Utah Lake Commission Survey 2013

Results and Recommendations

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UTAH LAKE
COMMISSION

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Executive Summary

Overview of Methodology

The Utah Lake Commission with the help of Brianna Binnebose, conducted a Community Interest and Opinion Survey in the summer, 2013 to help determine priorities for improving Utah Lake and its shorelands. The survey was administered by mail and online.

The Utah Lake Commission worked extensively with its Technical Committee, Public Advisory Group, and other lake stakeholders to develop and design the survey, which allowed the Commission to focus on issues of strategic importance to effectively plan for the lake's future.

In July of 2013, a six-page survey was mailed to a random sample of 1,482 residents of Utah County. A link to an identical survey online was also sent to known users and user groups of the lake, who were encouraged to send the link to others. A link was also provided on the website utahlake.gov.

The goal was to receive 300 completed hard-copy surveys. This goal was accomplished by receiving 339 surveys. The level of confidence is 95% with a margin of error of 5.32%. In addition, there were 64 responses to the email survey and 16 responses to the survey linked on the utahlake.gov website.

Major Survey Findings

The following bullet points summarize major survey findings:

Main activities and uses

- 95% of all respondents have visited Utah Lake in the past.

- Most (79%) visit the lake at least once annually; 24% visit more than six times a year.

- 43% of respondents indicated they had been visiting the lake for over 20 years; 16% were relatively new to the lake, having visited it for the past 1-5 years.

- The main use of the lake is for motor boating (51%), and closely associated with that use was waterskiing/wakeboarding (44%). Other uses were fishing (33%), walking (27%) and picnicking (27%). Swimming was selected by 21% of respondents.

- As one would expect, the main access points around the lake were the public marinas. First was the Utah Lake State Park with 55% of respondents indicating they used the facility to access Utah Lake. Next were American Fork Harbor (26%), Lindon Marina (25%), Lincoln Beach (18%) and Saratoga Springs City Marina (17%). The most-frequented access points outside the public marinas included the airport dike road (11%), Sandy Beach (10%), and Vineyard Park/Utah Lake Parkway Beach (7%).

- The main reason respondents did not use Utah Lake was because they felt the lake was dirty (51%), followed by a preference for other lakes or reservoirs (22%), and not having time to recreate at the lake (18%). There were numerous "other" comments that were also given.

- Most respondents indicated they felt Utah Lake was 'very valuable,' both environmentally and recreationally (64%). Only 2% of respondents felt that Utah Lake had 'little or no' recreational value, compared to 4% environmental and 12% commercial.

- Respondents were asked to rate existing amenities at Utah Lake on a scale from 1 (household needs not met) to 5 (household needs met) to show whether their household needs were being met.
  - Areas showing needs are not being met include:
    - Sand beaches: 54% of respondents indicated a range between 1 and 3, indicating that there were an inadequate number of sand beaches.
    - Picnic areas: 51% of respondents felt that there were not adequate picnic areas around the lake.
    - Playgrounds: 43% of the responses indicated that there were not adequate playgrounds.
    - Trails: 45% suggested that the trail system could be improved
  - Areas showing needs are being met include:
    - Motor boat launches: 35% of respondents indicated a range between 4 and 5, indicating that there were an adequate number of motor boat launches. However, a large number (21%) felt motor boat launches were not needed.

- The most important amenities included restrooms, with 62% selecting this amenity. This was followed closely by sand beaches (54%), parking (46%), picnic areas (45%), trails (32%), and boat docks (27%).

Most-desired improvements

- Respondents were asked what changes should be made to amenities used by their household including whether they felt more were needed, better/improved, less/fewer, or that their needs were not met.
  - Sand beaches were a top priority amenity, with 26% of respondents indicating that they would like more.
  - Trails were also desired (18%), followed by picnic areas (15%), restrooms (15%), campgrounds (14%), garbage receptacles (13%), and parking (13%).
  - The majority of respondents felt that restrooms should be improved at Utah Lake, with 36%. This is followed by improving picnic areas (34%), improving sand beaches (33%), improving parking (26%), and improving fishing piers or shoreline fishing (24%).

- 35% of respondents rated areas they used on Utah Lake as 'fair,' compared to 24% rating it 'good,' and 13% rating it 'poor.' Only 4% of respondents rated the areas they use as 'excellent.'

- Respondents were asked what their level of support would be for certain improvements at Utah Lake. The main improvements supported in the survey were:
  - Improving water quality through carp removal with 69% of respondents being "Very supportive."

o Shoreline restoration through invasive plant removal with 59% of respondents being "Very supportive."

o Other actions that received good support included developing new beaches and creation of an "Adopt a Shoreline" program to allow residents to help keep the lake clean.

o Actions that garnered the lowest levels of support, where respondents answered 'not supportive', included developing a dog park (37%), developing a resort (30%), developing a research facility (22%), developing a nature center (20%), and developing a wildlife habitat (18%).

General feel about financing improvements

- Carp removal efforts (56%) and improving wildlife habitats (48%) were the actions respondents were most likely to allocate funding to, along with shoreline restoration efforts (38%). Funding for a nature center and research facility was the least popular action, with only 10% of respondents choosing this.

- Most respondents (42%) indicated they would prefer user fees as the method of funding Utah Lake improvements, followed by legislative appropriation (34%), increased sales tax (11%), increased water/wastewater fees (8%), and increased property taxes (7%). However, 10% of respondents do not support funding Utah Lake improvements.

- Most respondents (37%) indicated they would vote in favor of a sales tax increase to fund improvements at Utah Lake, compared to 21% who would vote against a sales tax increase. 17% of respondents indicated that they 'might vote in favor,' while 9% said they would vote in favor 'only if improvements were made to areas I use,' and 5% 'might vote in favor only if improvements were made to areas I use.' Additionally, 9% were unsure how they would vote.

- Respondents cited needing more information as the main reason (24%) why they would vote against a tax increase for improving Utah Lake, while 15% 'just do not support tax increases for Utah Lake improvements.' Not recreating at Utah Lake was the reason 10% of respondents gave, along with supporting a tax increase if the economy improves (7%).

- 25% of respondents indicated the maximum amount they would be willing to pay to fund Utah Lake improvements is an additional $1 - $9 per year, while 19% would be willing to pay $10 - $24 per year. Respondents willing to pay $25 - $49 per year (11%), $50 - $99 per year (8%), $100 - $149 per year (3%) and $150+ per year (4%).

Demographics

There were also several questions requesting the respondent's age, income, housing, education, etc.

- 45% of respondents are aged 55 and up
- 92% are homeowners
- 42% have a household income of $55,000 and above
- 49% reported that they are employed full time
- 64% have a Bachelor's or advanced degree

Recommendations

Based on the responses received from this survey, efforts should be made to both begin and continue efforts to improve the lake in the following ways:

Improved Access

Sand beaches were frequently mentioned in open comment questions, as well as scoring high marks as an amenity that needs to be improved and increased in quantity. Efforts should be to maintain the existing beaches on the lake as well as creating new beaches for recreation.

Restoration of the lake shoreline including continued efforts to remove phragmites was widely supported by the survey results. Efforts to continue the phragmites removal program including ongoing maintenance of the removal work should be a priority.

