

A Baseline Assessment of the Economic and Social Values of Moses Lake, WA



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TABLE OF CONTENTS

Part I: Economic Fact Sheet	03
Regional Economic Quick Facts	04
Executive Summary	05
Grant County Population Trends	06
Economic Indicators	07
Part II: Moses Lake Community Use and Perceptions Survey	15
Community Survey Quick Facts	16
Executive Summary	17
Survey Respondents	18
Moses Lake Usage	19
Algae Awareness and Lake Use	20
Algae as a Health Risk	23
Algae Exposure by Activity	25
Importance of Moses Lake	28
Moving Forward	32
Septic/Sewer	33
Appendix	35
Works Cited	42
About the Authors	43

Part I: Economic Fact Sheet

Regional Economic Quick Facts



**\$423,532 Average Lakefront
Home Sale Price**



**\$688,189 Hotel/Motel
Tax Redistributions**



**\$52.1 Million
Camper/Vacation
Home Spending**



**\$282 Million Direct
Tourism Spending**

Executive Summary

A variety of data strongly indicate that tourism and recreation are an essential component of the Moses Lake, Washington economy. Both the City of Moses Lake and Grant County are growing in population (Figures 1 and 2). As the region grows, more tourists from outside the area are coming to use the lake, camp, enjoy museums, dine, and more. Total tourism direct spending and campground visitor spending have grown in raw numbers (Figures 3 and 4), but more importantly, per capita spending has increased as well. This demonstrates the growth seen in tourism spending is not simply a byproduct of the increasing population of the area, but instead, evidence of the mounting importance of tourism and recreation in the region's overall economy. The recent construction of new hotels and their ensuing success in attracting visitors is demonstrated in the hotel/motel tax receipts and redistributions (Figures 6, 8, 9). Additionally, lakefront home sale prices have increased in the last 5 years (Figure 11). Taken as a whole, this suggests the overall health and success of the lake is important to a variety of stakeholders, including local and regional business leaders, property owners, and average citizens.

1.

Grant County Population Trends

The City of Moses Lake is the population and economic hub of Grant County, Washington. Moses Lake's population has grown steadily since 1990 (Figure 1). Recent estimates show a 2019 population of 24,086, double the city's 1990 population (US Census). Over this time, the overall population of Grant County has grown steadily as well (Figure 2).

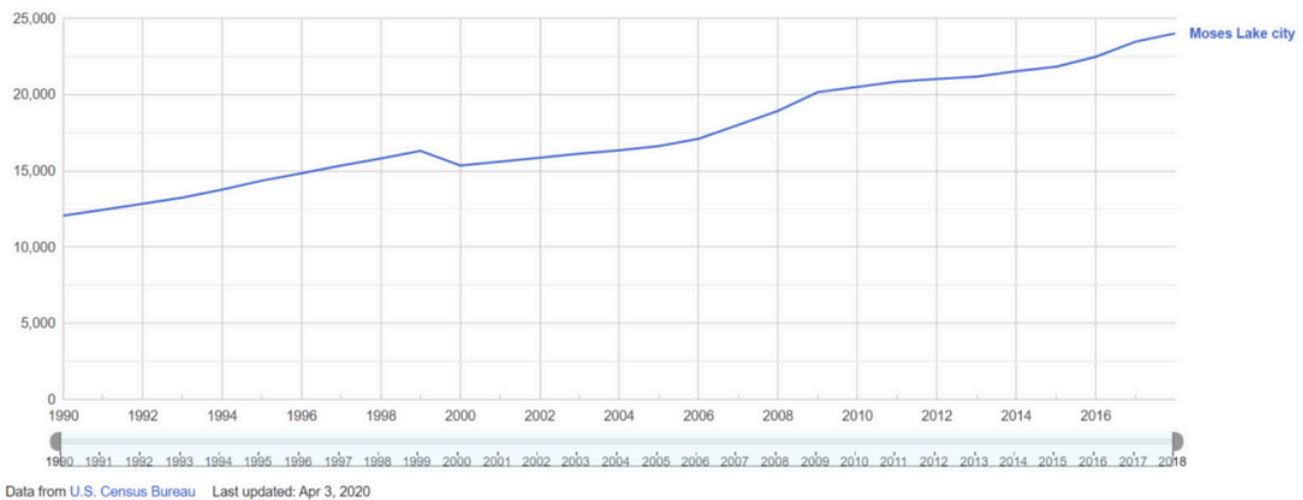


Figure 1. Moses Lake Population Growth 1990 – 2018 (US Census).

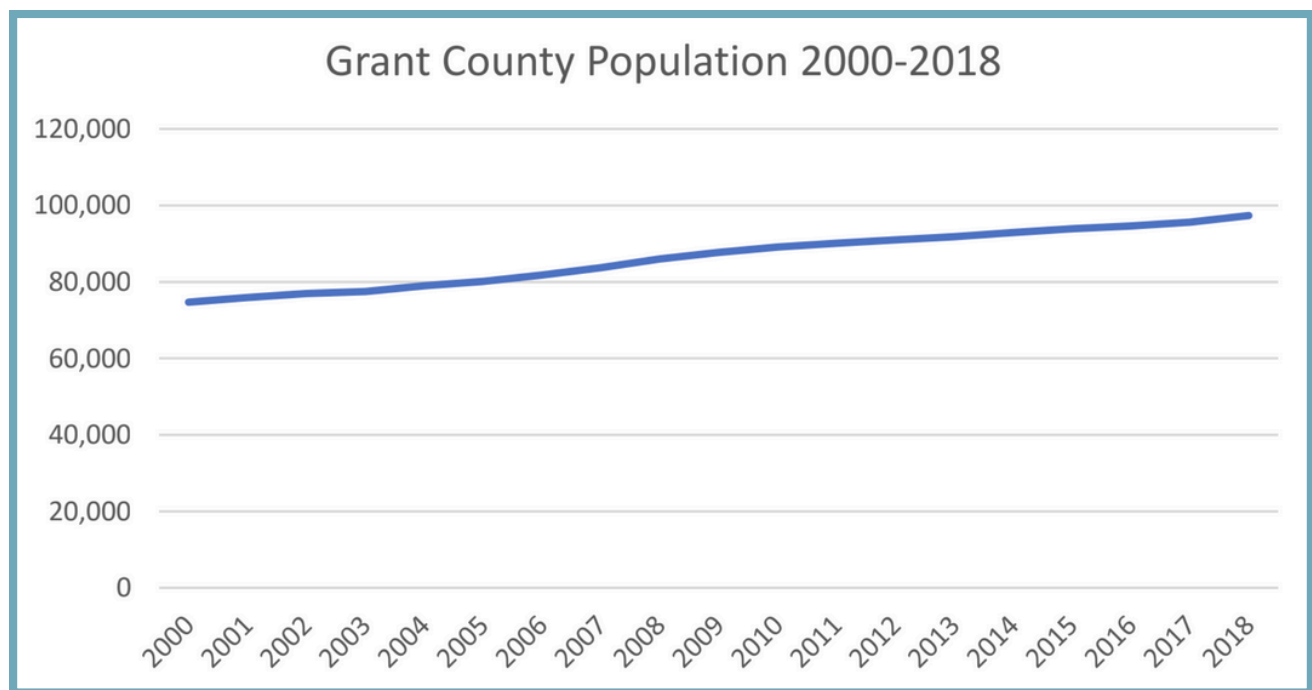


Figure 2. Grant County Total Population 2000 – 2018 (US Census).

Economic Indicators

Tourism & recreation is one of the primary economic engines of Moses Lake and the Grant County region more broadly. Tourist attractions in Grant County include water recreation on Moses Lake, hiking, wineries, and the arts. Tourism is important because it injects new, outside money into the economy. The importance of tourism on a local economy can be understood through the examination of key data related to: hotel/motel stays, restaurants, transportation, retail, campground visits, museum visits, etc.

Grant County travel and tourism spending has seen steady growth over the last 20 years (Figure 3). Travel and tourism spending in 2018 totaled \$282.4 million. This is an 89.5% increase in spending since 2000, when Grant County tourism brought in \$149 million overall (Grant County Trends). It is important to note that total travel and tourism spending is not just a byproduct of population increase. Per capita tourism spending in Grant County increased during this time, from \$1,988 in 2000 to \$2,901 in 2018 (Grant County Trends). As the population has grown, so has the importance of tourism to the local economy.

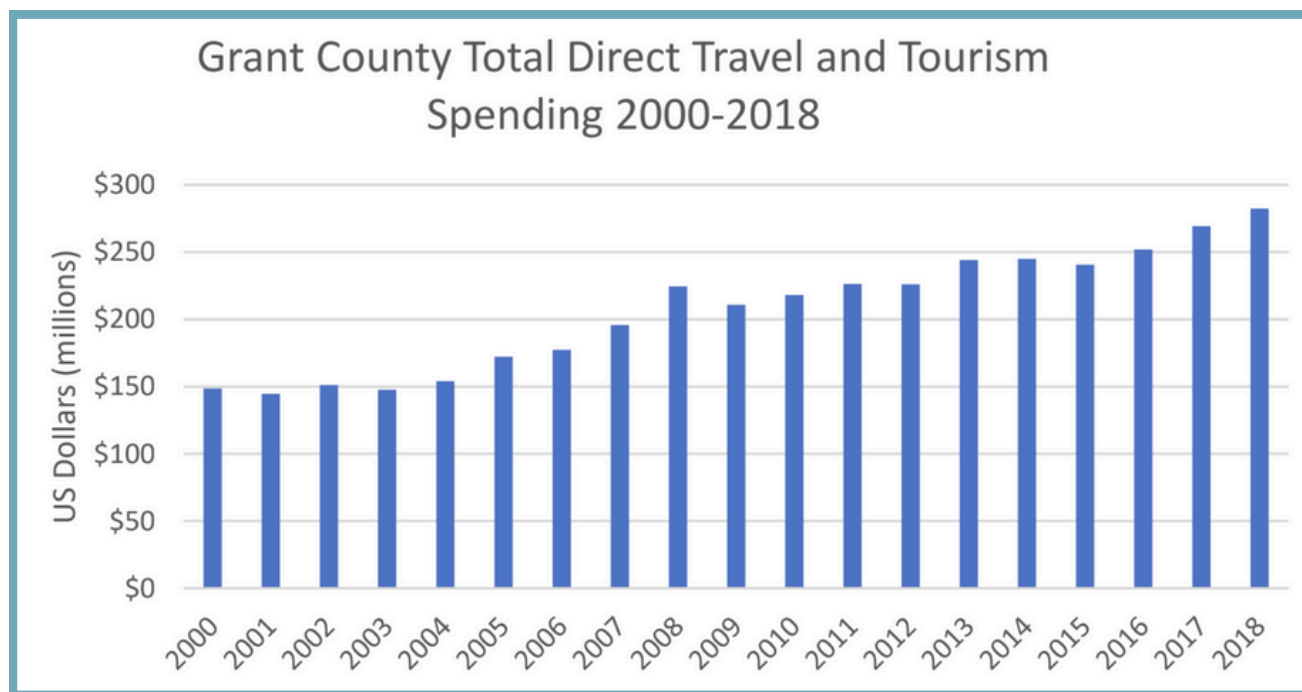


Figure 3. Grant County Total Direct Travel and Tourism Spending 2000-2018 (Grant County Trends).

Camping is a popular activity in Grant County, drawing people from across the state. Spending from individuals staying in campgrounds or vacation homes in Grant County has increased in recent years (Figure 4).

The data account for the money people spend at campground accommodations, as well as the money they spend in food and beverage, recreation, and transportation sectors. The City of Moses Lake contains lakefront campgrounds run by both local and state recreation departments. Data is comprised using campground specific data, average campsite occupancy levels, and visitor counts in the county. It is supplemented with surveys of visitors self-reporting spending habits while camping (Washington State Department of Commerce). Total tourism and travel expenditures from Grant County campers in 2018 were \$52.1 million. This is a 13.8% increase from 2012 when travel expenditures were \$45.8 million. Campers in Grant County have a very positive impact on the local economy, spending \$535 per capita in 2018. This is significantly higher than campers in Washington State overall who spent only \$115 per capita during the same year.

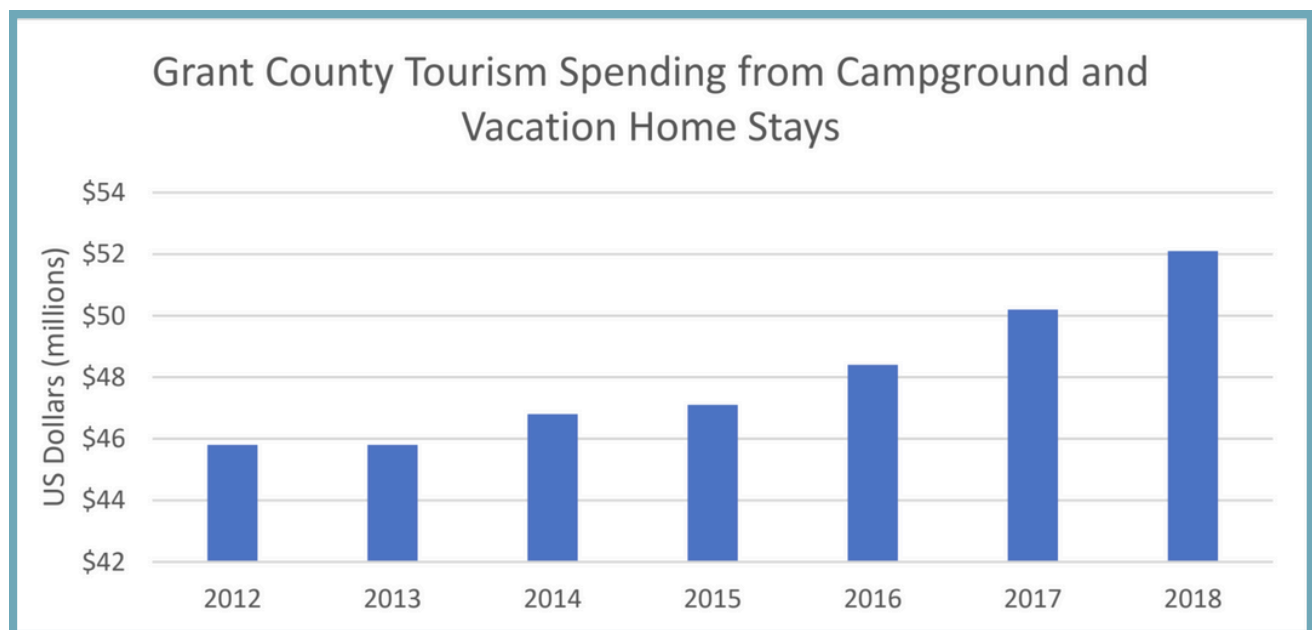


Figure 4. Grant County Tourism Spending from Campground and Vacation Home Stays (Washington State Department of Commerce).

Cascade Campground is a City of Moses Lake administered campsite on the shoreline in Cascade Valley. Throughout the summer months, campers use the public boat launch and docks for water recreation activities. Figure 5 shows the campground's yearly profits from 2010 to 2019 (Moses Lake Parks and Recreation). Fluctuations in profits from 2010 to 2015 is primarily attributed to broader weather patterns and air quality issues that occasionally arise from regional wildfires (personal communication with the City of Moses Lake, 2020). Camping reservations were not taken in June and July 2016 as construction was ongoing to upgrade restrooms and septic systems at the park.

This accounts for the substantial dip in profits during 2016. Upgrades paid-off as the campground made profits of \$79,670 in 2018, despite several weeks of poor air quality. Profits dipped in 2019 (\$71,015) as campground cancellations occurred over concerns about blue-green algae blooms in the water.

