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2021 Arizona Boat and Watercraft Study Research Report

Arizona State Parks Board
and
Arizona Game & Fish Department

Prepared by: Partners In Brainstorms, Inc.
Final: December 28, 2021



**Arizona State Parks Board (ASPB) and
Arizona Game & Fish Department (AZGFD)
2021 Arizona Boat and Watercraft Study (BWS)
Final Report**

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*All 2021 data represent respondent use during previous 12 months.

Executive Summary

Partners In Brainstorms, Inc. (PIB), a market research and strategic consulting firm, conducted a survey of Arizona registered boat owners and watercraft users during the period of May 24, 2021 through September 7, 2021. Historically, the survey is commissioned approximately every three years by the Arizona State Parks Board (ASPB) and Arizona Game & Fish Department (AZGFD) to help guide the spending of State Lake Improvement Fund (SLIF), Law Enforcement Boating Safety Fund (LEBSF), and other water recreation–related monies. Findings from the study also aid planning efforts related to boating and watercraft safety, facilities, and services.

The primary objective was to determine the number of days of recreational watercraft use in each of the state’s counties by boat use days and person use days. A secondary objective was to collect selected attitudinal and behavioral data related to boat and watercraft use.

Two notable updates were made in the 2021 Arizona Boat and Watercraft Study (BWS):

- In the previous studies going back to at least 2000, Arizona registered boat owners and residents (full- and part-time) have accounted for less than half the participants in the Arizona Boat and Watercraft Study. In the 2016 and 2012 BWS specifically, Arizona registered boat owners accounted for 47% of the respondents, with 38% from California and 7.5% each from Nevada and Utah. These overall percentages for the four states, with Arizona accounting for less than half the respondents, have remained virtually unchanged since 2000. For the 2021 BWS, a strategic decision was made to focus on Arizona registered boat owners and watercraft users.
- Previous BWS surveys, from 2000 through and including 2016, have been conducted solely by telephone among registered boat owners in the four states, with the large majority of respondents having been reached on their landline phones. In contrast, the 2021 BWS survey was conducted primarily online and enabled Arizona boat and watercraft owners and users to participate using mobile devices – smartphones and tablets – as well as laptops and computers. An email invitation to participate in the survey was sent to all registered boat and personal watercraft owners in Arizona. To broaden outreach efforts and increase participation, the 2021 survey also leveraged social media and current technology, i.e., GPS location-based QR codes on signage and flyers provided for distribution to members of the public using boating facilities, renting equipment, etc.

In 2021, a total of 6,771 surveys were completed among Arizona registered boat owners and watercraft users, compared with 3,152 in 2016 and 3,135 in 2012. Based on the total completed surveys, the study has a confidence level of 99% with a +/- 1% sample error.

Following are key findings from the survey:

- Overall boat and watercraft use in Arizona is continuing to increase. In the current survey, boat and watercraft use during the previous 12 months was 90%, a significant increase over the 2016 and 2012 findings of 70% and 64%, respectively.
- The most common reasons for non-use during the previous 12 months were: COVID-19/stay-at-home orders (33%) and too busy/no time (24%). Respondents also reported low water levels as a reason for non-use.

- Among all registered boat owners and watercraft users, the significant majority (90%) reported using motorized vessels; 30% used non-motorized. Respondents were permitted to select both, if applicable, thus accounting for the total percentages exceeding 100%. In 2021, a primary goal of the BWS survey was to secure responses from Arizona registered boat owners. All motorized boats and personal watercraft must be registered with the Arizona Game & Fish Department, thus accounting for the 90% response rate among motorized boat and watercraft users.
- Among individuals who used a motorized boat or watercraft, 97% reported that they owned or co-owned it, 3% rented or leased it, and 3% used or borrowed someone else's. Among those using a non-motorized boat or watercraft, 86% owned or co-owned it, 10% rented or leased it, and 11% used or borrowed someone else's. Respondents were asked to choose all that apply, thus accounting for the total percentages exceeding 100%.
- The overall mean of boat use days among Arizona registered boat owners and watercraft users was 17.5 days.
- The mean number of boating trips was 17.0, which was comparable to the 2016 data.
- Some changes were seen from the 2016 figures for the number of boat use days by county, with Maricopa County showing a significant increase in 2021. Mohave County continued to have the highest percentage (34%) of boat use days in the 2021 survey, followed by Maricopa (29%) and La Paz Counties (12%). In the 2016 BWS, the top two counties were Mohave (42%) and La Paz (27%), followed by Maricopa (16%).
- The top five most frequently visited lakes and rivers were Lake Havasu (Mohave County and La Paz County), Lake Pleasant (Maricopa County), Roosevelt Lake (Gila County), and Saguaro and Bartlett Lakes (both in Maricopa County), representing several changes from the 2016 BWS. While Lake Havasu was also the most visited in 2016, three of the previous top five locations – Parker Strip, Lake Mohave, and Lake Powell – dropped out of the top five in 2021. Lake Mead visitation also dropped considerably, from its 7th place ranking in 2016 to 20th place in 2021, likely due to its lowest water level since the Hoover Dam was completed and the reservoir filled in the 1930s.
- The top five counties where respondents reported using boats or watercraft were Maricopa (51%), Mohave (47%), Coconino (26%), Gila (20%), and La Paz (12%).
- The five waterways where respondents reported the largest mean number of people in the group were Grand Canyon (8.70 people in group), Lake Powell and Lake Mead (7.16 each), Clear Creek Reservoir (5.87), and Glen Canyon Dam to Lees Ferry (5.68).
- Slightly more than one-third (35%) of all respondents reported that the pandemic had affected their boat or watercraft use during the past 12 months, while 65% reported that the pandemic had no effect on their boat or watercraft use.
- Among those respondents who reported that the pandemic did affect their boat or watercraft use, 78% said that it had decreased their use, while 22% said that it had increased their use.
- General pleasure boating and fishing were the top two activities engaged in by all registered boat owners and watercraft users, unchanged from 2016.
- An examination of popularity of activities by respondent gender revealed some differences. Canoeing/kayaking, tubing, stand-up paddle boarding, and jet skiing showed a statistically significant greater frequency among women than men, while fishing was the only activity with a statistically significant greater frequency among men than women.

- The large majority (92%) of registered boat owners and watercraft users in Arizona know what Aquatic Invasive Species are.
- A smaller majority (76%) of respondents report that they always clean their boat or watercraft after each use. An additional 13% of all respondents report that they usually clean it after each use, which was generally comparable across age groups. The most frequently used cleaning method, selected by 87% of respondents was to clean and drain dry.
- With regard to having taken a boating safety course, boat and watercraft owners and users were nearly evenly split, with 48% having taken a course and 52% not having taken one.
- If a free boating safety course were offered, slightly more than half (54%) of boat and watercraft owners and users preferred to take it online, 16% in person, and 10% preferred a blended version incorporating both methods.
- Based on the review of respondents' suggestions and comments, preliminary recommendations include the following:
 - Develop video(s) on basic rules for operating boats and personal watercraft. Post on ASPT and AZGFD websites and distribute free of charge to boating clubs and organizations, boating-related retailers, etc. Also provide to boat and watercraft rental operators and encourage them to show to all customers before releasing equipment.
 - Expand promotional efforts regarding the availability and convenience of online boat and watercraft education courses, leveraging appropriate internal and external communication channels, such as agency websites, e-newsletters, social media, outreach to boating clubs and organizations, etc.
 - Use various communication channels to provide detailed, current information on water levels, congestion, launch ramp lines, etc. at sites. Agencies may also wish to consider expanding the use of web cams at the most visited sites.
 - Consider possible ways to expand customer-centric services, such as offering multi-year registration, online printable passes, etc. May also wish to consider slightly discounted registration fees for seniors, veterans, etc.

Research Background and Objectives

Historically, the Arizona State Parks Board (ASPB) and Arizona Game & Fish Department (AZGFD) commission a survey of registered boat owners and watercraft users on Arizona lakes and rivers approximately every three years. This survey provides essential information about recreational watercraft usage patterns – such as frequency and destination data – that can benefit planning efforts related to safety, services and facilities, and tourism. The findings also help guide the spending of State Lake Improvement Fund (SLIF), Law Enforcement Boating Safety Fund (LEBSF), and other water recreation–related monies, which can be used for local, tribal, or state projects on waterways where gasoline powered boats are permitted.

To support allocation of funds, the primary objective of this study was to determine the number of days of recreational watercraft use in each of the state’s counties by boat use days and person use days. A secondary objective was to collect selected attitudinal and behavioral data related to boat and watercraft use.

This study was designed and executed under the direction of a Technical Advisory Committee (TAC) consisting of representatives from each sponsoring agency. Partners In Brainstorms wishes to thank each of the following TAC members for their indispensable insights and guidance during this important project:

- Dawn Collins, ASPB
- Danny Rodriguez, AZGFD
- Gene Elms, AZGFD

Methodology

Data was primarily gathered using an online survey, which was launched on May 24, 2021 and remained available through September 7, 2021. Additionally, some surveys were completed by phone during that same time period. Previous BWS surveys were conducted solely by telephone, with the large majority of respondents having been reached on their landline phones. In contrast, conducting the 2021 survey primarily online enabled respondents to participate using mobile devices – smartphones and tablets – as well as laptops and computers. The 2021 survey also leveraged popular communication channels, including social media, and current technology – i.e., GPS location-based QR codes – to broaden and expand outreach to and participation among potential qualified respondents, particularly among younger boaters.

Email invitations to participate in the survey were sent to registered Arizona boat owners, and a variety of channels were used to promote and encourage participation, including notices on ASPT and AZGFD websites; social media (Facebook, Twitter, and Instagram); agency e-newsletters; press releases; and flyers and signage with GPS location-based scannable QR codes (barcodes) that contained a link to the survey. The flyers and signage were provided to key parks with boating facilities, marina and watercraft rental operators, etc. for distribution to visitors and customers. Each channel was assigned a unique survey link, thereby enabling the ASPT team to identify those channels that were most effective in recruiting participants.

Incentives were also used to encourage participation. More than 70 prizes were donated by vendors and ASPT, including gift cards, high-quality life jackets, and passes and stays at Arizona state parks.

Sample

In previous years, the sample universe included registered boat owners in selected California, Nevada, and Utah counties where they were known to visit Arizona lakes and rivers. For the current survey, the project team was unable to secure appropriate boat registration contact information from those states due to their recently enacted extensive privacy laws regarding sharing such information, as well as such other issues as time and cost of securing the information. Furthermore, conducting on-site, in-person surveys was not an option due to COVID-19 protocols recommended by the Centers for Disease Control (CDC) and the Arizona Department of Health Services. The research team worked with ASPT and AZGFD to develop a solution, which was to solicit participation from registered boat owners only in Arizona and not in the three other states. Additionally, the sample universe was expanded to include Arizona boat and watercraft users, such as individuals who rented or borrowed boats and watercraft. This strategy resulted in several positive outcomes:

- More than doubled participation among registered boat owners and watercraft users residing in Arizona as compared with 2016.
- Represented greater diversity of respondents in ethnicity, race, and age (i.e., in younger age groups).
- Provided Arizona-specific information on impact of COVID-19 pandemic on boating activity.
- Comments and suggestions came from Arizona residents, who represent ASPT's and AZGFD's primary customers.

In 2021, a total of 6,771 surveys were completed among Arizona registered boat owners and watercraft users, compared with 3,152 in 2016 and 3,135 in 2012. Based on the total completed surveys, the study has a confidence level of 99% with a +/- 1% sample error.

Data Analysis

Response frequencies and percentages were calculated for each question. Cross tabulations for each question were created to compare such criteria as number of boating days and trips; locations (by county) of Arizona waterways visited; and demographic characteristics of boaters, including their county of residence, age, gender, children under age 18 in household, etc. These demographic characteristics had not been collected in previous BWS surveys.

The demographics of respondents are presented in Appendix A, and comparisons with U.S. Census data are also included where available. Appendix B contains the list of Arizona lakes and rivers presented to survey participants, with response data on visitation. The survey questionnaire is provided in Appendix C.

Findings

A total of 6,771 individuals completed the survey, which consisted of 19 questions. The majority of questions addressed boating usage at Arizona lakes and rivers, including those visited, number of days spent, number of people in the group, and suggestions for improving their boating experiences. To aid in correctly identifying and targeting specific locations along the Colorado River where respondents had boated, a map was provided in the questionnaire highlighting 13 segments of the Colorado River. The questionnaire, including the map, is provided in Appendix C.

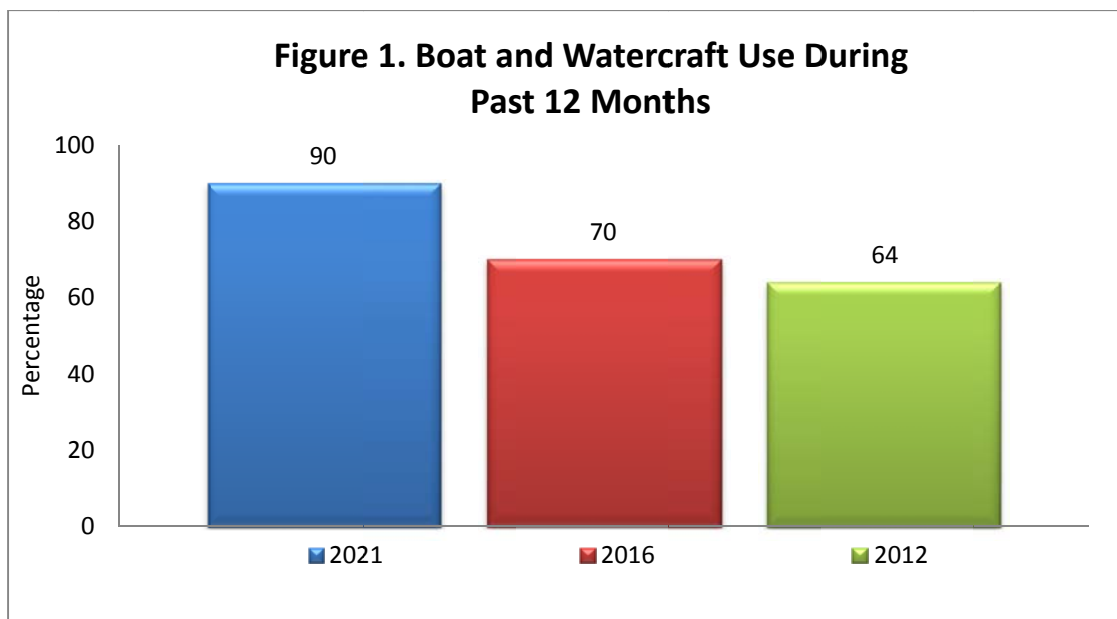
Unlike previous BWS surveys, the 2021 survey also collected demographic data for respondents, which will assist targeted outreach and messaging in the future. Additionally, because the survey asks about the previous 12 months of usage – during which the COVID-19 pandemic had forced lockdowns and other significant behavior and activity restrictions – two questions were added regarding the effect of the pandemic on respondents' recreational boating activities.

Following is a detailed analysis of the 2021 survey findings.

Boat and Watercraft Use on Arizona Lakes and Rivers During Past 12 Months

Overall Use

Respondents were first asked if they had used their boat or watercraft on Arizona lakes and rivers during the past 12 months. A total of 6,771 respondents had done so, thereby qualifying to continue with the survey. A comparison with previous studies, presented in Figure 1, shows that overall boat use in the past 12 months in 2021 was 90%, 70% in 2016, and 64% in 2012.



Additionally, 728 individuals invited to participate in the survey did not qualify because they had not used a boat or watercraft during the past 12 months.