Improving access to the lake, including enhancing existing access points as well as creating and acquiring additional access points around the lake was widely supported. Examples of access improvements that were supported by the survey include construction of new and maintenance of existing trails; creation of restroom and parking facilities; creation of overnight camping facilities; creation of picnic areas and playgrounds; construction and maintenance of trails.

Despite the perception of the public that there are adequate launches for motor boats and their needs are met, the increasing population and the often overcrowded marinas indicate that expansion of existing marinas or creation of new marinas in strategic locations should still be considered a priority. As planning efforts for the lake continue, accommodating this apparent future need should not be ignored because of the current opinions of the general public.

Water Quality

Carp removal received great support from the survey. Efforts to continue the removal program should be a priority.

Measures focused towards improving overall water quality or cleanliness, including dredging, was also frequently discussed as a priority to respondents. Efforts should be made to explain the existing water quality characteristics to the general public to assure them the water is clean. This includes the consequences of large scale dredging.

Increase communication to community

Open comments indicated that some respondents had not heard much, if anything, about Utah Lake and would like to know more. This could increase support of improvements and increased fees if community members felt they knew more about the challenges Utah Lake is facing at meeting the needs of its users. Some respondents indicated they knew little to nothing about Utah Lake, while others only knew of Utah Lake as a result of what they heard secondhand from friends, family and neighbors. While this is an important medium to spread knowledge of activities and proposals for Utah Lake, increasing the organization's presence on a larger scale is critical to continue to develop the area appropriately.

Transparency of increased taxes and fees

Several respondents had expressed concern in open comments [Appendix E] that in general, they do not support any type of tax increase to fund improvements at Utah Lake. If community members and users could be shown where their money was being used and specific improvements that were being made as a result of their contribution, this may increase the overall support community members have towards to financial support of improvements.

Encourage participation in user groups that frequent Utah Lake

Efforts should be made to reach out to user groups that would directly benefit from improvements to Utah Lake. These groups can provide a catalyst and help show public support for improving the lake. They can also help identify the best locations for appropriate improvements and will be key in maintaining the improvements once they have been completed.

Future survey efforts and improvements

The real benefit of outreach surveys to gauge public opinion to direct efforts and set priorities of achieving the goals of the Utah Lake Master Plan will become apparent over time. Regular outreach efforts, including surveying to determine where efforts should be focused on Utah Lake, should be conducted and improved over time.

Seek long-term funding from a variety of sources

Efforts to identify and obtain acceptable long-term funding to make desired improvements to the lake should be made through a variety of sources, including legislative appropriations, user fees, tax increases, private donations, sponsorships, and others.

Background

The Utah Lake Master Plan defines a vision for the lake and identifies 18 high-priority goals with 36 objectives associated with the goals. It also identifies 13 medium priority goals with 17 associated objectives. Because of the broad scope of the plan, it was intended to identify numerous specific projects to meet the objectives of the plan in the future.

Over the years, the Utah Lake Commission and other partners have been successful in obtaining grants to fund projects that meet many of the objectives of the plan, and continue to do so. However, many other improvements should be made to achieve the vision for the lake. It was decided to create a survey to allow the public a medium to inform us where they feel the greatest need and support for lake improvements is in order to allow us to focus our efforts in those areas and to approach other partners to achieve those goals.

Methodology

A complete copy of the survey administered can be found in Appendix A, along with a copy of the survey codes used for data collection and analysis in Appendix B and Appendix B(1).

Survey creation

In order to effectively achieve the goals of the Utah Lake Master Plan, the Utah Lake Commission decided to survey the general public and lake stakeholders to gauge support and to identify needs. Working with the Utah Lake Commission Technical Committee, Public Advisory Group and key stakeholders, the objectives of the Master Plan were categorized into five different groups, Education, Environment, Land Use, Recreation, and Other. It was also determined whether each goal had a specific project or improvement that could be identified and pursued at some point in the future. For example, the objective identifying a non-motorized trail around the lake has a specific project that can be pursued. The objective to coordinate and facilitate communications among jurisdictions does not.

Once the objectives were categorized, a draft questionnaire was created using examples of surveys conducted by the June Sucker Recovery Implementation Program and the Provo City Parks and Recreation Department to gauge public opinion and support for similar issues we face. The survey was divided into three sections. The first section was designed to understand the respondent's past use of the lake, to identify areas that were most used, amenities that met their needs, and what improvements were desired. The next section gauged their level of support to fund certain improvements at the lake and asked what types of funding mechanisms they would support. Finally, a section on demographics would allow us to understand more about the respondents and help us better understand the results of the survey. The draft survey was reviewed by several groups, comments were received, incorporated into the survey where appropriate, and a final version was produced.

Survey Administration

The survey was administered in three different mediums, with each survey identical in wording. The first was a hard copy survey mailed to a random sample of Utah County residents. The second was targeted at known lake users and was distributed through email and administered online through the website SurveyMonkey.com. The third was a link in a post on the utahlake.gov website encouraging the visitor to participate in the survey. A phone-based survey was also considered. However, after testing the survey on several random phone numbers, it was quickly realized that with only one completed response per hour, the necessary personnel resources would not be available to efficiently administer the survey and get a significant amount of responses. The phone survey was abandoned, relying heavily on the hard copy and online versions.

Hard copy survey

After much discussion, a decision was made to administer the survey only to Utah County residents. Reasons for doing this were threefold: First, Utah Lake is a public resource that primarily affects the lifestyle of Utah County residents. Accordingly, its residents would best understand what improvements would be desired. Responses from out-of-county residents may likely be less informed than those residing in the area due to proximity and access to Utah Lake and its amenities. Second, one of the primary purposes of this survey is to inform decision makers at the local, municipal and county levels, as well as state legislators representing Utah County residents about the level of support of those they represent to make improvements at the lake. Third, the best source for random addresses available to us was through the Utah County Treasurer's office, which could readily supply random addresses of Utah County residents.

Utah County Treasurer, Robert C. Kirk, was asked to provide a list of 2,000 randomly selected mailing addresses in Utah County. The list provided to us consisted of individuals and businesses that pay property taxes to Utah County, so it contained numerous addresses from outside the county. Because we had decided to focus our survey on residents living in the county, all business and non-county addresses were removed from the list. However, because the list was limited to residents who pay property taxes, this likely under-covered the portion of the population who do not pay property taxes (e.g. renters) and limited the random sample to those who pay property taxes.

A letter describing the goal of the survey process and encouraging the residents to respond within two weeks was included with a hard-copy of the survey and a self-addressed stamped return envelope. To encourage residents to respond, the Utah Lake Commission logo was included on the return address label to indicate that it was not junk mail, a sticker was affixed that said in red, bold letters, "SURVEY ENCLOSED!" The survey was mailed through the United States Postal Service to 1,482 residents on Friday, July 26.

After three weeks, 339 responses were received. As surveys came in, staff input the data into the online survey service, SurveyMonkey®. We have since received an additional 39 responses, which were not included in the data set because of the difficulty of adding them to the cleaned-up data. There were 58 surveys that were returned as undeliverable, meaning 1,424 surveys were delivered to residents in the county. This puts the response rate at 24%.