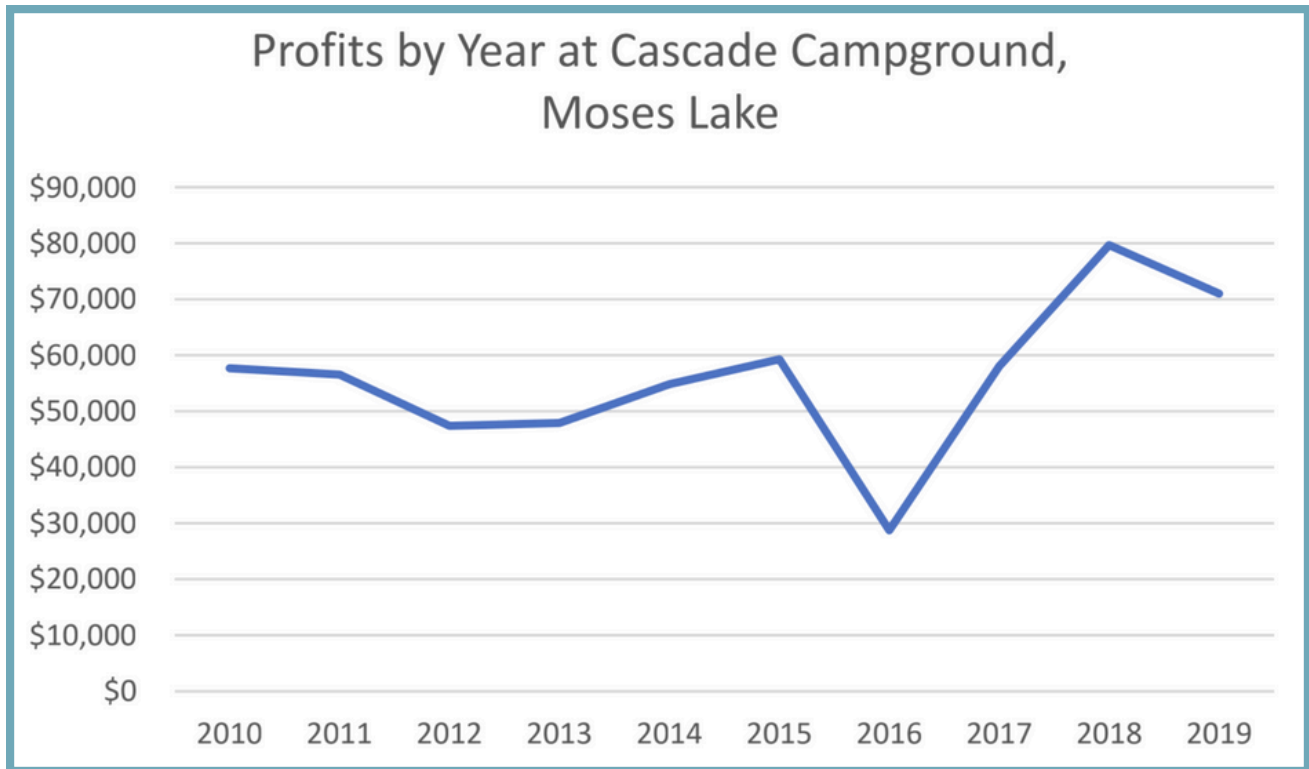


Figure 5. Profits from Cascade Campground, Moses Lake, 2010 – 2019.

Hotel and motel taxes are imposed on stays of less than 30 days by the state, county, and local municipalities. Revenues collected are redistributed by the Washington State Treasury. Not all taxes collected from hotel and motel stays are redistributed, as some of the tax dollars are kept by the State of Washington. Money that is returned to the counties is used to promote local tourism activities or construct and maintain tourism-related facilities (Washington State Department of Revenue). Figure 6 shows Grant County hotel and motel tax redistributions from 2004 to 2016. The data show a 140% increase in Grant County's tax redistribution over this time. In 2016, Grant County received \$688,189 from the Washington State Treasury that could then be used to promote tourism or maintain related facilities. 2016 per capita tax redistributions in Grant County were at \$7.30, compared to only \$5.50 per capita for the rest of Washington State.

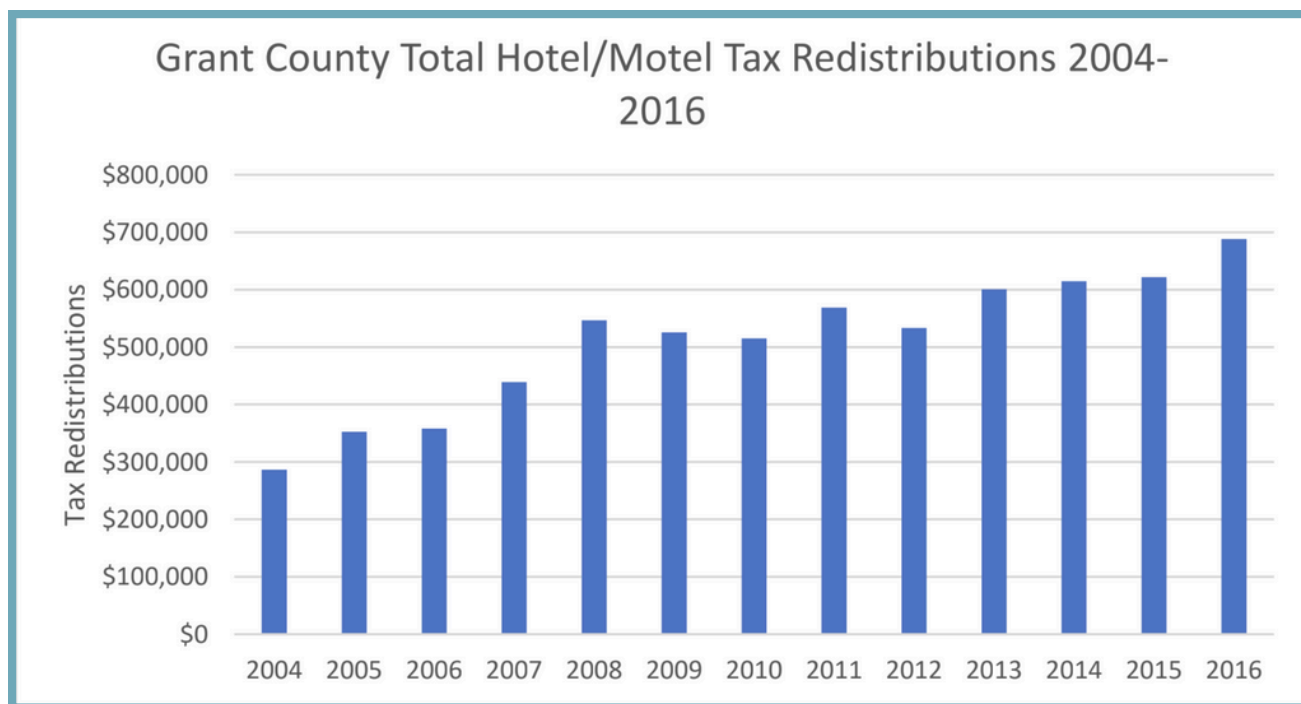


Figure 6. Grant County Total Hotel/Motel Tax Redistributions 2004-2016.

Food and accommodation businesses, which include hotels, campgrounds, bars, restaurants, etc., are considered a sector of the economy that is a good indicator for tourism according to the U.S. Census Bureau. While restaurants and bars, for example, do not owe all their livelihood to tourism, food and accommodation services are considered a proxy indicator for the tourism sector. Figure 7 shows the total number of Grant County businesses that fall into this category from 1998 to 2017. In 1998, there were 166 food and accommodation service businesses in Grant County. By 2017, this had increased to 192 businesses. In this 20-year span, there is a 15.6% increase in these businesses.

In 2017, there was a rate of 101.4 food and accommodation businesses per 1,000 businesses in Grant County. By comparison, the rate in Washington State overall was 93.3 in 2017. Throughout the United States, food and accommodation businesses had a rate of 92.4 businesses per 1,000. By comparing the rate in Grant County to these larger entities, it shows that food and accommodation businesses make up a larger percentage of businesses locally than elsewhere. These businesses depend on money brought into the area by tourism.

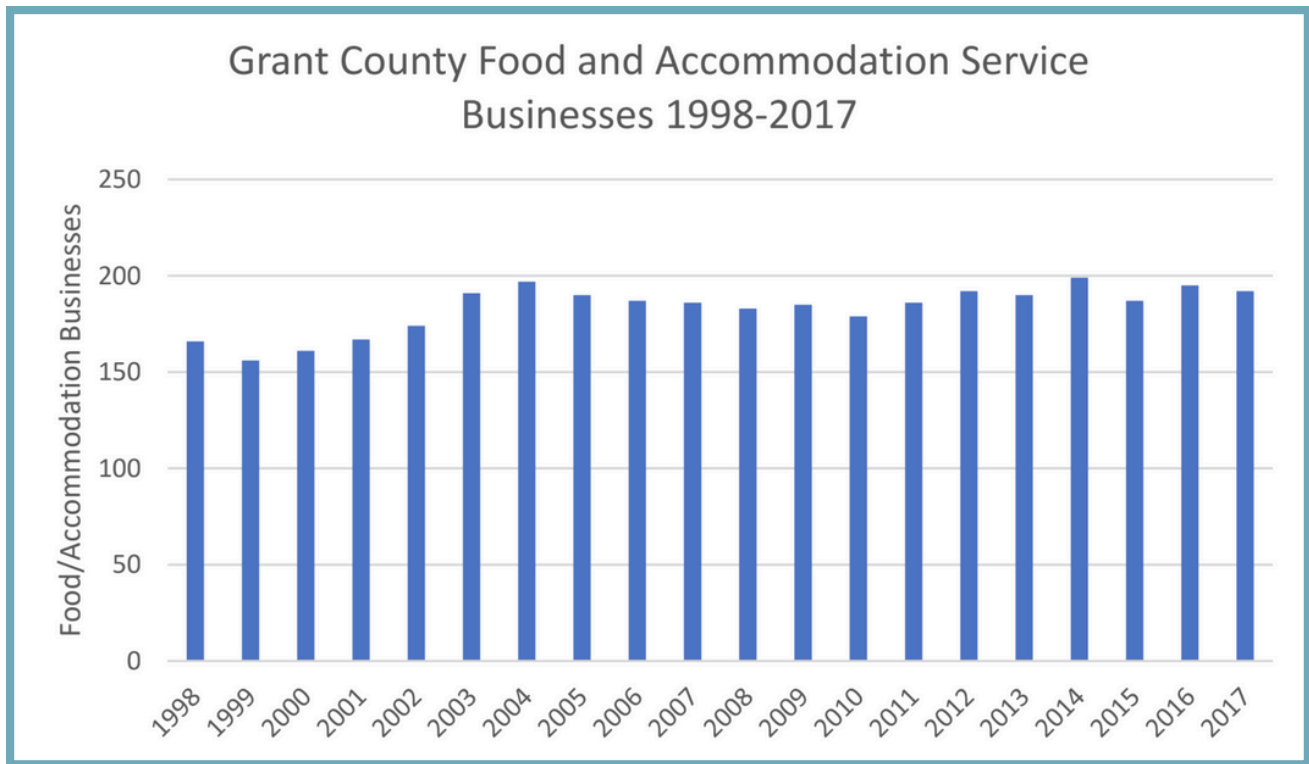


Figure 7. Grant County Food and Accommodation Service Businesses 1998-2017.

In the last few years, there has been an increase in the number of hotels and motels in Moses Lake. This increase is reflected in the hotel/motel tax receipts from the City (Figure 8). After hovering around \$500,000 from 2010 to 2016, tax receipts increase in 2017 up to \$676,594. This trend continues in 2018 (\$695,035), with another jump in 2019 to \$799,538. Overall, Moses Lake hotels and motels have seen increased economic activity in recent years with a 62.7% increase in tax receipts since 2010 (personal communication with the City of Moses Lake, 2020).

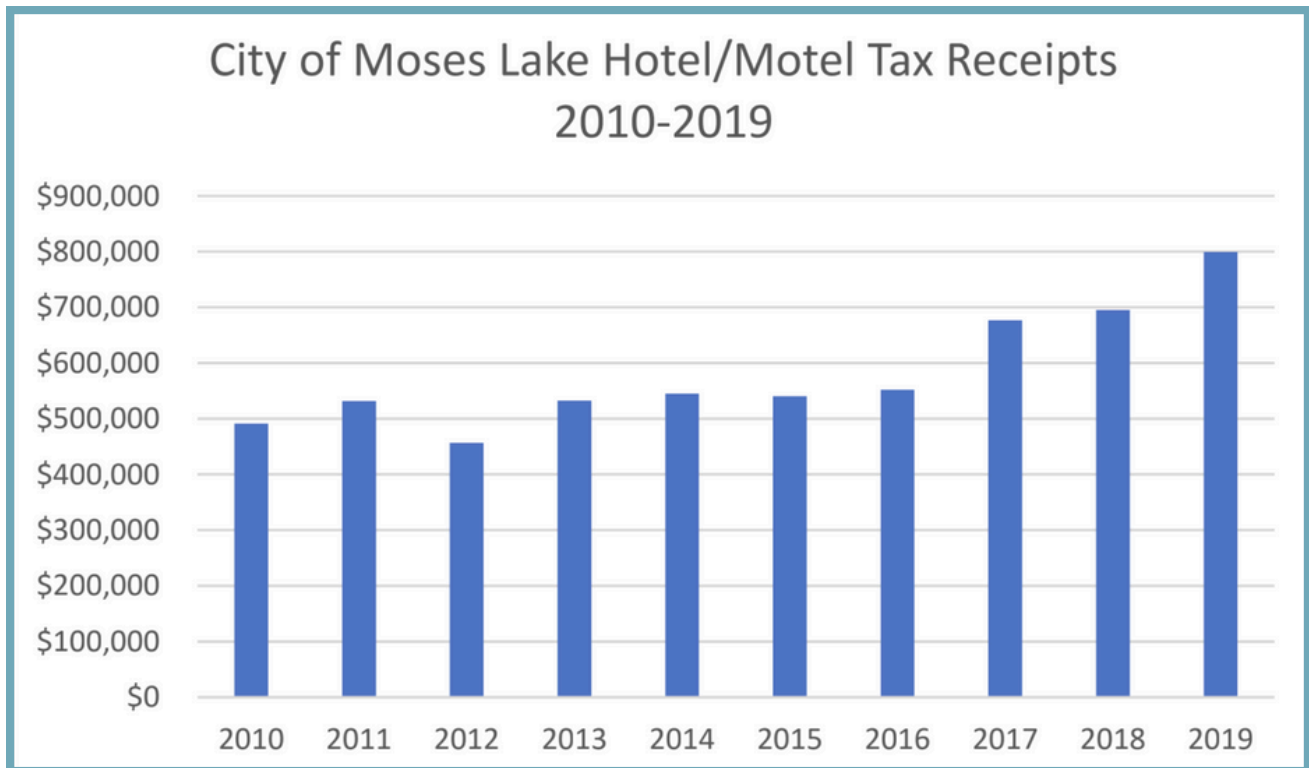


Figure 8. City of Moses Lake Hotel/Motel Tax Receipts from 2010 - 2019.

Grant County total accommodation retail sales, not surprisingly, show a similar pattern as seen in Moses Lake (Figure 9). In 2018, the most recent data available, total taxable retail sales from accommodation in Grant County were \$36.5 million. This is a 114% increase from the 2005 total of \$17 million.

