somewhat	9.4%	5.0%
Very Much	12.4%	6.9%
Primary Reason	30.7%	25.1%

Residents were asked how much they agreed with the statement that the Great Lakes Maritime Heritage Center is an important cultural attraction to the city of Alpena. The table below presents the results. Nearly all, 98.3%, strongly agreed or agreed with the statement. Only one respondent strongly disagreed and no one disagreed.

Table 0.17 The Great Lakes Maritime Heritage Center is an important cultural attraction

Level of Agreement	Frequency	Percentage
Strongly Agree	151	87.8%
Agree	18	10.5%
Neutral	1	0.6%
Disagree	0	0.0%
Strongly Disagree	1	0.6%
Don't Know	1	0.6%

Open-Ended Questions

Respondents were also asked open-ended questions about how to improve Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center and what was most memorable about both locations. Of the 77 resident respondents that provided a response to how Alpena Shipwreck Tours could be improved, 57 said nothing to improve. The second most common response was more shipwrecks (8), and two people indicated the

weather. For the Great Lakes Maritime Heritage Center, 109 of 145 residents reported nothing to improve. Second to “nothing to improve” was more hands-on activities (9), some specifically stating for kids.

Sixty-three residents (of 146 that provided a response) reported that the Western Hope exhibit was the most memorable feature of the Great Lakes Maritime Heritage Center. Other people also reported the information they learned and one resident stated the most memorable aspect was “being able to show friends from college all the cool stuff.” The most memorable aspect of Alpena Shipwreck Tours for the 77 respondents who responded were the shipwrecks, with some respondents citing specific aspects, like the boiler, propeller, ribs, and bandings. The second most cited item was the narration (8).

For visitors, 386 of the 524 who provided a response to how Great Lakes Maritime Heritage Center could be improved stated “nothing.” Other less common responses (15 or fewer) were better signage (both to get to the Great Lakes Maritime Heritage Center and within the center); going out the boat; tables and chairs for sitting; better lighting for the exhibits; and more hands on-activities. Three-quarters of the visitors (178 of 237) stated they had no recommendations for improvements to Alpena Shipwreck Tours. Fifteen visitors stated that they would have liked to see more shipwrecks and made other suggestions for improvement that included better speakers, better clarity of water, and weather. However, water clarity and weather are not something that Alpena Shipwreck Tours has the ability to improve.

Visitors also rated the Western Hope exhibit at the Great Lakes Maritime Heritage Center as being the most memorable part of their experience. Over half (212 of 408) of those who responded cited the Western Hope exhibit and/or specific aspects of it, such as the unique perspective, appeal to kids, the audio, and the realism of the exhibit. Other items respondents found memorable include: Science on a Sphere®, artifacts, exhibits for kids, and the films shown in the theater. The most memorable aspects of Alpena Shipwreck Tours were shipwrecks (148 of 238 responses), narration (29), and the boat ride/being outside (17).

CHAPTER 3: TESTING FOR DIFFERENCES IN SCREENER AND MAILBACK RESULTS

Introduction

Two variables were included on the in-person screeners to test for non-response bias in two components of the online/mailback survey: the expenditures and importance/satisfaction. Both age and gender were questions on the on-site screener and the online/mailback survey. If non-response bias does exist, it would be necessary to weight the data when analyzing the results of the longer survey. In other words, because demographics were collected on the on-site screener survey, non-response bias can be tested for in the mailback/online survey.

Nonresponse bias occurs when the group that responds to the mailback survey is different from the population for which you want to estimate certain measurements. The group that responds is different from the population if they have significantly different responses. For example, average expenditures per person per trip for lodging may be a function of age. If those over 60 have higher expenditures and replied to the survey at higher rates than the general population of users, then applying the higher average to all visitors would result in an overestimate of lodging expenditures. This overestimation would be the result of non-response bias.

The approach used here for non-response bias has two steps. First, one needs to determine whether a person completes the mailback/online survey is related to various socioeconomic factors. The research question is “Are the visitors that responded to the mailback survey any different from those that did not respond?” Second, if any of the socioeconomic factors (age and gender) are found to be significant in determining whether a person completes the survey, then we must test to see if there is a relationship between socioeconomic factors and mailback question responses.

For non-response bias to exist requires not only that respondents to the mailback survey are different but that the same factors related to whether the visitor responded to the mailback are also related to mailback question responses. It is shown here that there is some non-response bias, but it is not significant (i.e., there is no statistically significant difference between weighted and unweighted estimates) in all the mailback surveys.

Non-Response Bias for Satisfaction Survey

The results of the non-response bias testing for the satisfaction portion of the online/mailback survey are presented first. Tables 3.1 and 3.2 show whether the demographics (age and gender) were significant in predicting whether a person

completed the mailback survey (dependent variable). Respondents were asked to select a range for their age: 18-30, 31-40, 41-50, 51-60, or 61 and over. Table 3.1 shows age as an ordinal variable and Table 3.2 shows age as a set of dummy variables with 18-30 being the comparison age. Regardless of the age variable specification, age was significant in determining whether a person completed the longer version of the survey. The gender of the respondent was not significant in determining whether a person completed the longer survey.

Table 0.1 Estimation of demographics on whether a person completed mailback survey

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
Age	0.217	0.056	3.860	0.000	0.107	0.328
Female	-0.200	0.150	-1.330	0.183	-0.494	0.094
Intercept	-1.363	0.249	-5.480	0.000	-1.850	-0.875

Observations: 818

LR=17.58

Pseudo R²=.017

Table 0.2 Estimation of demographics on whether a person completed mailback survey with age dummy variables

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
31-40 Years	0.614	0.374	1.640	0.101	-0.119	1.348
41-50 Years	0.909	0.360	2.520	0.012	0.203	1.614
51-60 Years	1.224	0.352	3.480	0.000	0.535	1.913
61 and Older	1.114	0.322	3.460	0.001	0.483	1.746
Female	-0.185	0.150	-1.230	0.218	-0.480	0.109
Intercept	-1.486	0.316	-4.700	0.000	-2.106	-0.866

Observations: 819

LR=20.97

Pseudo R²=.020

Although there is some non-response bias, the next step is to determine if age is significant in predicting how a person responds to the importance/satisfaction questions and/or expenditures. There were 25 questions on the survey that asked about various attributes and characteristics regarding the respondents' experience in the region. The average score for the satisfaction attributes and the average score of the importance attributes were used as the dependent variables. For expenditures, the sum of lodging and the sum of food expenses were both used as dependent variables to test if age was a significant predictor. The results are presented below, but age is not significant in determining responses in the long survey with the exception of satisfaction (Tables 3.3-3.6). Given this, it is necessary take additional steps to determine if the data need to be weighted for satisfaction.

Table 0.3 Significance of age on lodging expenditures

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
Female	-7.364	3.427	-2.150	0.033	-14.110	-0.618
31-40 Years	-0.273	9.511	-0.030	0.977	-18.996	18.449
41-50 Years	1.652	9.076	0.180	0.856	-16.216	19.519
51-60 Years	1.017	8.814	0.120	0.908	-16.334	18.367
61 and Older	9.540	8.267	1.150	0.250	-6.735	25.815
Intercept	5.098	8.251	0.620	0.537	-11.144	21.340

Observations: 283

Adjusted R²= .024**Table 0.4** Significance of age on food expenditures

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
Female	-8.350	6.488	-1.290	0.199	-21.122	4.422
31-40 Years	12.018	18.006	0.670	0.505	-23.429	47.464
41-50 Years	9.607	17.184	0.560	0.577	-24.220	43.434
51-60 Years	23.370	16.687	1.400	0.162	-9.479	56.218
61 and Older	17.509	15.652	1.120	0.264	-13.304	48.321
Intercept	5.781	15.621	0.370	0.712	-24.969	36.531

Observations: 283

Adjusted R²= .0005**Table 0.5** Significance of age on importance variables

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
Female	-0.070	0.088	-0.800	0.426	-0.243	0.103
31-40 Years	-0.265	0.247	-1.070	0.284	-0.751	0.221
41-50 Years	-0.041	0.237	-0.170	0.861	-0.508	0.425
51-60 Years	-0.171	0.230	-0.750	0.456	-0.623	0.281
61 and Older	-0.222	0.215	-1.030	0.305	-0.646	0.202
Intercept	3.769	0.215	17.570	0.000	3.346	4.191

Observations: 271

Adjusted R²= -.005**Table 0.6** Significance of age on satisfaction variables

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
31-40 Years	0.614	0.374	1.640	0.101	-0.119	1.348
41-50 Years	0.909	0.360	2.520	0.012	0.203	1.614
51-60 Years	1.224	0.352	3.480	0.000	0.535	1.913
61 and Older	1.114	0.322	3.460	0.001	0.483	1.746
Female	-0.185	0.150	-1.230	0.218	-0.480	0.109
Intercept	-1.486	0.316	-4.700	0.000	-2.106	-0.866

Observations: 250

Adjusted $R^2 = -.014$

Since age was significant in determining the satisfaction scores, the next step to determine if the data need to be weighted is to analyze the weighted and unweighted confidence intervals. The results are shown below. In all cases, the weighted versus unweighted data confidence intervals overlapped. Since there was overlap in the confidence intervals around the means of all expenditure categories, the expenditure data were not weighted for this analysis.

Table 0.7 Confidence intervals of selected satisfaction variable means of weighted and unweighted data by age

Visitor Status	Mean	Standard Error	Confidence Interval	
			Lower 95%	Upper 95%
<i>Weighted Data</i>				
Resident	4.219	0.103	4.012	4.425
Visitor	4.107	0.054	3.999	4.214
<i>Unweighted Data</i>				
Resident	4.187	0.102	3.982	4.392
Visitor	4.139	0.051	4.038	4.240

CHAPTER 4: WEIGHTING DATA BY LOCATION

Although the data did not need to be weighted for demographic factors, there were two locations the respondents could have completed the survey: on Alpena Shipwreck Tours or at the Great Lakes Maritime Heritage Center. It is important to determine if the data needed to be weighted by the location that respondents visited.

The distribution of how many people went to only Alpena Shipwreck Tours, only the Great Lakes Maritime Heritage Center, or both for the sample is known. For the general population, the number of adult visitors to Alpena Shipwreck Tours and the number of visitors to Great Lakes Maritime Heritage Center is known. However, the population estimate of the number of visitors who went to both is not known. The sample distribution and known population numbers are presented in tables 4.1 and 4.2.

Table 0.1 Sample distribution by location

Location without Double Counting	Sample N	Percent
Both	135	48.4%
Only Alpena Shipwreck Tours	17	6.1%
Only Great Lakes Maritime Heritage Center	127	45.5%
Total	279	100.0%

Table 0.2 Population distribution by location

Location	Population Visitors
Alpena Shipwreck Tours	7,865
Great Lakes Maritime Heritage Center	80,287

The process to determine if the sample needs to be weighted by the location respondents visited is the same as described in Chapter 3. The first step is to determine if the location respondents visited was significant in determining whether a respondent completed the survey.

Table 0.3 Estimation of location on whether a person completed mailback survey

Variable	Coefficient	Standard Error	z	P Value	95% Confidence Interval	
Intercept	.187	.203	.92	.356	-.210	.584
Alpena Shipwreck Tours Dummy	-.447	.165	2.69	.007	-.772	-.121
Great Lakes Maritime Heritage Center Dummy	-.689	.197	3.49	.000	-1.075	-.302

Observations: 854

LR=14.33

Pseudo R²=.013

The location is significant in predicting whether a person completed the longer version of the survey, so the next step is to determine if location is significant in predicting how a person responds to the importance/satisfaction questions and/or expenditures. The results are presented below, but location is not significant in determining responses in the long survey (Tables 4.4-Tables 4.7).

Table 0.4 Significance of location on lodging expenditures

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
Alpena Shipwreck Tours Dummy	-4.930	3.302	-1.490	0.136	-11.427	1.567
Great Lakes Maritime Heritage Center Dummy	2.008	3.683	0.550	0.586	-5.238	9.254
Location	5.844	3.556	1.640	0.101	-1.153	12.842

Observations: 317

Adjusted R²= .003**Table 0.5** Significance of location on food expenditures

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
Alpena Shipwreck Tours Dummy	4.312	6.229	0.690	0.489	-7.944	16.567
Great Lakes Maritime Heritage Center Dummy	6.402	6.947	0.920	0.357	-7.266	20.070
Location	10.200	6.709	1.520	0.129	-3.000	23.399

Observations: 317

Adjusted R²= -.003

Table 0.6 Significance of location on importance variables

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
Alpena Shipwreck Tours Dummy	0.051	0.092	0.550	0.581	-0.131	0.232
Great Lakes Maritime Heritage Center Dummy	0.001	0.104	0.010	0.991	-0.203	0.205
Location	3.522	0.100	35.100	0.000	3.325	3.720

Observations: 302

Adjusted R²= -.006**Table 0.7** Significance of location on satisfaction variables

Variable	Coefficient	Standard Error	t	P Value	95% Confidence Interval	
Alpena Shipwreck Tours Dummy	-0.100	0.097	-1.030	0.304	-0.291	0.091
Great Lakes Maritime Heritage Center Dummy	-0.166	0.109	-1.520	0.129	-0.381	0.049
Location	4.307	0.106	40.690	0.000	4.099	4.515

Observations: 280

Adjusted R²= .003

CHAPTER 5: PERSON-DAYS

Respondents were asked to report the number of days they spent in Michigan and Alpena as part of the trip in which they were intercepted for the survey. They were also asked how many trips they had taken within the past 12 months. Before estimating the number of person-days and activity participation rates, the data were analyzed for outliers and missing values.

Outlier Analysis

If a respondent answered the number of days they were in Alpena, Michigan, on their most recent trip, but left the number of Michigan days blank, Alpena days replaced the missing value. (Twenty-two values were replaced). This is a conservative estimate for the number of Michigan days, since it is possible they spent additional days outside of the region. Further, if a person left the number of trips blank within the past 12 months, this value was replaced with one. Again, this is a conservative estimate, since it is possible they took more than the one trip that they were recruited into the survey.