Targeted survey

A second method of distributing the survey was also used to compare the random sample of the hard copy survey to the responses of users of Utah Lake. It was emailed to individuals with known interests in Utah Lake, including sportsmen, recreationists, environmentalists, land developers, etc. A link to an online survey at Survey Monkey® was included in the email. These individuals were encouraged to forward the survey to anyone whom they felt would want to participate and this method garnered 64 responses. However, participation rates were not calculated for this medium because we were unable to determine with any certainty how many people the survey had been distributed to through the existing users.

Website survey

A third method was a survey that was included on the Utah Lake Commission website, utahlake.gov. A post on the website was made, encouraging the reader to complete the survey. This included a different link to the same online survey at Survey Monkey®, allowing us to determine the origin of the respondent's exposure to the survey. This method only received 16 responses and we were unable to calculate response rates because at this time, we do not have tracking data from the website that shows us how many users had viewed the survey.

Margin of Error and Sample Size Validity

Krecjie and Morgan (1970)[1] developed a formula to assist researchers in calculating sample sizes based on the total population to determine valid sample sizes to draw inferences upon. Larger sample sizes are always preferred, as it helps represent more of the population and can increase our confidence intervals, as well as decrease our margin of error. However, Krejcie and Morgan note that at a certain point, there is a diminishing rate of return for sample size based on population size, meaning a sample size for 1,000,000 is going to be the same size as one for a population of 5,000,000, with 384 suggested for a sample size for both groups. It should also be noted that the formula is a guideline and the numbers they suggest are a minimum recommendation.

According to 2011 Census data, Utah County has a population of approximately 530,000. Based on the formula, for us to have a margin of error of 5% (our results are representative of the population within +/- 5%) with a confidence interval of 95% (we are 95% certain of our results), we would need a sample size of 384 responses. With our 339 random survey responses, our 95% confidence interval gives us a margin of error of +/- 5.32%[2]. The aggregate sum of our responses is 419, which puts us below the 5% margin of error for our population size with a 95% confidence interval, with 4.79%. However, as the additional responses were not random, we will use our 339 sample size for the purposes of margin of error calculation, with the aggregate frequency of responses being provided in the report.

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[1] Krejcie, Robert and Daryle Morgan. "Determining Sample Sizes for Research Activities." *Educational and Psychological Measurement* (1970) 30: 607-610.

[2] Based on a margin of error calculator provided by American Research Group, Inc. http://americanresearchgroup.com/moe.html

Data Analysis

Data cleanup and analysis

There were multiple questions where a specific amount of responses was requested and some allowed for more than one response. As such, we took each response for each multiple answer question and created a variable that essentially become a 'yes' or 'no' question. Each possible answer became a variable and respondents were either given a "0" (no) when that option was not selected and a "1" (yes) when they selected the option (Q9 had 84 variables as a result of this).

For questions where respondents were asked to rank an amenity, each variable had the numerical rank assigned to it and resulted in only variable. Additionally, there were many questions where respondents simply did not provide an answer and were given a "0" for that particular question. Non-response totals were noted in the frequency tables, along with the responses to show how non-response compared to responses for all questions.

An additional step we took in analysis was to create a set of indices for multi-answer questions. The indices' scores were coded to be straightforward: the larger the number, the more strongly respondents felt about a particular issue. For example, combining all the variables from Q4 created an index for activities participation, with the quantity of activities the respondent chose determining the level for that particular index. It would be expected that a respondent who had selected five activities would have a higher participation index than someone who had chosen one activity. This method was applied to other questions that had multiple variables, resulting in a total of 11 indices created [Table 1].

Why did we create the indices? They summarize a series of questions that have a similar focus, such as the questions where respondents were allowed to choose multiple answers, resulting in some questions having over 50 variables. However, we must take into consideration that we cannot separate which variables in the index were most influential, though the indices were created with equal weights. The indices created are useful in helping regroup the fragmented questions but are not the focal point of the analysis.

Data analysis was conducted through usage of SAS 9.3, utilizing a variety of statistical tests that included frequencies, means and one-way ANOVA test for variances to determine if the sample yielded statistically significant ($p < .05$) results when responses were compared across survey type and age group. We also performed regression models to determine if some variables were better predictors than others in whether respondents supported various actions and financial initiatives.

Table 1 – Index creation from multi-part questions

Index name	Variables	Goal
Activities participation	Hunting+Motor_boating+Passive_boating+Winter_sports+ Waterskiing+Jogging_running+Walking+Kiteboarding+Swimming+Camping +Bird_watching	Overall level of participation in activities at Utah Lake
Amenities ratings	Visitor_information_7+Picnic_areas_7+Sand_beaches_7+ Motor_boat_launches_7+Passive_boat_launches_7+Boat_docks_7+Boat_stor age_7+Equipment_rental_7+Restrooms_7+Parking_7+Handicap_access_7+ Trails_7+Garbage_bins_7+Fishing_shoreline_piers_7+ Fish_cleaning_stations_7+Playgrounds_7+Campgrounds_7+Concessions_7+ Edu_displays_7	Respondents' overall attitudes towards Utah Lake amenities
Amenities changes - not needed	Visitor_information_A1+Picnic_areas_B1+Sand_beaches_C1+Motor_boat_l aunches_D1+Passive_boat_launches_E1+Boat_docks_F1+Boat_storage_G1+ Equipment_rental_H1+Restrooms_I1+Parking_J1+Handicap_access_K1+Tra ils_L1+Garbage_bins_M1+Fishing_shoreline_piers_N1+Fish_cleaning_statio ns_O1+Playgrounds_P1+Campgrounds_Q1+Concessions_R1+Edu_displays_ S1	Preference for no changes to amenities at Utah Lake
Amenities changes - fewer	Visitor_information_A2+Picnic_areas_B2+Sand_beaches_C2+Motor_boat_l aunches_D2+Passive_boat_launches_E2+Boat_docks_F2+Boat_storage_G2+ Equipment_rentals_H2+Restrooms_I2+Parking_J2+Handicap_access_K2+Tr ails_L2+Garage_bins_M2+Fishing_shoreline_piers_N2+Fish_cleaning_statio ns_O2+Playgrounds_P2+Campgrounds_Q2+Concessions_R2+Edu_displays_ S2	Preference for fewer amenities at Utah Lake
Amenities changes - improve	Visitor_information_A3+Picnic_areas_B3+Sand_beaches_C3+Motor_boat_l aunches_D3+Passive_boat_launches_E3+Boat_docks_F3+Boat_storage_G3+ Equipment_rental_H3+Restrooms_I3+Parking_J3+Handicap_access_K3+Tra ils_L3+Garbage_bins_M3+Fishing_shoreline_piers_N3+Fish_cleaning_statio ns_O3+Playgrounds_P3+Campgrounds_Q3+Concessions_R3+Edu_displays_ S3	Preference for improving amenities at Utah Lake
Amenities changes - more	Visitor_information_A4+Picnic_areas_B4+Sand_beaches_C4+Motor_boat_l aunches_D4+Passive_boat_launches_E4+Boat_docks_F4+Boat_storage_G4+ Equipment_rental_H4+Restrooms_I4+Parking_J4+Handicap_access_K4+Tra ils_L4+Garbage_bins_M4+Fishing_shoreline_piers_N4+ Fish_cleaning_stations_O4+Playgrounds_P4+Campgrounds_Q4+ Concessions_R4+Edu_displays_S4	Preference for more amenities at Utah Lake
Acquire	Acquire_prop_openspace+Acquire_prop_active+Acquire_prop_passiveact+A cquire_prop_access	Support for acquisition projects
Enhance	Enhance_fishhunt_access+Enhance_wildlife_hab+Enhance_exist_marinas+E nhance_exist_launch+Enhance_beaches+Enhance_exist_walkbike_trails+Enh ance_exist_rec_areas	Support for enhancement projects
Develop	Develop_wildlife_hab+Develop_new_marinas+Develop_new_passlaunch+D evelop_new_beaches+Develop_new_rec_areas+Develop_nat_center+ Develop_research+Develop_resort+Develop_dog_park+Develop_ON_camp	Support of development projects
Financial support	Leg_appro+prop_tax+inc_sales_tax+water_waste_fees+user_fees+ do_not_support_fund+Sales_tax+Vote_against_tax+WTP_improve	Support of financial initiatives for Utah Lake improvements