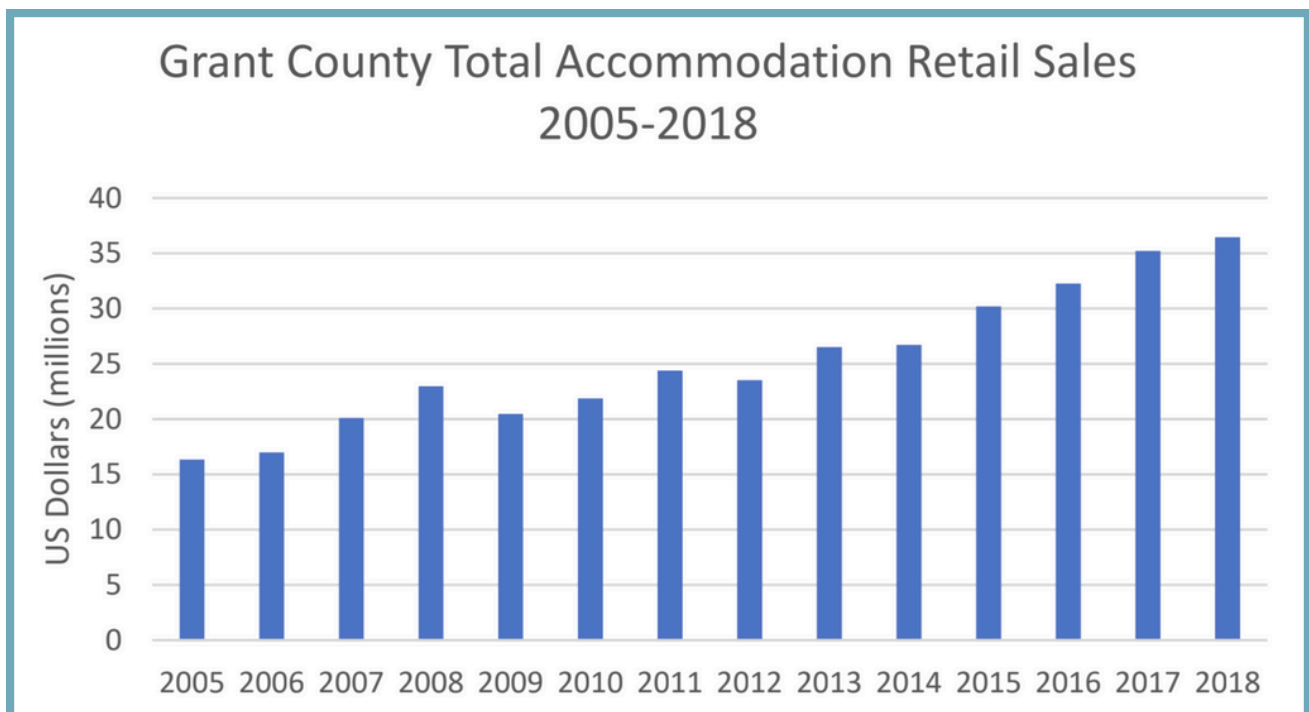


Figure 9. Grant County Total Accommodation Retail sales 2005 – 2018.

Moses Lake has over 120 miles of shoreline. Residential real estate has taken advantage of this abundance of shoreline with much of it developed for housing. Many of the most expensive residential properties in the area contain private shoreline on Moses Lake, or have views of the lake. Lakefront homes usually have private docks that can be used for boat moorage, fishing or numerous other recreational water activities. Figure 10 shows the number of lakefront homes sold from 2015 through May 2020. Figure 11 shows the average lakefront home sale price over the same time. The most recent available full year of data is from 2019. For houses sold on the lakefront in Moses Lake, the average 2019 sale price was \$423,532 (Grant County Assessor's Office). During 2019 in the rest of Grant County, the total median resale value of homes sold was \$226,200 (University of Washington). The limited 2020 data show lakefront home sale prices increasing, meaning the economic and cultural importance of the lakefront is alive and well.

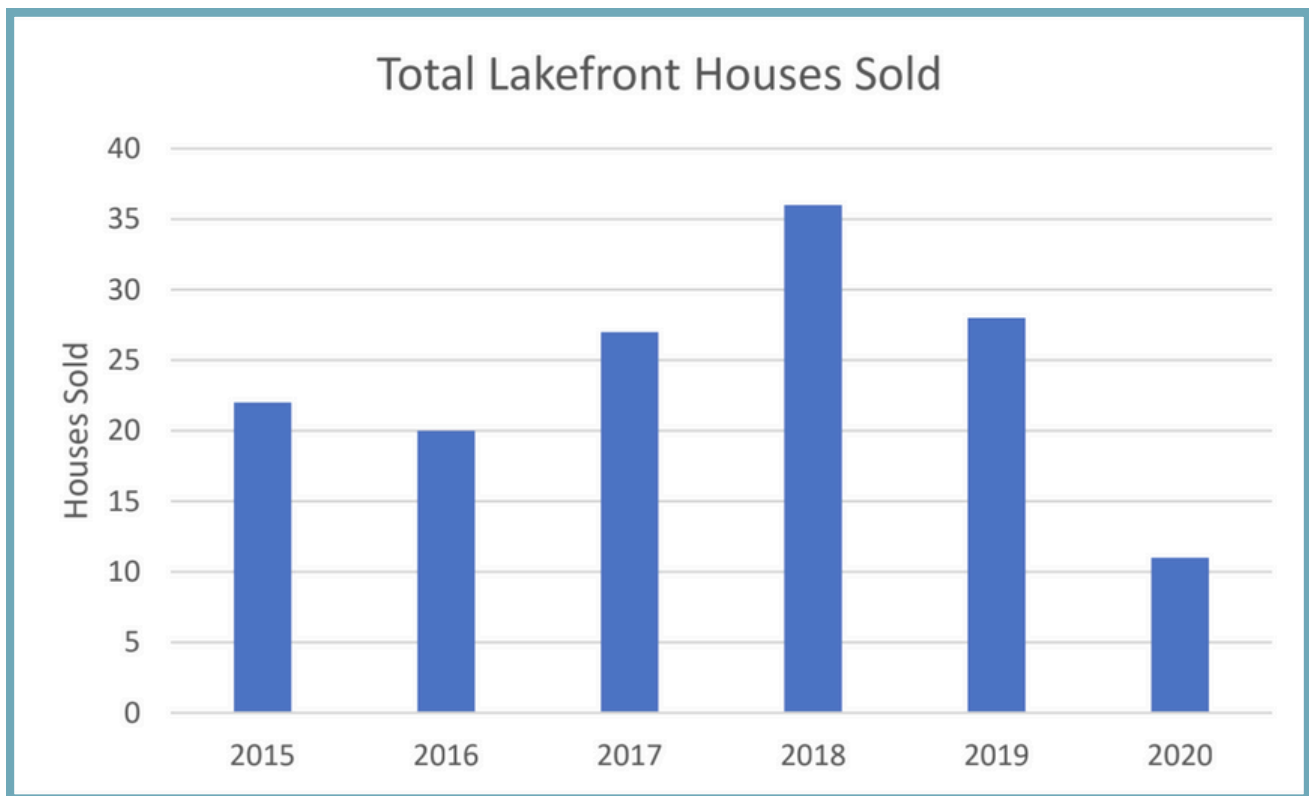


Figure 10. Total Lakefront Houses Sold in Moses Lake 2015 – May 2020 (Grant County Assessor's Office).
Note: 2020 totals are only for 5 months.

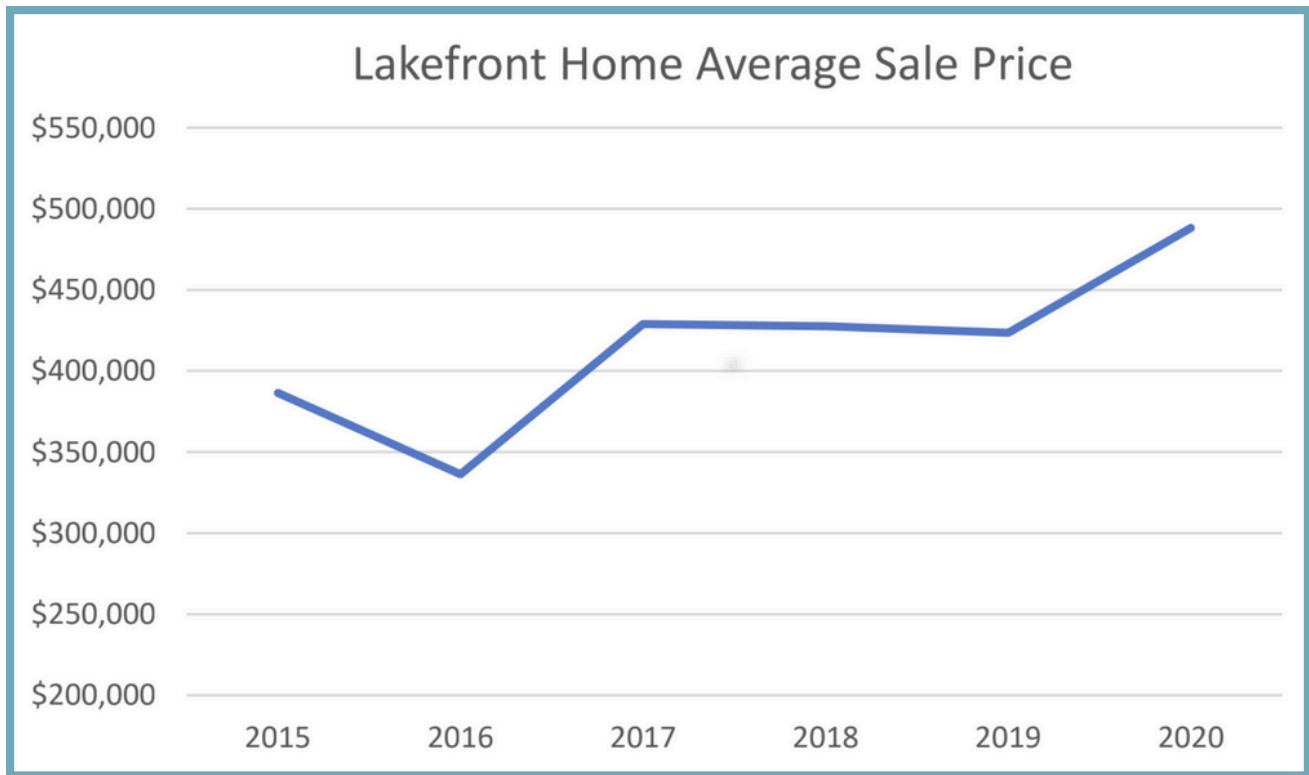


Figure 11. Lakefront Home Average Sale Price in Moses Lake 2015 – May 2020 (Grant County Assessor's Office). Note: 2020 totals are only for 5 months.

Part II: Moses Lake Community Use and Perceptions Survey

Community Survey Quick Facts



1,142 Survey Respondents



**78.9% Concerned About
Algae Health Risks**



**88.5% Say Algae
Negatively Impacts
Local Economy**



**72.1% Reduced Lake Use During
Summer 2020 Algae Bloom**

Executive Summary

The Moses Lake Community Use and Perceptions survey collected the opinions of 1,142 unique individuals between August 15 and September 12, 2020. Conducted at the behest of the Columbia Basin Conservation District, this project examines how people use the lake, the importance of the lake to the local economy, and the ways the lake provides value to the community. This is a companion document to the previously submitted Part 1: Economic Fact Sheet. Survey data was collected using Qualtrics XM software and analyzed in Microsoft Excel. The survey was distributed through Facebook pages operated by the City of Moses Lake and Moses Lake Parks and Recreation. Additionally, known users of local campsites were specifically targeted by email for the purpose of reaching out-of-town recreational users of Moses Lake.

Survey results demonstrate how important the lake is to residents of Moses Lake, WA, and the surrounding region. Over 93% of respondents *strongly agree* that it is important to the community for Moses Lake to be safe and usable for recreation. 57% of respondents say the lake is a primary reason they choose to live in Moses Lake.

Users of Moses Lake were aware of the blue-green algae blooms occurring in summers 2019 (97% of respondents) and 2020 (95%). Most respondents (78.9%) are *concerned* about the potential health risks associated with algae blooms, while almost half of respondents (48.8%) reported being *very concerned*. While residents were aware and concerned about the issue, there is disagreement in the community about how much contact with blue-green algae leads to negative health outcomes.

Concerns about blue-green algae have translated into *less* recreational use of Moses Lake over the past two years. 79% of respondents reported using the lake less during the summer 2019 algae bloom compared to previous years. During the summer 2020 algae bloom, 72% of respondents reported less lake usage.

There is broad support among community members to fix the algae issue. Three government entities were identified as most responsible for finding a solution. These were the City of Moses Lake (83% of respondents), the Washington State Department of Ecology (79%), and the Moses Lake Irrigation District (77%).

In open-ended responses, the community repeatedly emphasized there will be a decrease in quality of life in Moses Lake if algae blooms continue in the years ahead. Some residents expressed embarrassment that their out-of-town guests cannot use the lake during algae blooms, while many more said they may rethink buying lakefront property, or even living in Moses Lake long-term.

All of this suggests the lake remains a focal point of the community and the long-term health and usability of the water is of utmost importance.

Survey Respondents

Most survey respondents (n=936, 82%) identified their primary residence in the local 98837 zip code, which encompasses Moses Lake and the immediate area. Zip codes with the next greatest frequency of respondents included 98823 (n=27, Ephrata), 98851 (n=8, Soap Lake), 98857 (n=8, Warden), and 99169 (n=3, Ritzville). In total, 167 respondents listed non-local zip codes as their primary residence.

Survey respondents included a diversity of household types. Sizes represented in this survey span from one-person households up to households of ten (Figure 1). Survey results found in this report represent up to approximately 3,840 people based on reported household size.

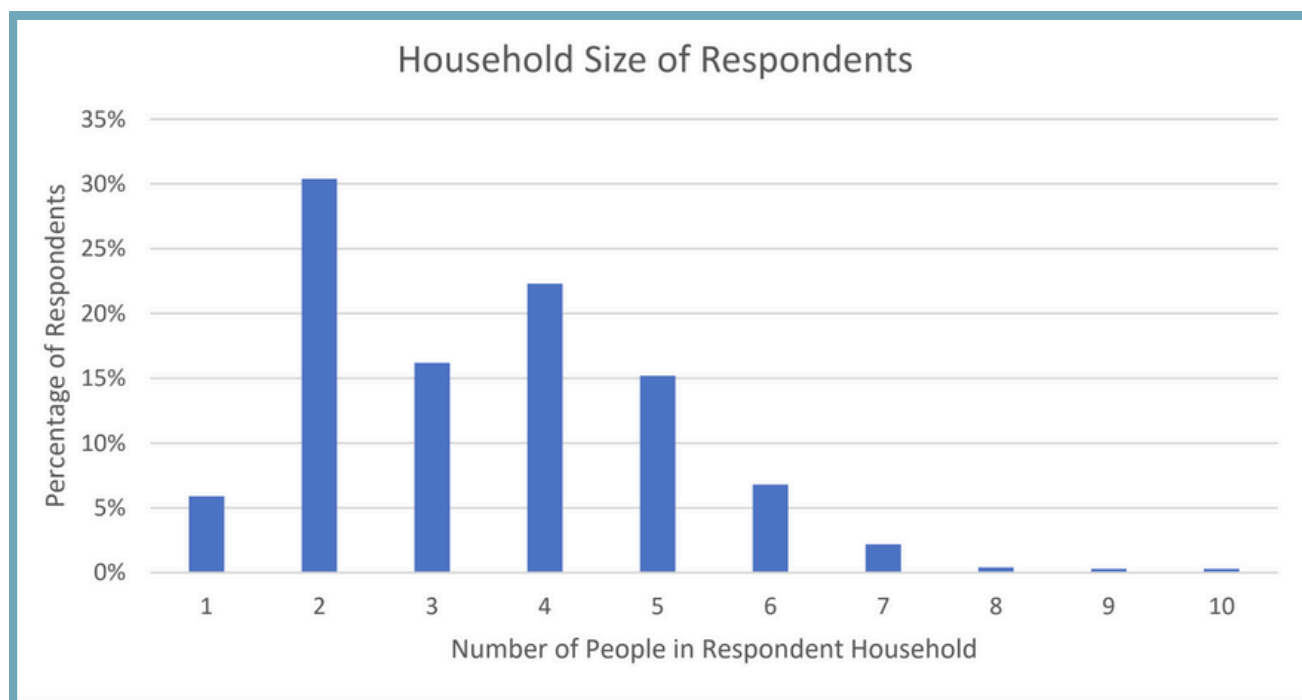


Figure 1. Key finding: 84.1% of survey respondents live in households containing between two to five individuals.