The next step was to analyze for outliers. Outliers were identified so that the largest five person-days did not account for more than 19% of the total person-days spent in a location. The means of days spent in Michigan and Alpena and the number of trips is presented below in Table 5.1, prior to removing any outliers. Table 5.2 presents the means with the outliers removed. The outliers truncated to 35 days for Michigan days were: three observations of 100, one of 85, one of 69, and two of 40 days. These seven observations accounted for roughly 26.6% of all Michigan days. For Alpena days, two observations of 100, one of 85, and one of 40, were truncated to 35 days. Those four observations accounted for roughly 26.9% of all Alpena days. Lastly, one observation of 100, one observation of 85, and two observations of 40 trips were censored to 30. Those four observations accounted for 22.3% of all Alpena trips.

After censoring the outliers, there is still overlap between the 95% confidence intervals. However, the decision to censor outliers was made for a few reasons. First, roughly one to three percent of all observations make up roughly 22% to 27% of days or trips. A small portion of all observations is accounting for a sizable share of days or trips. Secondly, the observations were censored to the next largest number, and not simply removed.

Table 0.1 Person-day estimates with outliers

	Sum	Mean	Minimum	Maximum	Standard Error	N
Michigan Days	2,007	6.74	1	100	0.718	298
Alpena Days	1,210	4.10	1	100	0.584	295
Alpena Trips	982	3.30	1	100	0.513	298

Table 0.2 Person-day estimates without outliers

	Sum	Mean	Minimum	Maximum	Standard Error	N
Michigan Days	1,718	5.77	1	35	0.378	298
Alpena Days	1,025	3.47	1	35	0.285	295
Alpena Trips	837	2.81	1	30	0.289	298

Person-Day Analysis

The number of days was analyzed for both residents and visitors. The t-values for the Satterthwaite t-test is presented below. The Folded F-test revealed that the variances for person-days and trips by resident status were unequal. The difference in the mean person-day estimates for Michigan were not statistically different, but the difference in mean person-days for Alpena was found to be statistically different based upon resident class. Residents spent an average of 7.93 days per trip in Michigan, with 7.29 of those days in the Alpena region. Visitors spent an average of 5.49 days in Michigan, and 2.89 days in the Alpena region per trip. A statistical difference in mean trips to the region by resident status was also found. Residents of the region on average make about nine trips annually to the area, whereas visitors make roughly two trips annually.

Table 0.3 Person-days by resident status

	Variable	Sum	Mean	Minimum	Maximum	Standard Error	N
Residents	Michigan Days	325	7.93	1	35	1.760	41
	Alpena Days	299	7.29	1	35	1.784	41
	Alpena Trips	379	9.24	1	30	1.605	41
Visitors	Michigan Days	1,377	5.49	1	35	0.340	251
	Alpena Days	719	2.89	1	14	0.134	249
	Alpena Trips	453	1.80	1	20	0.137	252

Table 0.4 Statistical significance by resident status for person-days

Variable	Mean Difference	T-Value	Significance Level
Michigan Days	2.441	1.36	0.180
Alpena Days	4.405	2.46	0.018
Alpena Trips	4.310	4.62	0.000

The next step is to use the sample estimates to extrapolate population person-days. The number of visitors to Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center is known. In total there were 7,865 adult visitors to Alpena Shipwreck Tours and 80,287 visitors to the Great Lakes Maritime Heritage Center.

Using this information, the number of person-days spent doing various activities in the Alpena region may be estimated. The table below shows the sample statistics for person-days reported for several different activities and the number of total person-days by activities from those who visited either both or one of the two sites.

The most common activity completed by respondents was visiting the Great Lakes Maritime Heritage Center. The participation rate was 93.1%. The second highest participation rate was beaches/swimming at 25.9%, with nearly 21,000 person-days of this activity. The participation rates and number of person-days are shown below.

Table 0.5 Activity participation and person-days

Activity	Participation Rate	Person-Days
Great Lakes Maritime Heritage Center	93.1%	80,287
Alpena Shipwreck Tours aboard the glass bottom boat, <i>Lady Michigan</i>	9.7%	7,865
Paddling/kayaking to visit shipwrecks	2.8%	2,293
Scuba diving from a charter boat	0.0%	-
Scuba diving from a private boat	0.3%	255
Scuba diving from the shore	0.9%	764
Snorkeling from a charter boat	0.3%	255
Snorkeling from a private boat	0.6%	510
Snorkeling from shore, kayak, stand-up paddleboard, or canoe	0.6%	510
Fishing from a charter boat	0.6%	510
Fishing from a private boat	3.8%	3,057
Fishing from the shoreline	4.7%	3,822
Kayaking/canoeing	9.5%	7,644
Stand-up paddle board	2.2%	1,783
Private/rental power boat or jet-ski	2.8%	2,293
Sailing	1.9%	1,529
Biking (road or trails)	6.6%	5,350
Hiking	22.4%	18,090
Camping	11.7%	9,427
Beaches/swimming	25.9%	20,892
Other	15.5%	12,484

The next item analyzed is the average number of adults and children participating in each activity, based upon those who were recruited into the sample. Zeros were included in the analysis, meaning some participants did not engage in an activity. The Great Lakes Maritime Heritage Center had the highest number of adults per group at 2.67 participating in the activity and Alpena Shipwreck Tours had the second highest with an average of 1.44 adults. Beaches/swimming was the third highest with an average of 0.68 adults per group. The average number of children participating per group was highest for the Great Lakes Maritime Heritage Center (0.37 children), Alpena Shipwreck Tours (0.23 children) and beaches/swimming (0.17 children).

Table 0.6 Average number of adults per group per activity (N=317)

Activity	Mean	Minimum	Maximum	Standard Error
Great Lakes Maritime Heritage Center	2.669	0	12	0.110
Alpena Shipwreck Tours aboard the glass bottom boat, <i>Lady Michigan</i>	1.438	0	12	0.118
Paddling/kayaking to visit shipwrecks	0.069	0	3	0.020
Scuba diving from a charter boat	0.016	0	2	0.008
Scuba diving from a private boat	0.025	0	3	0.013
Scuba diving from the shore	0.028	0	2	0.011
Snorkeling from a charter boat	0.022	0	2	0.010
Snorkeling from a private boat	0.022	0	2	0.009
Snorkeling from shore, kayak, stand-up paddleboard, or canoe	0.032	0	3	0.014
Fishing from a charter boat	0.041	0	5	0.020
Fishing from a private boat	0.120	0	5	0.034
Fishing from the shoreline	0.123	0	5	0.032
Kayaking/canoeing	0.287	0	7	0.056
Stand-up paddle board	0.057	0	3	0.018
Private/rental power boat or jet-ski	0.114	0	7	0.040
Sailing	0.069	0	6	0.027
Biking (road or trails)	0.177	0	6	0.041
Hiking	0.555	0	7	0.066
Camping	0.315	0	7	0.055
Beaches/swimming	0.675	0	8	0.077
Other	0.341	0	6	0.052

Table 0.7 Average number of children per group per activity (N=317)

Activity	Mean	Minimum	Maximum	Standard Error
Great Lakes Maritime Heritage Center	0.372	0	5	0.048
Alpena Shipwreck Tours aboard the glass bottom boat, <i>Lady Michigan</i>	0.237	0	6	0.038
Paddling/kayaking to visit shipwrecks	0.025	0	5	0.017
Scuba diving from a charter boat	0.000	0	0	0.000
Scuba diving from a private boat	0.000	0	0	0.000
Scuba diving from the shore	0.003	0	1	0.003
Snorkeling from a charter boat	0.000	0	0	0.000
Snorkeling from a private boat	0.000	0	0	0.000
Snorkeling from shore, kayak, stand-up paddleboard, or canoe	0.006	0	1	0.004
Fishing from a charter boat	0.000	0	0	0.000
Fishing from a private boat	0.013	0	2	0.008
Fishing from the shoreline	0.038	0	5	0.021
Kayaking/canoeing	0.047	0	3	0.017
Stand-up paddle board	0.006	0	1	0.004
Private/rental power boat or jet-ski	0.032	0	6	0.021
Sailing	0.006	0	1	0.004
Biking (road or trails)	0.016	0	2	0.008
Hiking	0.050	0	3	0.018
Camping	0.044	0	6	0.023
Beaches/swimming	0.170	0	5	0.038
Other	0.032	0	3	0.013

Table 5.8 presents the participation rate of those intercepted at the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours for iconic or popular destinations that people may visit on their trip that are near the sanctuary. Nearly half, 41.6% of respondents, reported visiting the Great Lakes Maritime Heritage Trail. The next most popular destination was the New Presque Isle Lighthouse, with nearly a quarter, 23.3%, of respondents visiting the wreck.

Table 0.8 Nearby iconic and popular locations to visit

Activity or Location	Participation Rate
Great Lakes Maritime Heritage Trail	0.416
New Presque Isle Lighthouse	0.233
Old Presque Isle Lighthouse	0.218
Art galleries or exhibits	0.180
Great Lakes Lore Maritime Museum	0.177
40 Mile Point Lighthouse	0.161
Sturgeon Point Lighthouse	0.148
Visit brewery	0.126
Ocqueoc Falls State Park	0.123
Onaway State Park	0.110
Visit winery (tasting)	0.104
<i>Joseph Fay</i> shipwreck (on beach near Forty Mile Point Lighthouse)	0.098
Alpena Wildlife Sanctuary/Duck Park/Sportsman Island	0.095
Thompson Harbor State Park	0.073
Besser Museum for Northeast Michigan	0.069
Harrisville State Park	0.044
Hoelt State Park	0.035
Rockport State Park/ Besser Natural Areas	0.032
Middle Island Lighthouse	0.013
Negwegon State Park	0.013
Sailing lessons	0.000

CHAPTER 6: IMPORTANCE/SATISFACTION

For many years, the U.S. Forest Service and many other federal, state, and local agencies that manage parks and/or other natural resources have used the National Satisfaction Index (NSI) for measuring visitor satisfaction. Satisfaction is a complex feature of the recreation/tourist experience and it is now agreed upon by most researchers that “importance-performance” or “importance-satisfaction” is a much more complete measure and provides a much simpler interpretation than the NSI. First described in the marketing literature by Martilla and James (1977), importance/satisfaction has been described and/or used in such studies as Guadagnolo (1985), Richardson (1987), Hollenhorst, Olson, and Fortney (1992), and Leeworthy and Wiley (1996). Since then the approach has been used in Florida Keys National Marine Sanctuary (Leeworthy et al., 2010) and Olympic Coast National Marine Sanctuary (Leeworthy et al., 2017).

The satisfaction questionnaire was divided into two sections to obtain the necessary information for the importance-satisfaction analysis. The first section asks the respondent to read each statement and to rate the importance of each of the 26 items as it contributes to visitor experiences at the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours. Each item is rated or scored on a one to five Likert scale (1-5) with one (1) meaning “Not Important” and five (5) meaning “Extremely Important.” The respondent was also given the choices of answering “Not Applicable” or “Don’t Know.” The second section asks the respondent to consider the same list of items they just rated for importance and to rate them for how satisfied they were with each of the items on their visit to the Alpena region. Again, a five-point scale was used with one (1) meaning “Not Satisfied” and a score of five (5) meaning “Extremely Satisfied.” Respondents were also given the choices of answering either “Not Applicable” or “Don’t Know.”

The collected data are presented in multiple ways. First, the means, or average scores, are reported along with the estimated standard errors of the mean, the sample sizes (number of responses), and the percent of respondents who gave a rating. This latter measure is important because many respondents provide importance ratings for selected items but may not have had a chance to use a resource, facility, or service and therefore do not provide a satisfaction rating. This might lead to biases in comparing importance and satisfaction.

The second method of presentation is the bar charts showing the mean scores of each item’s importance and satisfaction rating. It is important to note that, while both importance and satisfaction are measured on a one to five scale, the scales are measuring different metrics, and are not directly comparable. They do, however, communicate relative importance/satisfaction relationships across the different items.

The most useful analytical framework provided in importance-satisfaction analysis is the four-quadrant presentation. The four quadrants are formed by first placing the importance measurement on the vertical axis and the satisfaction measurement on the horizontal axis (see Figure 6.1). A vertical line is placed at the mean score for all 26 items on the satisfaction scale and an additional horizontal line is placed at the mean score for all 26 items on the importance scale. These two lines form a cross hair. The cross hair then separates the importance-satisfaction measurement area into four separate areas or quadrants. This allows for interpretation as to the relative importance and relative satisfaction of each item. That is, if everyone gave high scores to all items, we would still be able to judge the relative importance and satisfaction to establish priorities.

The use of the four quadrants provides a simple but easy-to-interpret summary of results. Scores falling in the upper left quadrant are relatively high on the importance scale and relatively low on the satisfaction scale. This quadrant is labeled “Concentrate Here.” Scores falling in the upper right quadrant are relatively high on the importance scale and relatively high on the satisfaction scale and are labeled “Keep up the Good Work.” Scores falling in the lower left quadrant are relatively low on both the importance and satisfaction scale and are labeled “Low Priority.” And, finally, scores in the lower right quadrant are relatively low on the importance scale but relatively high on the satisfaction scale and are labeled “Possible Overkill.”

In general, the 26 items that resident and visitors were asked to rate are organized into four categories. In the survey, the order of the items was mixed. Each of the items is given a letter rather than a number and so are labeled A through Z.

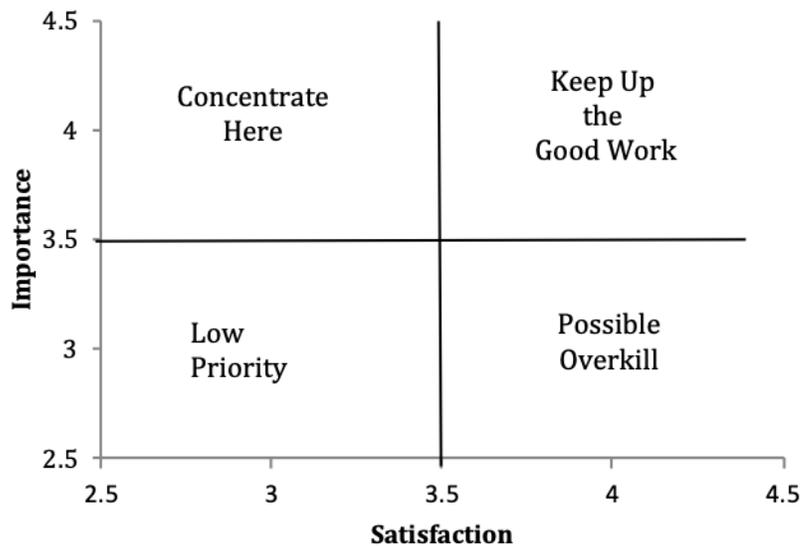


Figure 0.1 Importance/satisfaction matrix
Credit: Office of National Marine Sanctuaries

Importance-Satisfaction Mean Ratings

This section presents the mean level of importance and satisfaction for the sample as a whole, then residents and visitors separately. For the sample, the items with the highest level of satisfaction were welcoming and friendly staff at Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center. The items with the highest level of importance were preservation of lighthouses and welcoming and friendly staff at Alpena Shipwreck Tours. Tables 6.1 through 6.3 show the importance and satisfaction scores. The blue in the table below represents the mean importance score, and the red is the mean satisfaction score for the sample.