Reasons for Non-Use

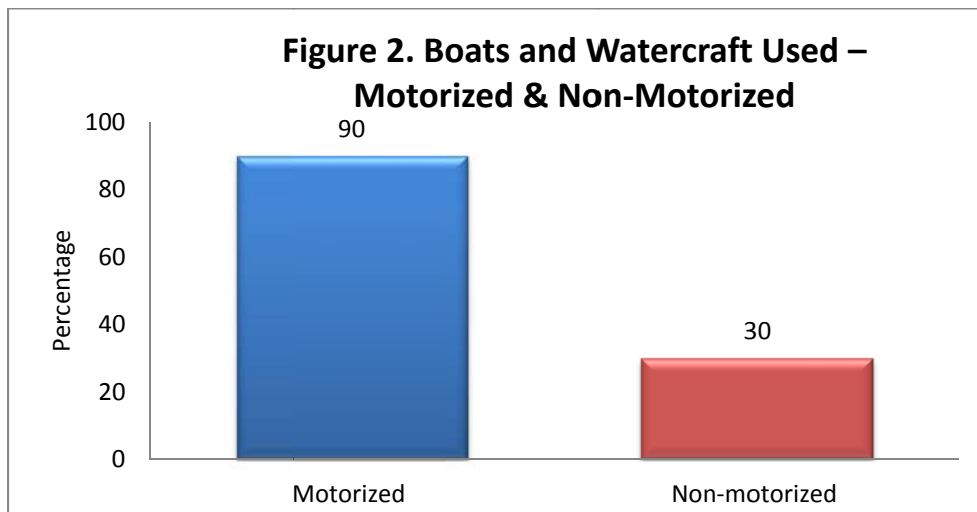
Before being terminated from the survey, those individuals who had not used a boat or watercraft during the past 12 months were asked to identify their reason(s) for non-use, choosing as many as apply. Table 1 below shows the most frequently cited reasons for non-use:

Table 1. Reasons for Non-Use	
Reasons Given	Percentage
COVID-19 / stay-at-home orders	33.2%
Too busy, no time	24.4%
Too crowded	11.3%
Not currently a boat or watercraft user	10.6%
Boat wasn't working, broken down	10.4%
Other miscellaneous reasons	10.1%

Approximately 17% used the write-in option to provide their reasons for non-use during the past 12 months. The most frequently added reasons were low water levels, health issues, sold or did not own the boat, and boat was not easily accessible (e.g., located in Mexico).

Use of Motorized and Non-Motorized Boats and Watercraft

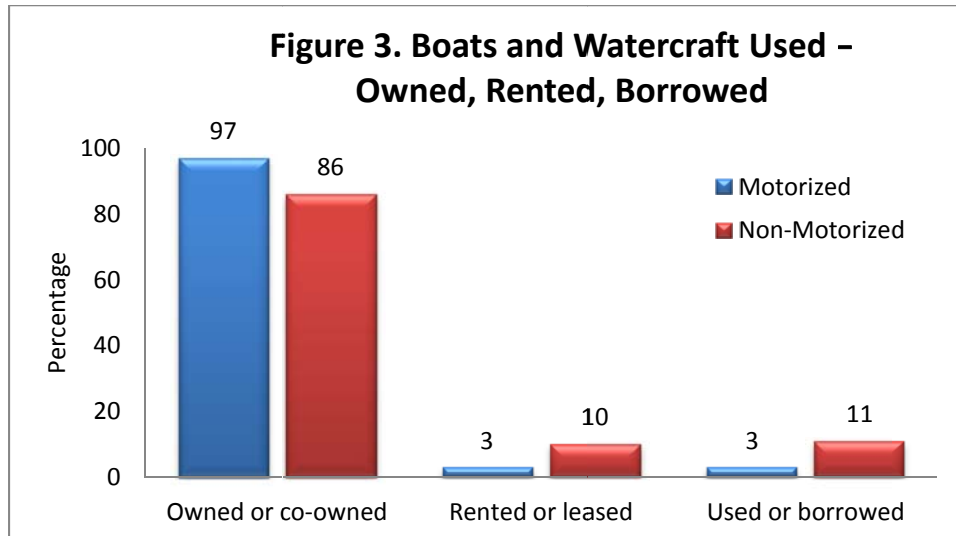
As seen in Figure 2, the significant majority (90%) of respondents reported using motorized boats or watercraft on Arizona waterways during the past 12 months, while 30% reported using non-motorized boats or watercraft. The percentages total greater than 100% because respondents could select both if applicable.



In 2021, a primary goal of the BWS survey was to secure responses from Arizona registered boat owners. All motorized boats and personal watercraft must be registered with the Arizona Game & Fish Department, thus accounting for the 90% response rate among motorized boat and watercraft users.

Ownership Status

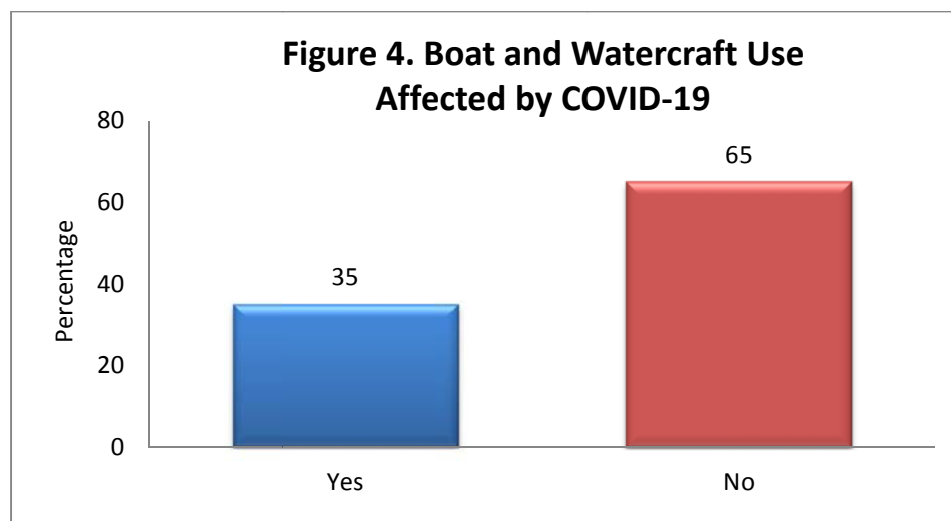
As seen in Figure 3, 97% of individuals who used a motorized boat or watercraft reported that they owned or co-owned it, 3% rented or leased it, and 3% used or borrowed someone else's. Among those using a non-motorized boat or watercraft, 86% owned or co-owned it, 10% rented or leased it, and 11% used or borrowed someone else's. The percentages total more than 100% because respondents were permitted to select all responses that apply, including ownership of both motorized and non-motorized boats and watercraft.



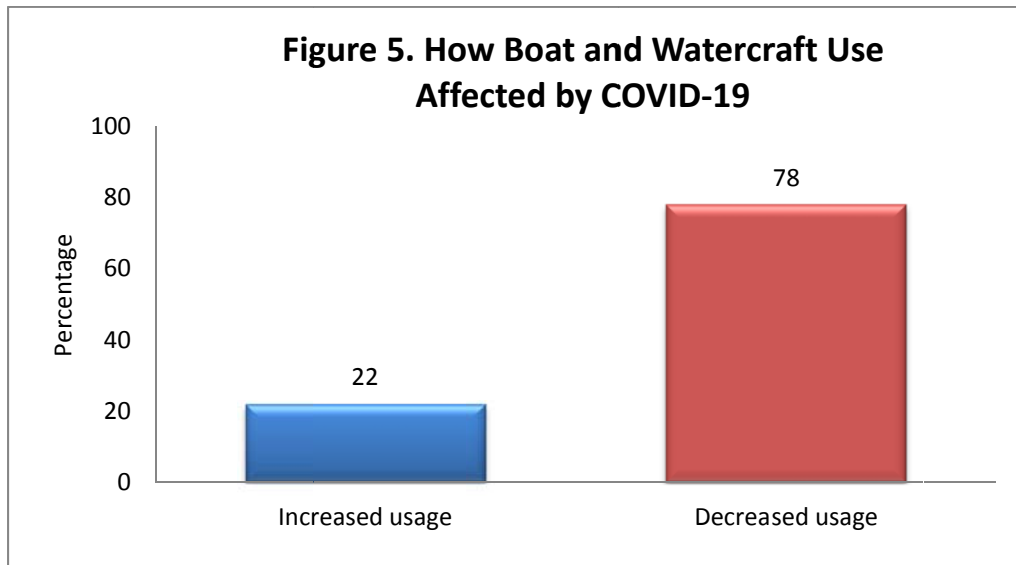
Respondents age 45 and older were significantly more likely to own or co-own their boat or watercraft, while those in the three younger age groups, spanning ages 18 to 44, were significantly more likely to rent or lease it.

Impact of COVID-19 Pandemic

Figure 4 shows that slightly more than one-third (35%) of all respondents reported that the pandemic had affected their boat or watercraft use during the past 12 months, while 65% reported that the pandemic had no effect on their boat or watercraft use.



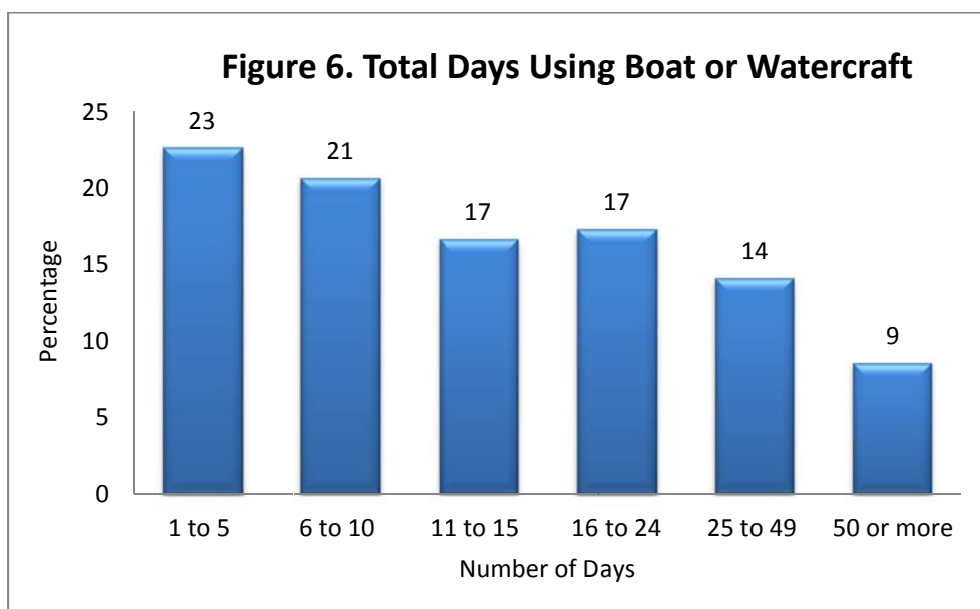
Among those respondents who reported that the pandemic had affected their boat or watercraft use, 78% said that it had decreased their use, while 22% said that it had increased their use, as seen in Figure 5.



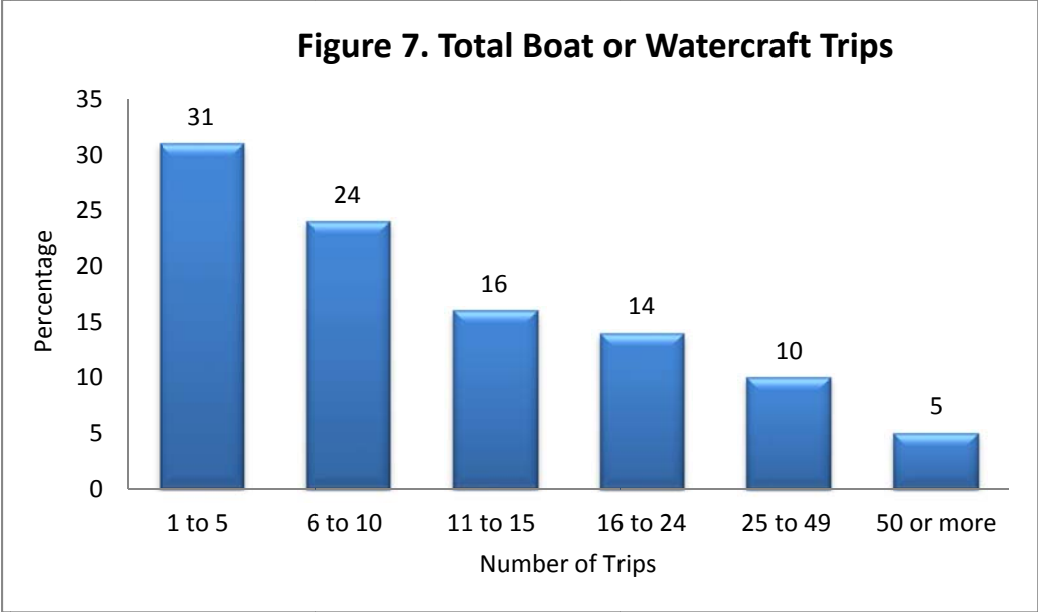
Respondents who reported that COVID-19 had decreased their boat and watercraft use represented the majority of every age group except 18 to 24. There is a direct correlation between this decreased boat usage and age, increasing from 60% to 94% – specifically 60% of individuals ages 25 to 44, 68% of those 45 to 54, 81% of those 55 to 64, 90% of those 65 to 74, and 94% of those 75 and older.

Frequency of Use on Arizona Lakes and Rivers – Estimated Number of Days and Trips

Respondents were asked to estimate the total number of days they had used a boat or personal watercraft on Arizona lakes and rivers, including the Colorado River, during the past 12 months. Response data are presented in Figure 6. The overall mean was 17.5 days, representing a large decrease from the 2016 average of 25.5 days and a smaller decrease from the 2012 average of 18.1 days.



Respondents were then asked to estimate the number of trips on which they had used a boat or watercraft on Arizona waterways during the past 12 months. Response data are presented in Figure 7. The overall mean was 17.1 trips, reflecting little or no change from the 2016 data.



Arizona Lakes and Rivers Visited

Respondents were asked a series of questions regarding the waterways they had visited during the past 12 months, with each question designed to obtain more detailed information. They were first asked to select all the Arizona lakes and rivers, including the Colorado River broken out into lakes and segments, where they had used a boat or watercraft during the past 12 months. Respondents were then shown all the waterways they had previously selected and asked to identify the one or two they had visited most often; no more than two were permitted. The top 25 responses for these questions are presented in Tables 2 and 3. The full lists of lakes and rivers identified by respondents in each question are provided in Appendix B.

Among the 10 most highly visited waterways statewide, five were lakes and segments of the Colorado River – specifically Lake Havasu, Lake Powell, Topock Gorge, the Parker Strip, and Lake Mohave – and five were located elsewhere in the state.

Table 2. Top 25 Arizona Lakes and Rivers Visited at Least Once During Past 12 Months

Ranking	Lake or River	Number of Respondents Who Visited	Percentage of Total Respondents	County Where Located
1	Lake Havasu	2,026	29.9%	Mohave 90%, La Paz 10%
2	Lake Pleasant	1,894	28.0%	Maricopa
3	Roosevelt Lake	1,333	19.7%	Gila
4	Saguaro Lake	1,266	18.7%	Maricopa
5	Bartlett Lake	1,193	17.6%	Maricopa
6	Canyon Lake	1,155	17.1%	Maricopa
7	Lake Powell	857	12.7%	Coconino
8	Topock Gorge	826	12.2%	Mohave
9	Parker Strip (Parker Dam to Headgate Rock Dam)	756	11.2%	La Paz
10	Lake Mohave (Hoover Dam to Davis Dam)	567	8.4%	Mohave
11	Alamo Lake	500	7.4%	La Paz
12	Apache Lake	455	6.7%	Maricopa
13	Patagonia Lake	439	6.5%	Santa Cruz
14	Big Lake	412	6.1%	Apache
15	Davis Dam to Topock Gorge	406	6.0%	Mohave
16	Salt River	381	5.6%	Maricopa
17	Willow Springs Lake	381	5.6%	Coconino
18	Woods Canyon Lake	365	5.4%	Coconino
19	Lake Mead	289	4.3%	Mohave
20	Martinez Lake to Imperial Dam	263	3.9%	Yuma
21	Show Low Lake	261	3.9%	Navajo
22	Fool Hollow Lake	258	3.8%	Navajo
23	Lake Mary (Upper)	241	3.6%	Coconino
24	Watson Lake	197	2.9%	Yavapai
25	Parker Canyon Lake	193	2.9%	Cochise

**Table 3. Top 25 Arizona Lakes and Rivers Visited Most Often
During Past 12 Months**

Ranking	Lake or River	Number of Respondents	Percentage of Total Respondents
1	Lake Havasu	1,271	18.8%
2	Lake Pleasant	1,211	17.9%
3	Roosevelt Lake	691	10.2%
4	Saguaro Lake	603	8.9%
5	Bartlett Lake	548	8.1%
6	Canyon Lake	480	7.1%
7	Lake Powell	346	5.1%
8	Patagonia Lake	272	4.0%
9	Parker Strip (Parker Dam to Headgate Rock Dam)	263	3.9%
10	Lake Mohave (Hoover Dam to Davis Dam)	260	3.8%
11	Topock Gorge	233	3.4%
12	Willow Springs Lake	149	2.2%
13	Davis Dam to Topock Gorge	148	2.2%
14	Martinez Lake to Imperial Dam	144	2.1%
15	Big Lake	128	1.9%
16	Alamo Lake	127	1.9%
17	Salt River	127	1.9%
18	Apache Lake	113	1.7%
19	Show Low Lake	96	1.4%
20	Lake Mead	93	1.4%
21	Woods Canyon Lake	89	1.3%
22	Fool Hollow Lake	77	1.1%
23	Parker Canyon Lake	71	1.0%
24	Ehrenberg to Martinez Lake	68	1.0%
25	Watson Lake	61	0.9%

As seen in Table 4, nearly all counties in Arizona experienced some boat or watercraft use. The top five counties where respondents reported using boats or watercraft were Maricopa (51.4%), Mohave (47.1%), Coconino (26%), Gila (20.1%) and La Paz (11.5%).