Moses Lake Usage

Survey respondents were asked to self-report all activities they participate in that utilize Moses Lake. The results are found in Figure 2, with swimming (n=784, 68.65%), fishing (n=754, 66.02%), and boating (n=627, 54.9%) reported as the most popular lake activities. Other lake activities that were popular write-in responses included: walking/running/cycling along the lake, golfing, picnicking/barbecuing, and simply enjoying the view of the lake. Respondents were then asked how frequently they used the lake in each month during an average year. The results are found in Figure 3. Warmer summer months of June, July, and August enjoy more frequent lake usage, followed closely by May and September. Frequency of use drops substantially in the colder months of late fall through early spring.

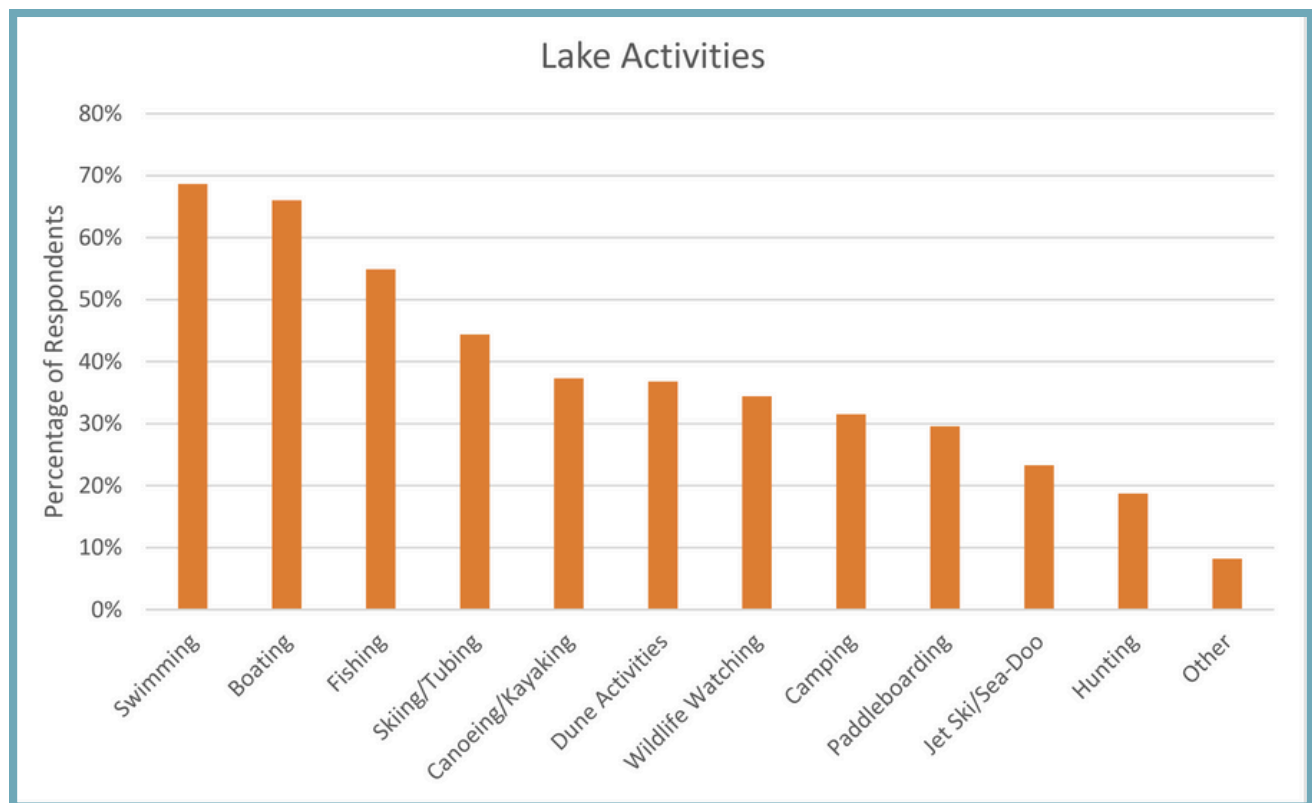


Figure 2. Percentage of respondents who engage in each water activity.

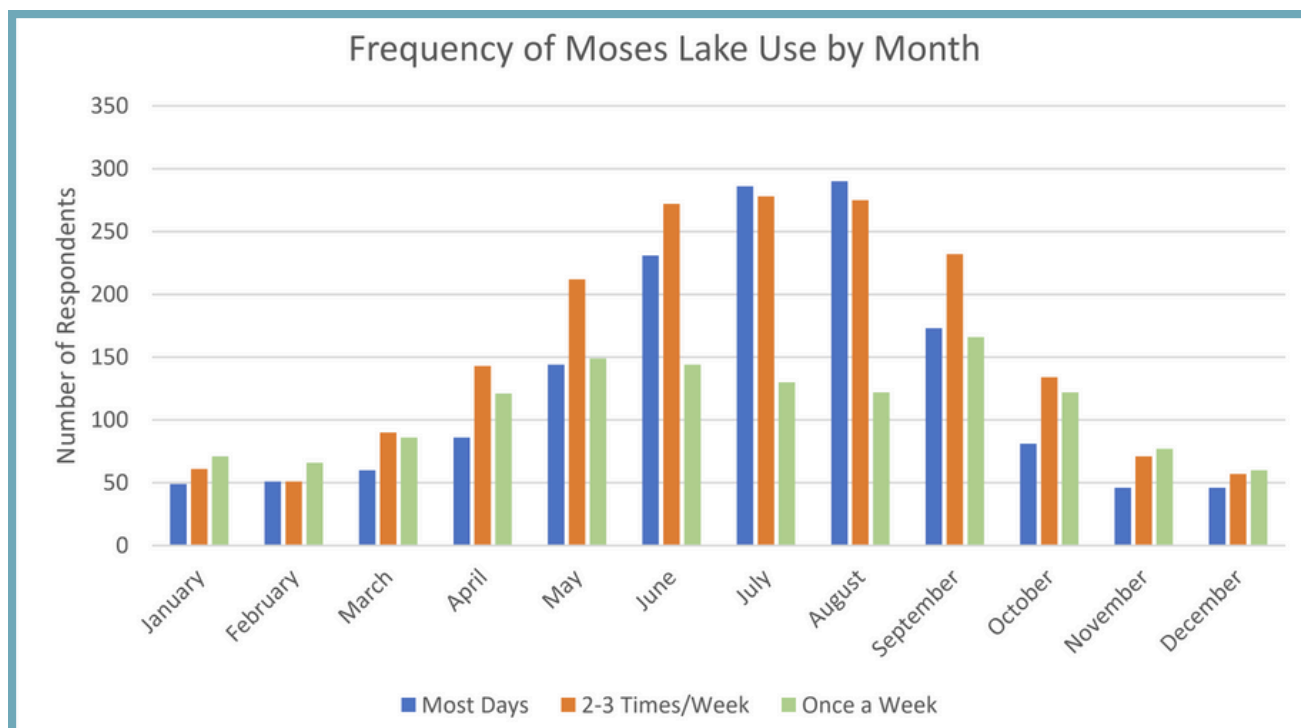


Figure 3. Frequency of lake use by month.

Algae Awareness and Lake Use

The overwhelming majority of individuals were aware of summertime blue-green algae blooms in both 2019 (n=1073, 97%) and 2020 (n=1042, 95%). Figure 4 shows the ways that people learned about algae blooms on the lake. Social media (n=805, 74.43%) was the top response, followed by health department signage (n=705, 61.73%) and word-of-mouth communication (n=631, 55.25%).

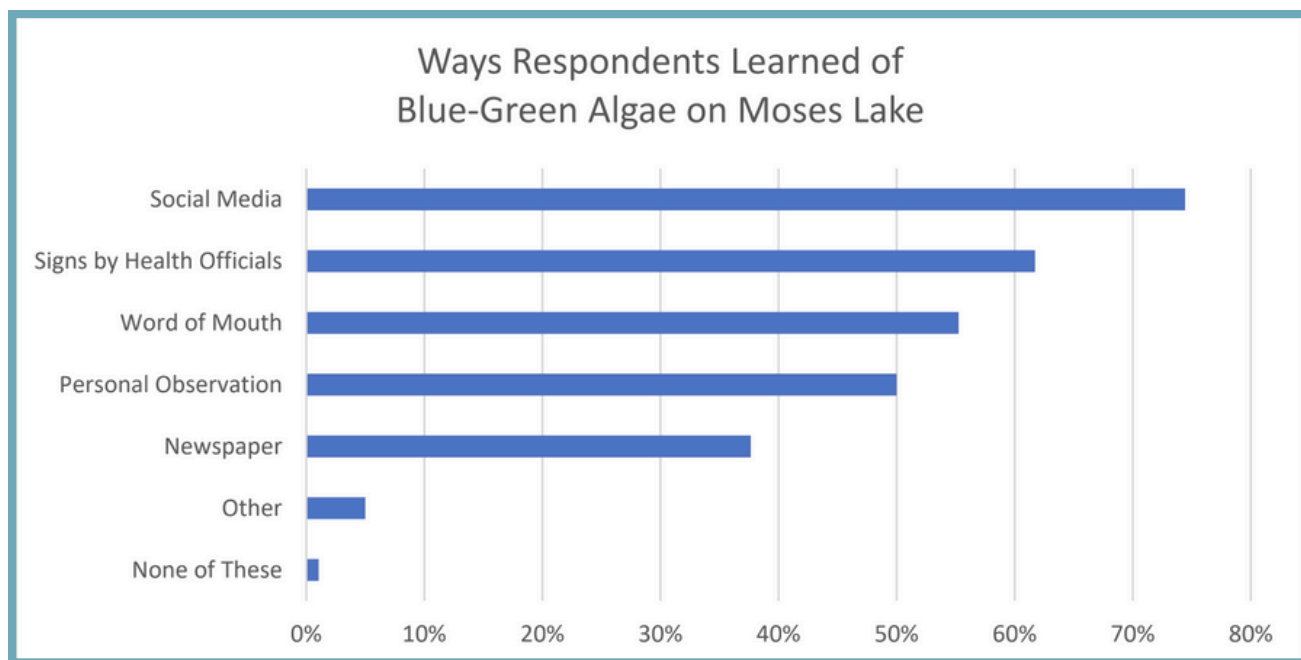


Figure 4. Percentage of respondents reporting all the ways they heard about algae blooms. Key finding: Social media (74.4% of respondents) and signage posted by health officials (61.7%) were the ways that most people learned of algae blooms.

In both 2019 and 2020, most respondents reported that they used the lake *significantly less* or *somewhat less* than in an average year due to the presence of blue-green algae (Figures 5 and 6). In summer 2020, more people reported no difference (n=278, 25%) in their lake usage. Additionally, 2020 (n=604, 55%) saw a decrease in the number of respondents who reported using the lake *significantly less* from 2019 (n=703, 64%). This decrease is likely the result of COVID-19. Lake activities were likely viewed as safer to participate in while social distancing.

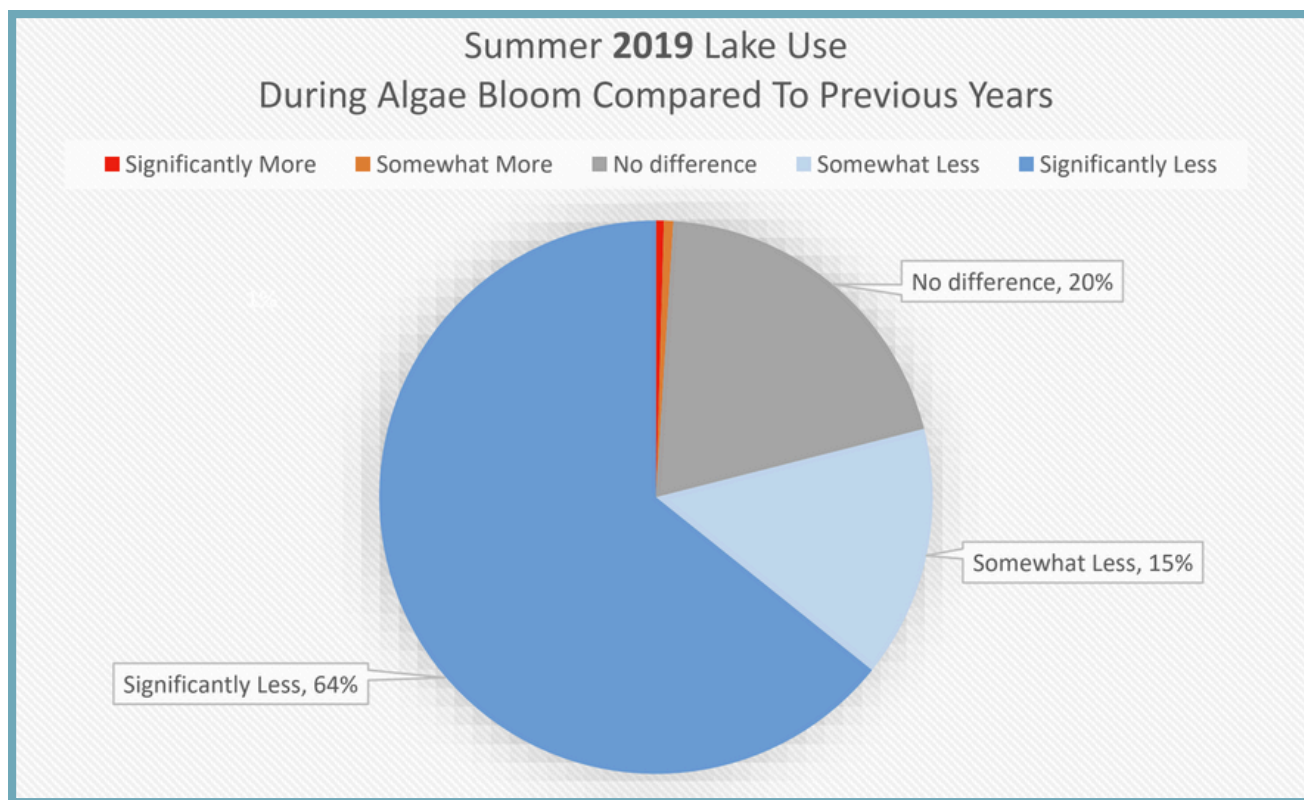


Figure 5. Did you use Moses Lake LESS as a result of the blue-green algae bloom in summer 2019? Key finding: 79% of respondents reported using Moses Lake *significantly less* or *somewhat less* in summer 2019 because of algae blooms.