When looking at only *residents*, the items with the highest level of importance were:

- welcoming and friendly staff at Alpena Shipwreck Tours,
- narration on Alpena Shipwreck Tours, and
- the Great Lakes Maritime Heritage Center was engaging to the children in group.

The items with the highest levels of satisfaction for *residents* were:

- ability to see shipwrecks while paddling,
- welcoming and friendly staff at Alpena Shipwreck Tours, and
- visibility of shipwrecks while diving and snorkeling.

The items that *visitors* ranked as most important were:

- preservation of lighthouses,
- welcoming and friendly staff at the Great Lakes Maritime Heritage Center, and
- welcoming and friendly staff at Alpena Shipwreck Tours.

The items with the highest level of satisfaction for *visitors* were:

- the Great Lakes Maritime Heritage Center was engaging to the children in my group,
- welcoming and friendly staff at the Great Lakes Maritime Heritage Center, and
- welcoming and friendly staff at Alpena Shipwreck Tours.

Table 0.1 Mean importance-satisfaction scores for sample¹

Shipwrecks and Lighthouses			Standard Error	N	% Rated
A	Ability to see shipwrecks while paddling	2.48 3.70	0.135	81	26.1%
			0.245	30	9.7%
B	Visibility of shipwrecks while diving or snorkeling	2.44 3.88	0.164	62	20.0%
			0.301	16	5.2%
C	Information and stories about shipwrecks and maritime history in museums	3.68 4.35	0.056	285	91.9%
			0.064	250	80.6%
H	Preservation of lighthouses	4.00 4.22	0.062	247	79.7%
			0.084	169	54.5%
Access and Parking			Standard Error	N	% Rated
D	Public access to Lake Huron (Trails, boardwalks, beaches, & boat launches)	3.87 4.17	0.068	223	71.9%
			0.081	172	55.5%
E	Public access to maritime heritage resources, including shipwreck moorings	3.68 4.09	0.072	209	67.4%
			0.089	158	51.0%
F	Public access to parks and other natural areas	3.82 4.25	0.063	251	81.0%
			0.074	193	62.3%
G	Access to lighthouses	3.72 4.12	0.066	247	79.7%
			0.090	172	55.5%
I	Marina facilities, boat ramps & launching facilities	2.90 4.04	0.113	155	50.0%
			0.130	78	25.2%
J	Shore side signage with information about maritime heritage and history	3.55 3.82	0.073	222	71.6%
			0.090	194	62.6%
K	Road side/wayfinding signage directing me to GLMHC/ Alpena Shipwreck Tours.	3.54 3.71	0.069	244	78.7%
			0.093	214	69.0%
L	Parking at/for GLMHC/ Alpena Shipwreck Tours	3.94 3.89	0.065	279	90.0%
			0.072	255	82.3%
Great Lakes Maritime Heritage Center			Standard Error	N	% Rated
M	GLMHC is free admission	3.91 4.50	0.071	286	92.3%
			0.055	263	84.8%
N	GLMHC merchandise available for purchase	2.58 3.80	0.071	258	83.2%
			0.080	220	71.0%
O	Welcoming and friendly staff at GLMHC	3.91 4.58	0.050	296	95.5%
			0.053	266	85.8%
P	GLMHC was engaging to the children in my group	3.79 4.58	0.115	101	32.6%
			0.090	90	29.0%
Q	Your self-guided experience at GLMHC	3.57 4.32	0.056	286	92.3%
			0.063	256	82.6%
R	Cleanliness of bathrooms at GLMHC	3.85 4.40	0.054	286	92.3%
			0.062	250	80.6%
Alpena Shipwreck Tours			Standard Error	N	% Rated
S	Welcoming and friendly staff at Alpena Shipwreck Tours	3.90 4.61	0.065	206	66.5%
			0.067	160	51.6%
T	Cleanliness of bathrooms at Alpena Shipwreck Tours	3.67 4.31	0.074	168	54.2%
			0.100	105	33.9%
U	The Alpena Shipwreck Tour was engaging to the children in my group	3.81 4.38	0.124	81	26.1%
			0.125	66	21.3%
V	Narration on Alpena Shipwreck Tours	3.84 4.39	0.074	171	55.2%
			0.087	140	45.2%
W	Ticket price of Alpena Shipwreck Tours	3.88 3.75	0.078	177	57.1%
			0.105	141	45.5%
X	Easy boarding process of Alpena Shipwreck Tours	3.57 4.24	0.081	176	56.8%
			0.095	143	46.1%
Y	Time spent viewing each shipwreck on Alpena Shipwreck Tours	3.60 4.11	0.085	174	56.1%
			0.105	141	45.5%
Z	Trip length of Alpena Shipwreck Tours	3.65 3.98	0.076	174	56.1%
			0.106	141	45.5%

1. The blue in the table above represents the mean importance score, and the red is the mean satisfaction score for the sample.

Table 0.2 Mean importance-satisfaction scores for residents¹

Shipwrecks and Lighthouses			Standard Error	N	% Rated
A	Ability to see shipwrecks while paddling	2.57	0.263	21	36.8%
		4.78	0.222	9	15.8%
B	Visibility of shipwrecks while diving or snorkeling	2.78	0.339	18	31.6%
		4.80	0.400	5	8.8%
C	Information and stories about shipwrecks and maritime history in museums	3.97	0.139	52	91.2%
		4.23	0.158	48	84.2%
H	Preservation of lighthouses	4.02	0.154	46	80.7%
		4.27	0.180	37	64.9%
Access and Parking			Standard Error	N	% Rated
D	Public access to Lake Huron (Trails, boardwalks, beaches, & boat launches)	4.07	0.147	44	77.2%
		4.16	0.171	37	64.9%
E	Public access to maritime heritage resources, including shipwreck moorings	3.86	0.155	43	75.4%
		3.97	0.201	36	63.2%
F	Public access to parks and other natural areas	3.80	0.138	50	87.7%
		4.20	0.169	40	70.2%
G	Access to lighthouses	3.96	0.178	47	82.5%
		4.00	0.198	37	64.9%
I	Marina facilities, boat ramps & launching facilities	3.24	0.230	33	57.9%
		4.32	0.222	22	38.6%
J	Shore side signage with information about maritime heritage and history	3.96	0.179	43	75.4%
		3.94	0.224	37	64.9%
K	Road side/wayfinding signage directing me to GLMHC/ Alpena Shipwreck Tours.	3.75	0.175	44	77.2%
		3.98	0.202	42	73.7%
L	Parking at/for GLMHC/ Alpena Shipwreck Tours	3.24	0.144	49	86.0%
		3.98	0.160	51	89.5%
Great Lakes Maritime Heritage Center			Standard Error	N	% Rated
M	GLMHC is free admission	3.88	0.153	54	94.7%
		4.50	0.123	54	94.7%
N	GLMHC merchandise available for purchase	2.55	0.157	51	89.5%
		4.16	0.171	45	78.9%
O	Welcoming and friendly staff at GLMHC	3.96	0.118	56	98.2%
		4.44	0.123	54	94.7%
P	GLMHC was engaging to the children in my group	4.07	0.168	27	47.4%
		4.36	0.190	25	43.9%
Q	Your self-guided experience at GLMHC	3.89	0.157	49	86.0%
		4.26	0.144	46	80.7%
R	Cleanliness of bathrooms at GLMHC	3.88	0.128	52	91.2%
		4.34	0.139	50	87.7%
Alpena Shipwreck Tours			Standard Error	N	% Rated
S	Welcoming and friendly staff at Alpena Shipwreck Tours	4.11	0.136	45	78.9%
		4.75	0.101	42	73.7%
T	Cleanliness of bathrooms at Alpena Shipwreck Tours	3.71	0.164	38	66.7%
		4.44	0.183	25	43.9%
U	The Alpena Shipwreck Tour was engaging to the children in my group	3.86	0.176	21	36.8%
		4.40	0.210	20	35.1%
V	Narration on Alpena Shipwreck Tours	4.10	0.146	39	68.4%
		4.68	0.134	38	66.7%
W	Ticket price of Alpena Shipwreck Tours	3.70	0.165	40	70.2%
		3.75	0.207	37	64.9%
X	Easy boarding process of Alpena Shipwreck Tours	3.86	0.188	40	70.2%
		4.24	0.161	38	66.7%
Y	Time spent viewing each shipwreck on Alpena Shipwreck Tours	3.80	0.151	41	71.9%
		4.05	0.188	38	66.7%
Z	Trip length of Alpena Shipwreck Tours	3.98	0.162	41	71.9%
		3.74	0.209	38	66.7%

1. The blue in the table above represents the mean importance score, and the red is the mean satisfaction score for the sample.

Table 0.3 Mean importance-satisfaction scores for visitors¹

Shipwrecks and Lighthouses			Standard Error	N	% Rated
A	Ability to see shipwrecks while paddling	2.45 3.24	0.158 0.284	60 21	23.7% 8.3%
B	Visibility of shipwrecks while diving or snorkeling	2.31 3.55	0.183 0.366	44 11	17.4% 4.3%
C	Information and stories about shipwrecks and maritime history in museums	3.69 4.37	0.061 0.071	230 200	90.9% 79.1%
H	Preservation of lighthouses	4.00 4.23	0.068 0.095	196 129	78.3% 51.0%
Access and Parking			Standard Error	N	% Rated
D	Public access to Lake Huron (Trails, boardwalks, beaches, & boat launches)	3.82 4.17	0.077 0.092	179 134	70.8% 53.0%
E	Public access to maritime heritage resources, including shipwreck moorings	3.57 4.11	0.082 0.100	165 120	65.2% 47.4%
F	Public access to parks and other natural areas	3.80 4.27	0.072 0.082	200 152	79.1% 60.1%
G	Access to lighthouses	3.73 4.16	0.070 0.102	197 132	77.9% 52.2%
I	Marina facilities, boat ramps & launching facilities	2.81 3.93	0.129 0.157	122 56	48.2% 22.1%
J	Shore side signage with information about maritime heritage and history	3.53 3.83	0.080 0.099	176 156	70.4% 61.7%
K	Road side/wayfinding signage directing me to GLMHC/ Alpena Shipwreck Tours.	3.49 3.67	0.074 0.104	200 172	79.1% 68.0%
L	Parking at/for GLMHC/ Alpena Shipwreck Tours	3.24 3.89	0.073 0.082	229 203	90.5% 80.2%
Great Lakes Maritime Heritage Center			Standard Error	N	% Rated
M	GLMHC is free admission	3.15 4.50	0.080 0.062	229 208	90.5% 82.2%
N	GLMHC merchandise available for purchase	2.59 3.71	0.082 0.090	204 173	80.6% 68.4%
O	Welcoming and friendly staff at GLMHC	3.90 4.55	0.055 0.059	237 210	93.7% 83.0%
P	GLMHC was engaging to the children in my group	3.71 4.60	0.143 0.100	73 65	28.9% 25.7%
Q	Your self-guided experience at GLMHC	3.61 4.33	0.060 0.070	234 209	92.5% 82.6%
R	Cleanliness of bathrooms at GLMHC	3.84 4.41	0.060 0.070	231 198	91.3% 78.3%
Alpena Shipwreck Tours			Standard Error	N	% Rated
S	Welcoming and friendly staff at Alpena Shipwreck Tours	3.85 4.55	0.075 0.084	158 116	62.5% 45.8%
T	Cleanliness of bathrooms at Alpena Shipwreck Tours	3.66 4.26	0.085 0.120	127 78	50.2% 30.8%
U	The Alpena Shipwreck Tour was engaging to the children in my group	3.78 4.37	0.159 0.157	59 46	23.3% 18.2%
V	Narration on Alpena Shipwreck Tours	3.78 4.33	0.087 0.109	129 100	51.0% 39.5%
W	Ticket price of Alpena Shipwreck Tours	3.28 3.74	0.088 0.123	135 103	53.4% 40.7%
X	Easy boarding process of Alpena Shipwreck Tours	3.55 4.19	0.091 0.117	133 103	52.6% 40.7%
Y	Time spent viewing each shipwreck on Alpena Shipwreck Tours	3.50 4.11	0.101 0.129	130 101	51.4% 39.9%
Z	Trip length of Alpena Shipwreck Tours	3.57 4.05	0.087 0.124	130 101	51.4% 39.9%

1. The blue in the table above represents the mean importance score, and the red is the mean satisfaction score for the sample.

The tables below show the statistical tests for differences between residents and visitors. For the continuous variables of importance and satisfaction, t-tests were employed to see if there were statistical differences between visitors and residents of the region. Tests for equality of variances (Folded F-Test) were performed to determine the appropriate t-test: pooled for cases of equality of variances and Satterthwaite for unequal variances. Tests were completed using SAS PROC T-test. The Folded F-Tests revealed that there were equal variances; the pooled t-test statistics are presented in Tables 6.4 and 6.5.

There were no statistically significant differences between the importance ratings of residents and visitors at the 5% level except the ticket price of Alpena Shipwreck Tours and the length of Alpena Shipwreck Tours (see italicized rows in Table 6.4). The residents had a statistically higher mean for both items, meaning they place a higher level of importance on how much tickets cost to go to Alpena Shipwreck Tours and on the length of Alpena Shipwreck Tours. There were statistical differences between the satisfaction ratings of residents and visitors for ability to see shipwrecks while paddling and Great Lakes Maritime Heritage Center merchandise available for purchase at the 5% level (see italicized rows in Table 6.5). Residents had a statistically higher mean.