Table 4. Boat or Watercraft Use for All Arizona Counties During Past 12 Months		
County	Number of Respondents Who Visited	Percentage of Total Respondents
Apache	607	9.0%
Cochise	193	2.9%
Coconino	1,759	26.0%
Gila	1,358	20.1%
Graham	104	1.5%
Greenlee	0	0.0%
La Paz	779	11.5%
Maricopa	3,477	51.4%
Mohave	3,188	47.1%
Navajo	575	8.5%
Pima	129	1.9%
Pinal	4	0.1%
Santa Cruz	497	7.3%
Yavapai	468	6.9%
Yuma	302	4.5%

Average Number of Days Spent On Arizona Lakes and Rivers

As discussed earlier, respondents were asked to identify all the Arizona lakes and rivers, including the Colorado River, where they had used a boat or watercraft during the past 12 months. A follow-up question presented respondents with a list of all the waterways they had selected. For each waterway shown, respondents were asked to provide the number of days spent there and the number of people typically in the group.

The mean number of days spent for each of the top 25 lakes and rivers is presented in Table 5, and the full list of 94 lakes and rivers identified by respondents is provided in Appendix B. As seen in Table 5, the nine waterways where the greatest number of days were spent are various segments of the Colorado River.

**Table 5. Average Number of Days Spent on Lake or River
During Past 12 Months
(Top 25 Lakes and Rivers)**

Ranking	Lake or River	Number of Days Spent (Summary of Means)
1	Lake Havasu	17.64
2	Martinez Lake to Imperial Dam	17.32
3	Ehrenberg to Martinez Lake	14.44
4	Parker Strip (Parker Dam to Headgate Rock Dam)	14.33
5	Mittry Lake (Imperial Dam to Morels Dam)	10.94
6	Davis Dam to Topock Gorge	10.77
7	Headgate Rock Dam to Ehrenberg	9.13
8	Topock Gorge	9.11
9	Lake Mohave (Hoover Dam to Davis Dam)	9.05
10	Lake Pleasant	8.74
11	Roosevelt Lake	8.65
12	Lake Powell	8.20
13	Lake Mead	8.06
14	Squaw Lake	7.48
15	Chaparral Lake	7.44
16	Bartlett Lake	6.89
17	Saguaro Lake	6.27
18	Canyon Lake	5.66
19	Grand Canyon	5.55
20	Becker Lake	5.46
21	Gila River	5.41
22	Tempe Town Lake	5.29
23	Rainbow Lake	5.16
24	White Mountain Lake	5.14
25	Patagonia Lake	5.12

Average Number of People in Group

Table 6 presents the mean number of people on boating trips for each of the top 25 lakes and rivers. The full list of 94 lakes and rivers identified by respondents is provided in Appendix B.

For many of the waterways, significant increases were seen in the number of people in the group compared with data for the 2016 survey. Grand Canyon’s mean number of people rose from 4.71 people in 2016 to 8.70 people in 2021, Lake Powell’s rose from 5.47 people in 2016 to 7.16 in 2021, and Lake Mead’s rose from 4.55 in 2016 to 7.16 in 2021. It is likely that COVID-19 contributed significantly to this increase, in that boating offered families and households a safe way to enjoy outdoor recreation together – which the boating industry referred to as a “family boat bubble” – while maintaining social distancing from others.

Table 6. Average Number of People In Group on Boating Trips During Past 12 Months (Top 25 Lakes and Rivers)		
Ranking	Lake or River	Number of People in Group (Summary of Means)
1	Grand Canyon	8.70
2	Lake Powell	7.16
3	Lake Mead	7.16
4	Clear Creek Reservoir	5.87
5	Glen Canyon Dam to Lees Ferry	5.68
6	Headgate Rock Dam to Ehrenberg	5.25
7	Lake Havasu	5.22
8	Davis Dam to Topock Gorge	5.08
9	Salt River	4.73
10	Topock Gorge	4.66
11	Ehrenberg to Martinez Lake	4.61
12	Parker Strip (Parker Dam to Headgate Rock Dam)	4.59
13	Martinez Lake to Imperial Dam	4.51
14	Lake Mohave (Hoover Dam to Davis Dam)	4.50
15	Lake Pleasant	4.50
16	Roosevelt Lake	4.46
17	Black River	4.43
18	Verde River	4.33
19	Canyon Lake	4.18
20	Apache Lake	4.12
21	Firebird Lake	4.00
22	Cyclone Lake	4.00
23	Saguaro Lake	3.97
24	White Mountain Lake	3.89
25	Bartlett Lake	3.78

Law Enforcement and Boating Safety Fund (LEBSF)

In 1981, the Arizona legislature established the Law Enforcement and Boating Safety Fund (LEBSF) to provide grants to county boards of supervisors for the purpose of supporting boating law enforcement and safety activities. The statute (A.R.S. §5-383) specifies that LEBSF funds be granted for boating law enforcement, personnel, equipment, and training.

Distribution of monies to the Fund is subject to legislative appropriation. The state treasurer administers the Fund and disburses monies based on allocation determinations made by the Arizona Game and Fish Commission. Only a board of supervisors of a county that has a law enforcement and boating safety program that was in existence before July 1, 1990 is eligible to receive LEBSF monies. The following eight counties are eligible for disbursements from LEBSF: Apache, Coconino, Gila, La Paz, Maricopa, Mohave, Navajo, and Yuma.

A formula has been created to guide the disbursement of funds among these eight counties, which includes “Boat Use Days” as determined by this Boat and Watercraft Study (BWS).

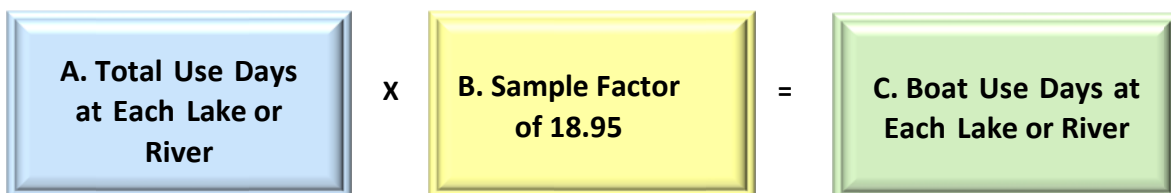
Boat Use Days and Person Use Days

In this section of the report, data on watercraft usage by Arizona registered boat owners and watercraft users is presented for each Arizona county. Watercraft usage in this section is calculated and presented using lake and river utilization during the 12 months prior to taking the survey.

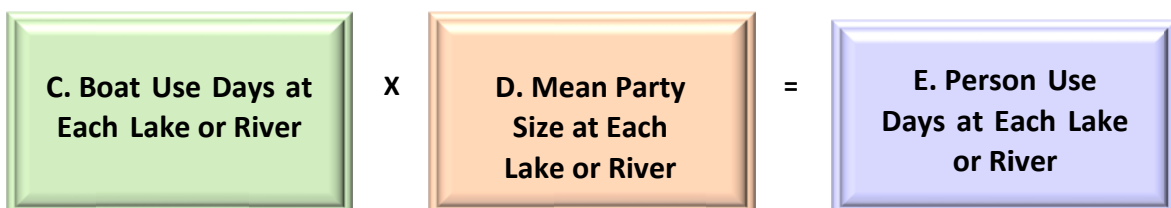
The total number of days of use for each lake or river was obtained by summing days of use for all respondents for each lake or river. To assure that boat owners and their boats were proportionately represented in the final calculation of boat usage at each lake or river, the total number of Arizona registered boats and watercraft was divided by the total number of survey respondents (Arizona registered boat owners and watercraft users), generating the overall survey sample factor.

$$\begin{aligned} \text{Sample Factor} &= 128,326 \text{ (Arizona boats)} / 6,771 \text{ (survey respondents)} \\ &= 18.95 \end{aligned}$$

The days of use at each lake or river were then multiplied by the sample factor to determine the total boat use days for the lake or river.



Person use days for each lake or river were then calculated by multiplying the boat use days at each lake or river by the average boating party size for that lake or river.



Boat Use Days and Person Use Days for Arizona Lakes and Rivers

Table 7 presents both the boat use days and person use days for each of the Arizona lakes and rivers identified by respondents in the 2021 BWS survey. Nine of the top 10 lakes and rivers in boat use days are also the most visited, with the exception of Topock Gorge, which was reported by respondents as the 11th most visited lake.

Lake Havasu alone accounts for 22% of the total boat use days for Arizona and 26% of the person use days. The top 10 Arizona lakes and rivers represent over 2.2 million, or 74%, of the total estimated boat use days among Arizona registered boat owners and watercraft users. The total person use days among these 10 Arizona lakes and rivers represent over 10.6 million, or 77%, of the total estimated person use days. These top 10 lakes and rivers in Table 7 are located in four counties, all of which are eligible for disbursements from LEBSF:

- Mohave = Lake Havasu (90%), Topock George, Lake Mohave
- La Paz = Lake Havasu (10%), Parker Strip
- Maricopa = Lake Pleasant, Saguaro Lake, Bartlett Lake, and Canyon Lake
- Gila = Roosevelt Lake

Table 7. Boat Use Days and Person Use Days for Arizona Lakes and Rivers Visited During Past 12 Months			
Rank	Lake or River	Boat Use Days by Lake/River	Person Use Days by Lake/River
1	Lake Havasu	676,989	3,532,972
2	Lake Pleasant	313,433	1,413,015
3	Roosevelt Lake	218,512	974,044
4	Parker Strip (Parker Dam to Headgate Rock Dam)	204,868	941,419
5	Bartlett Lake	155,617	588,657
6	Saguaro Lake	150,274	595,753
7	Topock Gorge	143,224	667,050
8	Lake Powell	132,972	951,907
9	Canyon Lake	123,952	518,130
10	Lake Mohave (Hoover Dam to Davis Dam)	97,289	438,231
11	Martinez Lake to Imperial Dam	86,336	389,662
12	Davis Dam to Topock Gorge	82,849	421,185
13	Alamo Lake	47,034	152,484
14	Lake Mead	44,135	316,119
15	Patagonia Lake	42,581	154,318
16	Apache Lake	34,091	140,410
17	Ehrenberg to Martinez Lake	32,026	147,536
18	Salt River	31,173	147,191
19	Mittry Lake (Imperial Dam to Morels Dam)	28,444	88,051
20	Big Lake	27,572	90,614

**Table 7. Boat Use Days and Person Use Days for
Arizona Lakes and Rivers Visited During Past 12 Months (cont'd)**

Rank	Lake or River	Boat Use Days by Lake/River	Person Use Days by Lake/River
21	Willow Springs Lake	24,825	75,192
22	Show Low Lake	21,053	56,627
23	Fool Hollow Lake	19,689	56,625
24	Woods Canyon Lake	18,779	64,982
25	Glen Canyon Dam to Lees Ferry	15,956	90,586
26	Lake Mary (Upper)	13,890	47,089
27	Tempe Town Lake	12,526	40,183
28	Parker Canyon Lake	12,488	35,458
29	Verde River	12,261	52,749
30	Lynx Lake	9,968	27,941
31	Watson Lake	9,077	24,282
32	Rainbow Lake	8,793	25,206
33	Headgate Rock Dam to Ehrenberg	8,300	43,576
34	Roper Lake	8,281	27,546
35	Lyman Reservoir	8,243	27,854
36	Pena Blanca Lake	7,732	17,741
37	Arivaca Lake	7,542	17,452
38	Blue Ridge Reservoir	7,523	25,816
39	Hawley Lake	6,879	19,031
40	Reservation Lake	6,254	16,676
41	Dogtown Reservoir	5,723	17,169
42	Ashurst Lake	5,666	16,624
43	Becker Lake	5,382	12,213
44	Black Canyon Lake	5,192	17,277
45	Grand Canyon	4,946	43,040
46	Kaibab Lake	4,719	15,034
47	Greer Lakes	4,681	13,231
48	Squaw Lake	4,396	15,175
49	Horseshoe Lake	4,207	10,097
50	Whitehorse Lake	4,207	15,513
51	Gila River	3,866	12,208
52	Goldwater Lake	3,866	11,050
53	Clear Creek Reservoir	3,582	20,892
54	Bear Canyon Lake	3,449	12,301
55	Luna Lake	3,051	8,739
56	White Mountain Lake	2,861	10,952
57	Knoll Lake	2,293	6,958
58	Nelson Reservoir	2,198	6,144

**Table 7. Boat Use Days and Person Use Days for
Arizona Lakes and Rivers Visited During Past 12 Months (cont'd)**

Rank	Lake or River	Boat Use Days by Lake/River	Person Use Days by Lake/River
59	River Reservoir	2,198	6,595
60	Crescent Lake	2,047	5,521
61	Senators Wash	2,047	13,098
62	Tunnel Reservoir	1,933	4,775
63	Chevelon Canyon Lake	1,876	5,868
64	Lakeside	1,800	6,146
65	Bunch Reservoir	1,724	5,269
66	Silverbell Lake	1,706	4,157
67	Kennedy Lake	1,402	2,980
68	Chaparral Lake	1,270	2,680
69	Cataract Lake	1,156	3,116
70	Scott Reservoir	1,156	2,716
71	Kinnikinick Lake	1,137	2,767
72	Riggs Flat Lake	1,099	2,898
73	Woodland Lake	985	2,546
74	Sunrise Lake	966	2,434
75	Mormon Lake	948	2,741
76	Black River	910	4,028
77	San Carlos Lake	606	1,559
78	Fain Lake	587	1,044
79	Deadhorse	512	1,194
80	Long Lake	474	1,480
81	Green Valley	398	1,049
82	Lee Valley Lake	379	869
83	Cyclone Lake	303	6,822
84	Horsethief Basin Lake	265	597
85	Christmas Tree Lake	208	646
86	Painted Rock Reservoir	190	426
87	Picacho Reservoir	190	569
88	Stoneman Lake	190	569
89	Concho Lake	171	512
90	Earl Park	171	375
91	Drift Fence Lake	152	515
92	Cholla Lake	76	253
93	Cooley Lake	76	227
94	Alvord Lake	57	114
95	Little Bog Creek	38	76
96	Wheatfields Lake	38	76
97	Firebird Lake	19	76
98	Seneca Lake	19	38
	Totals	3,019,190	13,825,397

Boat Use Days and Person Use Days by Arizona County

As seen in Table 7, there were 3,019,130 total boat use days and 13,825,397 total person use days among Arizona registered boat owners and watercraft users on the state’s lakes and rivers over the past 12 months. Table 8 shows the boat use days and person use days by each of Arizona’s 15 counties.

For purposes of direct comparison, the 2016 total boat use days and person use days for Arizona registered boat owners are also included in the table. The data show increases in 2021 in both boat use and person use days among all Arizona counties that were recorded in 2016.

Table 8. Boat Use Days and Person Use Days by Arizona County Comparison of Arizona Registered Boat Owners and Watercraft Users in 2021 and 2016* (12-Month Data)				
County	Boat Use Days		Person Use Days	
	2021	2016 (AZ)*	2021	2016 (AZ)*
Mohave	976,787	255,399	5,022,260	1,127,837
Maricopa	830,673	301,746	3,468,939	1,216,038
La Paz	359,927	127,629	1,638,312	571,064
Coconino	250,727	56,725	1,398,750	275,239
Gila	220,445	72,583	980,719	293,593
Yuma	121,223	13,349	505,986	52,837
Apache	74,587	19,760	228,986	62,401
Navajo	63,464	5,991	193,322	21,111
Santa Cruz	50,312	23,294	172,060	91,515
Yavapai	36,536	2,221	118,858	3,675
Cochise	12,488	2,535	35,458	10,775
Pima	12,450	269	30,735	404
Graham	9,380	269	30,443	1,077
Pinal	190	0	569	0
Greenlee	0	0	0	0
Totals	3,019,190	881,770	13,825,397	3,727,566

* 2016 data represent registered boat owners only.