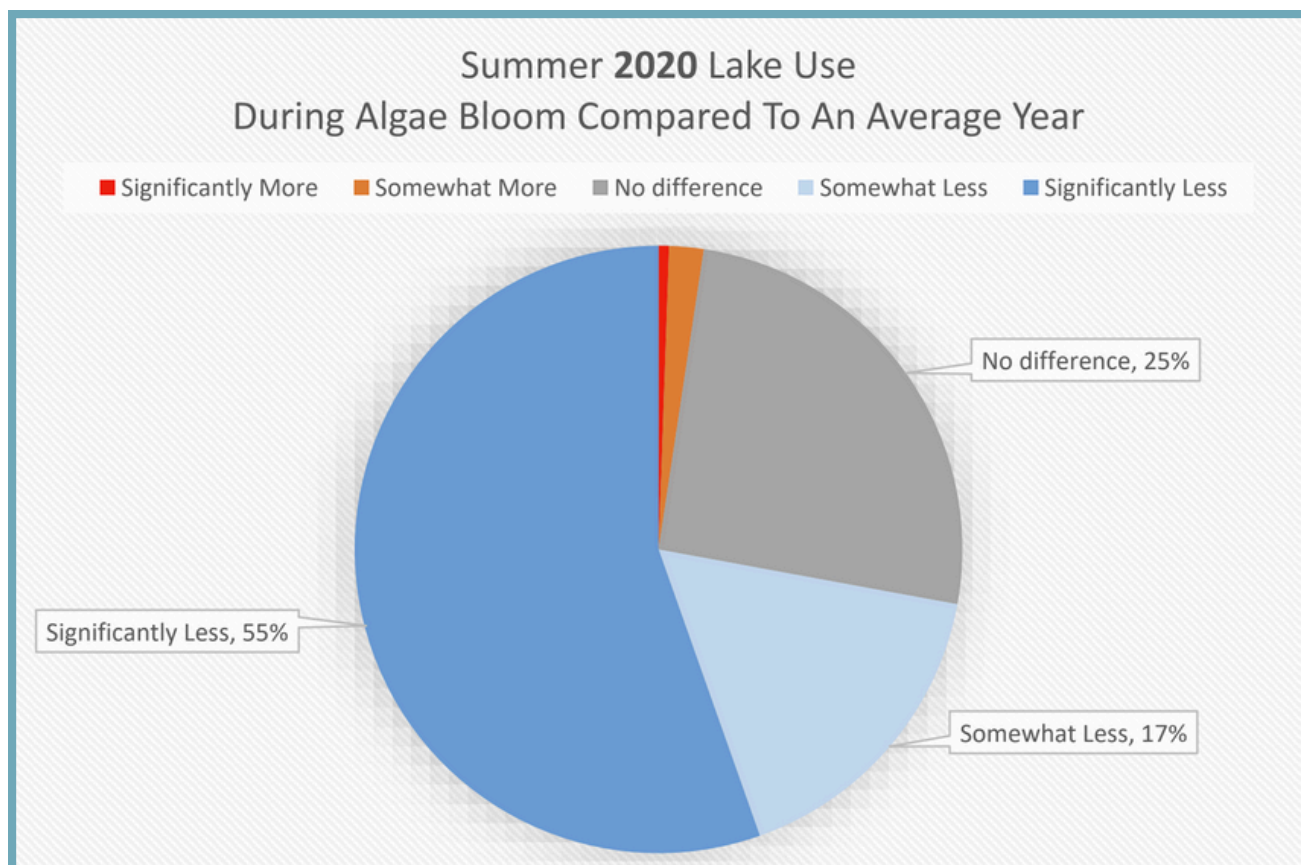


Figure 6. Did you use Moses Lake LESS as a result of the blue-green algae bloom in Summer 2020? Key finding: 72% of respondents reported using Moses Lake *significantly less* or *somewhat less* in summer 2020 because of algae blooms.

Algae as a Health Risk

Most respondents believe that blue-green algae poses a health risk to humans (Figure 7). Additionally, there is significant concern in the community regarding these health risks with the vast majority of respondents being *very concerned* or *somewhat concerned* about the negative health impacts it may cause (Figure 8). There is disagreement regarding how much algae contact it takes for negative health outcomes to occur (Figure 9). Less than half of respondents reported that *any contact* with algae can cause negative health outcomes (n=459, 43%). However, significant numbers of respondents also believed it could take *multiple contacts* (n=146, n=13%) or *frequent contact* with algae (n=157, 15%) to have negative health impacts. Over a quarter of respondents *did not know* how much contact could result in illness (n=283, 26%).

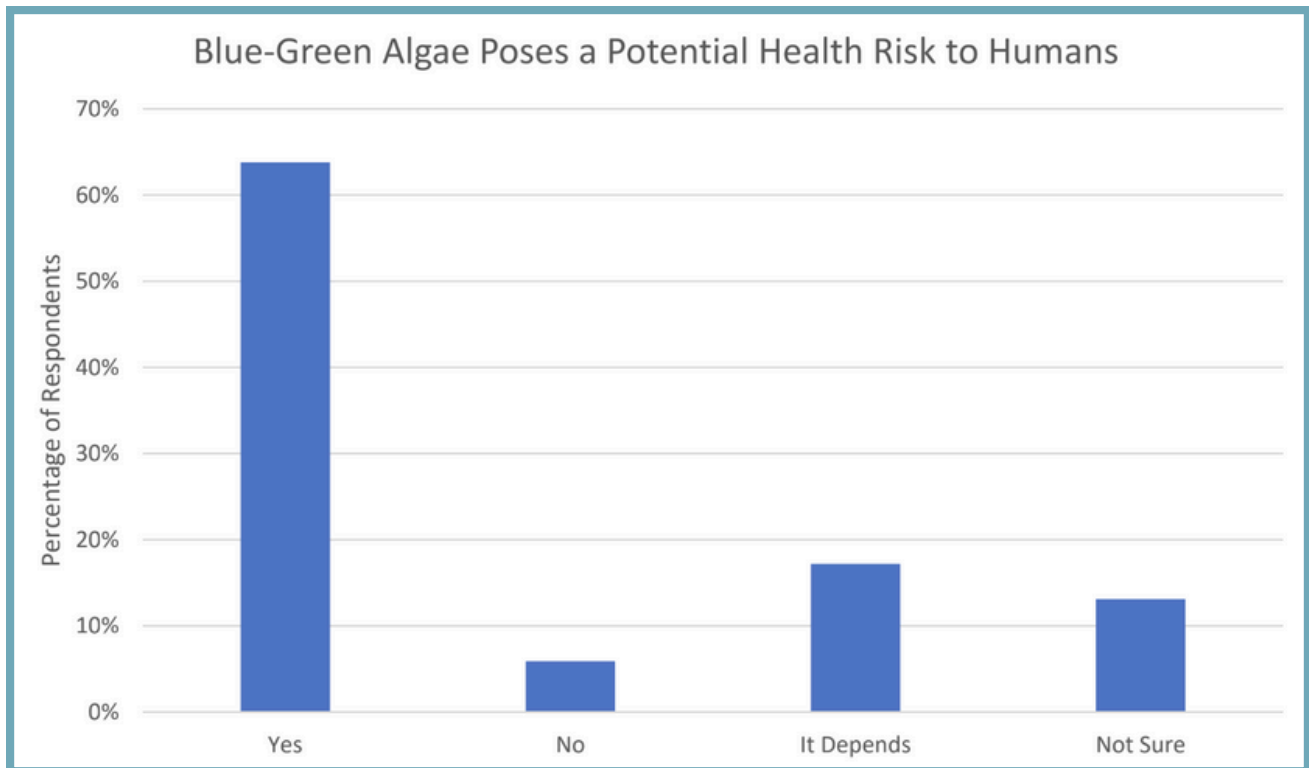


Figure 7. Key finding: 63.8% of respondents believe blue-green algae poses a health risk to humans.

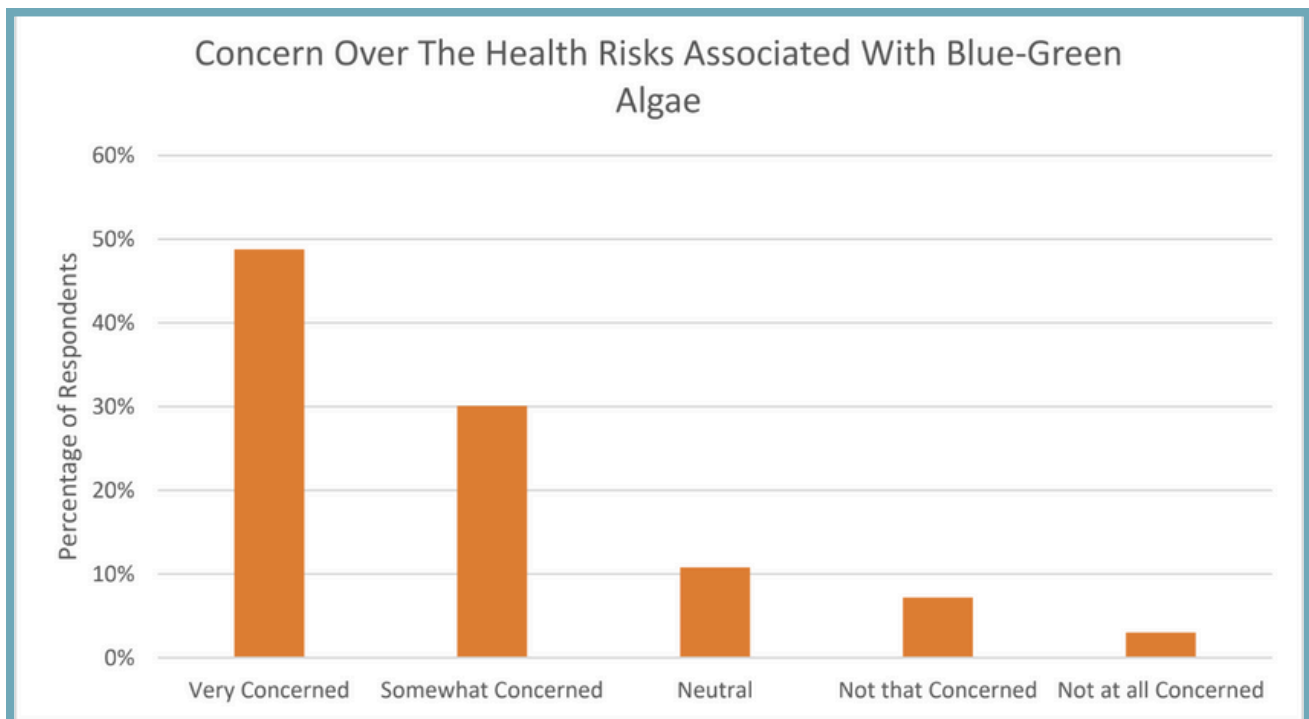


Figure 8. Key finding: 78.9% of respondents are *very concerned* or *somewhat concerned* about the health risks associated with blue-green algae.

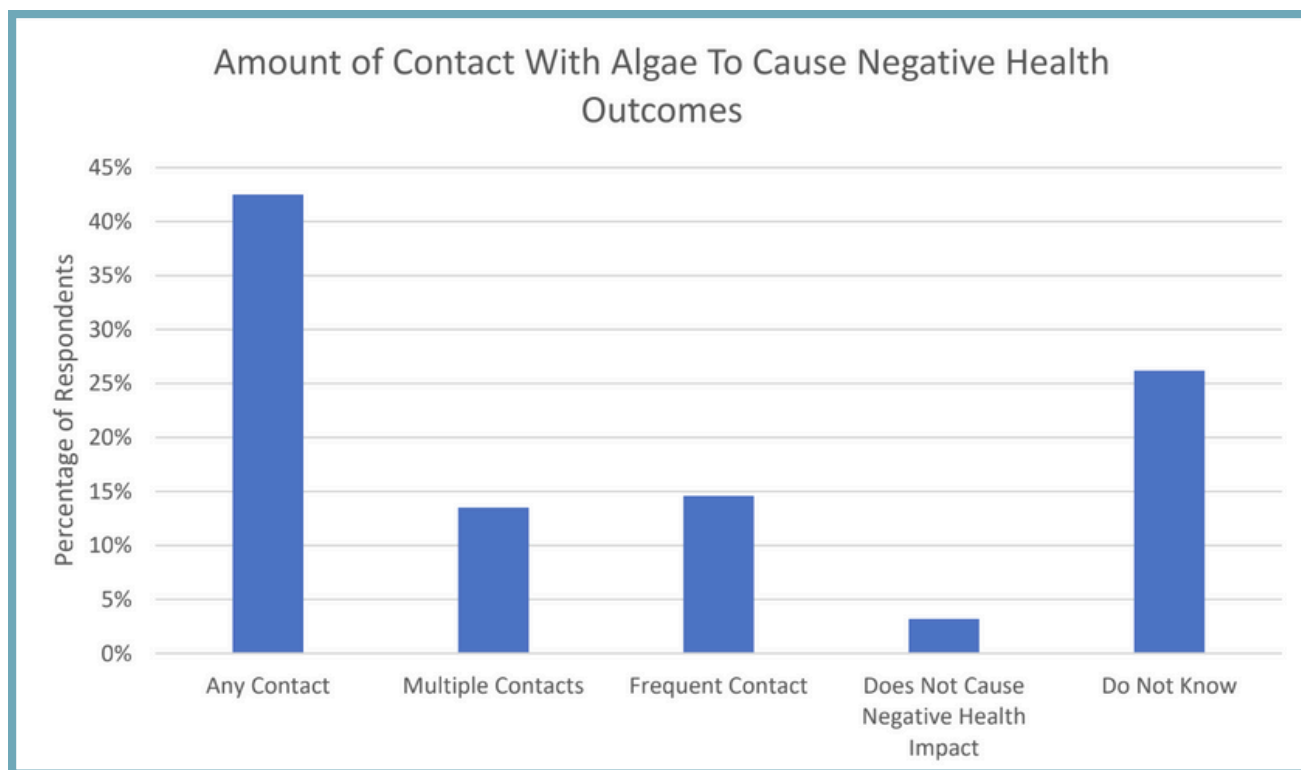


Figure 9. Key finding: There is disagreement about the amount of contact with algae it takes for negative health outcomes to occur.

Algae Exposure by Activity

Survey respondents distinguish greatly between the kinds of activities that expose people to blue-green algae. Figures 10-12 show respondents' perceived risks from exposure while recreating *in the water* (swimming, wading, skiing), *on the water* (fishing, boating), and *near the water* (camping, 4-wheeling). These data dovetail with Figure 13, which reports the ways in which respondents believe a person can become exposed to blue-green algae.

Algae Exposure Risk Activities IN the Water (e.g. Swimming)

■ High Exposure ■ Medium Exposure ■ Low Exposure ■ None ■ Don't Know

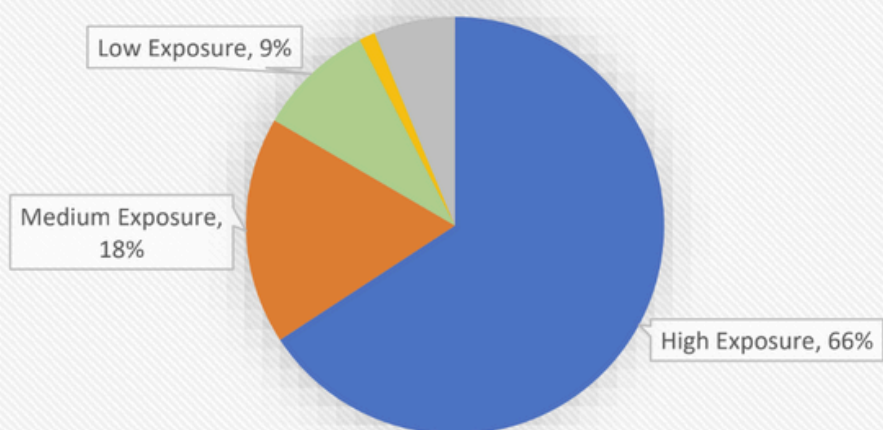


Figure 10. Perceived exposure risk while recreating in the water.