Table 0.4 Statistical tests between residents and visitors for importance ratings

Variable	Mean Difference	T-Value	T-Value Significance
Ability to see shipwrecks while paddling	0.121	0.39	0.696
Visibility of shipwrecks while diving or snorkeling	0.482	1.35	0.183
Information and stories about shipwrecks and maritime history in museums	-0.014	-0.10	0.923
Public access to Lake Huron (trails, boardwalks, beaches, & boat launches)	0.247	1.44	0.151
Public access to maritime heritage resources, including shipwreck moorings	0.291	1.63	0.105
Public access to parks and other natural areas	0.105	0.66	0.510
Access to lighthouses	-0.050	-0.30	0.765
Preservation of lighthouses	0.022	0.14	0.892
Marina facilities, boat ramps, & launching facilities	0.431	1.57	0.119
Shore-side signage with information about maritime heritage and history	0.100	0.54	0.589
Roadside/wayfinding signage to the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours	0.260	1.46	0.147
Parking at/for the Great Lakes Maritime Heritage Center/ Alpena Shipwreck Tours	0.000	0.00	0.998
The Great Lakes Maritime Heritage Center has free admission	0.273	1.51	0.133
The Great Lakes Maritime Heritage Center merchandise available for purchase	-0.039	-0.22	0.829
Welcoming and friendly staff at the Great Lakes Maritime Heritage Center	0.044	0.34	0.733
The Great Lakes Maritime Heritage Center was engaging to the children in my group	0.362	1.41	0.161
Self-guided experience at the Great Lakes Maritime Heritage Center	-0.117	-0.78	0.434
Cleanliness of bathrooms at the Great Lakes Maritime Heritage Center	0.041	0.29	0.774
Welcoming and friendly staff at Alpena Shipwreck Tours	0.263	1.67	0.097
Cleanliness of bathrooms at Alpena Shipwreck Tours	0.049	0.27	0.784
Alpena Shipwreck Tour was engaging to the children in my group	0.173	0.60	0.548
Narration on Alpena Shipwreck Tours	0.320	1.81	0.073
<i>Ticket price of Alpena Shipwreck Tours</i>	<i>0.419</i>	<i>2.26</i>	<i>0.025</i>
Easy boarding process of Alpena Shipwreck Tours	0.101	0.52	0.607
<i>Time spent viewing each shipwreck on Alpena Shipwreck Tours</i>	<i>0.402</i>	<i>2.02</i>	<i>0.046</i>
<i>Trip length of Alpena Shipwreck Tours</i>	<i>0.358</i>	<i>2.00</i>	<i>0.047</i>

Table 0.5 Statistical tests between residents and visitors for satisfaction ratings

Variable	Mean Difference	T-Value	T-Value Significance
<i>Ability to see shipwrecks while paddling</i>	1.540	3.35	0.002
Visibility of shipwrecks while diving or snorkeling	1.055	1.73	0.106
Information and stories about shipwrecks and maritime history in museums	-0.141	-0.86	0.392
Public access to Lake Huron (trails, boardwalks, beaches, & boat launches)	-0.009	-0.05	0.962
Public access to maritime heritage resources, including shipwreck moorings	-0.136	-0.64	0.525
Public access to parks and other natural areas	-0.070	-0.38	0.703
Access to lighthouses	-0.159	-0.72	0.471
Preservation of lighthouses	0.038	0.19	0.852
Marina facilities, boat ramps, & launching facilities	0.390	1.36	0.178
Shore-side signage with information about maritime heritage and history	0.011	0.05	0.962
Roadside/wayfinding signage to the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours	0.207	0.88	0.377
Parking at/for the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours	-0.009	-0.05	0.959
The Great Lakes Maritime Heritage Center has free admission	0.005	0.04	0.972
<i>The Great Lakes Maritime Heritage Center merchandise available for purchase</i>	0.445	2.25	0.026
Welcoming and friendly staff at the Great Lakes Maritime Heritage Center	-0.108	-0.82	0.413
The Great Lakes Maritime Heritage Center was engaging to the children in my group	0.240	-1.20	0.233
Self-guided experience at the Great Lakes Maritime Heritage Center	-0.065	-0.39	0.696
Cleanliness of bathrooms at the Great Lakes Maritime Heritage Center	-0.069	-0.44	0.657
Welcoming and friendly staff at Alpena Shipwreck Tours	0.210	1.38	0.171
Cleanliness of bathrooms at Alpena Shipwreck Tours	0.184	0.78	0.440
The Alpena Shipwreck Tour was engaging to the children in my group	0.030	0.11	0.912
Narration on Alpena Shipwreck Tours	0.249	1.27	0.205
Ticket price of Alpena Shipwreck Tours	0.019	0.08	0.937
Easy boarding process of Alpena Shipwreck Tours	0.148	0.68	0.495
Time spent viewing each shipwreck on Alpena Shipwreck Tours	-0.056	-0.23	0.815
Trip length of Alpena Shipwreck Tours	-0.313	-1.31	0.193

Resident Four Quadrant Analysis

Below shows the scatter plot for the four quadrant analysis. The mean importance score was 3.65 and the mean satisfaction score was 4.24. Using this information, the 26 items can be separated into the quadrants. Some of the lowest priority items (high satisfaction and low importance) were parking and merchandise at Great Lakes Maritime Heritage Center. The cleanliness of the bathrooms at Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours narration fell into the “keep up the good work category (relatively more important and relatively more satisfied).

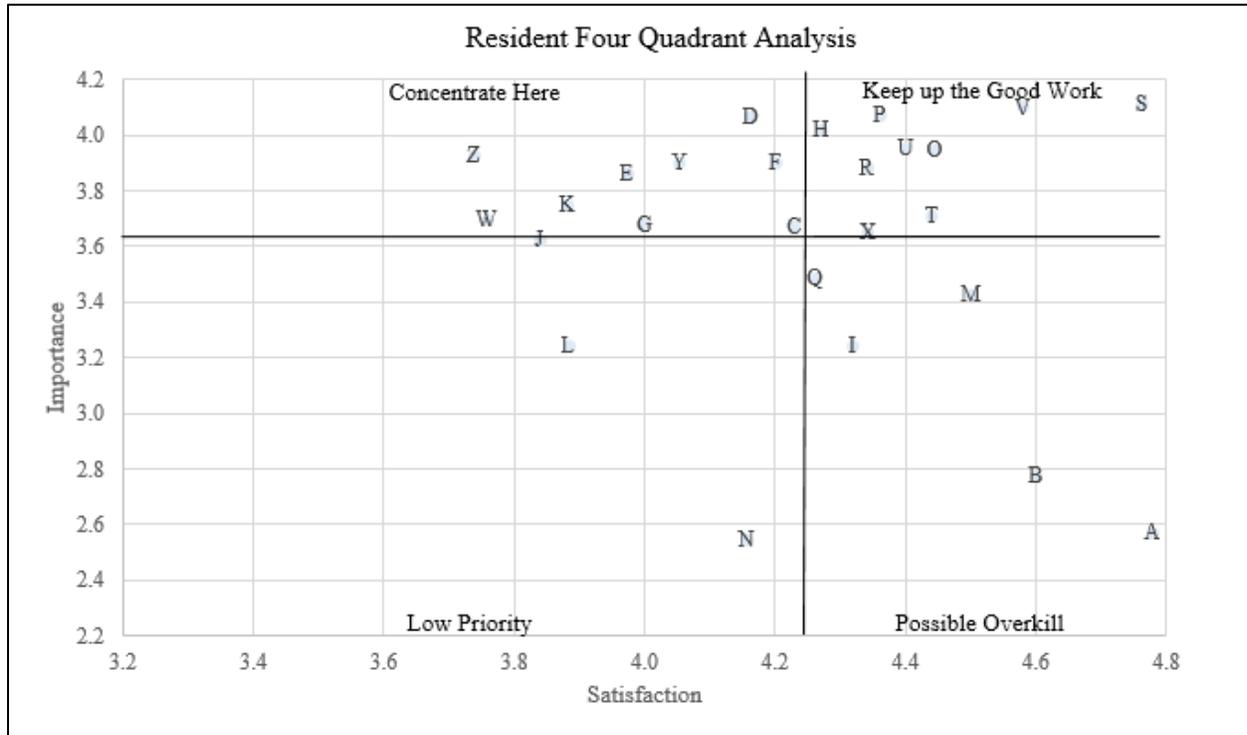


Figure 0.2 Resident four quadrant analysis

Concentrate Here:

- C. Information and stories about shipwrecks and maritime history in museums
- D. Public access to Lake Huron (trails, boardwalks, beaches, & boat launches)
- E. Public access to maritime heritage resources, including shipwreck moorings
- F. Public access to parks and other natural areas
- G. Access to lighthouses
- K. Roadside/wayfinding signage with directions to the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours
- W. Ticket price of Alpena Shipwreck Tours
- Y. Time spent viewing each shipwreck on Alpena Shipwreck Tours
- Z. Trip length of Alpena Shipwreck Tours

Low Priority:

- J. Shoreside signage with information and maritime heritage and history

- L. Parking at/for the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours
- N. The Great Lakes Maritime Heritage Center merchandise available for purchase

Possible Overkill:

- A. Ability to see shipwrecks while paddling
- I. Marina facilities, boat ramps, & launching facilities
- M. The Great Lakes Maritime Heritage Center has free admission
- Q. Self-guided experience in the Great Lakes Maritime Heritage Center

Keep Up the Good Work:

- B. Visibility of shipwrecks while diving and snorkeling
- H. Preservation of lighthouses
- O. Welcoming and friendly staff at the Great Lakes Maritime Heritage Center
- P. The Great Lakes Maritime Heritage Center was engaging to children in my group
- R. Cleanliness of bathrooms at the Great Lakes Maritime Heritage Center
- S. Welcoming and friendly staff at Alpena Shipwreck Tours
- T. Cleanliness of bathrooms at Alpena Shipwreck Tours
- U. Alpena Shipwreck Tours was engaging to the children in my group
- V. Narration on Alpena Shipwreck Tours
- X. Easy boarding process of Alpena Shipwreck Tours

Visitor Four Quadrant Analysis

The average importance rating was 3.5 and the average satisfaction rating was 4.1 for visitors. Using this information, the 26 items are graphed in Figure 6.3. Visitors thought that resources could be “concentrated here” to improve public access to maritime heritage resources, including shipwrecks; shore-side signage with information about maritime heritage and history; and the trip length of Alpena Shipwreck Tours.

An area of “possible overkill” included public access to Lake Huron (trails, boardwalks, beaches, & boat launches). However, public access to parks and other natural areas and information and stories about shipwrecks and maritime history in museums fell into the “keep up the good work” category.

Concentrate Here:

- E. Public access to maritime heritage resources, including shipwrecks moorings
- J. Shore-side signage with information about maritime heritage and history
- Y. Time spent viewing each shipwreck on Alpena Shipwreck Tours
- Z. Trip length of Alpena Shipwreck Tours

Low Priority:

- A. Ability to see shipwrecks
- B. Visibility of shipwrecks while diving or snorkeling
- I. Marina facilities, boat ramps, & launching facilities

- K. Roadside/wayfinding signage with directions to the Great Lakes Maritime Heritage Center/ Alpena Shipwreck Tours
- L. Parking at/for the Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours
- N. The Great Lakes Maritime Heritage Center merchandise available for purchase
- W. Ticket price of Alpena Shipwreck Tours

Possible Overkill

- M. Great Lakes Maritime Heritage Center has free admission

Keep Up the Good Work

- C. Information and stories about shipwrecks and maritime history in museums
- D. Public access to Lake Huron (trails, boardwalks, beaches, & boat launches)
- F. Public access to parks and other natural areas
- G. Access to lighthouses
- H. Preservation of lighthouses
- O. Welcoming and friendly staff at the Great Lakes Maritime Heritage Center
- P. The Great Lakes Maritime Heritage Center was engaging to the children in my group
- Q. Self-guided experience at the Great Lakes Maritime Heritage Center
- R. Cleanliness of bathrooms at the Great Lakes Maritime Heritage Center
- S. Welcoming and friendly staff at Alpena Shipwreck Tours
- T. Cleanliness of bathrooms at Alpena Shipwreck Tours
- U. The Alpena Shipwreck Tour was engaging to the children in my group
- V. Narration on Alpena Shipwreck Tours
- X. Easy boarding process of Alpena Shipwreck Tours

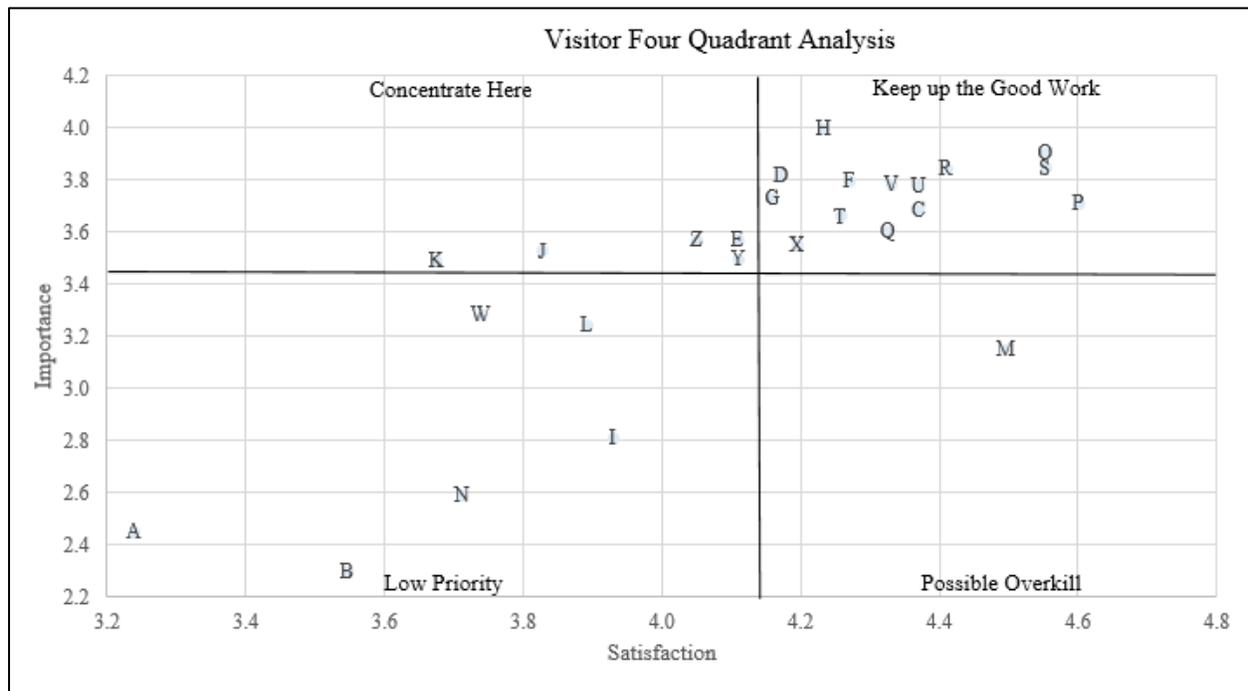


Figure 0.3 Visitor four quadrant analysis

CHAPTER 7: EXPENDITURES

Here the methods are detailed on how estimates of spending per-trip and per person-day were obtained for the study area (Alpena, Presque Isle, and Alcona counties) and total trip. The IMPLAN input-output model was used to estimate the contributions of spending on total output/sales, value-added, income, and employment, including the multipliers for study area spending. IMPLAN is detailed in the next chapter. Expenditures are not presented for respondents and visitors individually. The sample size of respondents was not large enough to provide estimates with confidence for the two separate groups. Consequently, expenditures are presented for the whole sample only.