**Boat Use Days Among Arizona Counties Eligible for Disbursements from LEBSF
(Comparison of 2021 to 2016)**

Table 9 presents the boat use days for the eight counties that are eligible for disbursements from the Law Enforcement and Boating Safety Fund (LEBSF): Apache, Coconino, Gila, La Paz, Maricopa, Mohave, Navajo, and Yuma. The most recent fund allocations were determined by the Arizona Game and Fish Commission using the boat use days from the 2016 BWS survey, which included responses from Arizona and three bordering states: California, Nevada, and Utah. In 2016, Arizona respondents accounted for less than half (47%) of all respondents, with 38% from California and 7.5% each from Nevada and Utah. In 2021, a strategic decision was made to focus on Arizona registered boat owners and watercraft users and their usage over the past 12 months, rather than on boat owners in all four states.

The 2016 boat use days are shown in two ways: the first presents only the data for Arizona registered boat owners and users, and the second presents the data from all four participating states. The first calculation (Arizona-only data) represents a more direct comparison with the data for the 2021 survey, which focused on Arizona registered boat owners and watercraft users. The 2021 boat use days exceed both calculations of 2016 boat use days in seven of the eight LEBSF-eligible Arizona counties, with the one exception being La Paz County boat use days when the three additional states are included.

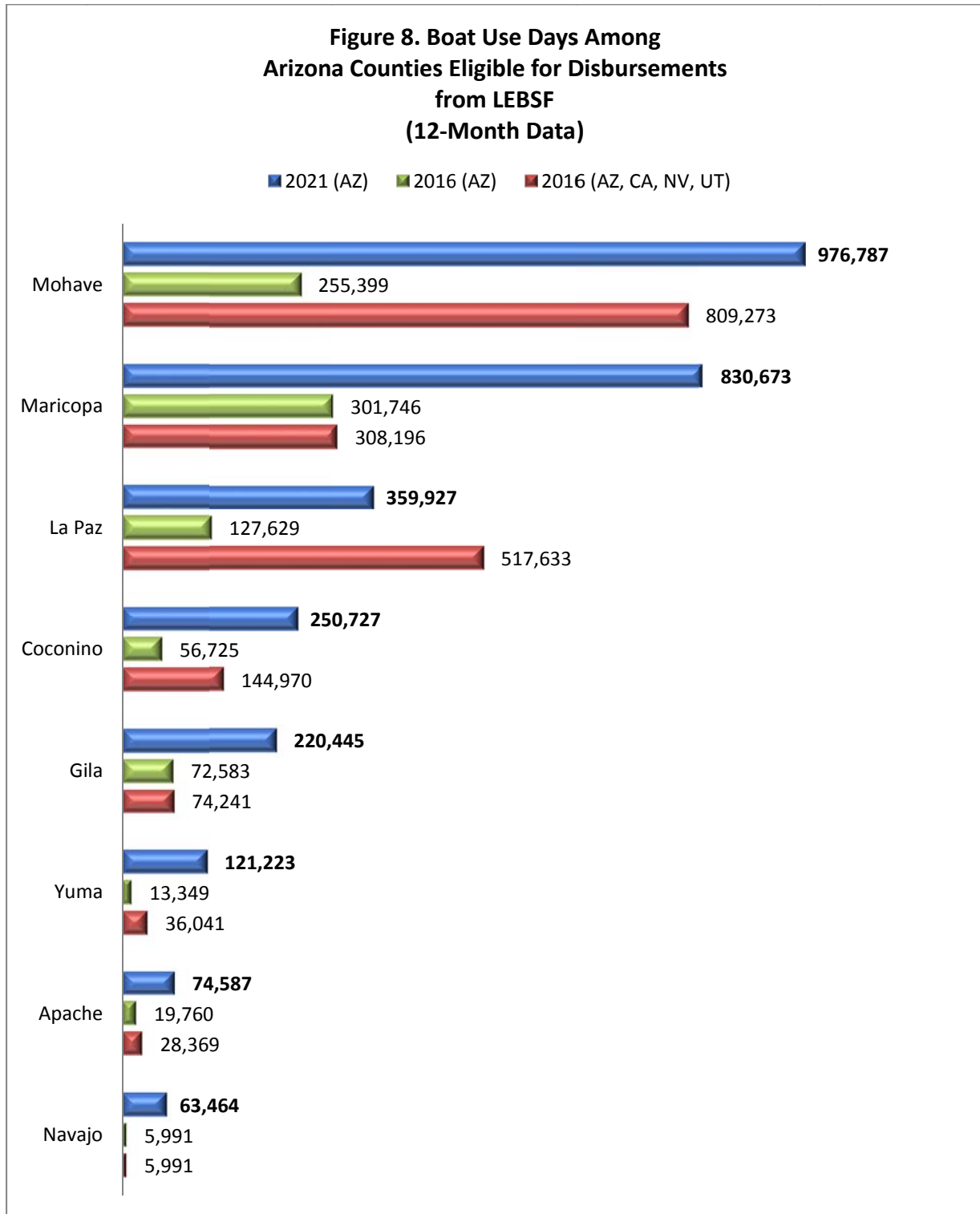
**Table 9. Boat Use Days Among Arizona Counties Eligible for Disbursements from LEBSF
Comparison of Arizona Registered Boat Owners and Watercraft Users in 2021 and 2016**
(12-Month Data)**

Arizona County	2021 (AZ)		2016 (AZ)**		2016 (AZ, CA, NV, UT)**	
	Boat Use Days	Percentage*	Boat Use Days	Percentage	Boat Use Days	Percentage
Mohave	976,787	33.71%	255,399	29.9%	809,273	42.0%
Maricopa	830,673	28.67%	301,746	35.4%	308,196	16.0%
La Paz	359,927	12.42%	127,629	15.0%	517,633	26.9%
Coconino	250,727	8.65%	56,725	6.6%	144,970	7.5%
Gila	220,445	7.61%	72,583	8.5%	74,241	3.9%
Yuma	121,223	4.18%	13,349	1.6%	36,041	1.9%
Apache	74,587	2.57%	19,760	2.3%	28,369	1.5%
Navajo	63,464	2.19%	5,991	0.7%	5,991	0.3%
Totals	2,897,834	100.00%	853,182	100.0%	1,924,714	100.0%

* Expanded the 2021 boat use days percentages to the hundredth place based on recent LEBSF worksheets and allocation summaries.

** 2016 data represent registered boat owners only.

Figure 8 graphically depicts the increase in boat use days among all eight counties in 2021 when comparing Arizona registered boat owners and watercraft users. Even when comparing 2021 Arizona-based results against the four-state total boat use days for 2016, seven of the eight counties showed increases, with La Paz County being the sole exception.



Increases in Boat Use Days for Maricopa County Lakes

As noted earlier, the survey methodology used in 2016 included four states (Arizona, California, Nevada and Utah); in 2021, the strategic decision was made to focus on Arizona registered boat owners and watercraft users. The 2020 U.S. Census estimates Arizona's population at 7.15 million, a growth of 39% since 2000. Maricopa County is home to 4.4 million of Arizona residents, or 62% of the state's population, making it the state's most populous county and the fourth most populous county in the United States. Among the survey respondents who are registered boat owners, 45% reside in Maricopa County.

Based on the boat use and person use days, there was an increase at all lakes and rivers within Maricopa County, most notably Lake Pleasant, Saguaro Lake, Bartlett Lake, and Canyon Lake – all of which are in the top 10 lakes in the state.

Decline in Boat Use Days for Popular Arizona Lakes Likely Due to Low Water Levels

Figure 9 presents a map of Arizona showing the location by county of each of the lakes and rivers with the top 10 boat use days. These top 10 represent over 2.2 million, or 74%, of the total estimated boat use days among Arizona registered boat owners and watercraft users.

Analysis of the 2021 data for the top 10 lakes and rivers in boat use days identified several changes from the 2016 BWS findings, most notably:

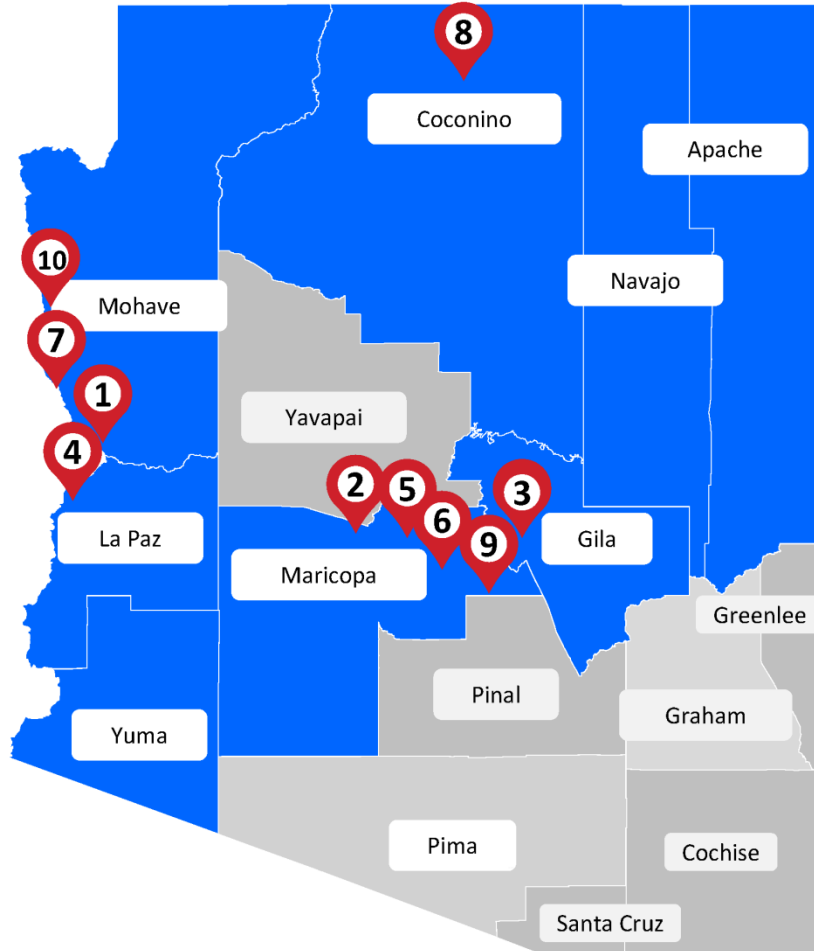
- Lake Mohave in 2016 ranked 3rd; in 2021 it ranks 10th in boat use days.
- Lake Mead in 2016 ranked 7th; in 2021 it ranks 19th in boat use days.

Lake Mead, one of Mohave County's most popular lakes, is fed by the Colorado River. In 2021, the Colorado was at its lowest water level since Hoover Dam was completed and the reservoir filled in the 1930s. According to the National Park Service, *"Declining water levels due to climate change and 20 years of ongoing drought have reshaped the park's shorelines. As Lake Mead continues to recede, extending launch ramps has become more difficult and more expensive due to the topography and projected decline in water levels."**

Comments from Arizona boaters in the 2021 survey noted that one of the major challenges to boating at Lake Mead is the closing of launch ramps, presumably due to low water levels. This appears to be substantiated on the National Park Service website, which states that among the eight available launch ramps, one (South Cove) is closed until further notice; two (Boulder Harbor, Temple Bar) are temporarily closed; and three (Hemenway Harbor, Callville Bay, and Echo Bay) are down to one lane, primarily due to construction. Respondents also noted that they had chosen to visit those lakes and rivers where they could be assured of a successful boating experience, avoiding the uncertainty about which lakes have a limited number of available launch ramps and/or major lines and wait times due to low water levels.

* Source: <https://www.nps.gov/lake/learn/news/lakeconditions.htm>

**Figure 9. Arizona Counties Eligible for Disbursements
from LEBSF
(Appear in Blue)**



Key: County Location of Top 10 Lakes and Rivers in Boat Use Days

#	Lake or River	County	#	Lake or River	County
1	Lake Havasu	Mohave (90%) and LaPaz (10%)	6	Saguaro Lake	Maricopa
2	Lake Pleasant	Maricopa	7	Topock Gorge	Mohave
3	Roosevelt Lake	Gila	8	Lake Powell	Coconino
4	Parker Strip (Parker Dam to Headgate Rock Dam)	La Paz	9	Canyon Lake	Maricopa
5	Bartlett Lake	Maricopa	10	Lake Mohave (Hoover Dam to Davis Dam)	Mohave

Activities Participated in on Boating Trips

Among respondents overall, the two activities most frequently enjoyed on a typical boating trip were general pleasure boating and fishing (61% and 56%, respectively), as seen in Table 10. These were also the top two activities among owners and users of motorized watercraft. For owners and users of non-motorized watercraft, the top activity was canoeing/kayaking and the second was general pleasure boating (66% and 56%, respectively). Tubing was ranked a distant third place (26%) among owners and users of motorized watercraft, while owners and users of non-motorized watercraft ranked stand-up paddle boarding third (31%).

Activity	Percentage
General pleasure boating	60.8%
Fishing	56.4%
Tubing	25.9%
Canoeing/kayaking	22.2%
Water skiing	18.5%
Jet skiing	16.6%
Wake boarding	15.2%
Stand up paddle boarding (SUP)	12.4%
Knee boarding	6.5%
Rafting	2.9%
Sailing	1.7%
Other responses (swimming, camping, hunting/duck hunting, etc.)	5.8%

General pleasure boating, fishing, and canoeing/kayaking were the most frequent activities on short trips of 1 to 5 days, with canoeing/kayaking earning third place by virtue of it being ranked the most frequent activity among users of non-motorized boats and watercraft. Most other activities were more frequent among respondents reporting 6 or more total boating days and 5 or more total boating trips.

Tubing ranked fourth overall in frequency and is popular across most age ranges (26%), and most popular among individuals ages 35 to 44 (45%). Fishing is highly popular among all age groups (56% of respondents overall) and enjoyed most frequently by respondents ages 65 to 74 (63%) and ages 75 and older (72%). Canoeing/kayaking and water skiing are also popular across most age groups. As would be expected, some highly active activities associated with motorized boating, like jet skiing and wake boarding, were engaged in significantly more frequently by respondents in the youngest age groups, 18 to 24 and 25 to 34.

An examination of popularity of activities by respondent gender revealed some differences. Canoeing/kayaking, tubing, stand-up paddle boarding, and jet skiing showed a statistically significant greater frequency among women than men. Specifically, when looking at overall responses for the activities selected by women and men, canoeing/kayaking was selected by 41% of women and 18% of men; tubing by 32% of women and 25% of men; stand-up paddle boarding by 24% of women and 10% of men, and jet skiing by 19% of women and 16% of men. Fishing was the only activity with a statistically significant greater frequency among men than women at 61% versus 39%, respectively.

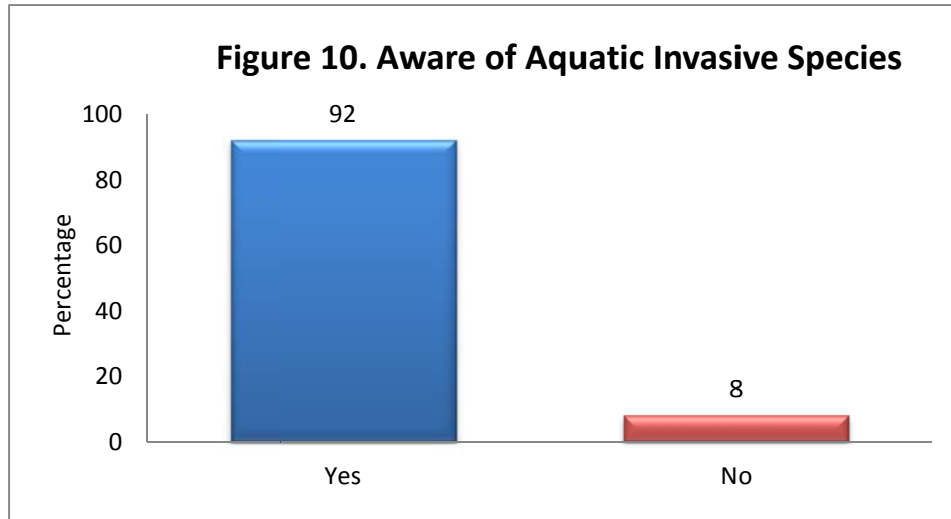
Additionally, respondents were given the option to add an activity they enjoyed on a typical boating trip that was not included among the response options. Activities most frequently added were swimming, surfing/wake

surfing, floating, camping, and hunting/duck hunting. For the next BWS survey, the ASPB and AZGFD may wish to consider adding these to the response options.