Algae Exposure Risk Activities ON the Water (e.g. Fishing)

■ High Exposure ■ Medium Exposure ■ Low Exposure ■ None ■ Don't Know

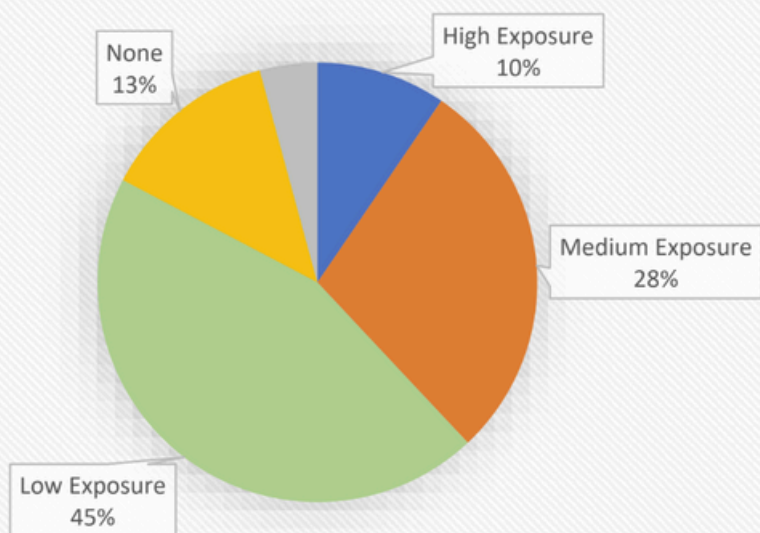


Figure 11. Perceived exposure risk while recreating on the water.

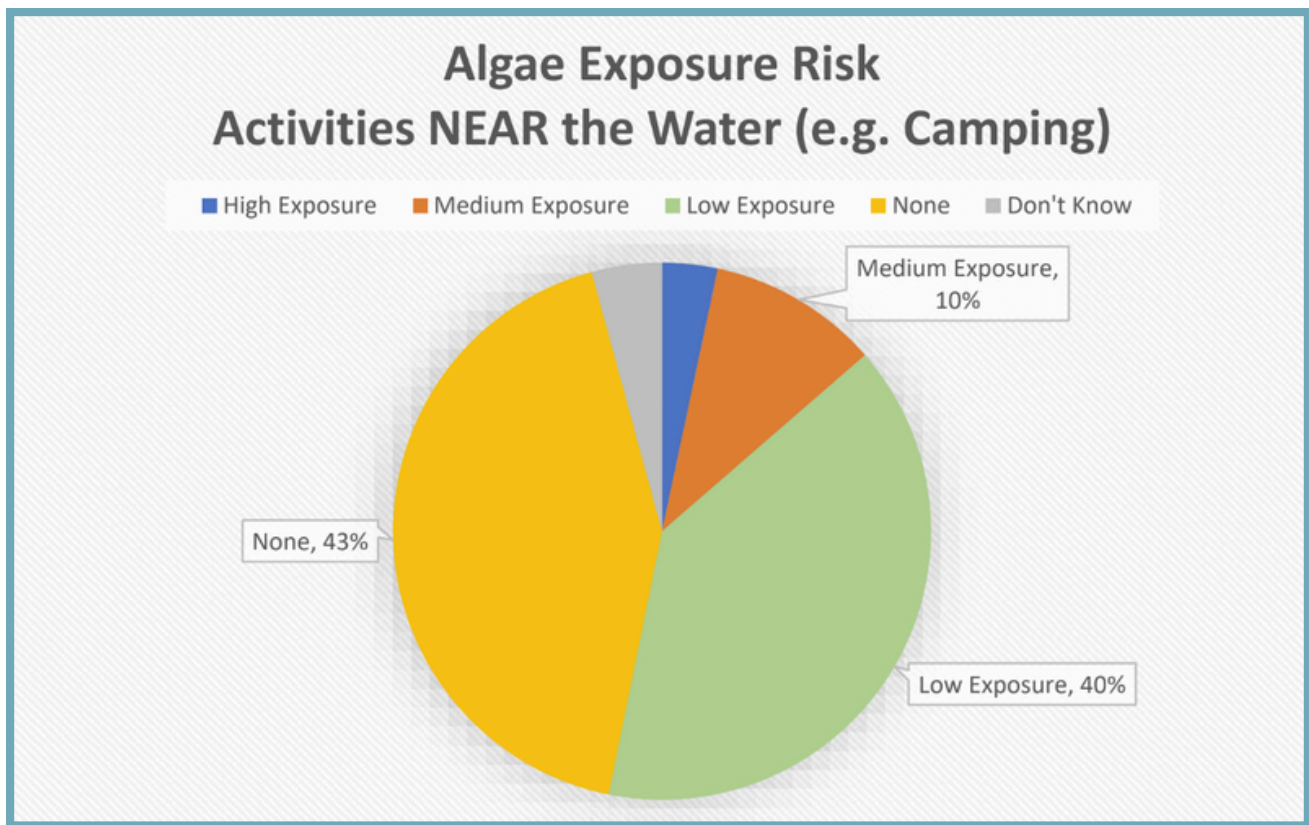


Figure 12. Perceived exposure risk while recreating near the water.

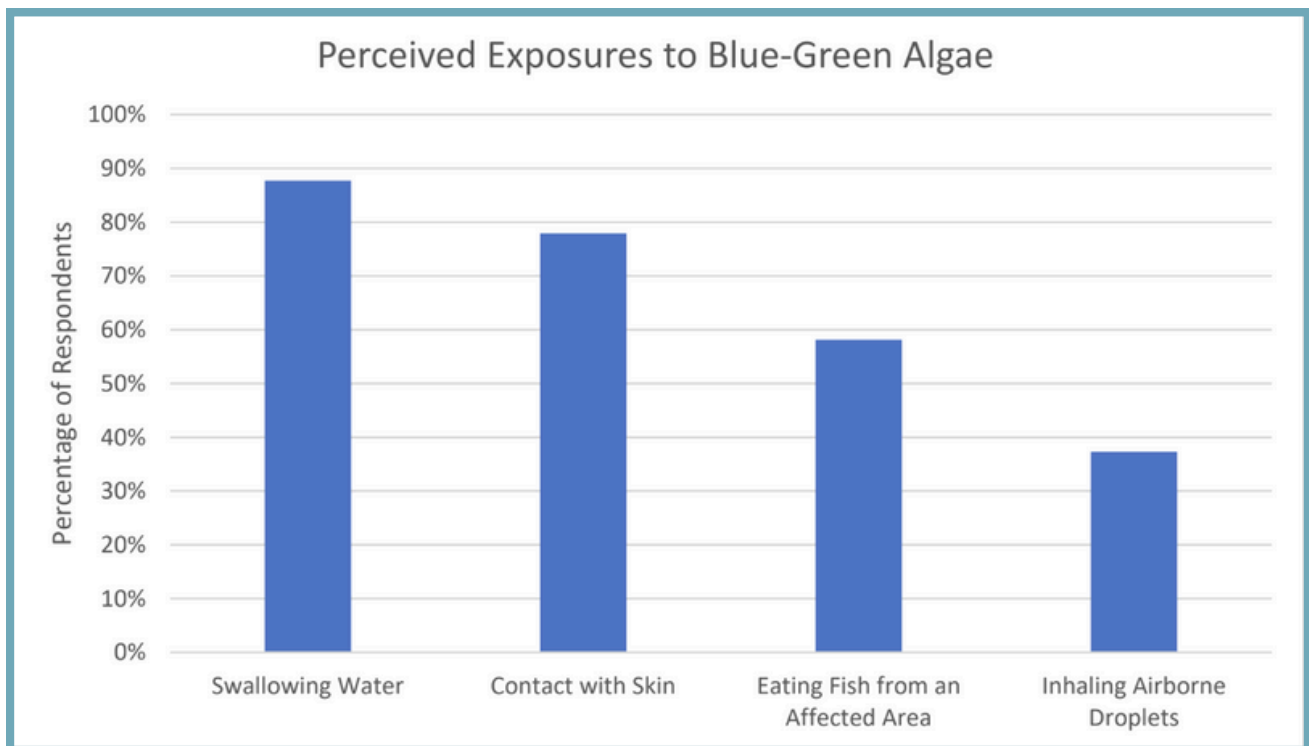


Figure 13. Perceived ways to be exposed to blue-green algae.

Importance of Moses Lake

Survey respondents agree on the importance of Moses Lake to both individuals and their families, as well as the greater community. For example, 88% of respondents *strongly agree* (n=704, 67%) or *somewhat agree* (n=219, 21%) that blue-green algae blooms have a negative impact on the local economy (tourism, small businesses, jobs) (Figure 14). Additionally, 72% of respondents either *strongly agree* (n=461, 44.5%) or *somewhat agree* (n=286, 27.6%) that algae blooms have a negative impact on property values in Moses Lake (Figure 15). The same trends hold regarding people's perceptions of the health of the lake ecosystem (Figure 16). Over 83% of people *strongly agree* (n=628, 60.6%) or *somewhat agree* (n=236, 22.8%) that algae blooms have a negative impact on the lake ecosystem.

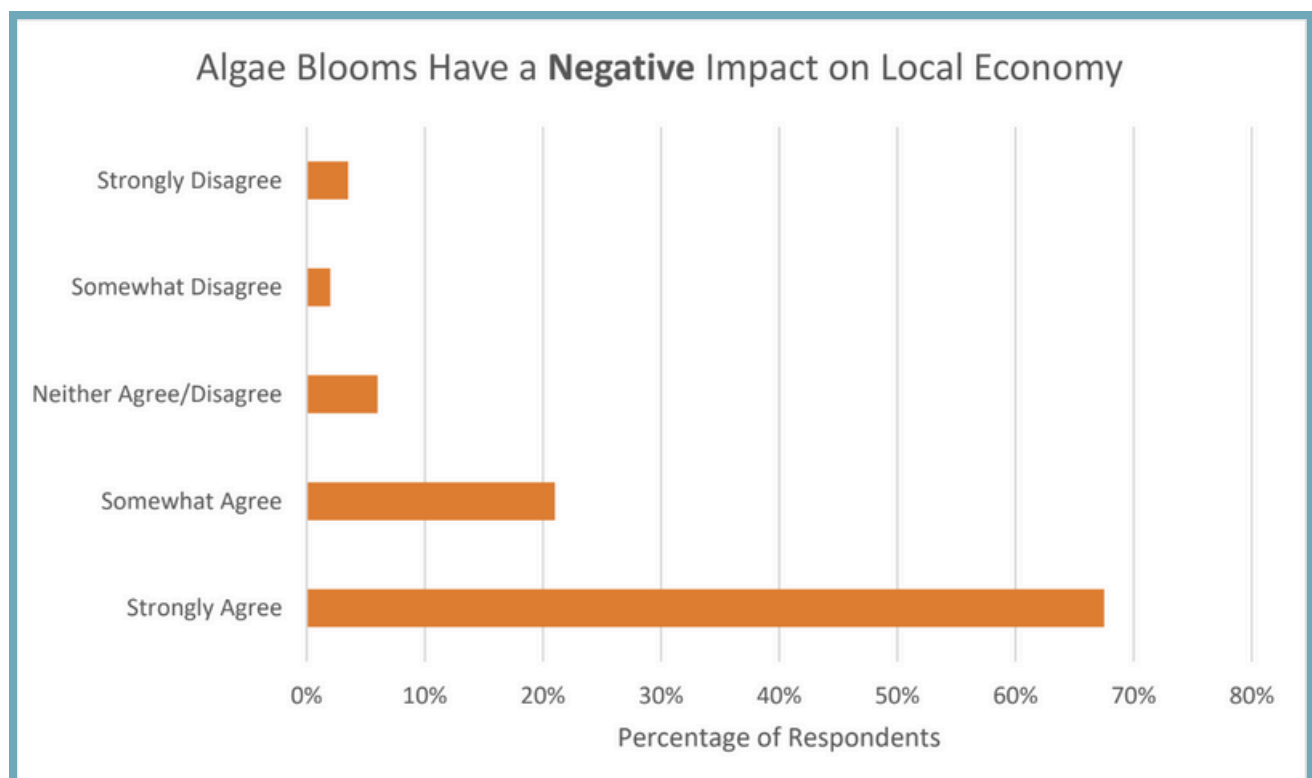


Figure 14. Agree/Disagree. Algae blooms have a negative impact on the local economy.

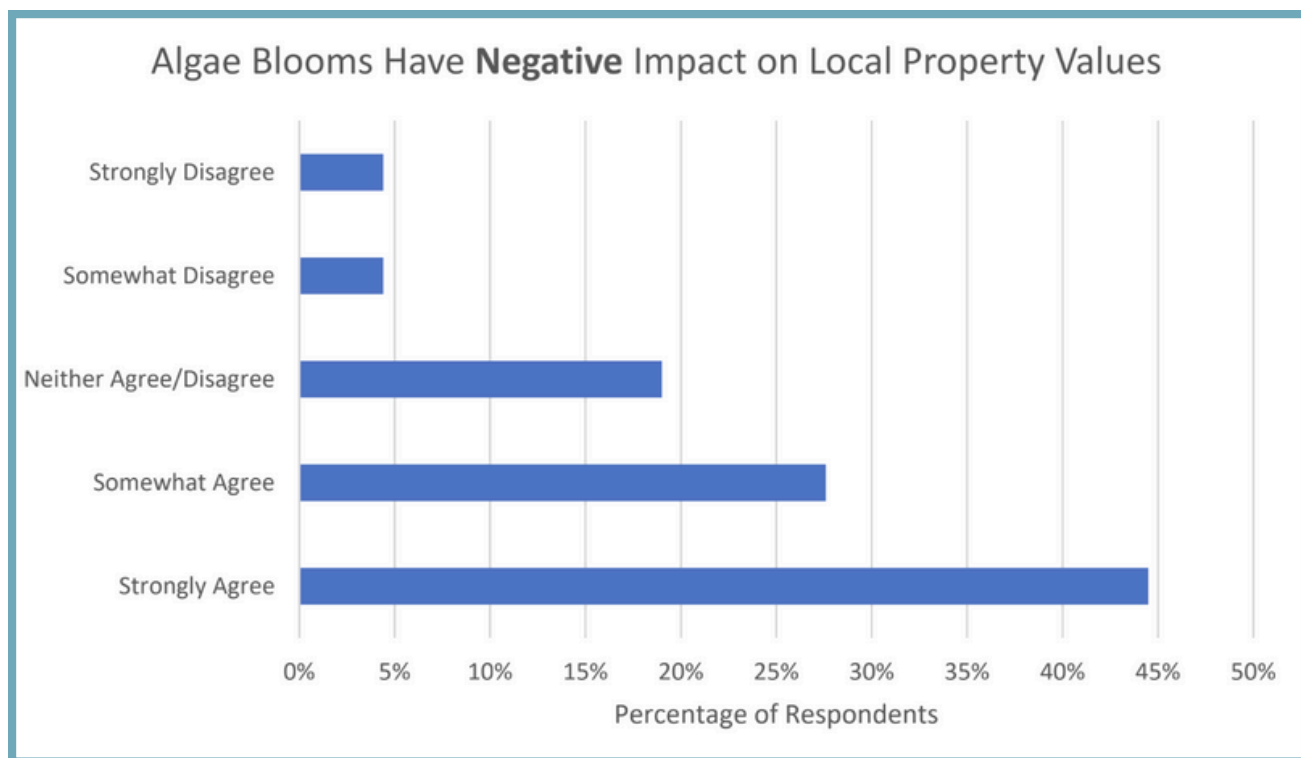


Figure 15. Agree/Disagree. Algae blooms have a negative impact on local property values.