The next step is to use the sample estimates to extrapolate population person-days. The number of visitors to Alpena Shipwreck Tours and the Great Lakes Maritime Heritage Center is known. In total there were 7,865 adult visitors to Alpena Shipwreck Tours and 80,287 visitors to the Great Lakes Maritime Heritage Center. Although the total number of visitors to each location is known, many of the visitors at each site visited both. This must be accounted for in estimates or double counting will ensue with extrapolating individual estimates to population spending.

Table 0.1 Great Lakes Maritime Heritage Museum and Alpena Shipwreck Tours sample visitation

Location	Respondents	Percent
Both	135	48.4%
Alpena Shipwreck Tours	17	6.1%
Great Lakes Maritime Heritage Center	127	45.5%
Total	279	100%

Extrapolating from the sample to the population, of those that went to Alpena Shipwreck Tours, 6.1% only went on the boat and not to the Great Lakes Maritime Heritage Center. Knowing this we can then estimate the total number of unique visitors. The results are shown in Table 7.2.

Table 0.2 Visitors to Alpena Shipwreck Tours and Great Lakes Maritime Heritage Center – population estimates

Location	Sample	Population	Unique Visitors
Alpena Shipwreck Tours	17	7,865	480
Great Lakes Maritime Heritage Center	127	80,287	80,287
Total	279	86,802	80,767

Expenditures Per Person-Trip and Total Annual Expenditures

The expenditure mailback/online survey (Appendix A) asked respondents for their total expenditures for the trip and then to identify how much was spent within the study area. The number of people that the expense covered was also asked. (See Question 16 on the mailback survey.)

Expenditures Per Person-Day

For future analyses, it is useful to have expenditures normalized on a per person-day basis. To obtain the economic contribution to the local economy of recreational activity one can multiply the total person-days by the expenditure profile of expenditures per person-day to get an estimate of total expenditures. This total expenditure can then be inputted into the IMPLAN model to estimate the contribution on output/sales, value-added, income, and employment. To get total expenditures, multiply the person-day expenditures by the total number of unique visitors. Due to the sample size, estimates are not provided for visitor and residents individually. Instead one estimate for the sample is reported.

Per-person per-day expenditures for the trip were calculated by taking the reported expenditures for the trip and dividing each expenditure item by the number of people that expenditure covered. This gives us the per-person expenditure. The next step is to divide the per person expenditure by the number of days spent in Michigan. This last step provides the per-person expenditures per day for Michigan.

To obtain the per-person per-day expenditures for the Alpena region (the study area), the expenditures in the study area were divided by the number of people that expenditure covered. This provides the per-person expenditure for the Alpena region. The next step is to take that estimate and divide it by the number of days in the Alpena region. This gives the per-person per-day expenditure for the study area.

It is possible that the per-person per day spent for the trip is less than the per-person spending for the study area. For example, assume someone spent \$200 on food in Michigan and \$195 of that was in Alpena. The person then spent nine days in Michigan, eight of them in Alpena. This means the person spent \$22.22 for their per-person per day expenditure on food in Michigan, but the per-person per-day expenditure in the study area was \$24.38.

Table 7.3 below presents the per-person per-day expenditures for respondents in Michigan. The category of hotel/motel had the highest per-person per-day expenditure at \$10.80, and the second highest category was food and drink at a restaurant or bar at \$9.02. Across all lodging, the spending was \$14.68 per-person per-day.

Table 0.3 Per-person per-day expenditures in Michigan

Michigan Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Activities					
Scuba diving or snorkeling on shipwrecks via private boat	\$0.004	\$0.00	\$1.11	0.004	283
Scuba diving or snorkeling on shipwrecks via charter	\$0.000	\$0.00	\$0.00	0.000	283
Snorkeling/diving equipment purchase or rental	\$0.054	\$0.00	\$8.89	0.039	283
On the water cruises and tours (including AST)	\$5.176	\$0.00	\$78.13	0.631	276
Fishing charters	\$0.412	\$0.00	\$75.00	0.303	283
Personal watercraft rental	\$0.135	\$0.00	\$16.25	0.075	282
Boat launch or marina fees	\$0.116	\$0.00	\$11.11	0.059	283
Fuel for boats	\$0.111	\$0.00	\$14.00	0.057	283
Land-based sightseeing tours	\$0.128	\$0.00	\$12.00	0.059	283
Admission to amusement, festivals, and other attractions (e.g., lighthouses and museums)	\$1.466	\$0.00	\$78.13	0.357	283
Michigan Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Other Activities					
Equipment purchased for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	\$0.625	\$0.00	\$137.50	0.496	283
Rental of equipment for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	\$0.044	\$0.00	\$5.00	0.022	282
Fees or costs for beach access or hiking	\$0.301	\$0.00	\$78.13	0.276	283
Equipment purchased for recreation (swimming, camping, hiking)	\$0.457	\$0.00	\$60.00	0.240	282
Rental of equipment for recreation (swimming, camping, hiking)	\$0.151	\$0.00	\$31.25	0.115	283
Guided service tours (not listed above)	\$0.054	\$0.00	\$12.00	0.044	283
Tickets for motion pictures, theaters, musical performances, concerts, etc.	\$0.395	\$0.00	\$42.50	0.172	283
Wine tasting	\$0.890	\$0.00	\$90.00	0.384	282
Other, please specify:	\$3.115	\$0.00	\$300.00	1.464	282

Michigan Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Lodging					
Hotel/motel	\$10.799	\$0.00	\$180.00	1.408	280
Bed & breakfast	\$0.324	\$0.00	\$33.33	0.188	283
Cabin	\$1.221	\$0.00	\$70.00	0.464	283
Campground fees	\$1.101	\$0.00	\$55.00	0.294	283
Cottage/condo/rental home	\$1.234	\$0.00	\$78.13	0.445	283
Other, please specify:	\$0.000	\$0.00	\$0.00	0.000	283
Michigan Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Food & Beverages					
Food purchased at a grocery store	\$3.528	\$0.00	\$78.13	0.537	281
Food and drinks bought at restaurants and bars	\$9.018	\$0.00	\$84.00	0.736	277
Food and drinks purchased on a vessel charter or tour	\$0.127	\$0.00	\$16.00	0.061	281
Other, please specify:	\$0.214	\$0.00	\$18.75	0.088	282
Michigan Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Transportation					
Rental automobile, motor home, trailer, motorcycle, etc.	\$0.881	\$0.00	\$55.00	0.344	283
Gas & oil for automobile or RV	\$4.761	\$0.00	\$78.13	0.523	279
Automobile or RV parking fees & tolls	\$0.012	\$0.00	\$1.43	0.007	283
Taxi fare	\$0.004	\$0.00	\$1.25	0.004	283
Ferry	\$0.166	\$0.00	\$25.00	0.095	283
Train	\$0.000	\$0.00	\$0.00	0.000	283
Bus fare (day passes and package tours)	\$2.373	\$0.00	\$300.00	1.439	283
Airline fare	\$2.287	\$0.00	\$150.00	0.812	283
Michigan Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Miscellaneous Expenditures					
Binoculars	\$0.010	\$0.00	\$2.68	0.010	282
Camera and supplies – film, batteries, memory stick or card, film development	\$0.184	\$0.00	\$50.00	0.177	283
Footwear	\$0.476	\$0.00	\$50.00	0.251	283
Clothing (including foul weather gear, hats, sweatshirts, etc.)	\$2.079	\$0.00	\$78.13	0.486	282
Sunblock and other sundries	\$0.067	\$0.00	\$6.00	0.028	282
Souvenirs, art, gifts (not including clothing)	\$1.702	\$0.00	\$78.13	0.341	282
Other, please specify:	\$0.737	\$0.00	\$40.00	0.250	282

Table 7.4 presents the per-person per-day expenditures for the Alpena study area. The category of hotel/motel had the highest per-person per-day expenditure at \$11.27, and the second highest category was food and drink at a restaurant or bar at \$7.02. Across all lodging the spending was \$14.23 per-person per-day. The highest spending based upon activities was on the water cruises and tours (including Alpena Shipwreck Tours) at \$2.92, followed by admissions to amusements, festivals and other attractions at \$1.27.

Table 0.4 Per-person per-day expenditures in Alpena study area

Alpena Area Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Activities					
Scuba diving or snorkeling on shipwrecks via private boat	\$0.004	\$0.00	\$1.11	0.004	283
Scuba diving or snorkeling on shipwrecks via charter	\$0.000	\$0.00	\$0.00	0.000	283
Snorkeling/diving equipment purchase or rental	\$0.031	\$0.00	\$8.89	0.031	283
On the water cruises and tours (including AST)	\$2.920	\$0.00	\$78.13	0.577	281
Fishing charters	\$0.501	\$0.00	\$100.00	0.382	283
Personal watercraft rental	\$0.185	\$0.00	\$25.00	0.104	282
Boat launch or marina fees	\$0.098	\$0.00	\$16.67	0.069	283
Fuel for boats	\$0.038	\$0.00	\$5.56	0.023	283
Land-based sightseeing tours	\$0.112	\$0.00	\$12.50	0.058	283
Admission to amusement, festivals, and other attractions (e.g., lighthouses and museums)	\$1.267	\$0.00	\$78.13	0.422	283
Alpena Area Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Other Activities					
Equipment purchased for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	\$0.098	\$0.00	\$27.78	0.098	283
Rental of equipment for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	\$0.086	\$0.00	\$8.33	0.046	282
Fees or costs for beach access or hiking	\$0.286	\$0.00	\$78.13	0.276	283
Equipment purchased for recreation (swimming, camping, hiking)	\$0.207	\$0.00	\$45.00	0.166	283
Rental of equipment for recreation (swimming, camping, hiking)	\$0.442	\$0.00	\$125.00	0.442	283
Guided service tours (not listed above)	\$0.106	\$0.00	\$30.00	0.106	283
Tickets for motion pictures, theaters, musical performances, concerts, etc.	\$0.140	\$0.00	\$15.00	0.076	283
Wine tasting	\$0.540	\$0.00	\$90.00	0.335	282
Other, please specify:	\$0.826	\$0.00	\$100.00	0.503	283

Alpena Area Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Lodging					
Hotel/motel	\$11.273	\$0.00	\$600.00	3.410	281
Bed & breakfast	\$0.471	\$0.00	\$100.00	0.372	283
Cabin	\$0.365	\$0.00	\$70.00	0.274	283
Campground fees	\$1.501	\$0.00	\$125.00	0.533	283
Cottage/condo/rental home	\$0.624	\$0.00	\$78.13	0.390	283
Other, please specify:	\$0.000	\$0.00	\$0.00	0.000	283
Alpena Area Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Food & Beverages					
Food purchased at a grocery store (or farmers market)	\$2.766	\$0.00	\$125.00	0.665	283
Food and drinks bought at restaurants and bars	\$7.018	\$0.00	\$125.00	0.871	279
Food and drinks purchased on a vessel charter or tour	\$0.170	\$0.00	\$40.00	0.142	282
Other, please specify:	\$0.181	\$0.00	\$18.75	0.084	282
Alpena Area Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Transportation					
Rental automobile, motor home, trailer, motorcycle, etc.	\$0.486	\$0.00	\$50.00	0.282	283
Gas & oil for automobile or RV	\$3.566	\$0.00	\$125.00	0.632	280
Automobile or RV parking fees & tolls	\$0.005	\$0.00	\$1.43	0.005	283
Taxi fare	\$0.000	\$0.00	\$0.00	0.000	283
Ferry	\$0.150	\$0.00	\$27.50	0.111	283
Train	\$0.000	\$0.00	\$0.00	0.000	283
Bus fare (e.g., day passes and package tours)	\$0.035	\$0.00	\$10.00	0.035	283
Airline fare	\$0.186	\$0.00	\$52.50	0.186	283
Alpena Area Per Person-Per Day Expenditures	Mean	Minimum	Maximum	Standard Error	N
Miscellaneous Expenditures					
Binoculars	\$0.010	\$0.00	\$2.68	0.010	282
Camera and supplies – film, batteries, memory stick or card, film development	\$0.011	\$0.00	\$3.00	0.011	283
Footwear	\$0.066	\$0.00	\$11.25	0.048	283
Clothing (including foul weather gear, hats, sweatshirts, etc.)	\$2.579	\$0.00	\$250.00	0.975	282
Sunblock and other sundries	\$0.041	\$0.00	\$3.75	0.020	282
Souvenirs, art, and gifts (not including clothing)	\$1.292	\$0.00	\$78.13	0.345	282
Other, please specify:	\$0.400	\$0.00	\$40.00	0.209	283

The next table (7.5) presents the total spending per day of the population. As discussed earlier in this chapter, the total number of unique estimated individuals that visited the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours was estimated to be 80,767. This number is multiplied by the per-person per-day expenditures for each expenditure item to estimate the spending per day in the state and study area.