Boat and Watercraft Cleaning and Safety

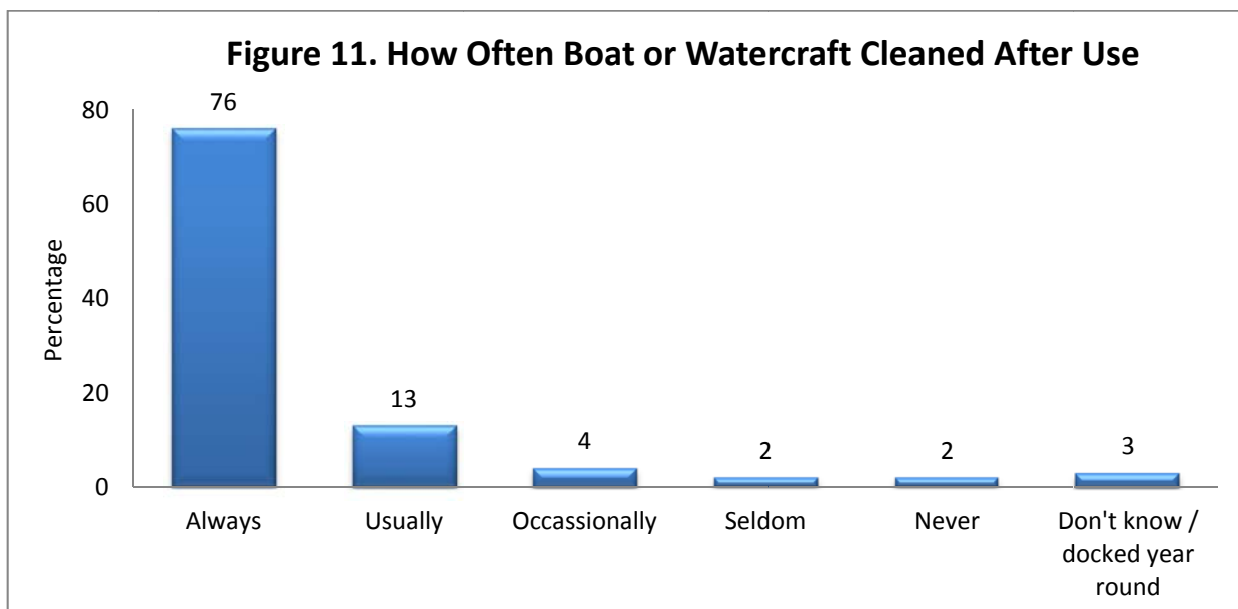
Awareness of Aquatic Invasive Species

The large majority (92%) of boat and watercraft owners and users in Arizona know what Aquatic Invasive Species are, such as quagga mussels, as seen in Figure 10. However, individuals in the two youngest age ranges (18 to 24 and 25 to 34) were less aware (81% and 83%, respectively) than those in the older age ranges.

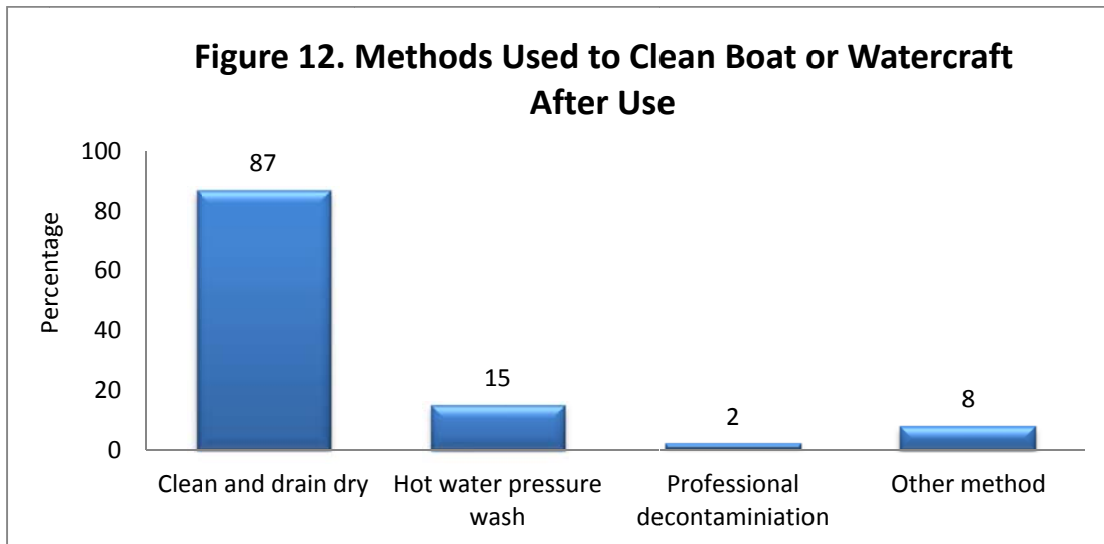


Cleaning Practices

As seen in Figure 11, a smaller majority (76%) of respondents report that they always clean their boat or watercraft after each use. As with awareness of Aquatic Invasive Species, individuals age 35 and older were statistically significantly more likely to clean their boat after each use.



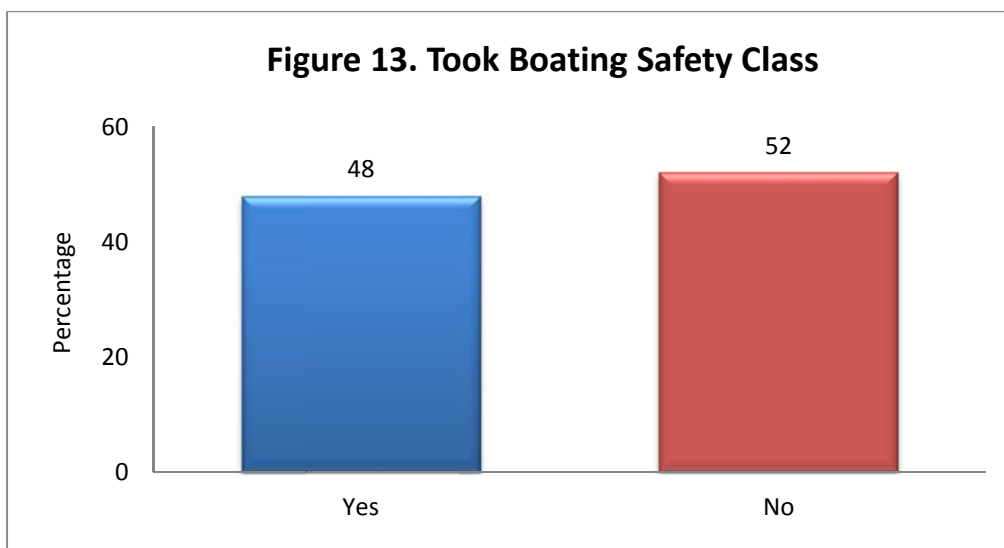
All respondents who reported ever cleaning their boat or watercraft after use, regardless of the frequency, were asked to identify the cleaning methods(s) they typically used, selecting all that apply. As seen in Figure 12, the most frequently used method, selected by 87% of respondents, was to clean and drain dry. Using a hot water pressure wash was ranked a distant second, reported by 15% of respondents.



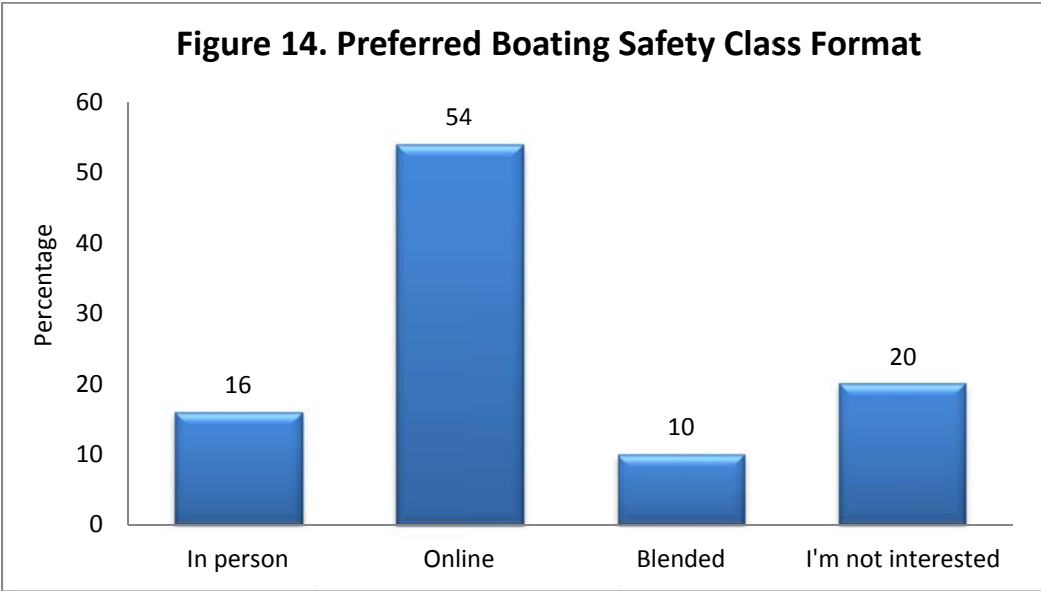
Additionally, respondents were given the option to add a cleaning method they used that was not included among the response options. Methods most frequently added were pressure wash/cold water pressure wash, vinegar and vinegar cleaning product wash, soap and water wash, and hand wash. For the next BWS survey, the ASPB and AZGFD may wish to consider adding these to the response options.

Boating Safety Education

When asked if they had ever taken a boating safety course, respondents were nearly evenly split, with 48% reporting that they had taken a class and 52% having never taken a class. Individuals who reported having taken a boating safety course increased incrementally with each age group starting at ages 35 to 44 (42%) and continuing through respondents 75 and older (57%). Among those who have not taken a boating safety course, the highest percentage was among those ages 25 to 34 at 68%.



Respondents were then asked, “If free boating safety classes were offered in your area, would you prefer to attend in person or take them online?” Slightly more than half (54%) preferred to take it online, 16% preferred attending in person, and 10% preferred a blended version incorporating both methods. The remaining 20% were not interested in taking a boating safety course.



Key Respondent Suggestions and Comments

Presented below and organized by topic are key suggestions and comments drawn from responses to the survey's open-end question that asked the following: *"If you could make one recommendation or suggestion that would help improve your boating and personal watercraft experience on Arizona lakes and rivers, what would it be?"* While many of these comments did contain suggestions for improving the boating experience, it should be noted that there were also many comments thanking the agencies for doing a good job of managing the waterways in Arizona.

Boating Safety/Education/Operator License; Enforcement of Laws

The most frequently cited issues were those related to boating safety and education and the corollary need for more enforcement of safety-related laws, rules, and protocols. Of the 900-plus open-end responses to Q19, approximately 20% focused solely on, or included a reference to, safety issues.

Many comments reflected the belief that the requirements for operating a boat should be similar to those for operating a car – such as requiring an operator license or certification or, at the least, proof of having taken an authorized course on boating safety. Respondents generally noted that this should apply to all boat and watercraft operators, including owners as well as renters, but saw renters as the primary target because they are likely to be less knowledgeable about boating rules.

Clearly, implementing a requirement for a boat operator license or certification is a long-term effort and may require changes in state legislation. Below are some noteworthy comments and suggestions from respondents regarding other strategies to improve boating safety:

- Develop videos on basic rules for operating boats and personal watercraft, such as jet skis and similar equipment. Include definition and example of no-wake zone, meaning of buoys, flag use, etc. Customize videos as necessary for specific waterway – e.g., locations of no-wake zones. These should also include information on appropriate launch ramp use and etiquette – e.g., not to be used as fishing dock, diving board, place to gather, etc.
- Require vendors to show videos to customers before releasing watercraft, and institute a system of fines for operators who violate safety rules. This would be particularly helpful in the Lake Havasu and Parker areas, where boat and watercraft rentals are particularly high and renters are less likely to be aware of safety rules.
- In-person or online training on using trailers at ramps would be good to offer. New boat owners often have difficulty in backing up to the ramp.
- Offer free boating safety courses online, e.g., webinars, on-demand videos, etc.
- Patrolling seems to have increased generally, and that is great! However, there are numerous tournaments held at Bartlett and other Arizona lakes, which sometimes lead to reckless behavior, and the presence of at least one law enforcement officer during these tournaments would be very helpful.

Accessibility for Seniors and Individuals with Disabilities

Several respondents noted specific issues that make it difficult for seniors and persons with disabilities to fully enjoy use of their boats. Other comments in this area suggested that registration and other fees might be discounted for seniors.

- With the drought, many boat ramps are out of the water, making boating challenging, especially for those of us who are seniors and disabled.
- I am handicapped, so it would nice if the launching dock could be lowered to be in the water during low water conditions.
- Lake Powell boat ramps should be accessible to handicapped people. We got a boat slip because we had one person with cancer and one with a bad knee. There was no handicapped parking close to the ramp or slip. There was no shuttle.
- For Lake Mead National Recreation Area and Glen Canyon National Recreation areas, the fees have doubled. . . and while the only real use of both areas are for boaters, it seems that boaters are the last people to be considered. There is not enough parking and no consideration for people with disabilities or illnesses – no shuttles, with ramps being a mile away in 120-degree heat.
- There is no convenient place at Roosevelt for fishermen with disabilities. The signs are posted about no fishing or swimming on ramps and docks, but lots of people do. . . I would really enjoy a place such as a fishing dock where I could go fishing at Roosevelt without my boat.
- Increase accessible parking. I am 100% military disability and rarely have opportunity for parking.
- More handicap parking at Marina III at Katherine Landing (Lake Mohave)
- Offer a reduced registration fee for seniors age 65 and over.
- I am a 30 year Air Force veteran (1969-1999) and would greatly appreciate an annual fee exemption or some other consideration for my service to country.

Crowding and Congestion

As noted earlier, approximately 27% of all respondents reported that the pandemic had decreased their boat or watercraft use during the previous year. Nevertheless, many of the open-end comments voiced the perception that the pandemic had significantly increased crowding and congestion, possibly due to the closure of ramps at several popular lakes. Below are some comments and suggestions for handling and/or reducing congestion.

- Noticed heavier-than-usual usage of lakes during COVID. Many, many people leaving trash in and on the banks of lakes. Maybe place more trash barrels around the more remote (harder to get to) picnic camping spots.
- Pick a day each year where the lake is closed and have a massive shoreline clean-up program. Offer incentives to get people to participate. This is much needed.
- Have one weekend a month with no motorized boats or jet skis allowed running on the water, and a ramp area just for non-motorized kayaks, canoes, or jon boats.
- It would be nice to have a separate area for wake boarders. They are a nuisance to the people who just want to quietly enjoy the lake, and they cause so much damage to the shorelines with their wakes.

- Lakes around the immediate Phoenix metropolitan area could rotate yearly for use between fishing and watersports. For example, every other year Lake Pleasant would be open to fishing and closed to watersports boats. In alternating years, fishing would be closed and watersports would be allowed. This would alleviate fishing pressure and lake congestion, and let each respective boat user enjoy their activity more and have less on-the-water confrontations. Could also make a lake like Apache a fishing only lake. Fishermen need a place where they are not constantly dealing with wake boats and ski boats.
- As of today, there isn't access for motorized boats on Mead (one lane at one marina doesn't count, with 3-hour lines) or Powell . . . New ramps are needed for boaters, with drops into the water.

Communication and Administrative Services

Respondents are seeking more detailed information on conditions at specific waterways, generally due to their concerns about low water levels and crowding. Comments and suggestions regarding administrative services addressed a wide range of issues, although one common topic was the overall registration process and, in particular, the desire for a multi-year registration.

- Better information on getting permits for motorized use of waterways – jurisdiction, phone numbers, costs, local sources for permits, where to post permits, hours of service for sources of permits.
- Let people know the water is not deep enough for prop boats.
- Have a live web cam of the lake to check before heading out to see conditions and check the crowding.
- Not sure how feasible it is, but it would be nice to have better information on water conditions in regard to recreation. Fishing reports don't really tell you about chop and condition for recreation, etc.
- Have an AZGFD official at Lake Powell. I don't think it's right to make me drag my boat to Flagstaff for a 5 minute inspection.
- Make boater registration last longer than one year. Most states' registration is good for three years and the cost is the same as it is when you register here for 1 year. It would be a lot more enjoyable to only have to renew every three instead of the current practice of every year. In the long run, it would actually save the state the cost of having to print new registration sticker tags every year.
- Make the Personal User Permit for Lake Powell a part of the registration process, or make the renewal process available at the inspection station on the ramp, rather than having to manually order it each year.
- Online printable passes, with extended limits due to COVID.
- I have 5 watercraft, some of which I do not use for years at a time. I hate the fact that you do not have a longer registration period or some other way to make boating more affordable. If I skip registering a boat because I did not use it, I get penalized.
- Perhaps a monitored community boating hazmat point at the marinas. A lot of boaters use two or four stroke motors and fill fuel jugs prior to arriving at the lake, yet don't use all our fuel prior to leaving and end up with it sitting in our boats for months sometimes before we come back out. A community exchange system might be helpful and an incentive site for supervision/reinforcement in positive recreation activities.