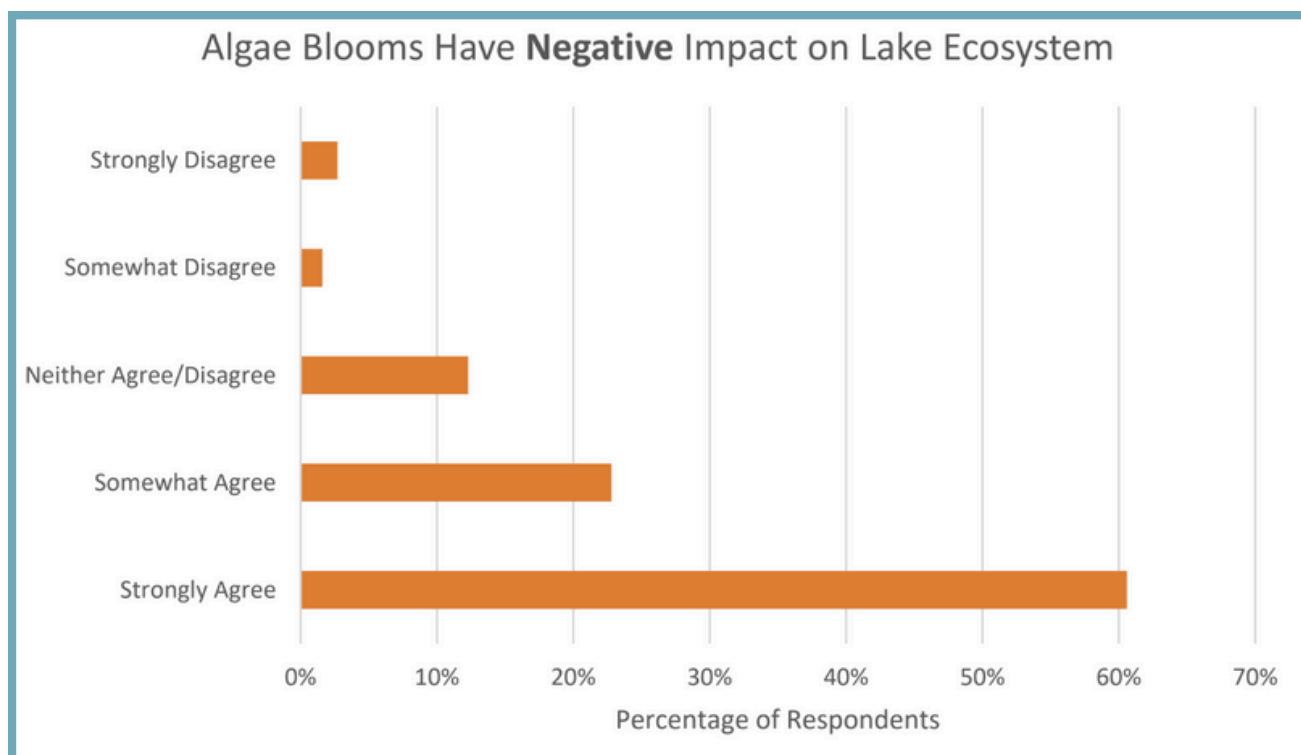


Figure 16. Agree/Disagree. Algae blooms have a negative impact on the lake ecosystem.

The pride and concern associated with Moses Lake may best be demonstrated when people were asked about the lake's importance to both the community and them personally. 93.2% (n=957) of respondents said they *strongly agreed* that it is important to the *community* that Moses Lake is safe and usable (Figure 17). 91.1% (n=936) of respondents *strongly agreed* that it is important to *them personally* that Moses Lake is safe and usable (Figure 18). Over 56% (n=534) of survey respondents reported that the lake is a primary reason why they chose to live in Moses Lake (Figure 19).

These data point to the fact that the lake remains a focal point of the community and the long-term health and usability of the water is of utmost importance.

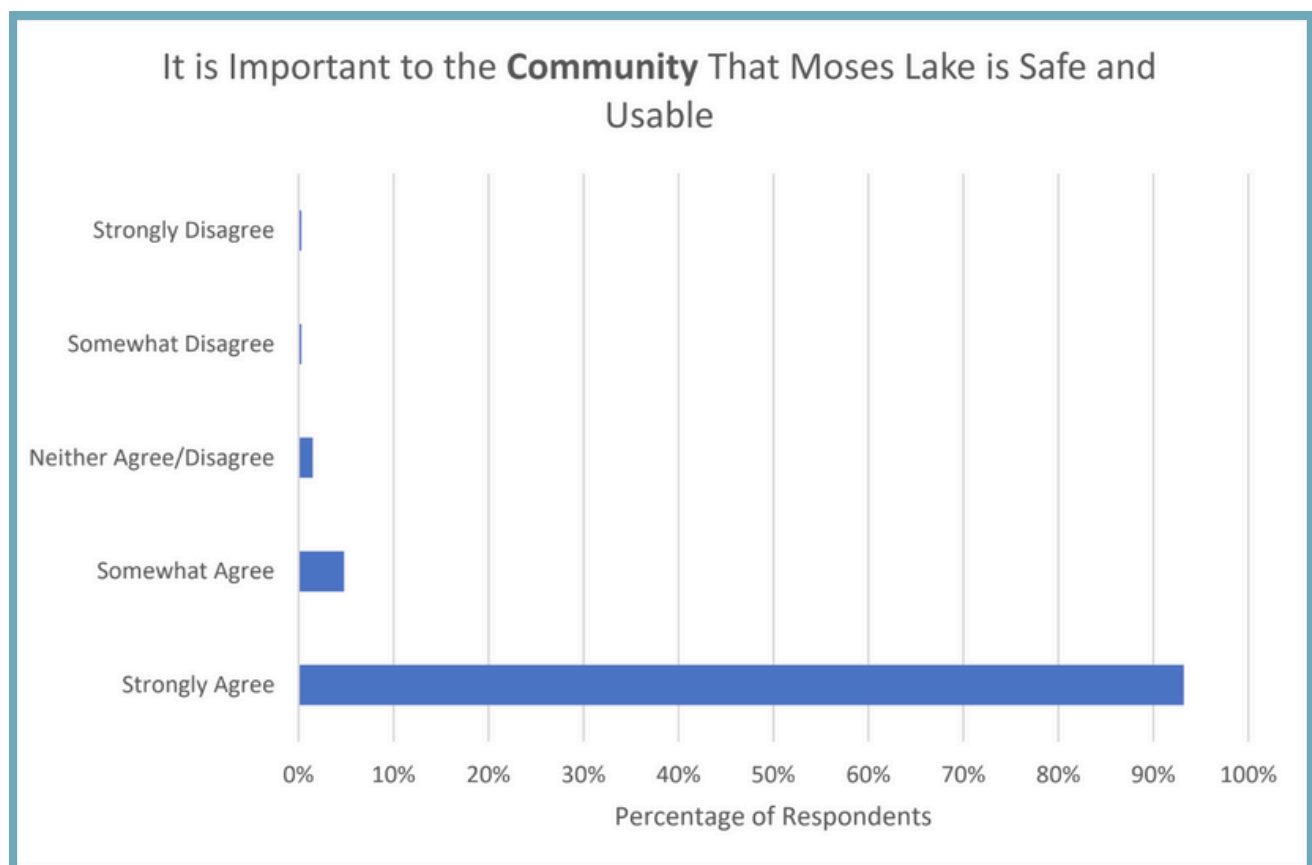


Figure 17. Agree/Disagree. It is important to the community that Moses Lake is safe and usable.

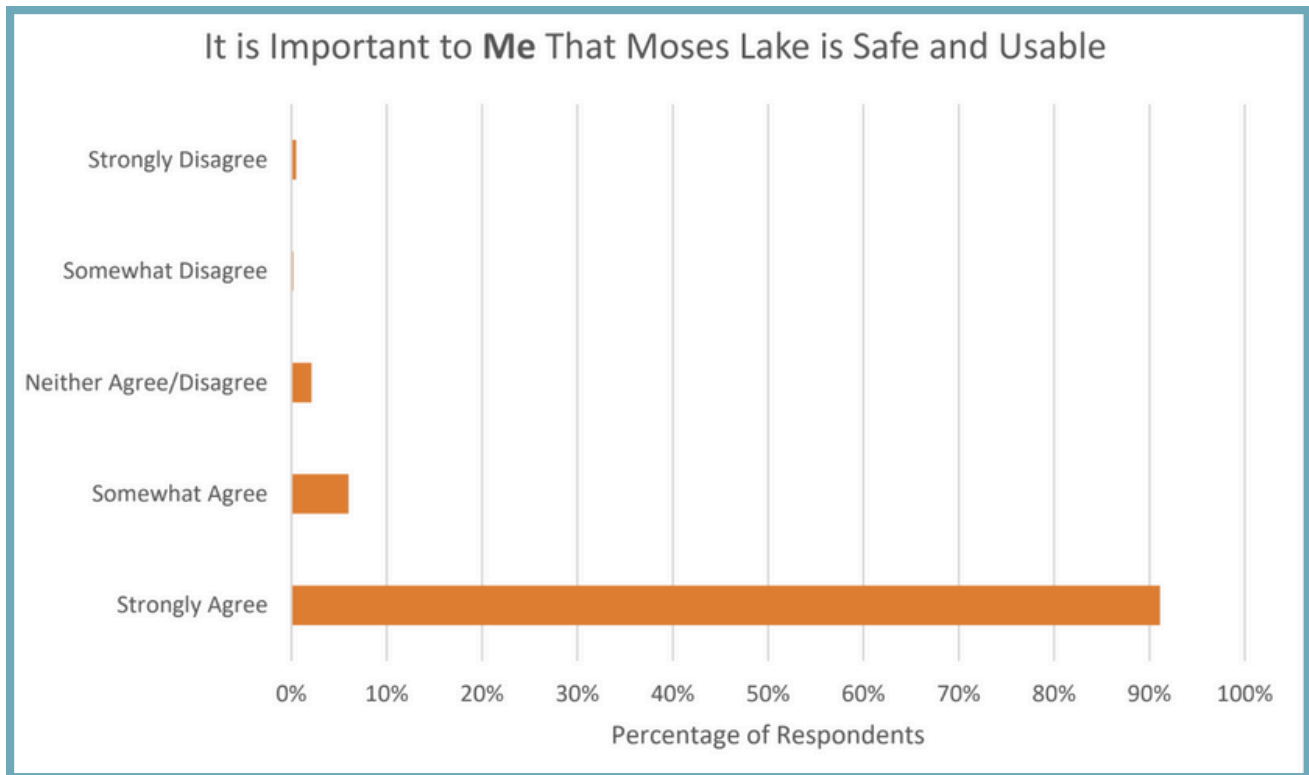


Figure 18. Agree/Disagree. It is important to me that Moses Lake is safe and usable.

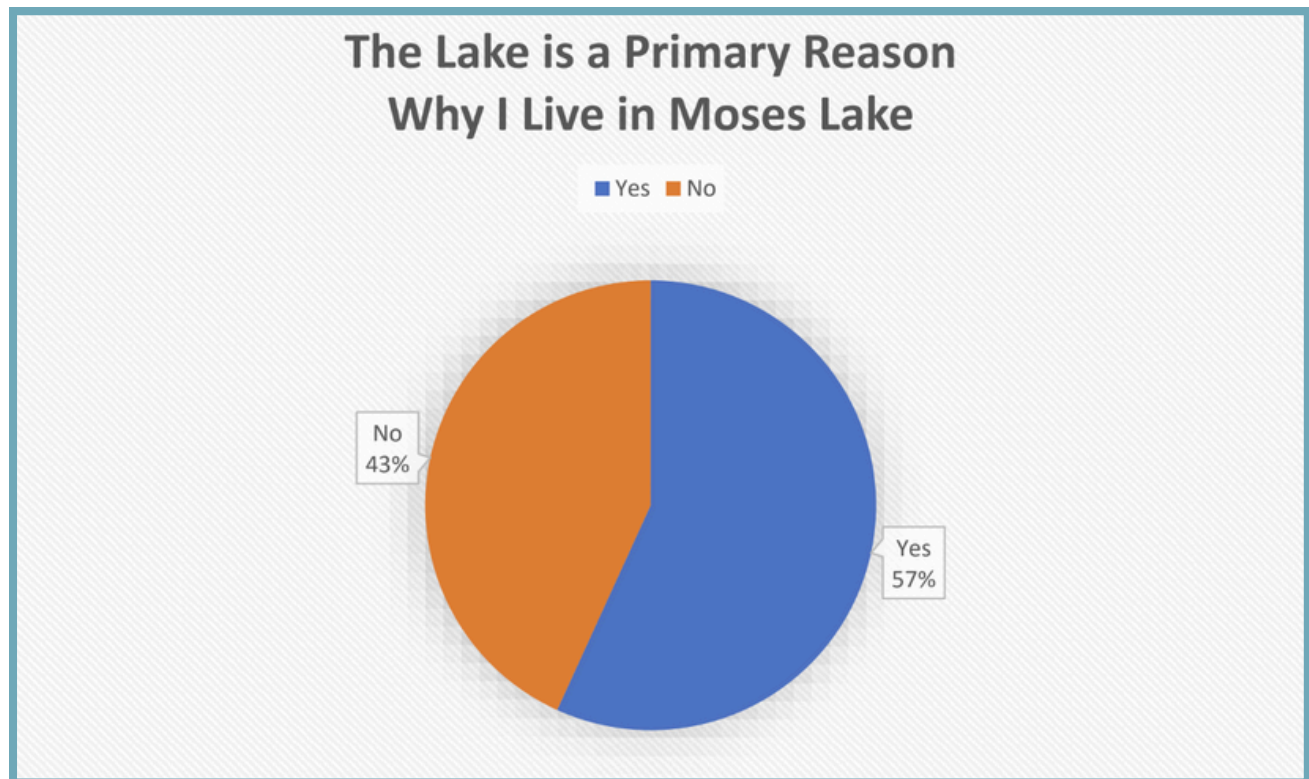


Figure 19. The lake is a primary reason why I live in Moses Lake.

Moving Forward

Survey respondents were asked to identify all the entities they think are responsible for finding solutions to the Moses Lake algae issue. The results are found in Figure 20. The City of Moses Lake (n=947, 83%) was the most frequently identified, followed next by the Washington State Department of Ecology (n=898, 79%), and the Moses Lake Irrigation District (n=878, 77%). These three entities polled higher than the Grant County Soil Conservation District (n=634, 56%), Bureau of Reclamation (n=605, 53%), and the Federal Government (n=403, 35%).