Table 0.5 Total spending per day for population of Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours visitors

	Total Spending Per Day in Michigan	Total Spending Per Day in Study Area
Activities		
Scuba diving or snorkeling on shipwrecks via private boat	\$0.004	\$0.004
Scuba diving or snorkeling on shipwrecks via charter	\$0.000	\$0.000
Snorkeling/diving equipment purchase or rental	\$0.054	\$0.031
On the water cruises and tours (including AST)	\$5.176	\$2.920
Fishing charters	\$0.412	\$0.501
Personal watercraft rental	\$0.135	\$0.185
Boat launch or marina fees	\$0.116	\$0.098
Fuel for boats	\$0.111	\$0.038
Land-based sightseeing tours	\$0.128	\$0.112
Admission to amusement, festivals, and other attractions (e.g., lighthouses and museums)	\$1.466	\$1.267
	Total Spending Per Day in Michigan	Total Spending Per Day in Study Area
Other Activities		
Equipment purchased for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	\$0.625	\$0.098
Rental of equipment for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	\$0.044	\$0.086
Fees or costs for beach access or hiking	\$0.301	\$0.286
Equipment purchased for recreation (swimming, camping, hiking)	\$0.457	\$0.207
Rental of equipment for recreation (swimming, camping, hiking)	\$0.151	\$0.442
Guided service tours (not listed above)	\$0.054	\$0.106
Tickets for motion pictures, theaters, musical performances, concerts, etc.	\$0.395	\$0.140
Wine tasting	\$0.890	\$0.540
Other, please specify:	\$3.115	\$0.826
Lodging		

	Total Spending Per Day in Michigan	Total Spending Per Day in Study Area
Hotel/motel	\$10.799	\$11.273
Bed & breakfast	\$0.324	\$0.471
Cabin	\$1.221	\$0.365
Campground fees	\$1.101	\$1.501
Cottage/condo/rental home	\$1.234	\$0.624
Other, please specify:	\$0.000	\$0.000
	Total Spending Per Day in Michigan	Total Spending Per Day in Study Area
Food & Beverages		
Food purchased at a grocery store (or farmers market)	\$3.528	\$2.766
Food and drinks bought at restaurants and bars	\$9.018	\$7.018
Food and drinks purchased on a vessel charter or tour	\$0.127	\$0.170
Other, please specify:	\$0.214	\$0.181
	Total Spending Per Day in Michigan	Total Spending Per Day in Study Area
Transportation		
Rental automobile, motor home, trailer, motorcycle, etc.	\$0.881	\$0.486
Gas & oil for automobile or RV	\$4.761	\$3.566
Automobile or RV parking fees & tolls	\$0.012	\$0.005
Taxi fare	\$0.004	\$0.000
Ferry	\$0.166	\$0.150
Train	\$0.000	\$0.000
Bus fare (e.g., day passes and package tours)	\$2.373	\$0.035
Airline fare	\$2.287	\$0.186
	Total Spending Per Day in Michigan	Total Spending Per Day in Study Area
Miscellaneous Expenditures		
Binoculars	\$0.010	\$0.010
Camera and supplies – film, batteries, memory stick or card, film development	\$0.184	\$0.011
Footwear	\$0.476	\$0.066
Clothing (including foul weather gear, hats, sweatshirts, etc.)	\$2.079	\$2.579
Sunblock and other sundries	\$0.067	\$0.041
Souvenirs, art, and gifts (not including clothing)	\$1.702	\$1.292
Other, please specify:	\$0.737	\$0.400
TOTAL ALL EXPENDITURES	\$56.94	\$41.08

The next step is to calculate total expenditures by those who visit the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours. The numbers in Table 7.5 above are multiplied by the number of days spent in Michigan and the Alpena study area, respectively. The number of days spent in Michigan averaged 5.77 and the number of days spent in the Alpena study area averaged 3.47 for each trip. On average respondents took 2.81 trips to the region. The number of average trips multiplied by the number of average days per trip is the total estimate of days annually. Total expenditures for the population of interest annually are presented in Table 7.6.

Table 0.6 Total annual spending in Michigan and study area

	Total Spending in Michigan	Total Spending in Study Area
Activities		
Scuba diving or snorkeling on shipwrecks via private boat	\$5,141	\$3,092
Scuba diving or snorkeling on shipwrecks via charter	\$0	\$0
Snorkeling/diving equipment purchase or rental	\$70,879	\$24,736
On the water cruises and tours (including AST)	\$6,778,097	\$2,299,820
Fishing charters	\$539,853	\$394,230
Personal watercraft rental	\$176,973	\$145,452
Boat launch or marina fees	\$151,994	\$77,300
Fuel for boats	\$144,750	\$30,202
Land-based sightseeing tours	\$167,267	\$88,337
Admission to amusement, festivals, and other attractions (e.g., lighthouses and museums)	\$1,920,423	\$997,982
	Total Spending in Michigan	Total Spending in Study Area
Other Activities		
Equipment purchased for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	\$818,776	\$77,300
Rental of equipment for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	\$58,046	\$67,489
Fees or costs for beach access or hiking	\$393,900	\$225,476
Equipment purchased for recreation (swimming, camping, hiking)	\$598,652	\$163,258
Rental of equipment for recreation (swimming, camping, hiking)	\$197,817	\$347,850
Guided service tours (not listed above)	\$70,952	\$83,484
Tickets for motion pictures, theaters, musical performances, concerts, etc.	\$517,174	\$110,582
Wine tasting	\$1,165,404	\$424,918
Other, please specify:	\$4,079,294	\$650,593

	Total Spending in Michigan	Total Spending in Study Area
Lodging		
Hotel/motel	\$14,141,065	\$8,878,074
Bed & breakfast	\$424,170	\$371,040
Cabin	\$1,599,093	\$287,556
Campground fees	\$1,441,849	\$1,181,816
Cottage/condo/rental home	\$1,615,667	\$491,338
Other, please specify:	\$0	\$0
	Total Spending in Michigan	Total Spending in Study Area
Food & Beverages		
Food purchased at a grocery store (or farmers market)	\$4,619,461	\$2,178,379
Food and drinks bought at restaurants and bars	\$11,808,889	\$5,526,928
Food and drinks purchased on a vessel charter or tour	\$165,806	\$133,505
Other, please specify:	\$280,033	\$142,542
	Total Spending in Michigan	Total Spending in Study Area
Transportation		
Rental automobile, motor home, trailer, motorcycle, etc.	\$1,153,634	\$382,635
Gas & oil for automobile or RV	\$6,234,068	\$2,808,525
Automobile or RV parking fees & tolls	\$16,306	\$3,975
Taxi fare	\$5,784	\$0
Ferry	\$217,153	\$118,269
Train	\$0	\$0
Bus fare (e.g., day passes and package tours)	\$3,108,008	\$27,828
Airline fare	\$2,994,797	\$146,097
	Total Spending in Michigan	Total Spending in Study Area
Miscellaneous Expenditures		
Binoculars	\$12,445	\$7,484
Camera and supplies – film, batteries, memory stick or card, film development	\$241,545	\$8,348
Footwear	\$622,924	\$52,177
Clothing (including foul weather gear, hats, sweatshirts, etc.)	\$2,722,702	\$2,030,796
Sunblock and other sundries	\$87,756	\$32,495
Souvenirs, art, and gifts (not including clothing)	\$2,228,707	\$1,017,380
Other, please specify:	\$964,732	\$315,152
TOTAL ALL EXPENDITURES	\$74,561,988	\$32,354,444

CHAPTER 8: ECONOMIC CONTRIBUTIONS

Study Area

When people recreate in an area and spend money, their expenditures contribute to the local area economies. This chapter quantifies those economic contributions of spending by those who visited the Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours to employment, income, value-added, and output.

IMPLAN

Using the expenditures profiles presented in Chapter 7 of this report, the economic contributions of users of the Great Lakes Maritime Heritage Center and Alpena Shipwreck Tours were estimated. Table 8.1 provides a more detailed explanation of the terminology used in this report, as defined by IMPLAN.

Table 0.1 IMPLAN economic indicators' definitions

Indicator	Definitions and Relationships
Employment	Total annual average jobs. This includes self-employed and wage and salary employees, and all full-time, part-time, and seasonal jobs, based on a count of full-time/part-time averages over 12 months.
Labor Income	Defines the total value paid to local workers within a region. Labor income is the income source for induced household spending estimations. Labor Income = Employee Compensation + Proprietor Income
Value Added	Comprised of labor income, indirect business taxes (IBT), and other property type income (OPTI), Value Added demonstrates an industry's value of production over the cost of its purchasing the goods and services required to make its products. Value added is often referred to as gross regional product (GRP). Value Added = Labor Income + IBT + OPTI
Output	The total value of an industry's production, composed of the value of intermediate inputs and value added. In IMPLAN, this is typically viewed as the value of a change in sales or the value of increased production. However, annual production is not always equal to annual sales. If production levels are higher than sales, surpluses become inventory. Because inventory does not drive additional impacts in the year it was produced, in IMPLAN, direct industry sales = direct output. Output = Intermediate Inputs + Value Added

Source: Day, 2011

Impacts/contributions are defined as direct, indirect, or induced. In short, direct effects are those that occur within the sector of the expenditure. Indirect effects occur as a result of spending within the primary sector on goods and services from other sectors. Induced effects result from

the wage earners within the study area spending money on goods and services within the region. The indirect plus induced effects make up what is generally referred to as the “multiplier” effects. Table 8.2 explains these types of impacts/contributions in more detail.

Table 0.2 Impact/contribution type definitions

Type	Definition
Direct Effect	The effect of spending by recreators at each business they purchased goods or services from within the study area.
Indirect Effect	The result of a sector purchasing goods and services to produce their product from other industries located within the study area.
Induced Effect	Results from spending of employee wages that stem from both the direct and indirect effects within the study area.

Economic Contributions by Study Area

The next several tables present the economic contributions resulting from the expenditures explained in Chapter 7. The contributions were estimated using IMPLAN. Table 8.3 shows the codes that were used with the corresponding total expenditures presented in Chapter 7. The total expenditures in the Alpena study area were used in IMPLAN to estimate economic contributions to the local economy from those who visit the Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours. In cases where there are multiple codes assigned to an activity, the total expenditures were distributed evenly across the sectors. A few expenditure categories were entered as commodities: state/local government non-education, and groceries. Commodities in IMPLAN are used when a good or service that is purchased might be produced by multiple industries. For example, a person buys groceries, but the groceries might be produced by farms, factories, and/or other facilities. The commodity applies the expenditure to a variety of industries that would be used to produce that commodity.

Table 0.3 IMPLAN codes

Activity	IMPLAN Code
Scuba diving or snorkeling on shipwrecks via private boat	3156/443/404
Scuba diving or snorkeling on shipwrecks via charter	470
Snorkeling/diving equipment purchase or rental	443/404
Alpena Shipwreck Tours/glass bottom boat tours	414
Sailing charters	414
Sunset cruises	414
Fishing charters	414
Personal watercraft rental	443
Boat launch or marina fees	496
Fuel for boats	3156
Land-based sightseeing tours	414
Admission to amusement, festivals, and other attractions (e.g., lighthouses and museums)	493

Activity	IMPLAN Code
Other Activities	
Equipment purchased for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	404
Rental of equipment for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)	443
Fees or costs for beach access or hiking	State/Local Government Non-Education
Equipment purchased for recreation (swimming, camping, hiking)	404
Rental of equipment for recreation (swimming, camping, hiking)	443
Guided service tours (not listed above)	414
Tickets for motion pictures, theaters, musical performances, concerts, etc.	423
Wine tasting	414
Other, please specify:	493
Activity	IMPLAN Code
Lodging	
Hotel/motel	499
Bed & breakfast	500
Cabin	500
Campground fees	500
Cottage/condo/rental home	500
Other, please specify:	500
Activity	IMPLAN Code
Food & Beverages	
Food purchased at a grocery store (or farmers market)	Grocery Commodity
Food and drinks bought at restaurants and bars	503
Food and drinks purchased on a vessel charter or tour	414
Other, please specify:	Grocery Commodity
Activity	IMPLAN Code
Transportation	
Rental automobile, motor home, trailer, motorcycle, etc.	442
Gas & oil for automobile or RV	3156
Automobile or RV parking fees & tolls	State/Local Government Non-Education
Taxi fare	412
Ferry	412
Train	412
Bus fare (e.g., day passes and package tours)	412
Airline fare	408

Activity	IMPLAN Code
Miscellaneous Expenditures	
Binoculars	405
Camera and supplies – film, batteries, memory stick or card, film development	398
Footwear	403
Clothing (including foul weather gear, hats, sweatshirts, etc.)	403
Sunblock and other sundries	405
Souvenirs, art, and gifts (not including clothing)	405
Other, please specify:	405

Table 8.4 presents the economic contributions to the Alpena study area of the expenditures made in the Alpena study area. In total, annually more than 460 jobs are supported by those who come to the region to visit the Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours. Further, \$14.8 million in labor income and \$40.0 million in output is supported by these activities annually. Annual local, state, and federal tax dollars generated from the spending can also be estimated. In total, \$4.0 million of local and state tax dollars were generated and \$3.3 million in federal tax dollars were generated.

Table 0.4 Annual economic contributions to local economy

Type	Employment	Labor Income	Value Added	Output
Direct Effect	365	\$11,444,768	\$15,597,187	\$28,206,858
Indirect Effect	48	\$1,651,430	\$2,688,876	\$5,740,686
Induced Effect	55	\$1,688,237	\$3,198,187	\$6,004,586
Total Effect	467	\$14,784,435	\$21,484,250	\$39,952,130

Although expenditure estimates by resident status are not estimated due to the small sample of residents, it is possible to estimate the percentage of contributions attributed to residents and visitors. Using the percentage of total expenditures that were made by residents (12.0%) and the total expenditures that were made by visitors (88.0%), the economic contributions by resident status can be estimated. The results are shown in tables 8.5 and 8.6 below.