Validity Issues

Variation in delivery methods caused problems with responses. On the two web-based versions, respondents were only allowed to choose a specified number of selections for each questions, whereas in the paper based survey, respondents could choose multiple answers. As the majority of survey responses were paper based, this could affect frequency of use for questions such as what amenities and access points are used the most, as well as any other questions where respondents were asked to limit their responses. Essentially, one group of respondents were able to choose as many responses as they liked while others were not.

Creating indices has problems, as it then becomes difficult to determine what individual variables are causing levels to increase or decrease. However, this method was utilized due to the large quantity of individual variables, using demographic information and key financial questions as the primary independent variables. Creating them allowed us to regroup some key questions to determine the overall feel that respondents have towards options in those particular questions. However, to avoid this we did not utilize them in more complex analysis as we recognized it would be difficult to separate the causes.

Non-response bias is also a potential issue, as we did have a high non-response rate of our sample population (76%). The issue at hand is that responses from our sample may differ significantly from those who did not respond, whether it was because they were not included in the population or chose not to respond for various reasons. Demographically, our respondents were homeowners aged 45 and older, with nearly 60% of respondents with household incomes greater than $50,000. Census data for Utah County shows the mean age for residents is 24.6, with a mean household income of $57,732 and 33% of the population renting homes.[3] Our respondents did differ demographically from the overall Utah County population so there is potential for responses of respondents to differ from those who did not respond, based on their demographic information.

The final issue present is the possibility of under-coverage of the non-homeowner population, as well as younger age groups. 92% of respondents were homeowners and of the paper survey respondents, less than 1% were renters (3 respondents out of 339), indicating that renters likely were underrepresented. However, this is difficult to be certain of, as we did have some paper respondents who rented, lending to the possibility that renters had been included and did not respond. This is also true for respondents in the age category, where it is possible that younger age groups had been included but also did not respond. If that is the case, we are limited in what we can do to increase the amount of younger respondents in the sample, though in the future we can take measures to increase the size of the younger age group population to mitigate that, as well focus sampling to addresses rather than property tax payers. This also holds true for renters, where we can ensure they are included in the sample population in the future but there is no guarantee they will be in the sample because we cannot force anyone to respond.

In an effort to determine variances in response, we completed analysis on the means of key variables by survey type and age group to if there was a difference. We found limited significant differences and the models that were significant often had very low model strength, with most occurring between the paper and email responses, as well as non-response for age and the individual age groups.

Accordingly, we do feel that the frequency statistics should still be considered seriously, as they represent opinions and comments of Utah County residents, even if the results may not be generalizable

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[3] Data courtesy of www.city-data.com. US Census information was unavailable due to the government shutdown.

to a larger population. We have little to no control over whether or not the population that we reach out to will respond to the survey but we feel it is important to report the opinions of those who did take the time to provide us with responses and comments. The focus of the survey is to gauge public opinion on Utah Lake, so we feel that even if there are some potential statistical validity issues, valuable opinions and usage data were collected from Utah County residents who may be affected by Utah Lake improvements and possible financial measures to sustain those improvements.

Data/Results

The following section addresses the responses to each question in the survey, with the combined values from all three survey types. The numbers in each column represent the frequency of that response, with percentages calculated based on 419 respondents and non-response being included in that total. All frequencies depicted in the report were completed without stratification between the different types of surveys distributed. A complete table of graphs is included in Appendix C, with graphs depicting results stratified by each survey type. Appendix D contains all frequency statistics and data analysis completed. Appendix E contains user comments to open ended questions.

For the purposes of this report, frequency statistics are likely going to be the most useful in telling us how the community feels about each topic that the survey covers. These are not sophisticated statistics but more of a reflection on popularity (or lack thereof) of each topic. The primary goal of the survey is to gauge public opinion on funding improvements, as well as determining the priorities of the community for those improvements. Accordingly, counting responses of a sample is a valuable tool, though there were limitations to that data that resulted from a limited random sample.

Frequency statistics

Q1: Have you or any members of your household ever visited Utah Lake?

Overwhelmingly, the majority of respondents had acknowledged that they or a member of their household had at least visited Utah Lake, with 95% answering 'yes.'

Q1 - Have you or a household member ever visited Utah Lake?
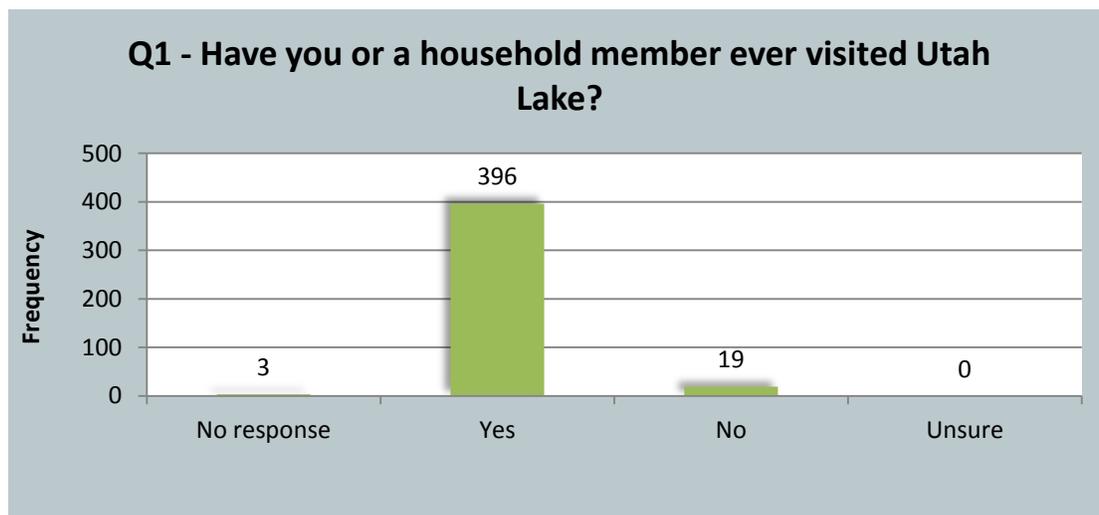
Q2: How many times do you or members of your household typically visit Utah Lake each year?