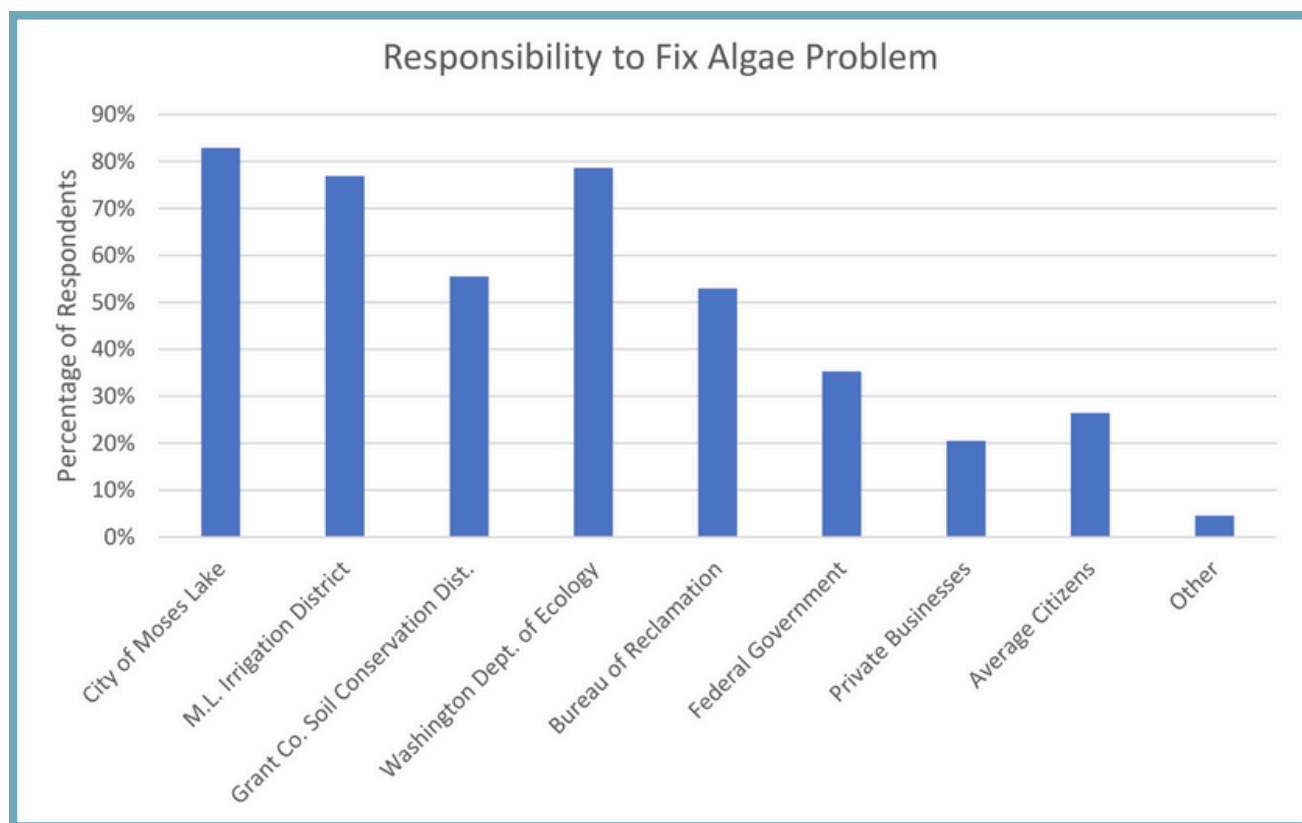


Figure 20. Whose responsibility is it to fix the algae problem?

At the end of the survey, respondents were asked two open-ended questions. First, “If local officials recommended that Moses Lake NOT BE USED for recreation when an algae bloom is present, how would this impact you and your lake use?” Qualitative analysis of the responses provided an important opportunity to capture opinions and attitudes that may have otherwise been lost. Analysis reveals numerous primary themes to respondent answers. First, many people wrote that they would consider moving away from Moses Lake if algae blooms continue to be a problem in the future, saying that the lake is one of the primary reasons for choosing to live in the town.

A second theme that arose frequently in the responses was the comment that people will go to other waterways in the region for their recreational activities, taking their money with them (in the form of gas sales, food, supplies, maintenance). Respondents also noted that they are embarrassed when friends and family come to visit, and the lake is not usable. Some people mentioned that they would reconsider buying lakefront property in Moses Lake if the algae problem continues. In sum, respondents reported their overall quality of life would decrease significantly if the algae problem is not fixed.

The second open-ended question asked “What, if anything, do you think should be done to reduce the frequency of algae blooms in Moses Lake?” Many people believe increased water flow should help substantially reduce the algae, i.e. dilution (commonly referred to by respondents as “flushing the lake”). Others believe agricultural runoff in the region needs to be reduced and it is the responsibility of the region’s farmers. Carp reduction was another proposed solution.

Other common responses included dredging the lake. However, there was a difference of opinion on the impact of lake dredging. Some respondents said they should stop dredging the lake because it stirs up elements and chemicals that cause algae blooms. Other respondents think more dredging is needed to remove algae-causing elements and chemicals. Numerous other respondents wrote that the lake shoreline needs to be re-naturalized.

Overall, survey respondents showed great concern over the local algae problem. 435 individuals said that they are interested in receiving future information about ongoing efforts to address it.

Septic/Sewer

A total of 214 respondents self-identified as lakefront homeowners in Moses Lake. These lakefront homeowners were evenly split regarding their current waste management system. 107 individuals are currently on the city sewer system while 107 individuals use a septic system. Lakefront residents on septic systems were asked if they would be interested in a program to transition to city sewer. Some 48% of respondents answered No (n=51), however 20% of respondents said Yes (n=21). 31% of respondents are still unsure (n=33) (Figure 21).

Over half of lakefront homeowners (n=110) want to receive more information about shoreline management.

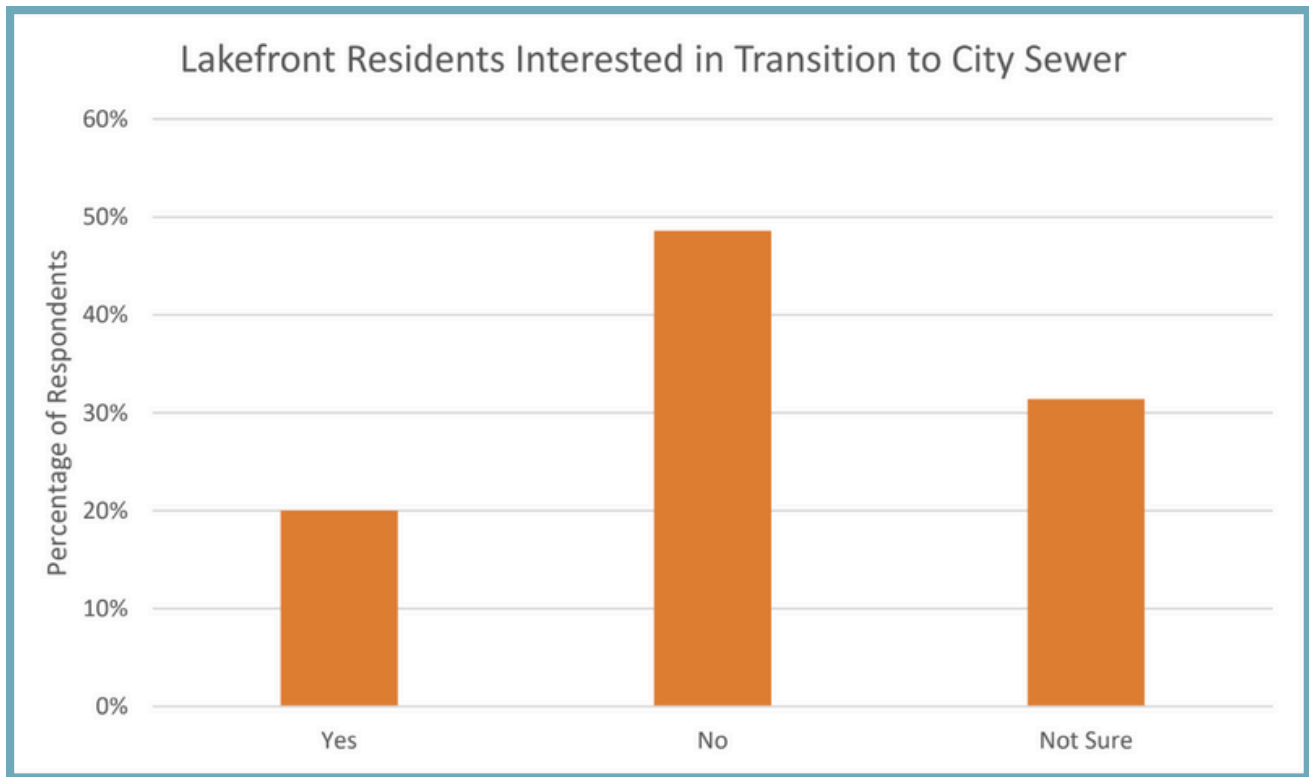


Figure 21. Are lakefront residents currently on septic interested in transitioning to city sewer?

Appendix

Survey Respondents

Zip Code	Respondents	Zip Code	Respondents	Zip Code	Respondents
29209	1	98133	1	98837-4039	1
45069	1	98168	1	98837-8750	1
58640	1	98201	1	98837-8920	1
83501	1	98203	2	98837-9625	1
83704	1	98225	1	98838	1
83716	1	98244	1	98847	2
84651	1	98252	1	98848	3
85614	1	98258	1	98851	8
89002	1	98271	1	98857	8
95453	1	98272	2	98860	1
95687	1	98277	1	98901	2
97031	1	98282	1	98902	1
97223	1	98290	1	98903	2
97303	1	98292	1	98908	2
98002	2	98360	3	98926	1
98012	2	98366	1	98937	3
98019	1	98373	1	99037	1
98022	1	98374	1	99115	1
98023	1	98382	1	99123	1
98026	3	98388	2	99133	1
98027	2	98502	1	99139	1
98034	1	98513	1	99169	3
98037	2	98528	1	99205	1
98040	1	98569	1	99206	1
98043	2	98589	1	99207	1
98052	1	98632	1	99212	1
98055	1	98802	1	99224	1
98056	1	98823	27	99336	1
98056-1241	1	98826	1	99337	1
98058	4	98832	1	99344	2
98059	1	98837	928	99352	2
98092	1	98837-1551	1	99353	1
98106	1	98837-1783	1	99357	1
98116	1	98837-2037	1	99837	3
98118	1	98837-3032	1	99937	1

Zip code of primary residence of survey respondents.

Household Size	Respondent Count
1	66
2	338
3	180
4	248
5	169
6	76
7	24
8	5
9	3
10	3
Total	1,112

Household size of respondents.

Moses Lake Usage

Activity	Count	% Respondents
Swimming	784	68.65
Boating	754	66.02
Fishing	627	54.9
Skiing/Wakeboarding/Tubing	507	44.39
Canoeing/Kayaking/Paddle Boat	426	37.3
Dune Activities (e.g. 4-wheeling)	420	36.78
Wildlife Watching	393	34.41
Camping	360	31.52
Paddleboarding	338	29.59
Jet Ski/Sea-Doo/WaveRunner	266	23.29
Hunting	214	18.73
Other	94	8.23

Self-reported participation in each recreational activity.

	Most Days	2-3 Times/Week	Once a Week	2-3 Times/Month	Once a Month	None
January	49	61	71	100	186	571
February	51	51	66	96	169	572
March	60	90	86	168	194	404
April	86	143	121	230	152	279
May	144	212	149	242	136	150
June	231	272	144	199	105	104
July	286	278	130	172	93	100
August	290	275	122	169	89	112
September	173	232	166	171	143	159
October	81	134	122	135	186	360
November	46	71	77	101	179	534
December	46	57	60	70	187	587

Respondent count of frequency of lake use by month.

Algae Awareness and Lake Use

	Count	Percentage
Yes	1073	97.28%
No	22	1.99%
Not Sure	8	0.72%
Total	1103	100%

In summer 2019, Moses Lake experienced a blue-green algae bloom. Were you aware of this?

	Count	Percentage
Yes	1042	94.64%
No	51	4.63%
Not Sure	8	0.72%
Total	1101	100%

In summer 2020, Moses Lake experienced a blue-green algae bloom. Were you aware of this?

How did you learn about the presence of algae on Moses Lake?	Count
Social Media	850
Signs Posted by Health Officials	705
Word of Mouth	631
Personal Observation	571
Newspaper	430
Other	57
None of These	12

Ways respondents learned of blue-green algae on Moses Lake.

	Significantly More	Somewhat More	No Difference	Somewhat Less	Significantly Less
2019	5	6	219	161	703
2020	6	20	278	182	604

Summers 2019 and 2020 lake use during algae blooms compared to previous years by respondent count.

Algae as a Health Risk

	Count	Percentage
Yes	688	63.76%
No	64	5.93%
It Depends	186	17.23%
Not Sure	141	13.07%
Total	1079	100%

Blue-green algae poses a potential health risk to humans.

	Count	Percentage
Very Concerned	527	48.84%
Somewhat Concerned	325	30.12%
Neutral	117	10.84%
Not That Concerned	78	7.22%
Not at all Concerned	32	2.96%
Total	1079	100%

Concern over the health risks associated with blue-green algae.

	Count	Percentage
Any Contact	459	42.54%
Multiple Contacts	146	13.53%
Frequent Contacts	157	14.55%
Does Not Cause Negative Health	34	3.15%
Don't Know	283	26.23%
Total	1079	100%

Amount of contact with algae to cause negative health outcomes.

Algae Exposure by Activity

	Count	Percentage
High Exposure	690	65.78%
Medium Exposure	185	17.64%
Low Exposure	95	9.06%
None	13	1.24%
Don't Know	66	6.29%
Total	1049	100%

Algae exposure risk from activities IN the water.

	Count	Percentage
High Exposure	97	9.53%
Medium Exposure	290	28.49%
Low Exposure	455	44.70%
None	133	13.06%
Don't Know	43	4.22%
Total	1018	100%

Algae exposure risk from activities ON the water.

	Count	Percentage
High Exposure	34	3.33%
Medium Exposure	105	10.28%
Low Exposure	404	39.57%
None	435	42.61%
Don't Know	43	4.21%
Total	1021	100%

Algae exposure risk from activities NEAR the water.

	Count	Percentage
Swallowing Water	1002	87.74%
Contact with Skin	890	77.93%
Eating Fish from an Affected Area	664	58.14%
Inhaling Airborne Droplets	426	37.30%

Perceived ways to be exposed to blue-green algae.

Importance of Moses Lake

	Count	Percentage
Strongly Agree	704	67.50%
Somewhat Agree	219	21%
Neither Agree Nor Disagree	63	6%
Somewhat Disagree	21	2%
Strongly Disagree	36	3.50%
Total	1043	100%

Agree/Disagree. Algae blooms have a negative impact on the local economy (tourism, small businesses, jobs).

	Count	Percentage
Strongly Agree	461	44.50%
Somewhat Agree	286	27.60%
Neither Agree Nor Disagree	197	19%
Somewhat Disagree	46	4.40%
Strongly Disagree	46	4.40%
Total	1036	100%

Agree/Disagree. Algae blooms have a negative impact on local property values.

	Count	Percentage
Strongly Agree	628	60.60%
Somewhat Agree	236	22.80%
Neither Agree/Disagree	127	12.30%
Somewhat Disagree	17	1.60%
Strongly Disagree	28	2.70%
Total	1036	100%

Agree/Disagree. Algae blooms have a negative impact on the lake ecosystem.

	Count	Percentage
Strongly Agree	957	93.20%
Somewhat Agree	49	4.80%
Neither Agree/Disagree	15	1.50%
Somewhat Disagree	3	0.30%
Strongly Disagree	3	0.30%
Total	1027	100%

Agree/Disagree. It is important to the community that Moses Lake is safe and usable.

	Count	Percentage
Strongly Agree	936	91.10%
Somewhat Agree	62	6.00%
Neither Agree/Disagree	22	2.10%
Somewhat Disagree	2	0.20%
Strongly Disagree	5	0.50%
Total	1027	100%

Agree/Disagree. It is important to me that Moses Lake is safe and usable.

	Count	Percentage
Yes	534	56.38%
No	406	42.87%
Total	947	100%

The lake is a primary reason why I live in Moses Lake.

Moving Forward

	Count	Percentage
City of Moses Lake	947	82.92%
M.L. Irrigation District	878	76.88%
Grant Co. Soil Conservation Dist.	634	55.51%
Washington Dept. of Ecology	898	78.63%
Bureau of Reclamation	605	52.97%
Federal Government	403	35.28%
Private Businesses	234	20.49%
Average Citizens	302	26.44%
Other	52	4.55%

Whose responsibility is it to fix the algae problem?

Septic/Sewer

	Count	Percentage
Yes	21	20%
No	51	48.60%
Not Sure	33	31.40%
Total	105	100%

Are lakefront residents currently on septic interested in transitioning to city sewer?

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