Facilities and Maintenance Needs

A frequent topic of comments was the need to extend boat launches out into the water due to low water levels. A number of respondent comments requested that shoreline camping be reinstated, perhaps limited to tents or pop-up tents (i.e., no travel trailers, RVs, or other large vehicles). Additionally, a number of respondents used this opportunity to identify repair and maintenance needs at specific locations.

- Keep the public docks maintained. Missing bumpers and broken metal cleats causes damage to our boats.
- On Saguaro Lake, the dock was built with horizontal panels on the side of the dock, causing boats to get caught on the edge as the boat raises up and down . . . The sides of the dock panels need to be vertical and long, so boats do not get damaged.
- Make sure all underwater hazards are marked if possible.
- Ramps at all lakes need to be cleaned so algae doesn't make them so slippery. Not only is it dangerous to walk on, but it makes a serious pain pulling boats out for everyone.
- Build parking closer to the launch point – Cholla Ramp at Roosevelt is a long walk as well as Indian Point and others – too far for elders. Kaibab ramp has a 15 ft. drop off at the asphalt, people get stuck driving out. Plus tourists always fill up the boat trailer parking with their cars; no one enforces the parking rules.
- Security cameras in parking lots at lakes. My trailers have been hit by other people twice, causing damage equaling \$1,500 each occurrence, both at Lake Pleasant! Also, one attempt at stealing my boat trailer has been made at Lake Pleasant, evidenced by a bent security lock where someone tried to pry it off my coupler.
- Cleaning of lakes of plastic ice bags. I lost my Honda 90HP 4 stroke engine because of a left-over ice bag thrown into the water. They do not just sink. \$12,800 for new engine. It will be some time before I go to Lake Pleasant again.
- Clean the invasive grass at least once a year in the London Bridge canal.

Recommendations

Based on the review of respondents' suggestions and comments, the following preliminary recommendations are proposed for consideration:

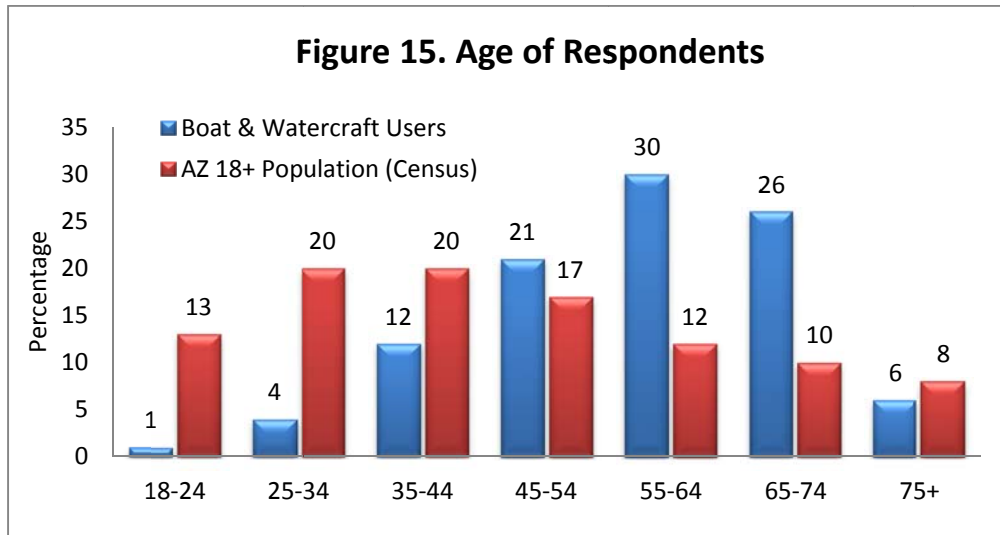
- Develop video(s) on basic rules for operating boats and personal watercraft. Topics might include explanation and example of no-wake zone, meaning of buoys, proper flag use, backing up boat to launch ramp, appropriate launch ramp use and etiquette, etc. If possible, videos could be customized for the most popular waterways to show locations of no-wake zones, etc.
 - Post the videos on the AZGFD and ASPT websites and/or social media as free learning resources available to the public at any time.
 - Provide the videos free of charge to boating clubs and organizations, boating-related retailers, etc. Also provide to boat and watercraft rental operators and encourage them to show to all customers before releasing equipment.
- Expand promotional efforts regarding the availability and convenience of online boat and watercraft education courses, leveraging appropriate internal and external communication channels, such as agency websites, e-newsletters, social media, outreach to boating clubs and organizations, etc. Include information on:
 - The meaning of “certification” and its applicability in Arizona.
 - Which online courses are free and which are not.
- Sponsor series of shoreline clean-up events for volunteers, rotating among the most visited sites. If possible, offer incentive for participation.
- Use various communication channels to provide detailed, current information on water levels, congestion, launch ramp lines, etc. at sites; may wish to consider use of web cams at the most visited sites.
- Consider possible ways to expand customer-centric services, such as offering multi-year registration, online printable passes, etc. May also wish to consider slightly discounted registration fees for seniors, veterans, etc.
- Consider possible ways to improve security in parking lots at the most visited sites.

Appendices

Appendix A: Respondent Demographics as Compared with Census

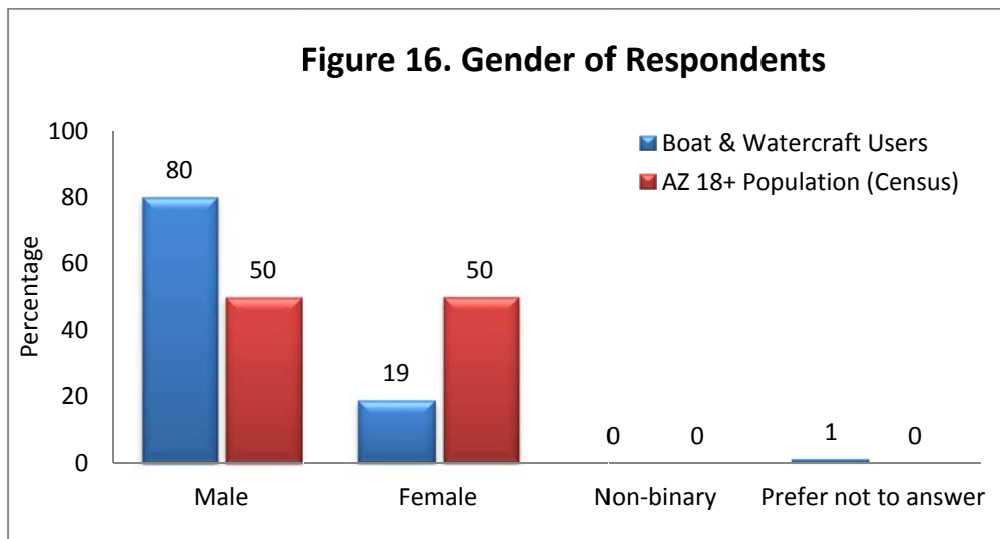
Age

While boat and watercraft ownership and use is increasing among younger adults, the majority of owners and users are 45 and older. This is true in Arizona as well as nationwide. Consequently, the percentages of Arizona boat and watercraft users in the 18 to 25 and 25 to 34 age ranges are significantly lower than the Census population figures for those age groups, as seen in Figure 15. Similarly, the percentages of Arizona boat and watercraft users in the age ranges from 45 to 74 are significantly higher than the Census population figures for those groups.



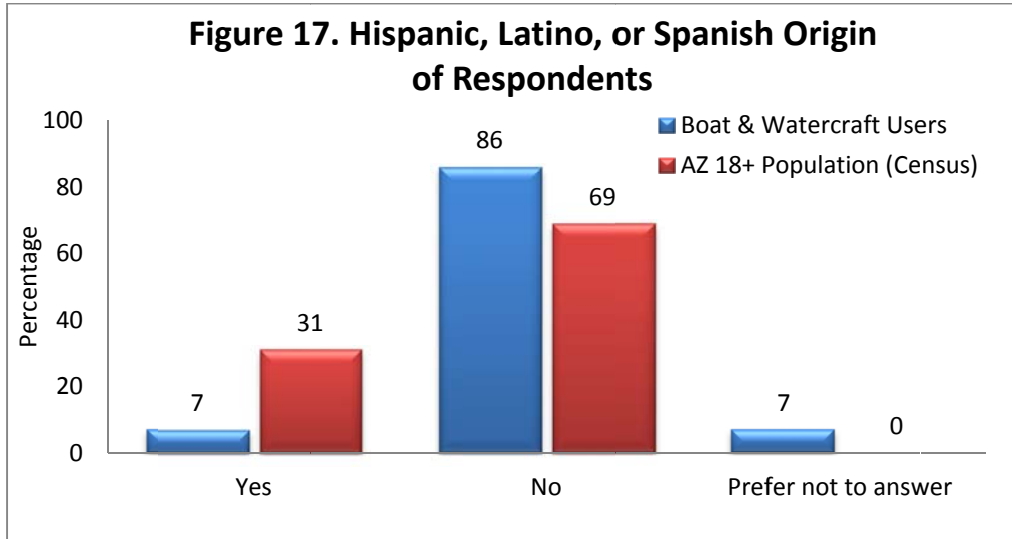
Gender

While Arizona’s population is evenly divided by gender, the majority of boat and watercraft users are male, as seen in Figure 16. This is also true nationwide.



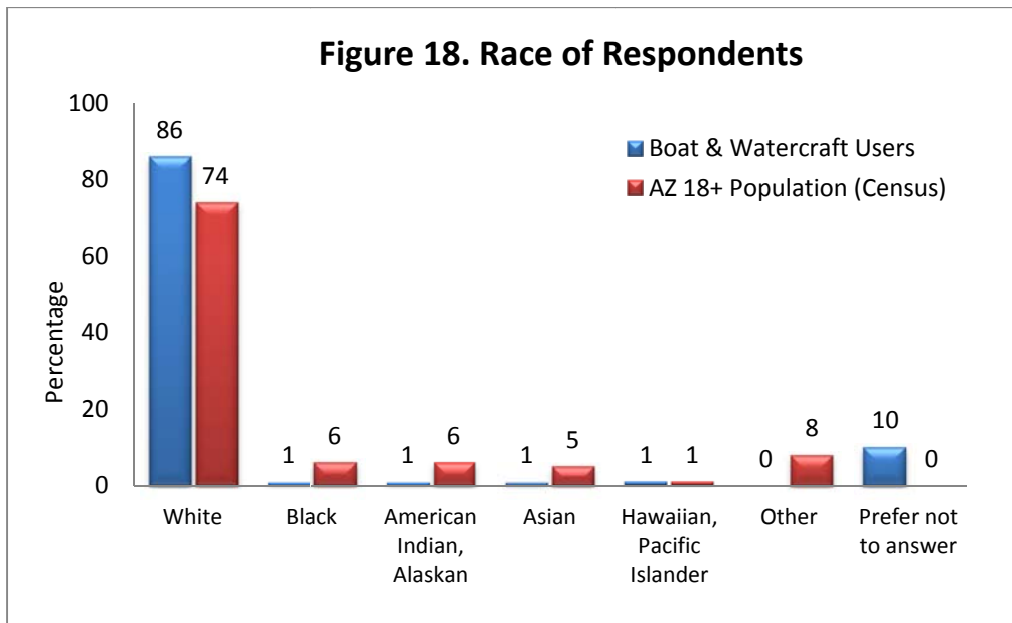
Ethnicity – Hispanic, Latino, or Spanish Origin

Figure 17 shows that individuals of Hispanic, Latino, or Spanish origin comprise a significantly smaller percentage of Arizona boat and watercraft users than the percentage reflected in Census population figures for Arizona.



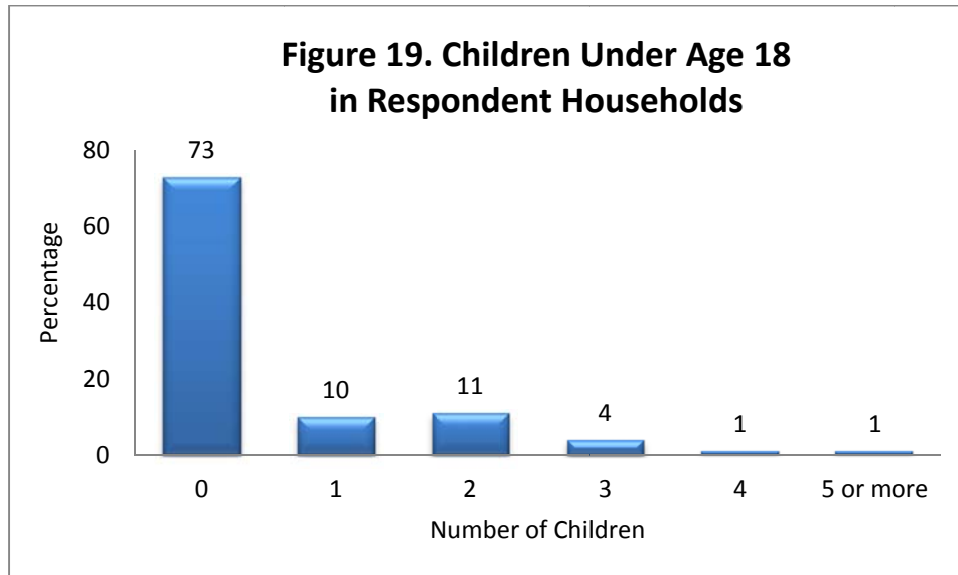
Race

As seen in Figure 18, the significant majority of both Arizona boat and watercraft users and the overall Arizona population is White, although that majority is greater among boat and watercraft users.



Children Under Age 18 in Household

Figure 19 shows that the significant majority of Arizona boat and watercraft users have no children under age 18 living in their households, which is to be expected given that boat owners and users tend to be at least age 45. Regarding Census population figures for Arizona, the closest comparison data is that 23% of Arizona households include children under the age of 18.



County of Residence

An extensive effort was made to ensure that the percentage of survey respondents residing in each county matched the Census figures for that county as closely as possible. As seen in Table 11, this effort was generally successful. The percentages for boat and watercraft users residing in counties with many waterways were generally higher than the Census population figures for those counties, with the exception of Maricopa and Pima Counties.