The majority of respondents had indicated that they or members of their household visited Utah Lake 1 to 3 annually (43%), followed by 0 (17%), 10+ (16%), 4 to 6 (13%), 7 to 9 (8%), 3% answered that they had never been to Utah Lake and 4 respondents did not answer this question. Almost 80% attend the lake at least once each year. These responses indicate that many Utah Lake users do not frequent the area for various reasons that will be discussed later in the survey.

Q2 - Yearly visits to Utah Lake

Frequency

	No response	0	1 to 3	4 to 6	7 to 9	10+	Never been to Utah Lake
	4	70	178	53	35	66	12
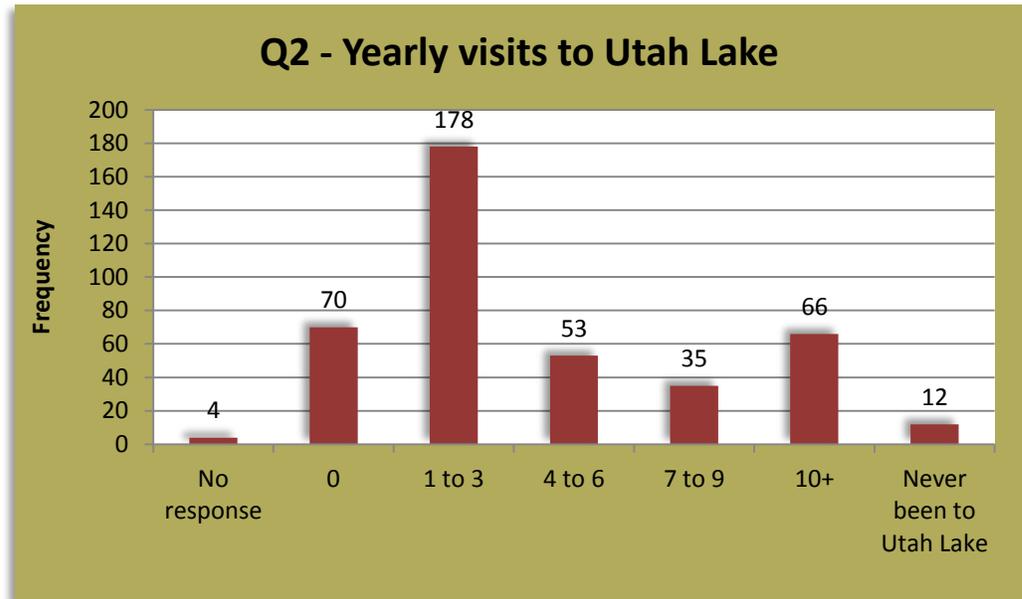
Q3: For how many years have you visited Utah Lake?

43% of respondents had indicated that they had been visiting Utah Lake for over 20 years, suggesting that while respondents may not frequent the lake often, they consistently return year after year. 17% had visited Utah Lake for 1 to 5 years, 13% had visited for 11 to 20 years, as well as those who had visited 6 to 10 years, 4% had never been to Utah Lake, 8% were not sure how long they had been visiting Utah Lake and 2% did not respond to the question. Additionally, demographic information that included respondent age was also collected and it should be noted the majority of respondents were 55 and older, indicating that the length of visitation to Utah Lake

Q3 - Years visited

Frequency

	No response	1 to 5	6 to 10	11 to 20	20+	Don't know	Never been to Utah Lake
	12	69	53	55	178	33	18
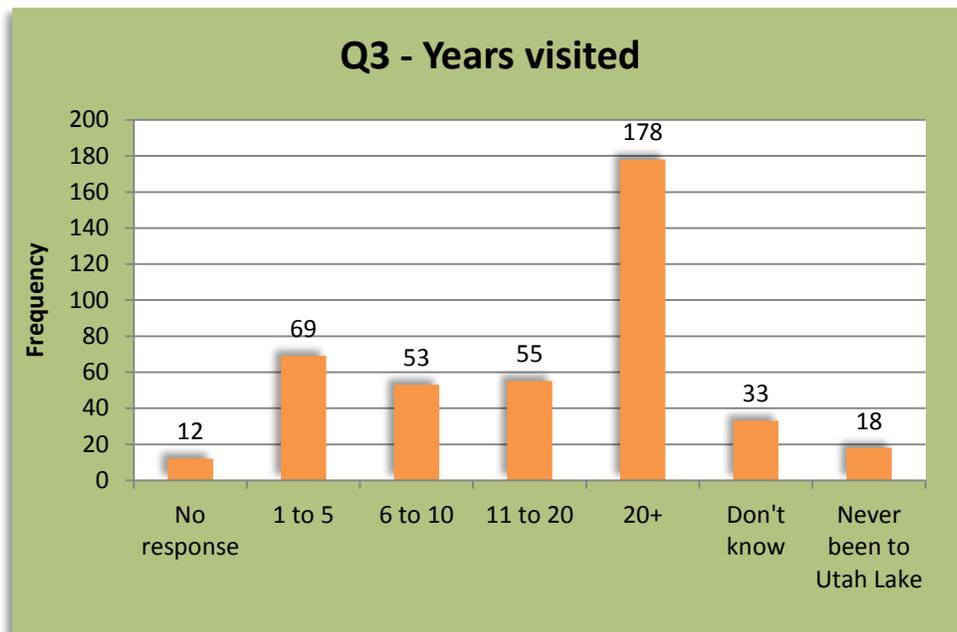
may be correlated with age.

Q4: From the following list, please check all the activities that you or members of your household participate in at Utah Lake?

Respondents were asked to indicate all the activities participated in, with percentages calculated based on 419 respondents. Motor-boating was the most popular activity, with 51% indicating that they participated in this activity. Waterskiing and/or wakeboarding followed closely behind with 44% choosing this activity, followed by fishing (33%), walking (27%) and picnicking (27%). Kite boarding was the least popular activity, with less than 1% of respondents indicating they participated in this activity.