Table 0.5 Annual resident economic contributions

Type	Employment	Labor Income	Value Added	Output
Direct Effect	44	\$1,373,632	\$1,872,016	\$3,385,463
Indirect Effect	6	\$198,209	\$322,726	\$689,013
Induced Effect	7	\$202,627	\$383,855	\$720,686
Total Effect	56	\$1,774,467	\$2,578,597	\$4,795,162

Table 0.6 Annual visitor economic contributions

Type	Employment	Labor Income	Value Added	Output
Direct Effect	321	\$10,071,137	\$13,725,171	\$24,821,395
Indirect Effect	42	\$1,453,221	\$2,366,150	\$5,051,674
Induced Effect	48	\$1,485,610	\$2,814,332	\$5,283,899
Total Effect	411	\$13,009,968	\$18,905,653	\$35,156,969

CHAPTER 9: PROFILES OF USERS

This section of the report presents the demographics for the respondents who completed the longer online/mailback version of the survey.

Influence of TBNMS, the Great Lakes Maritime Heritage Center, and/or Alpena Shipwreck Tours on Decisions

One of the questions on the longer survey asked respondents, “Prior to your most recent visit to the Alpena Region, how much did you know about Thunder Bay National Marine Sanctuary?” Most residents knew something (86.4%) about TBNMS. However, nearly half the visitors knew nothing (47.6%) about the sanctuary before coming to the region.

Table 0.1 TBNMS knowledge

	Resident N=57	Visitor N=253	All N=317
Nothing	13.5%	47.6%	41.9%
A Little Bit	40.4%	44.8%	43.9%
A Lot	46.2%	7.5%	14.2%

Respondents were also asked how much of an influence the presence of Thunder Bay National Marine Sanctuary and the Great Lakes Maritime Heritage Center in Alpena had on their decision to select the Alpena region as a travel destination. Nearly a quarter, 24.6% of residents and visitors, indicated TBNMS and the Great Lakes Maritime Heritage Center had no influence. However, the remaining 75.6% of respondents reported that the sanctuary or heritage center had a little bit or a lot of influence on their decision to come to the region.

Table 0.2 Great Lakes Maritime Heritage Center influence

	Resident N=57	Visitor N=253	All N=317
Nothing	26.1%	24.1%	24.6%
A Little Bit	37.0%	39.8%	39.5%
A Lot	37.0%	36.1%	35.9%

The last question about influence revolved around Alpena Shipwreck Tours. The question was “How much of an influence did Alpena Shipwreck Tours (glass bottom boat, *Lady Michigan*) in Alpena have on your decision to select the Alpena region as a travel destination?” More than 40% of visitors reported that Alpena Shipwreck Tours had no influence on their decision to come to the region. Despite this, most respondents indicated that Alpena Shipwreck Tours had a little bit or a lot of influence on their decision.

Table 0.3 Alpena Shipwreck Tours influence

	Resident N=57	Visitor N=253	All N=317
Nothing	37.0%	42.4%	41.7%
A Little Bit	26.1%	21.6%	22.2%
A Lot	37.0%	36.0%	36.1%

When considering whether either TBNMS and the Great Lakes Maritime Heritage Center or Alpena Shipwreck Tours had an influence on the respondent's decision to come to the region, only 19.6% of residents reported that neither had an influence on their decision. The rate was slightly lower for visitors: 18.2% indicated that neither influenced their decision to come to the region. This means that for both residents and visitors, over 80% were influenced by at least one of the above to come to the region.

Household Size

Most of the respondents live with at least one other adult. Roughly 20% of respondents are the only adult in the household. Further, roughly three-quarters of respondents have no children in their household.

Table 0.4 Number of adults in household

Number of Adults	Resident N=49	Visitor N=202	All N=252
1	18.4%	19.3%	19.4%
2	69.4%	62.9%	63.9%
3	6.1%	11.4%	10.3%
4 or More	6.1%	6.4%	6.3%

Table 0.5 Number of children in respondent's party

Number of Children	Resident N=50	Visitor N=196	All N=247
0	74.0%	75.7%	75.7%
1	16.0%	10.1%	10.5%
2	2.0%	9.7%	8.1%
3	4.0%	3.6%	3.6%
4 or more	4.0%	1.5%	2.0%

Age

When looking at age for both residents and visitors, roughly half (50.0% and 50.2%, respectively) were age 60 or older. Residents were younger, with 17.3% of respondents being under the age of 40, while 13.9% of visitors were under 40.

Table 0.6 Age of respondents

Age	Resident N=52	Visitor N=209	All N=262
18-30	11.5%	2.9%	4.6%
31-40	5.8%	11.0%	9.9%

41-50	21.2%	14.4%	15.6%
51-60	11.5%	21.5%	19.5%
Over 60	50.0%	50.2%	50.4%

Gender

The majority of respondents were female. More than two-thirds, 67.3% of residents were female. The distribution of respondents that were visitors was more evenly distributed.

Table 0.7 Gender of respondents

Gender	Resident N=52	Visitor N=211	All N=267
Female	67.3%	51.7%	54.5%
Male	32.7%	48.3%	45.5%

Race

The majority of respondents were white: over 95% of residents and visitors were white. There were no African Americans or Native Hawaiians that responded. There was a small percentage of Native Americans or Alaskan Natives that visited the area (1.1% of all respondents).

Table 0.8 Race of respondents

Race	Resident N=57	Visitor N=253	All N=310
White	96.3%	97.6%	97.3%
Black	0.0%	0.0%	0.0%
Asian	0.0%	0.0%	0.0%
American Indian or Alaskan Native	3.7%	0.5%	1.1%
Native Hawaiian	0.0%	0.0%	0.0%
Other Race	0.0%	1.9%	1.5%

Ethnicity

Nearly all, 98.3% of respondents were not Hispanic. Roughly one percent of all visitors reported being Hispanic.

Table 0.9 Ethnicity of respondents

	Resident N=51	Visitor N=207	All N=259
Not Hispanic	98.3%	99.2%	99.1%
Hispanic	1.8%	0.8%	1.0%

Income

In general, the visitors had higher incomes than residents. This makes sense given visitors may have extra expenses, like air travel, hotels, and rental cars. More than 50% of visitors had incomes of \$75,000 or more, versus roughly 35.0% of residents.

Table 0.10 Income of respondents

Income	Resident N=40	Visitor N=176	All N=217
Under \$20,000	12.5%	2.3%	4.1%
\$20,000-\$34,999	15.0%	8.0%	9.7%
\$35,000-\$49,999	10.0%	11.4%	11.1%
\$50,000 to \$59,999	17.5%	8.0%	9.7%
\$60,000 to \$74,999	10.0%	15.3%	14.3%
\$75,000 to \$99,999	10.0%	23.9%	21.2%
\$100,000 to \$149,999	12.5%	18.8%	17.5%
\$150,000 or More	12.5%	12.5%	12.4%

Employment Status

A higher percentage of visitors to the area were employed full-time than residents. Roughly the same amount of residents and visitors were retired: 43.1% and 41.5%, respectively.

Table 0.11 Employment status of respondent

Employment Status	Resident N=51	Visitor N=212	All N=264
Employed full-time	33.3%	41.0%	39.4%
Employed part-time	9.8%	9.0%	9.1%
Homemaker / Stay At Home Parent	7.8%	0.9%	2.3%
None of the above	0.0%	0.9%	0.8%
Retired	43.1%	41.5%	42.0%
Self-employed	2.0%	4.7%	4.2%
Student	2.0%	0.9%	1.1%
Unemployed	2.0%	0.9%	1.1%

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GLOSSARY OF ACRONYMS

GRP – Gross regional product

IBT – Indirect business taxes

NOAA – National Oceanic and Atmospheric Administration

NSI – National Satisfaction Index

OPTI – Other property type income

TBNMS – Thunder Bay National Marine Sanctuary

APPENDIX A: SURVEYS

Resident On-Site Survey

1. On your visit today are you or have you:

	Yes	No	I'm planning to today
Toured the Great Lakes Maritime Heritage Center exhibits			
Taken the <i>Lady Michigan</i> cruise			

2. Please answer the following questions based on how likely or unlikely you are to do the following:

	N/A	Very Unlikely	Unlikely	Neither	Very Likely	Don't Know
Recommend Alpena Shipwreck Tours to friend						
Recommend Great Lakes Maritime Heritage Center to friend						
Visit Alpena Shipwreck Tours again						
Visit Great Lakes Maritime Heritage Center again						
Learn more about TBNMS						
Diving/snorkeling or paddling						

3. Please state how much you agree or disagree that the Great Lakes Maritime Heritage Center is an important cultural attraction to the City of Alpena?

___ Strongly Disagree ___ Disagree ___ Neutral ___ Agree ___ Strongly Agree ___ DK

4. What was the most memorable aspect of your Alpena Shipwreck Tours (*Lady Michigan*) experience?

5. What was the most memorable aspect of your Great Lakes Maritime Heritage Center visit?

6. Could your Alpena Shipwreck Tours (*Lady Michigan*) experience be improved? If yes, how?

7. Could your Great Lakes Maritime Heritage Center visit be improved? If yes, how?

8. How satisfied were you with the customer service (check one box)?

	N/A	Very Much	Somewhat	A Little	Not At All	Don't Know
Great Lakes Maritime Heritage Center						
Alpena Shipwreck Tours (<i>Lady Michigan</i>)						

9. How many adults (age 18 & older) are in your group? _____

10. How many children (under age 18) are in your group? _____

11. What is your age? _____ 18-30 _____ 31-40 _____ 41-50 _____ 51-60
 _____ Over 60

12. What is your sex? _____ Male _____ Female _____ Other

13. What is your e-mail address?

14. Respondent ID Number _____
 (Record on mailback survey or place on the postcard with the online information, based upon the respondent request)

Alpena Shipwreck Tours: Alpena Shipwreck Tours (glass bottom boat, *Lady Michigan*)

Great Lakes Maritime Heritage Center: NOAA's Great Lakes Maritime Heritage Center

TBNMS: Thunder Bay National Marine Sanctuary



Survey Figure: Alpena region shown in Survey
Credit: Developed by TBNMS in ArcGIS

Visitor On-Site Survey

15. On your visit today are you **or** have you:

	Yes	No	I'm planning to today
Toured the Great Lakes Maritime Heritage Center exhibits			
Taken the Alpena Shipwreck Tours <i>Lady Michigan</i> cruise			

16. Is this your first trip to the region? Yes No

17. How many trips/visits have you had to the region in the past 12 months? _____

18. We'd like to ask you some details about where you are traveling. Where is the primary or ultimate destination of your trip? _____

- a. If answered a place other than the Alpena Region: Are you on your way there
 Coming back from there

19. Did you learn about Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours _____ before or _____ after coming to the region?

20. How did you travel to the Alpena region? (check all that apply)

- Personal auto Boat Flight into Alpena
 Personal RV Tour bus Flight into Detroit
 Rented auto/RV Flight to other
destination _____
 Other _____

21. How much influence did each of the following have on your travel plans to the Alpena Region?

	Primary Reason	Very Much	Somewhat	A Little	Not At All	Don't Know
Great Lakes Maritime Heritage Center						
Alpena Shipwreck Tours (<i>Lady Michigan</i>)						

22. Prior to your visit to the Alpena region, from which sources of information had you heard about the sanctuary? (Check all that apply).

- Prior visit as a tourist to the Alpena Region
- Prior participant at TBNMS educational field trip or workshop/training
- Educational presentation by TBNMS staff in my community
- Visit Alpena website (www.visitalpena.com)
- NOAA or TBNMS website
- Pure Michigan website (www.michigan.org)
- “Pure Michigan” TV or radio advertisements
- TBNMS social media (Facebook, Twitter, blogs, etc.)
- Documentary on TV about TBNMS
- News stories/publicity about TBNMS
- Print advertisement in newspaper or magazine
- “Get Into Your Sanctuary” billboard(s)
- Other billboard(s)
- Convention/trade show
- Referral from a friend/family member/colleague
- Radio
- Other: _____

23. Please answer the following questions based on how likely or unlikely you are to do the following:

	N/A	Very Unlikely	Unlikely	Neither	Very Likely	Don't Know
Recommend Alpena Shipwreck Tours to friend						
Recommend Great Lakes Maritime Heritage Center to friend						
Visit Alpena Shipwreck Tours again						
Visit Great Lakes Maritime Heritage Center again						
Learn more about TBNMS						
Diving/snorkeling or paddling						

24. What was the most memorable aspect of your Alpena Shipwreck Tours (*Lady Michigan*) experience?

25. What was the most memorable aspect of your Great Lakes Maritime Heritage Center visit?

26. Could your Alpena Shipwreck Tours (*Lady Michigan*) experience be improved? If yes, how?

27. Could your Great Lakes Maritime Heritage Center visit be improved? If yes, how?

28. How satisfied were you with the customer service (check one box)?

	N/A	Very Much	Somewhat	A Little	Not At All	Don't Know
Great Lakes Maritime Heritage Center						
Alpena Shipwreck Tours (<i>Lady Michigan</i>)						

29. How many adults (age 18 & older) are in your group? _____

30. How many children (under age 18) are in your group? _____

31. What is your age? ___ 18-30 ___ 31-40 ___ 41-50 ___ 51-60 ___ Over 60

32. What is your sex? ___ Male ___ Female ___ Other

33. What is your e-mail address? _____

34. Respondent ID Number _____
 (Record on mailback survey or place on the postcard with the online information, based upon the respondent request)

Alpena Shipwreck Tours: Alpena Shipwreck Tours (glass bottom boat, *Lady Michigan*)

Great Lakes Maritime Heritage Center: NOAA's Great Lakes Maritime Heritage Center

TBNMS: Thunder Bay National Marine Sanctuary



Survey Figure: Alpena region shown in Survey
Credit: Developed by TBNMS in ArcGIS

Mailback/Online Survey

Corresponding Survey Version _____

Today's Date _____

Location: _____

Dear Valued Visitor,

Thank you for your recent visit to NOAA's Great Lakes Maritime Heritage Center and/or Alpena Shipwreck Tours and for agreeing to complete this questionnaire. Your cooperation in this effort is greatly appreciated.