Table 11. County of Residence of Respondents		
Arizona County	Percentage of Boat and Watercraft Users	Percentage of Arizona 18+ Population (Census)
Apache	0.9%	0.9%
Cochise	1.7%	1.8%
Coconino	3.1%	2.1%
Gila	2.0%	0.8%
Graham	0.4%	0.5%
Greenlee	0.1%	0.1%
La Paz	2.2%	0.2%
Maricopa	44.5%	61.0%
Mohave	20.3%	3.2%
Navajo	2.8%	1.4%
Pima	8.9%	15.1%
Pinal	4.5%	5.9%
Santa Cruz	0.3%	0.6%
Yavapai	4.4%	3.6%
Yuma	2.9%	2.8%
Total	100%	100%

Appendix B: Arizona Lakes and Rivers Visitation Data

Table 12. Arizona Lakes and Rivers Visited at Least Once During Past 12 Months			
Ranking	Lake or River	Number of Respondents Who Visited	Percentage of Total Respondents
1	Lake Havasu	2,026	29.9%
2	Lake Pleasant	1,894	28.0%
3	Roosevelt Lake	1,333	19.7%
4	Saguaro Lake	1,266	18.7%
5	Bartlett Lake	1,193	17.6%
6	Canyon Lake	1,155	17.1%
7	Lake Powell	857	12.7%
8	Topock Gorge	826	12.2%
9	Parker Strip (Parker Dam to Headgate Rock Dam)	756	11.2%
10	Lake Mohave (Hoover Dam to Davis Dam)	567	8.4%
11	Alamo Lake	500	7.4%
12	Apache Lake	455	6.7%
13	Patagonia Lake	439	6.5%
14	Big Lake	412	6.1%
15	Davis Dam to Topock Gorge	406	6.0%
16	Salt River	381	5.6%
17	Willow Springs Lake	381	5.6%
18	Woods Canyon Lake	365	5.4%
19	Lake Mead	289	4.3%
20	Martinez Lake to Imperial Dam	263	3.9%
21	Show Low Lake	261	3.9%
22	Fool Hollow Lake	258	3.8%
23	Lake Mary (Upper)	241	3.6%
24	Watson Lake	197	2.9%
25	Parker Canyon Lake	193	2.9%
26	Glen Canyon Dam to Lees Ferry	189	2.8%
27	Lynx Lake	188	2.8%
28	Verde River	172	2.5%
29	Blue Ridge Reservoir	146	2.2%
30	Mittry Lake (Imperial Dam to Morels Dam)	136	2.0%

**Table 12. Arizona Lakes and Rivers Visited at Least Once
During Past 12 Months (cont'd)**

Ranking	Lake or River	Number of Respondents Who Visited	Percentage of Total Respondents
31	Tempe Town Lake	125	1.8%
32	Hawley Lake	120	1.8%
33	Ehrenberg to Martinez Lake	117	1.7%
34	Black Canyon Lake	113	1.7%
35	Pena Blanca Lake	112	1.7%
36	Ashurst Lake	106	1.6%
37	Goldwater Lake	106	1.6%
38	Reservation Lake	102	1.5%
39	Lyman Reservoir	95	1.4%
40	Roper Lake	95	1.4%
41	Bear Canyon Lake	90	1.3%
42	Rainbow Lake	90	1.3%
43	Arivaca Lake	86	1.3%
44	Kaibab Lake	86	1.3%
45	Horseshoe Lake	85	1.3%
46	Dogtown Reservoir	82	1.3%
47	Greer Lakes	75	1.1%
48	Luna Lake	59	0.9%
49	Knoll Lake	58	0.9%
50	Becker Lake	52	0.8%
51	Clear Creek Reservoir	49	0.7%
52	Headgate Rock Dam to Ehrenberg	48	0.7%
53	Whitehorse Lake	48	0.7%
54	Grand Canyon	47	0.7%
55	Chevelon Canyon Lake	47	0.7%
56	Crescent Lake	43	0.6%
57	Nelson Reservoir	39	0.6%
58	Gila River	38	0.6%
59	River Reservoir	38	0.6%
60	Bunch Reservoir	36	0.5%
61	Tunnel Reservoir	34	0.5%
62	Silverbell Lake	32	0.5%
63	Squaw Lake	31	0.5%
64	Kinnikinick Lake	30	0.4%
65	Lakeside	29	0.4%

**Table 12. Arizona Lakes and Rivers Visited at Least Once
During Past 12 Months (cont'd)**

Ranking	Lake or River	Number of Respondents Who Visited	Percentage of Total Respondents
66	White Mountain Lake	29	0.4%
67	Mormon Lake	28	0.4%
68	Sunrise Lake	27	0.4%
69	Cataract Lake	23	0.3%
70	Black River	21	0.3%
71	Colorado River	21	0.3%
72	Scott Reservoir	20	0.3%
73	Lee Valley Lake	17	0.3%
74	Kennedy Lake	16	0.2%
75	San Carlos Lake	14	0.2%
76	Woodland Lake	12	0.2%
77	Green Valley	11	0.2%
78	Riggs Flat Lake	11	0.2%
79	Christmas Tree Lake	10	0.1%
80	Senator's Wash	10	0.1%
81	Chaparral Lake	9	0.1%
82	Fain Lake	9	0.1%
83	Dead Horse Ponds	9	0.1%
84	Horsethief Basin Lake	8	0.1%
85	Long Lake	8	0.1%
86	Stoneman Lake	7	0.1%
87	Drift Fence Lake	5	0.1%
88	Earl Park Lake	5	0.1%
89	Cyclone Lake	4	0.1%
90	Painted Rock Reservoir	4	0.1%
91	Picacho Reservoir	4	0.1%
92	Alvord Lake	3	0.04%
93	Cholla Lake	3	0.04%
94	Cooley Lake	3	0.04%
95	Concho Lake	2	0.03%
96	Little Bog Creek	2	0.03%
97	Firebird Lake	1	0.01%
98	Seneca Lake	1	0.01%
99	Wheatfields Lake	1	0.01%
	Other Lakes or Rivers (private, communities-HOAs, etc.)	82	1.2%

**Table 13. Arizona Lakes and Rivers Visited Most Often
During Past 12 Months**

Ranking	Lake or River	Number of Respondents	Percentage of Total Respondents
1	Lake Havasu	1,271	18.8%
2	Lake Pleasant	1,211	17.9%
3	Roosevelt Lake	691	10.2%
4	Saguaro Lake	603	8.9%
5	Bartlett Lake	548	8.1%
6	Canyon Lake	480	7.1%
7	Lake Powell	346	5.1%
8	Patagonia Lake	272	4.0%
9	Parker Strip (Parker Dam to Headgate Rock Dam)	263	3.9%
10	Lake Mohave (Hoover Dam to Davis Dam)	260	3.8%
11	Topock Gorge	233	3.4%
12	Willow Springs Lake	149	2.2%
13	Davis Dam to Topock Gorge	148	2.2%
14	Martinez Lake to Imperial Dam	144	2.1%
15	Big Lake	128	1.9%
16	Alamo Lake	127	1.9%
17	Salt River	127	1.9%
18	Apache Lake	113	1.7%
19	Show Low Lake	96	1.4%
20	Lake Mead	93	1.4%
21	Woods Canyon Lake	89	1.3%
22	Fool Hollow Lake	77	1.1%
23	Parker Canyon Lake	71	1.0%
24	Ehrenberg to Martinez Lake	68	1.0%
25	Watson Lake	61	0.9%
26	Mittry Lake (Imperial Dam to Morels Dam)	56	0.8%
27	Lake Mary (Upper)	55	0.8%
28	Lynx Lake	53	0.8%
29	Verde River	45	0.7%
30	Pena Blanca Lake	39	0.6%
31	Tempe Town Lake	39	0.6%
32	Glen Canyon Dam to Lees Ferry	37	0.5%
33	Hawley Lake	33	0.5%

**Table 13. Arizona Lakes and Rivers Visited Most Often
During Past 12 Months (cont'd)**

Ranking	Lake or River	Number of Respondents	Percentage of Total Respondents
34	Lyman Reservoir	32	0.5%
35	Goldwater Lake	27	0.4%
36	Reservation Lake	27	0.4%
37	Roper Lake	27	0.4%
38	Headgate Rock Dam to Ehrenberg	24	0.4%
39	Arivaca Lake	23	0.3%
40	Ashurst Lake	21	0.3%
41	Blue Ridge Reservoir	20	0.3%
42	Becker Lake	19	0.3%
43	Kaibab Lake	19	0.3%
44	Luna Lake	19	0.3%
45	Greer Lakes	18	0.3%
46	Rainbow Lake	18	0.3%
47	Black Canyon Lake	17	0.3%
48	Clear Creek Reservoir	16	0.2%
49	Dogtown Reservoir	14	0.2%
50	Squaw Lake	14	0.2%
51	Knoll Lake	12	0.2%
52	Whitehorse Lake	12	0.2%
53	Nelson Reservoir	11	0.2%
54	White Mountain Lake	11	0.2%
55	Horseshoe Lake	10	0.1%
56	Silverbell Lake	10	0.1%
57	Bear Canyon Lake	7	0.1%
58	Chevelon Canyon Lake	7	0.1%
59	Grand Canyon	6	0.1%
60	Bunch Reservoir	6	0.1%
61	Gila River	6	0.1%
62	River Reservoir	6	0.1%
63	Cataract Lake	5	0.1%
64	Kinnikinick Lake	5	0.1%
65	Green Valley	4	0.1%
66	Kennedy Lake	4	0.1%
67	Lakeside	4	0.1%
68	Woodland Lake	4	0.1%
69	Mormon Lake	3	0.04%

**Table 13. Arizona Lakes and Rivers Visited Most Often
During Past 12 Months (cont'd)**

Ranking	Lake or River	Number of Respondents	Percentage of Total Respondents
70	Scott Reservoir	3	0.04%
71	Tunnel Reservoir	3	0.04%
72	Black River	1	0.01%
73	Chaparral Lake	1	0.01%
74	Crescent Lake	1	0.01%
75	Cyclone Lake	1	0.01%
76	Horsethief Basin Lake	1	0.01%
77	Lee Valley Lake	1	0.01%
78	Picacho Reservoir	1	0.01%
79	San Carlos Lake	1	0.01%
80	Sunrise Lake	1	0.01%
81	Alvord Lake	0	0.00%
82	Asaayi Lake	0	0.00%
83	Cholla Lake	0	0.00%
84	Christmas Tree Lake	0	0.00%
85	Concho Lake	0	0.00%
86	Cooley Lake	0	0.00%
87	Drift Fence Lake	0	0.00%
88	Fain Lake	0	0.00%
89	Firebird Lake	0	0.00%
90	Ganado Lake	0	0.00%
91	Hurricane Lake	0	0.00%
92	Little Bog Creek	0	0.00%
93	Long Lake	0	0.00%
94	Mexican Hay Lake	0	0.00%
95	Painted Rock Reservoir	0	0.00%
96	Seneca Lake	0	0.00%
97	Stoneman Lake	0	0.00%
98	Wheatfields Lake	0	0.00%
	Other lake/river	116	1.7%

**Table 14. Average Number of Days Spent on Lake or River
During Past 12 Months**

Ranking	Lake or River	Number of Days Spent (Summary of Means)
1	Lake Havasu	17.64
2	Martinez Lake to Imperial Dam	17.32
3	Ehrenberg to Martinez Lake	14.44
4	Parker Strip (Parker Dam to Headgate Rock Dam)	14.33
5	Mittry Lake (Imperial Dam to Morels Dam)	10.94
6	Davis Dam to Topock Gorge	10.77
7	Headgate Rock Dam to Ehrenberg	9.13
8	Topock Gorge	9.11
9	Lake Mohave (Hoover Dam to Davis Dam)	9.05
10	Lake Pleasant	8.74
11	Roosevelt Lake	8.65
12	Lake Powell	8.20
13	Lake Mead	8.06
14	Squaw Lake	7.48
15	Chaparral Lake	7.44
16	Bartlett Lake	6.89
17	Saguaro Lake	6.27
18	Canyon Lake	5.66
19	Grand Canyon	5.55
20	Becker Lake	5.46
21	Gila River	5.41
22	Tempe Town Lake	5.29
23	Rainbow Lake	5.16
24	White Mountain Lake	5.14
25	Patagonia Lake	5.12
26	Alamo Lake	4.96
27	Arivaca Lake	4.63
28	Kennedy Lake	4.63
29	Whitehorse Lake	4.63
30	Roper Lake	4.60
31	Lyman Reservoir	4.58
32	Concho Lake	4.50
33	Glen Canyon Dam to Lees Ferry	4.46
34	Woodland Lake	4.33
35	Salt River	4.26
36	Show Low Lake	4.26

**Table 14. Average Number of Days Spent on Lake or River
During Past 12 Months (cont'd)**

Ranking	Lake or River	Number of Days Spent (Summary of Means)
37	Fool Hollow Lake	4.03
38	Cyclone Lake	4.00
39	Clear Creek Reservoir	3.98
40	Apache Lake	3.95
41	Verde River	3.72
42	Dogtown Reservoir	3.68
43	Pena Blanca Lake	3.64
44	Big Lake	3.53
45	Fain Lake	3.44
46	Willow Springs Lake	3.44
47	Parker Canyon Lake	3.41
48	Greer Lakes	3.29
49	Lakeside	3.28
50	Reservation Lake	3.24
51	Long Lake	3.13
52	River Reservoir	3.05
53	Lake Mary (Upper)	3.05
54	Scott Reservoir	3.05
55	Hawley Lake	3.04
56	Tunnel Reservoir	3.00
57	Nelson Reservoir	2.97
58	Kaibab Lake	2.90
59	Ashurst Lake	2.82
60	Silverbell Lake	2.81
61	Lynx Lake	2.80
62	Luna Lake	2.73
63	Blue Ridge Reservoir	2.72
64	Woods Canyon Lake	2.72
65	Cataract Lake	2.65
66	Horseshoe Lake	2.60
67	Bunch Reservoir	2.53
68	Crescent Lake	2.51
69	Painted Rock Reservoir	2.50
70	Picacho Reservoir	2.50
71	Black Canyon Lake	2.42
72	Watson Lake	2.38
73	Black River	2.29

**Table 14. Average Number of Days Spent on Lake or River
During Past 12 Months (cont'd)**

Ranking	Lake or River	Number of Days Spent (Summary of Means)
74	San Carlos Lake	2.29
75	Chevelon Canyon Lake	2.11
76	Knoll Lake	2.09
77	Bear Canyon Lake	2.02
78	Kinnikinick Lake	2.00
79	Wheatfields Lake	2.00
80	Goldwater Lake	1.92
81	Green Valley	1.91
82	Sunrise Lake	1.89
83	Mormon Lake	1.79
84	Horsethief Basin Lake	1.75
85	Drift Fence Lake	1.60
86	Stoneman Lake	1.43
87	Cholla Lake	1.33
88	Cooley Lake	1.33
89	Lee Valley Lake	1.18
90	Christmas Tree Lake	1.10
91	Alvord Lake	1.00
92	Firebird Lake	1.00
93	Little Bog Creek	1.00
94	Seneca Lake	1.00
	Other Lakes or Rivers	11.46

Table 15. Average Number of People in Group on Boating Trips During Past 12 Months

Ranking	Lake or River	Number of People in Group (Summary of Means)
1	Grand Canyon	8.70
2	Lake Powell	7.16
3	Lake Mead	7.16
4	Clear Creek Reservoir	5.87
5	Glen Canyon Dam to Lees Ferry	5.68
6	Headgate Rock Dam to Ehrenberg	5.25
7	Lake Havasu	5.22
8	Davis Dam to Topock Gorge	5.08
9	Salt River	4.73
10	Topock Gorge	4.66
11	Ehrenberg to Martinez Lake	4.61
12	Parker Strip (Parker Dam to Headgate Rock Dam)	4.59
13	Martinez Lake to Imperial Dam	4.51
14	Lake Mohave (Hoover Dam to Davis Dam)	4.50
15	Lake Pleasant	4.50
16	Roosevelt Lake	4.46
17	Black River	4.43
18	Verde River	4.33
19	Canyon Lake	4.18
20	Apache Lake	4.12
21	Firebird Lake	4.00
22	Cyclone Lake	4.00
23	Saguaro Lake	3.97
24	White Mountain Lake	3.89
25	Bartlett Lake	3.78
26	Whitehorse Lake	3.69
27	Patagonia Lake	3.62
28	Bear Canyon Lake	3.57
29	Woods Canyon Lake	3.46
30	Squaw Lake	3.45
31	Blue Ridge Reservoir	3.43
32	Lakeside	3.41
33	Drift Fence Lake	3.40
34	Lake Mary (Upper)	3.40

Table 15. Average Number of People in Group on Boating Trips During Past 12 Months (cont'd)

Ranking	Lake or River	Number of People in Group (Summary of Means)
35	Lyman Reservoir	3.38
36	Cholla Lake	3.33
37	Black Canyon Lake	3.33
38	Roper Lake	3.33
39	Big Lake	3.29
40	Alamo Lake	3.24
41	Tempe Town Lake	3.21
42	Gila River	3.19
43	Kaibab Lake	3.19
44	Chevelon Canyon Lake	3.13
45	Long Lake	3.13
46	Mittry Lake (Imperial Dam to Morels Dam)	3.11
47	Christmas Tree Lake	3.10
48	Willow Springs Lake	3.07
49	Bunch Reservoir	3.06
50	Knoll Lake	3.03
51	Concho Lake	3.00
52	Cooley Lake	3.00
53	Dogtown Reservoir	3.00
54	Picacho Reservoir	3.00
55	River Reservoir	3.00
56	Stoneman Lake	3.00
57	Ashurst Lake	2.93
58	Mormon Lake	2.89
59	Fool Hollow Lake	2.88
60	Rainbow Lake	2.87
61	Luna Lake	2.86
62	Goldwater Lake	2.86
63	Parker Canyon Lake	2.84
64	Greer Lakes	2.83
65	Lynx Lake	2.80
66	Nelson Reservoir	2.79
67	Hawley Lake	2.77
68	Crescent Lake	2.70
69	Cataract Lake	2.70
70	Show Low Lake	2.69

Table 15. Average Number of People in Group on Boating Trips During Past 12 Months (cont'd)

Ranking	Lake or River	Number of People in Group (Summary of Means)
71	Watson Lake	2.68
72	Reservation Lake	2.67
73	Green Valley	2.64
74	Woodland Lake	2.58
75	San Carlos Lake	2.57
76	Sunrise Lake	2.52
77	Tunnel Reservoir	2.47
78	Silverbell Lake	2.44
79	Kinnikinick Lake	2.43
80	Horseshoe Lake	2.40
81	Scott Reservoir	2.35
82	Arivaca Lake	2.31
83	Pena Blanca Lake	2.29
84	Lee Valley Lake	2.29
85	Becker Lake	2.27
86	Horsethief Basin Lake	2.25
87	Painted Rock Reservoir	2.25
88	Kennedy Lake	2.13
89	Chaparral Lake	2.11
90	Alvord Lake	2.00
91	Little Bog Creek	2.00
92	Seneca Lake	2.00
93	Wheatfields Lake	2.00
94	Fain Lake	1.78
	Other Lakes or Rivers	8.55

Appendix C: Survey Questionnaire

Landing Page Copy

Thank you for your interest in participating in this survey, which is being conducted on behalf of Arizona Game and Fish Department and Arizona State Parks and Trails. The survey is about your boat and personal watercraft use on Arizona lakes and rivers, and your feedback is extremely important. Your participation is voluntary and confidential. The survey will take **approximately 10 minutes** to complete.