Q4 - Activities

Activity	Frequency
Other	63
Do not participate	49
Bird watching	63
Camping	36
Picnicking	114
Sunbathing	41
Swimming	90
Kiteboarding	3
Walking	115
Jogging/running	49
Winter sports	34
Waterskiing/wakeboarding	185
Passive boating	77
Motor boating	215
Hunting	35
Fishing	140
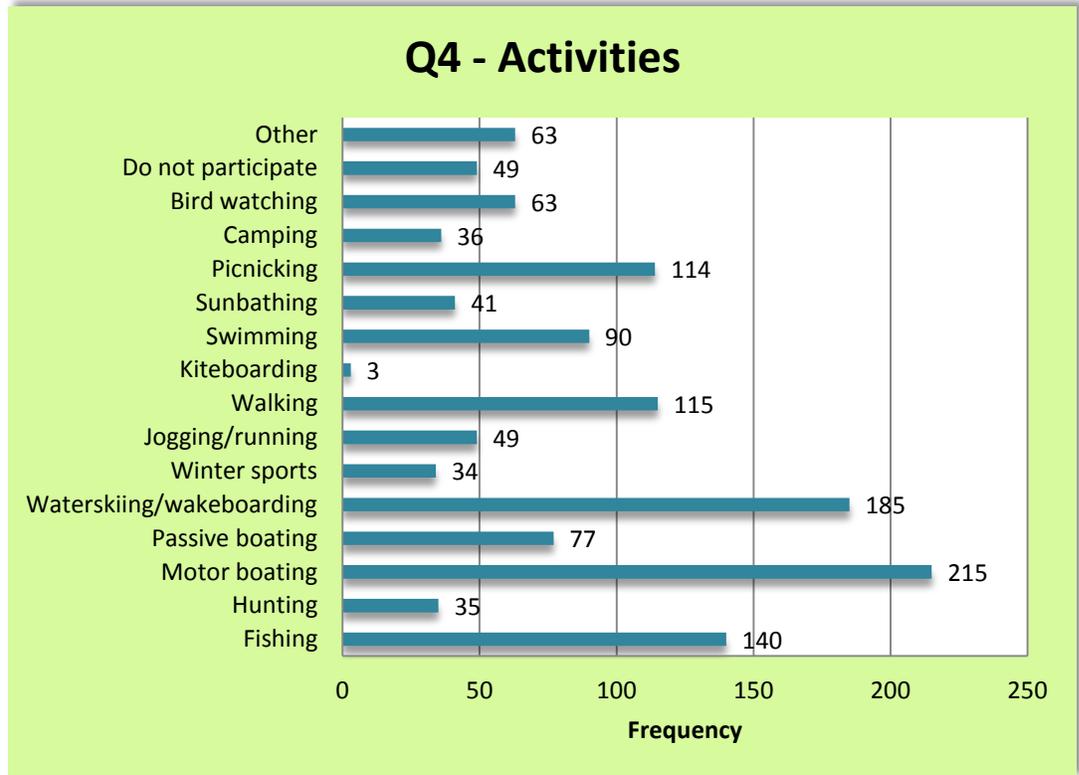
Q5: Please select up to five access points around Utah Lake that you and members of your household use the most.

Similar to the previous question, respondents were allowed to select more than one response and percentages were calculated based on the 419 total respondents. By far, Utah Lake State Park is the most widely used access point, with 55% of respondents indicating that they used the facility to access Utah Lake. American Fork Harbor (26%), Lindon Marina (25%), Lincoln Beach (18%) and Saratoga Springs City Marina (17%) composed the remainder of the most popular access points. Conversely, Blue Heron Beach, Mile Marker 13/Mosida Acres, Goose Point North and South, 4000 West Sportsman Access and Powell Slough South Sportsman were the least popular access points, each with only 2 respondents claiming they used the access points. Mulberry Beach is the only access in which no respondents indicated they used it, identifying this location as one that could be of lower priority for improvements.

Q5 - Most used access points

Access Point	Frequency
Other	21
Never been to Utah Lake	17
None	19
Loch Lomond Trailhead	3
Blue Heron Beach	2
Inlet Park	16
Saratoga Springs Owners' Association Marina	19
Eagle Park	7
El Nautica Boat Club	4
Saratoga Springs City Marina	73
Mile Marker 19/North Knolls	3
Mile Marker 13/Mosida Acres	2
LeBaron Point	3
Tower View Point	3
Goose Point South	2
Goose Point North	2
Mulberry Beach	0
Lincoln Point Parking/Sportsman Access	25
Lincoln Beach Boat Harbor	75
4000 West Sportsman Access	2
Sandy Beach	42
Swedes Lane Sportsman Access	11
Hobble Creek Sportsman Access	10
Mill Race Sportsman Access	3
Provo City 500 West Sportsman Access	30
Airport Dike Road	48
Utah Lake State Park	232
Skipper Bay Trailhead	4
Powell Slough South Sportsman Access	2
Powell Slough North Sportsman Access	5
Vineyard Center Street Access	13
Vineyard Park/Utah Lake Parkway Beach	31
Lindon Marina	106
Timp Marina Club	5
American Fork Boat Harbor	111

Frequency

Q6: Please select all the reasons that you and/or members of your household do not use Utah Lake more often.

Q6 - Household does not use Utah Lake because...

Category	Frequency
Other	98
Not interested	52
Do not Have time	75
Do not know what to do there	56
Prefer others lakes or reservoirs	92
Not accessible for people with disabilities	7
Fees are too high	54
Too far from residence	17
Safety concerns	32
Programs not offered	19
Facilities not well maintained	47
Lake is dirty	215
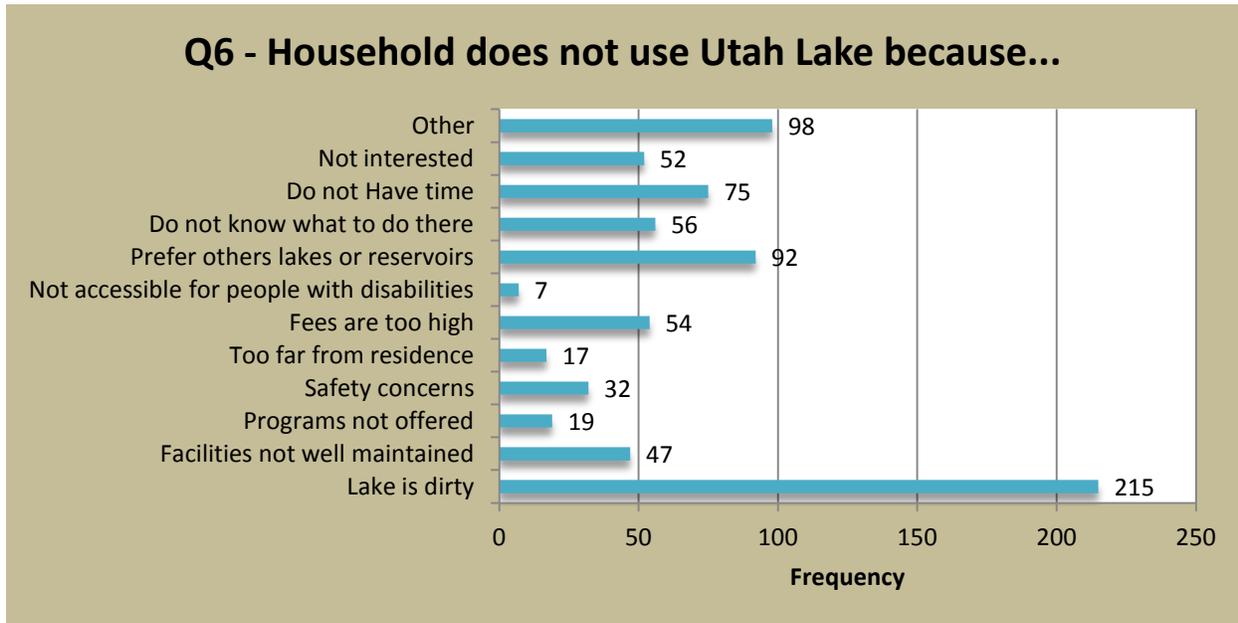
Respondents were allowed to choose multiple responses for this question as well, where each response is recorded as a percentage of total respondents. This question is closely related to Q2 and Q3, where this may offer some insight as to why respondents do not visit Utah Lake more frequently, despite a long history of visiting the lake. The majority of respondents (51%) cited "The lake is dirty" as the primary reason why they or members of their household do not use Utah Lake, suggesting this as a priority to address for lake improvements. 23% of respondents cited other reasons.