It is very important that the same person who participated in the on-site survey completes this questionnaire. The questionnaire will take about 25 minutes to complete. Instructions and an example response are provided below for your convenience. Please print answers accurately and legibly. Your participation is voluntary and your responses will remain confidential. After the completion of the project all materials identifying you as an individual will be destroyed.

To mail back your completed questionnaire, reverse-fold it so that our return address is facing out, and seal with tape or a staple before placing in mailbox. No postage is needed.

To thank you for participating, the respondent will receive one (1) \$10 off coupon for an adult ticket on Alpena Shipwreck Tours' *Lady Michigan* and entered into a drawing for a print of a shipwreck by artist Robert J. McGreevy.

For more information on Thunder Bay National Marine Sanctuary, visit thunderbay.noaa.gov.

We thank you again for your participation as this information is valuable to further improve visitor experiences in Thunder Bay National Marine Sanctuary.

Sincerely,

XXX
National Marine Sanctuary Foundation

Interview Number: _____

1. On your most recent trip to the Alpena Region for which you are filling out this survey, which reason best describes the purpose of your visit? (please rank your top three)

- | | |
|--|---|
| <input type="checkbox"/> Visit NOAA’s Great Lakes Maritime Heritage Center | <input type="checkbox"/> Fishing |
| <input type="checkbox"/> Alpena Shipwreck Tours/glass bottom boat | <input type="checkbox"/> Boating/sailing/watercraft |
| <input type="checkbox"/> Diving/snorkeling | <input type="checkbox"/> Paddling |
| <input type="checkbox"/> Visit family/friends | <input type="checkbox"/> Beaches/swimming |
| <input type="checkbox"/> Lighthouses | <input type="checkbox"/> Sightseeing |
| <input type="checkbox"/> Just stopped in/passing through | <input type="checkbox"/> Business trip |
| <input type="checkbox"/> Festival/event _____ | <input type="checkbox"/> Camping |
| | <input type="checkbox"/> Other _____ |

2. On your most recent trip to Michigan, how many days did you spend there? Count partial days as whole days. _____ days

3. On your most recent trip to Michigan, how many days did you spend in the Alpena region? Count partial days as whole days. _____ days

4. Including your most recent trip, in the past 12 months how many trips have you taken to the Alpena Region? _____ trips

5. Prior to your most recent visit to the Alpena Region, how much did you know about Thunder Bay National Marine Sanctuary?

- Nothing A little bit A lot

6. How much of an influence did the presence of NOAA’s Thunder Bay National Marine Sanctuary and Great Lakes Maritime Heritage Center in Alpena have on your decision to select the Alpena region as a travel destination?

- Nothing A little bit A lot

7. How much of an influence did Alpena Shipwreck Tours (glass bottom boat, *Lady Michigan*) in Alpena have on your decision to select the Alpena region as a travel destination?

- a. Nothing b. A little bit c. A lot

8. Which activities did you participate in during your most recent visit to the Alpena region (see map on the last page or here (if online))? Please indicate the number of people in your party (number of adults 18 or over and children under 18) and number of days you participated in the activity.

Activity	Did you participate in this activity?	# of adults 18 or over (other than you)	# children under 18	# of days you participated in the activity
NOAA's Great Lakes Maritime Heritage Center				
Alpena Shipwreck Tours aboard the glass-bottom boat, <i>Lady Michigan</i>				
Paddling/kayaking to visit shipwrecks				
Scuba diving from a charter boat				
Scuba diving from a private boat				
Scuba diving from shore				
Snorkeling from a charter boat				
Snorkeling from a private boat				
Snorkeling from shore, kayak, stand up paddleboard, or canoe				
Fishing from a charter boat				
Fishing from a private/rental boat				
Fishing from the shoreline				
Kayaking/canoeing				
Stand up paddleboard				
Private/rental power boat				
Sailing				
Biking (road or trails)				
Camping				
Hiking				
Beaches/swimming				
Other outdoor recreation activity (please list)				

9. Which specific attractions & activities did you visit or participate in during your stay? (check all that apply)
- a. Great Lakes Maritime Heritage Trail
 - b. New Presque Isle Lighthouse
 - c. Old Presque Isle Lighthouse
 - d. Sturgeon Point Lighthouse
 - e. 40 Mile Point Lighthouse
 - f. Middle Island Lighthouse
 - g. *Joseph Fay* shipwreck (on beach near Forty Mile Point Lighthouse)
 - h. Sailing lessons
 - i. Visit winery (tasting)
 - j. Visit brewery
 - k. Art galleries or exhibits
 - l. Besser Museum for Northeast Michigan
 - m. Great Lakes Lore Maritime Museum
 - n. Alpena Wildlife Sanctuary/Duck Park/Sportsman Island
 - o. Harrisville State Park
 - p. Hoeft State Park
 - q. Negwegon State Park
 - r. Onaway State Park
 - s. Rockport State Park/ Besser Natural Areas
 - t. Thompson Harbor State Park
 - u. Ocqueoc Falls State Park
 - v. Other area attractions _____

10. Do you think you will visit the Alpena region within the next year?
- a. Yes
 - b. No
 - c. Not Sure

11. Do you think you will visit the Alpena region within the next five years?
- ___ Yes ___ No ___ Not Sure

12. What new or different additions, features, or changes in the future would you like to see at NOAA's Great Lakes Maritime Heritage Center?

13. What new or different additions, features, or changes in the future would you like to see at NOAA's Alpena Shipwreck Tours (glass bottom boat *Lady Michigan*)?

Importance and Satisfaction:

14. Please read each statement and rate the **importance** of each item as it pertains to your trip to the Alpena region on the dates listed on the first page. If an item does not apply, indicate by checking “N/A” (not applicable). Likewise, if you don’t know, check “Don’t Know.” Please remember, Alpena Shipwreck Tours is the glass bottom boat *Lady Michigan*.

	N/A	Don't Know	Not Important	Somewhat Important	Important	Very Important	Extremely Important
Ability to see shipwrecks while paddling	a						
Visibility of shipwrecks while diving or snorkeling	b						
Information and stories about shipwrecks and maritime history in museums	c						
Public access to Lake Huron (trails, boardwalks, beaches, & boat launches)	d						
Public access to maritime heritage resources, including shipwreck moorings	e						
Public access to parks and other natural areas	f						
Access to lighthouses	g						
Preservation of lighthouses	h						
Marina facilities, boat ramps, & launching facilities	i						
Shore-side signage with information about maritime heritage and history	j						
Roadside/wayfinding signage directing me to Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours	k						
Parking at/for Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours	l						
Great Lakes Maritime Heritage Center is free admission	m						
Great Lakes Maritime Heritage Center merchandise available for purchase	n						
Welcoming and friendly staff at Great Lakes Maritime Heritage Center	o						
Great Lakes Maritime Heritage Center was engaging to the children in my group	p						
Your self-guided experience at Great Lakes Maritime Heritage Center	q						
Cleanliness of bathrooms at Great Lakes Maritime Heritage Center	r						
Welcoming and friendly staff at Alpena Shipwreck Tours	s						

Appendix A: Surveys

Cleanliness of bathrooms at Alpena Shipwreck Tours	t						
The Alpena Shipwreck Tour was engaging to the children in my group	u						
Narration on Alpena Shipwreck Tours	v						
Ticket price of Alpena Shipwreck Tours	w						
Easy boarding process of Alpena Shipwreck Tours	x						
Time spent viewing each shipwreck on Alpena Shipwreck Tours	y						
Trip length of Alpena Shipwreck Tours	z						

15. Please read each statement and rate how **satisfied** you were with each item as it pertains to your experience in the Alpena region on the date listed on the first page. If an item does not apply, indicate by checking “N/A” (not applicable). Likewise, if you don’t know, check “Don’t Know.” Please remember, Alpena Shipwreck Tours include the Glass Bottom Boat *Lady Michigan*.

	N/A	Don't Know	Not Satisfied	Somewhat Satisfied	Satisfied	Very Satisfied	Extremely Satisfied
Ability to see shipwrecks while paddling	a						
Visibility of shipwrecks while diving or snorkeling	b						
Information and stories about shipwrecks and maritime history in museums	c						
Public access to Lake Huron (trails, boardwalks, beaches, & boat launches)	d						
Public access to maritime heritage resources, including shipwreck moorings	e						
Public access to parks and other natural areas	f						
Access to lighthouses	g						
Preservation of lighthouses	h						
Marina facilities, boat ramps, & launching facilities	i						
Shore-side signage with information about maritime heritage and history	j						
Roadside/wayfinding signage directing me to Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours	k						
Parking at/for Great Lakes Maritime Heritage Center/Alpena Shipwreck Tours	l						
Great Lakes Maritime Heritage Center is free admission	m						
Great Lakes Maritime Heritage Center merchandise available for purchase	n						
Welcoming and friendly staff at Great Lakes Maritime Heritage Center	o						
Great Lakes Maritime Heritage Center was engaging to the children in my group	p						
Your self-guided experience at Great Lakes Maritime Heritage Center	q						
Cleanliness of bathrooms at Great Lakes Maritime Heritage Center	r						
Welcoming and friendly staff at Alpena Shipwreck Tours	s						
Cleanliness of bathrooms at Alpena Shipwreck Tours	t						

Appendix A: Surveys

The Alpena Shipwreck Tour was engaging to the children in my group	u						
Narration on Alpena Shipwreck Tours	v						
Ticket price of Alpena Shipwreck Tours	w						
Easy boarding process of Alpena Shipwreck Tours	x						
Time spent viewing each shipwreck on Alpena Shipwreck Tours	y						
Trip length of Alpena Shipwreck Tours	z						

Expenditures:

We would like to ask you about the expenses related to your recent trip to the Alpena Region. The Alpena Region is defined as Alpena, Alcona, and Presque Isle counties (See Map). We are interested in expenses made *only* for the trip associated with the date listed on the first page of this questionnaire.

Example Expenditure Response			
ITEMS	Total amount spent	Total amount spent in the study area	Number of people covered
Scenic Tours			
Scuba diving or snorkeling on shipwrecks	250	250	4
Scuba diving or snorkeling other	100	100	2
Snorkeling/diving equipment or rental	200	100	4

16. Please estimate how much money, rounded to the nearest dollar, your party spent on the following items and the number of people it covered for your most recent trip to the region. If no money was spent for any item, please place a zero in the corresponding box. Please use the map to identify the total amount spent within the study area.

ITEMS	Total amount spent	Total amount spent in the study area	Number of people covered
Activities			
Scuba diving or snorkeling on shipwrecks via private boat			
Scuba diving or snorkeling on shipwrecks via charter			
Other: _____			
Snorkeling/diving equipment purchase or rental			
Alpena Shipwreck Tours/glass bottom boat tours			
Sailing charters			
Sunset cruises			
Fishing charters			
Personal watercraft rental			
Boat launch or marina fees			
Fuel for boats			
Land-based sightseeing tours			
Admission to amusement, festivals, and other attractions (e.g., lighthouses and museums)			
Other, please specify: _____			
Other Activities			
Equipment purchased for recreation (bicycles, kayaks, paddle			

boats, stand up paddleboards)			
Rental of equipment for recreation (bicycles, kayaks, paddle boats, stand up paddleboards)			
Fees or costs for beach access or hiking			
Equipment purchased for recreation (swimming, camping, hiking)			
Rental of equipment for recreation (swimming, camping, hiking)			
Guided service tours (not listed above)			
Tickets for motion pictures, theaters, musical performances, concerts, etc.			
Wine tasting			
Other, please specify: _____			
Lodging			
Hotel/motel			
Bed & breakfast			
Cabin			
Campground fees			
Cottage/condo/rental home			
Other, please specify: _____			
Food & Beverages			
Food purchased at a grocery store (e.g., farmers market)			
Food and drinks bought at restaurants and bars			
Food and drinks purchased on a vessel charter or tour			
Other, please specify: _____			
Transportation			
Rental automobile, motor home, trailer, motorcycle, etc.			
Gas & oil for automobile or RV			
Automobile or RV parking fees & tolls			
Taxi fare			
Ferry			
Train			
Bus fare (e.g., day passes and package tours)			
Airline fare			
Miscellaneous Expenditures			
Binoculars			
Camera and supplies – film, batteries, memory stick or card, film development			
Footwear			
Clothing (including foul weather gear, hats, sweatshirts, etc.)			
Sunblock and other sundries			
Souvenirs, art and gifts (not including clothing)			

Other, please specify: _____			
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Demographics:

17. What is your country of residence? _____

18. If you live in the United States, what is your zip code? _____

19. What is your age?

 18-30 41-50 Over 60 31-40 51-60

20. What is your sex?

 Female Male Other _____

21. Are you Hispanic or Latino? _____ Yes _____ No

22. What is your race? Please check all that apply.

 White or Caucasian Native Hawaiian or Other Pacific Islander Black or African American Other _____ Asian American Indian or Alaskan Native

23. What is your employment status? Please select the best one.

 Unemployed Retired Employed full-time Student Employed part-time Homemaker Self-employed None of the above

24. How many adults, age 18 and over, live in your household? _____

25. How many children, under the age of 18, live in your household? _____

26. What is your household income?

 Less than \$5,000 \$75,000 to \$99,999 \$5,000 to \$9,999 \$100,000 to \$149,999 \$10,000 to \$14,999 \$150,000 or more \$15,000 to \$19,999 \$20,000 to \$24,999 \$25,000 to \$29,999 \$30,000 to \$34,999 \$35,000 to \$39,999 \$40,000 to \$44,999 \$45,000 to \$49,999 \$50,000 to \$59,999 \$60,000 to \$74,999

Thank you for completing this questionnaire. Your responses will help improve visitor experiences in Thunder Bay National Marine Sanctuary.

Please see front page of booklet for instructions to send back your completed questionnaire.

Map showing **Alpena Region**: Presque Isle, Alpena, and Alcona counties



Survey Figure: Alpena region shown in Survey

Credit: Developed by TBNMS in ArcGIS

To receive your one (1) \$10 off coupon for an adult ticket on the Alpena Shipwreck Tours' *Lady Michigan* and be entered into a drawing for a print of a shipwreck by artist Robert J. McGreevy., please complete the following information:

Name:

Address:



AMERICA'S UNDERWATER TREASURES