Everyone who completes the survey will automatically be entered into a drawing for more than **70 prizes** totaling **approximately \$7,000 in value**, including American Express and Keep Nature Wild! gift cards, high-quality life jackets, a 2-night cabin stay at Alamo Lake State Park, and annual and single-day passes for any Arizona State Park.

Please select your answer(s) or type your response in the space provided. To move on to the next page, use the **“Next”** button at the bottom of each page. **During the survey, please do not use the “Back” button in your web browser.**

So let’s get started – just click on the **NEXT** button.

[Place on bottom of webpage] Questions? Contact AZBoat@pib1.com or call toll-free (855) 744-5534.

[Note: Arizona State Parks and Trails Communications Department is developing the design for the flyers and signage and will share with us the graphics that we can use on the landing page with the copy above.]

Questionnaire

S1. Are you age 18 or older?

Yes

No **[TERMINATE – RECEIVE TERMINATION MESSAGE – NOT ELIGIBLE TO PARTICIPATE IN THE SURVEY OR THE DRAWING]**

1. Have you used a boat or personal watercraft – including canoes, kayaks, jet skis, paddleboards, etc. – on Arizona waterways, including the Colorado River, during the past 12 months?

Yes [GO TO Q2]

No, but someone else in the household has used a boat or personal watercraft on Arizona waterways during the past 12 months [GO TO Q1a; original responder is terminated]

No, no one in my household has used a boat or personal watercraft on Arizona waterways during the past 12 months [GO TO Q4, THEN TO DRAWING ENTRY PAGE]

1a. Please email or text the following survey link to the household member who used the boat or personal watercraft during the past 12 months to fill out this survey. You can also click on the link and copy it to clipboard.

[LINK]

2. Which of the boats or personal watercraft shown below did you use on Arizona waterways, including the Colorado River, during the past 12 months? Select all that apply.
- Motorized boat or personal watercraft (e.g. jet skis)
 - Non-motorized boat or personal watercraft (e.g., canoes, kayaks, paddleboards)

2a. **Of the boats or personal watercraft you used during the past 12 months**, which did you own or co-own, rent or lease, or simply use (e.g., used with owner, borrowed from owner, etc.)? Please select all that apply in each row.

	Owned or co-owned	Rented or leased	Used or borrowed
Motorized boat or personal watercraft (e.g. jet skis)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Non-motorized boat or personal watercraft (e.g., canoes, kayaks, paddleboards)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Has COVID-19 affected how much you used a boat or personal watercraft on Arizona lakes and rivers, including the Colorado River, during the past 12 months?
- Yes [GO TO Q3a, then to Q5]
 - No [SKIP TO Q5]

3a. How has COVID-19 affected how much you used a boat or personal watercraft on Arizona lakes and rivers during the past 12 months – has it increased your boat usage or decreased it?

- Increased usage [SKIP TO Q5]
- Decreased usage [SKIP TO Q5]

4. **[Programming: Q4 only asked of those who responded to Q1 row 3, "No, no one in my household has used a boat or personal watercraft..." After answering Q4, they go to drawing entry page.]**

Was there any particular reason you didn't use a boat or personal watercraft in Arizona during the past 12 months? Please select all that apply.

- Boat wasn't working, broken down
- Cost of use, couldn't afford
- Too busy, no time
- Lost interest, prefer other forms of recreation
- Only used in state(s) other than Arizona
- Too far to go
- Too crowded
- Don't know where to go
- COVID-19 / stay-at-home orders
- I'm not a boat or personal watercraft user
- Other (please specify): _____ **[Programming: Provide space for write-in]**

5. What is your best estimate of the **total number of days** that you used a boat or personal watercraft on Arizona lakes and rivers, including the Colorado River, during the past 12 months?

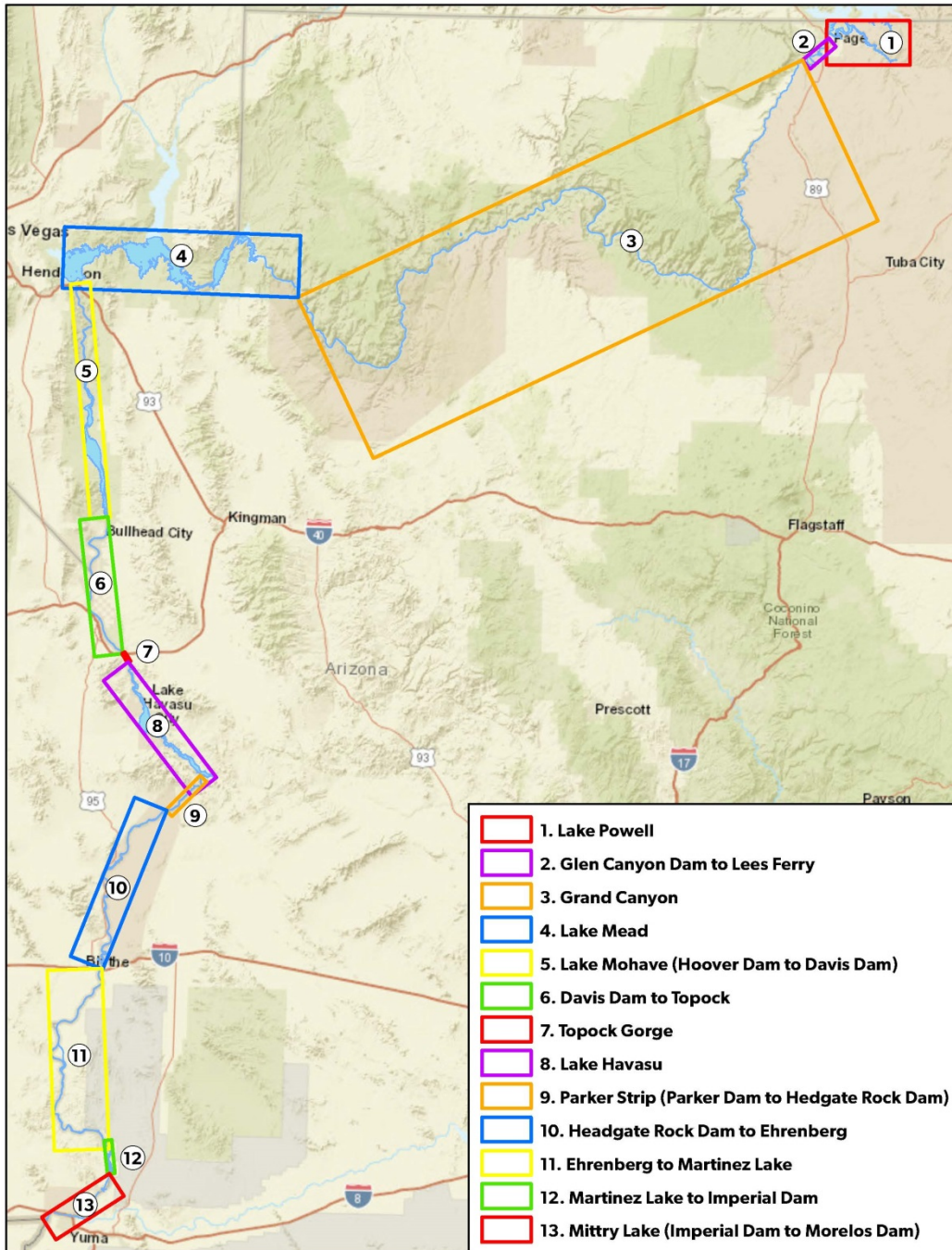
- 1 to 5 days
- 6 to 10 days
- 11 to 15 days
- 16 to 24 days
- 25 to 49 days
- 50 or more days

6. On approximately **how many separate trips** did you use a boat or personal watercraft on Arizona waterways during the past 12 months?

- 1 to 4 trips
- 5 to 9 trips
- 10 to 14 trips
- 15 to 24 trips
- 25 to 49 trips
- 50 or more trips

7. Please select **all the Arizona lakes and rivers — including the Colorado River —** where you used a boat or personal watercraft during the past 12 months.

Below is a listing of “Colorado River Segments”, followed by an alphabetical listing of “Other Lakes and Rivers”. If the waterway you use is not listed below, please enter the name under “Other”, which appears at the very end of the list. To see a map of Colorado River lakes and segments, click on the map image.



Please select all that apply.

Colorado River Segments – Also Referenced on Map

1. Lake Powell
2. Glen Canyon Dam to Lees Ferry
3. Grand Canyon
4. Lake Mead
5. Lake Mohave (Hoover Dam to Davis Dam)
6. Davis Dam to Topock Gorge
7. Topock Gorge
8. Lake Havasu
9. Parker Strip (Parker Dam to Headgate Rock Dam)
10. Headgate Rock Dam to Ehrenberg
11. Ehrenberg to Martinez Lake
12. Martinez Lake to Imperial Dam
13. Mittry Lake (Imperial Dam to Morels Dam)

Responses for Other Arizona Lakes and Rivers

14. Alamo Lake
15. Alvord Lake
16. Apache Lake
17. Arivaca Lake
18. Asaayi Lake
19. Ashurst Lake
20. Bartlett Lake
21. Bear Canyon Lake
22. Becker Lake
23. Big Lake
24. Black Canyon Lake
25. Black River
26. Blue Ridge Reservoir
27. Bunch Reservoir
28. Canyon Lake
29. Cataract Lake
30. Chaparral Lake
31. Chevelon Canyon Lake
32. Cholla Lake
33. Christmas Tree Lake
34. Clear Creek Reservoir
35. Concho Lake
36. Cooley Lake
37. Crescent Lake
38. Cyclone Lake
39. Dogtown Reservoir
40. Drift Fence Lake

41. Fain Lake
42. Firebird Lake
43. Fool Hollow Lake
44. Ganado Lake
45. Gila River
46. Goldwater Lake
47. Green Valley
48. Greer Lakes
49. Hawley Lake
50. Horseshoe Lake
51. Horsethief Basin Lake
52. Hurricane Lake
53. Kaibab Lake
54. Kennedy Lake
55. Kinnikinick Lake
56. Knoll Lake
57. Lake Mary (Upper)
58. Lake Pleasant
59. Lakeside
60. Lee Valley Lake
61. Little Bog Creek
62. Long Lake
63. Luna Lake
64. Lyman Reservoir
65. Lynx Lake
66. Mexican Hay Lake
67. Mormon Lake
68. Nelson Reservoir
69. Painted Rock Reservoir
70. Parker Canyon Lake
71. Patagonia Lake
72. Pena Blanca Lake
73. Picacho Reservoir
74. Rainbow Lake
75. Reservation Lake
76. River Reservoir
77. Roosevelt Lake
78. Roper Lake
79. Saguaro Lake
80. Salt River
81. San Carlos Lake
82. Scott Reservoir

- 83. Seneca Lake
- 84. Show Low Lake
- 85. Silverbell Lake
- 86. Squaw Lake
- 87. Stoneman Lake
- 88. Sunrise Lake
- 89. Tempe Town Lake
- 90. Tunnel Reservoir
- 91. Verde River
- 92. Watson Lake
- 93. Wheatfields Lake
- 94. White Mountain Lake
- 95. Whitehorse Lake
- 96. Willow Springs Lake
- 97. Woodland Lake
- 98. Woods Canyon Lake
- 99. Other (Please specify):

Please list the names of all the Arizona lakes and rivers—including the Colorado River—where you used a boat or personal watercraft during the past 12 months.

8. Shown below are all the Arizona lakes and rivers where you said you used a boat or personal watercraft during the past 12 months. For each lake or river, please fill in Column B with the total number of days you spent there, and Column C with the number of people, including yourself, that were usually in your group. ***[Programming: Auto-fill Column A with all locations selected in Q7. Include option to view map of Colorado River lakes and numbered segments.]***

A Lake or river where I used a boat or personal watercraft during past 12 months	B Number of days spent	C Number of people in group, including myself
<i>[Programming: Autofill Q7 responses]</i>		

9. Shown below are the Arizona lakes or rivers – including the Colorado River – where you used a boat or personal watercraft during the past 12 months. Which one(s) did you go to **most often**? Please select no more than two. **[Programming: Auto-fill with all locations selected in Q7 and permit up to two choices. Include option to view map of Colorado River lakes and numbered segments. If only one place selected in Q7, use it for Q9 response and skip the question.]**

Lake or river where you used boat or personal watercraft during past 12 months	Visited most often
[Programming: Auto fill Q7 responses]	<input type="checkbox"/>
	<input type="checkbox"/>
	<input type="checkbox"/>

10. What activities do you enjoy on a typical boating trip? Select all that apply. **[Programming: Provide space for write-in]**

- Water skiing
- Fishing
- General pleasure boating
- Jet skiing
- Knee boarding
- Wake boarding
- Tubing
- Rafting
- Sailing
- Canoeing/kayaking
- Stand up paddle boarding (SUP)
- Other (please specify) _____

11. Do you know what Aquatic Invasive Species are, such as quagga mussels?

- Yes
- No

- 11a. How often is your boat or personal watercraft cleaned after it is used?

- Always cleaned after each use
- Usually cleaned after each use
- Occasionally cleaned after use
- Seldom cleaned after use
- Never cleaned after use **[SKIP TO Q12]**
- The boat or personal watercraft used is not mine, so I don't know about how often it's cleaned **[SKIP TO Q12]**
- The boat or personal watercraft is docked and remains in the water throughout the year. **[SKIP TO Q12]**

11b. Which of the following methods is typically used for cleaning your boat or personal watercraft after use? Please select all that apply.

- Professional decontamination
- Hot water pressure wash
- Clean and drain dry
- Other method (please specify) _____

12. Have you ever taken a boating safety class?

- Yes
- No

12a. If **free** boating safety classes were offered in your area, would you prefer to attend in person or take them online?

- In person
- Online
- Blended (part online, part in person)
- I'm not interested in taking a boating safety course

Just a few questions left -- we need some basic information about you to help us better understand who is using and not using Arizona lakes and rivers and to better provide for everyone's needs. This information will remain strictly confidential and will be used for statistical purposes only.

13. What is your age?

- 18–24
- 25–34
- 35–44
- 45–54
- 55–64
- 65–74
- 75 and older

14. What is your gender?

- Male
- Female
- Non-binary
- Prefer not to answer

15. Are you of Hispanic, Latino, or Spanish origin?

- Yes
- No
- Prefer not to answer

16. Which of the following racial groups do you most identify with? Please select one.

- White
- Black/ African American
- American Indian/ Alaskan Native
- Asian
- Native Hawaiian/Other Pacific Islander
- Prefer not to answer

17. How many children under 18 years old live in your household?

- 0
- 1
- 2
- 3
- 4
- 5 or more

18. What Arizona county do you live in, whether year-round or for part of the year? **[Programming: Provide space for write-in.]**

- Apache
- Cochise
- Coconino
- Gila
- Graham
- Greenlee
- La Paz
- Maricopa
- Mohave
- Navajo
- Pima
- Pinal
- Santa Cruz
- Yavapai
- Yuma
- Other (please specify):
- _____

Q19. If you could make one recommendation or suggestion that would help improve your boating and personal watercraft experience on Arizona lakes and rivers, what would it be?

Thank you for your input – we greatly appreciate your time and opinions.

To enter your name in the drawing for prizes, we will need to confirm your contact information so we can notify you if are one of the winners.

First name: _____ Last name: _____

Address: _____

City: _____ State (pull-down menu) Zip code _____

Email address: _____

Phone number: _____

- I prefer not to provide this information or enter the drawing. ***[Programming: If information is provided and this box is NOT checked, present closing message A. If box IS checked, present closing message B]***

Closing message A

You will now be entered into the drawing for more than 70 prizes totaling approximately \$7,000 in value.

Closing message B

At your request, we will not enter you into the prize drawing. Thank you again for participating in this survey.

Termination message for Screener 1 (age)

S1: We appreciate your interest in our survey, but unfortunately you do not meet the qualifications for participation.