Preferring other lakes and reservoirs (22%) and do not have time (18%) were the other most frequently cited reasons as to why respondents did not use Utah Lake more often. Access for people with disabilities did not appear to be a problem for most respondents, as less than 2% of respondents listed this as a reason why they do not use Utah Lake more.

Why I would not visit Utah Lake more

"The lake is dirty and smelly. The beaches are terrible. There are no natural fish. There are no good resorts or restaurants on the lake near Provo."
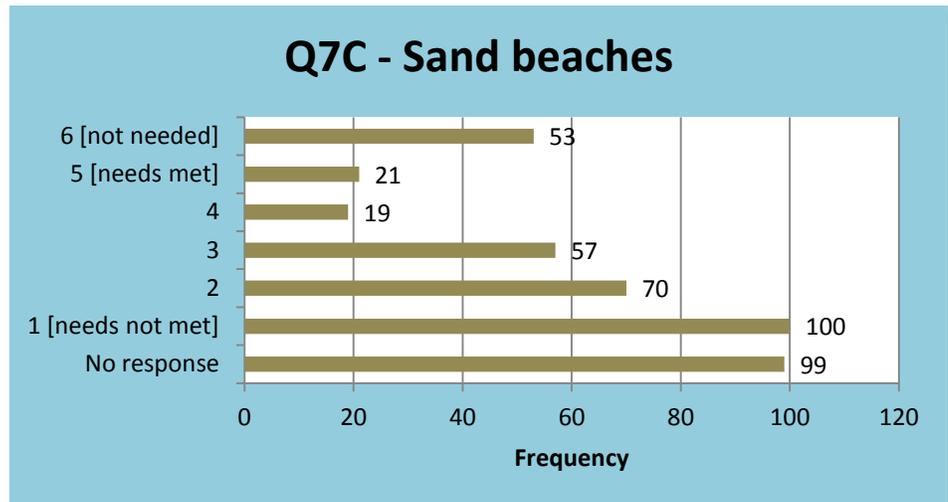
"Too many people at marinas; need more launching places."

"Shoreline is dirty; no beaches"

"Don't own a boat."

"Needs a grassy park or sandy beach or something. Man eating carp."
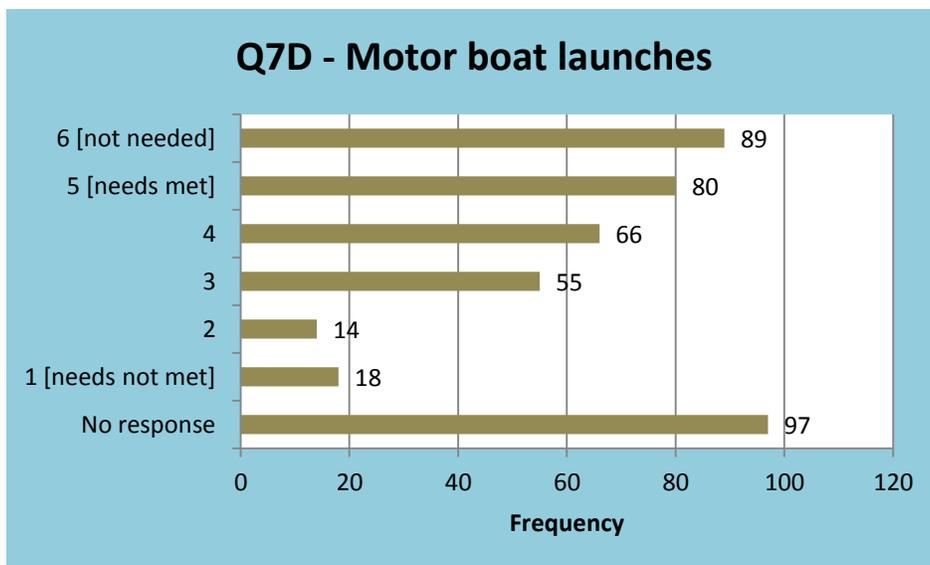

Q7: Please rate the existing amenities at Utah Lake on a scale of 1 – 5, where 1 means "Does not meet the needs of your household" and 5 means "100% of needs are being met" or select "Not needed" if your household does not use the amenity.

Responses to this question were varied, with many respondents not answering. It is challenging to explain why they chose not to answer but one possibility is the respondent may have felt they did not use that particular amenity and/or Utah Lake enough to feel confident in rating it, thus no response. This theory is based on open-ended comments that respondents made about amenities in this question, where comments include,

Q7C - Sand beaches

Rating	Frequency
6 [not needed]	53
5 [needs met]	21
4	19
3	57
2	70
1 [needs not met]	100
No response	99

"Don't go enough to know" or "Don't know enough about this to give accurate marks."

Sand beaches was the amenity that most respondents felt their needs were not met, with 24% indicating that their sand beach needs were currently not being met, consistent with open-ended comments regarding why people do not go visit the lake. 227 respondents or 54% rated this question between 1 and 3, indicating there is a desire for more beaches.

Q7D - Motor boat launches

Rating	Frequency
6 [not needed]	89
5 [needs met]	80
4	66
3	55
2	14
1 [needs not met]	18
No response	97

Conversely, 46% of respondents felt that handicap access was not needed[4], more than any other amenity. Interestingly, motor boat launches were the amenity where respondents felt their needs were being met the most (19%), despite comments specifically citing crowding at boat launches as a negative.

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[4] This does not specify whether the respondent felt the amenity was not needed by the household or not needed for the general public.

Other amenities a large portion of the public felt could be improved included picnic areas, playgrounds and trails. For picnic areas, 168 or 51% of those that answered the question felt there were not adequate picnic areas available around the lake compared to 57 (18%) who felt the amenity was not needed and 97 (30%) that felt adequate facilities have been provided.

Q7B - Picnic areas

Response	Frequency
6 [not needed]	57
5 [needs met]	51
4	46
3	79
2	51
1 [needs not met]	38
No response	97

Q7P - Playgrounds

Response	Frequency
6 [not needed]	119
5 [needs met]	15
4	30
3	46
2	61
1 [needs not met]	36
No response	112
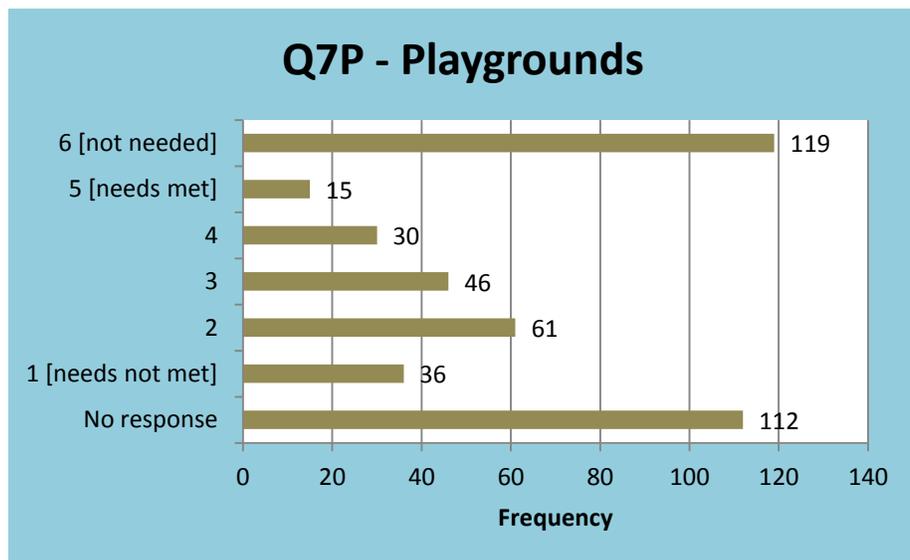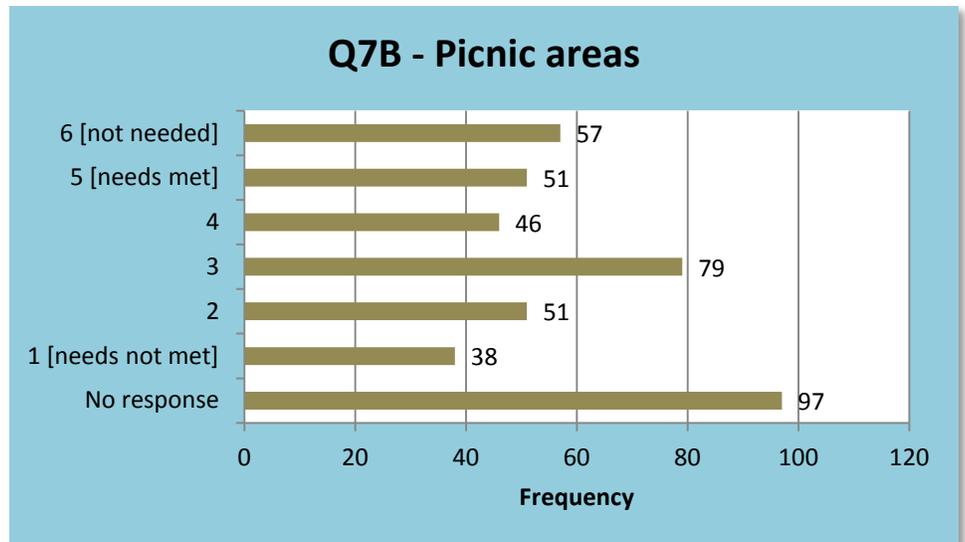
The survey also showed that there was a desire for more playgrounds near the lake, and a similar number suggested the improvement was not needed. 143 (43%) responses indicated that there were not adequate playgrounds. 119 (39%) felt that playgrounds were not needed, and 45 (15%) felt that there were adequate playgrounds provided.

For trails near Utah Lake, 136 (45%) suggested that the trail system could be improved while 80 (26%) felt it was adequate, while 88 (29%) suggested the trail system was not needed.

The following graph shows the number of responses for household needs suggested in the survey (Q-7 Household needs).

Q7L - Trails

Response	Frequency
6 [not needed]	88
5 [needs met]	40
4	40
3	64
2	38
1 [needs not met]	34
No response	115

Q7 - Household needs

Categories (top to bottom): Educational displays, Concessions, Campgrounds, Playgrounds, Fish cleaning station, Fishing piers or shoreline fishing, Garbage receptacles, Trails, Handicap access, Parking, Restrooms, Equipment rental, Boat storage, Boat docks, Passive boat launches, Motor boat launches, Sand Beaches, Picnic areas, Visitor information

X-axis: **Frequency** (0, 50, 100, 150, 200, 250)

Legend: Not needed, 5-Needs met, 4, 3, 2, 1-Needs not met

Q8: Please select the top five amenities that are most important to you and/or your household

Understandably, restrooms were the most important amenity to respondents, with 62% selecting this amenity, followed closely by sand beaches (54%), parking (46%), picnic areas (45%), trails (32%), and boat docks (27%).[5] This is consistent with respo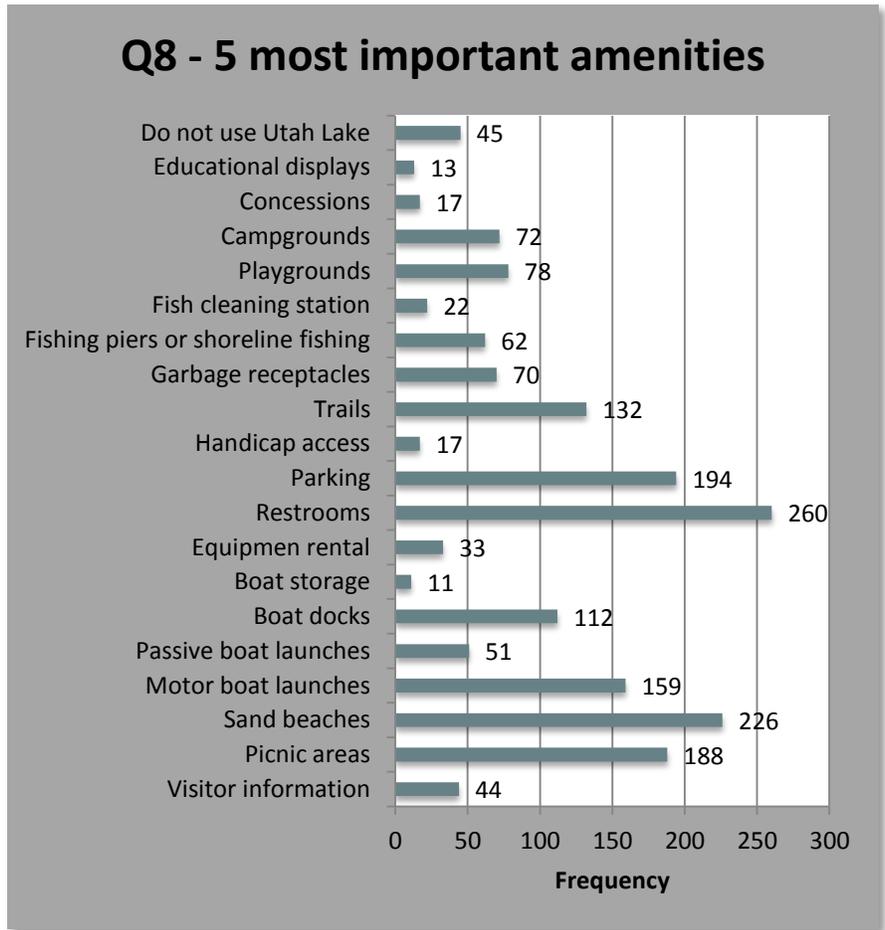ndents' attitudes towards motor boat launches throughout the survey, though the boat dock responses are somewhat inconsistent, as in the previous question where a slight majority of respondents felt that boat docks were not needed. It is unclear as to whether the respondents did not consider motor boat launches and boat docks to be synonymous.

Q9: What changes should be made to amenities that are used by you or members of your household at Utah Lake?

Q8 - 5 most important amenities

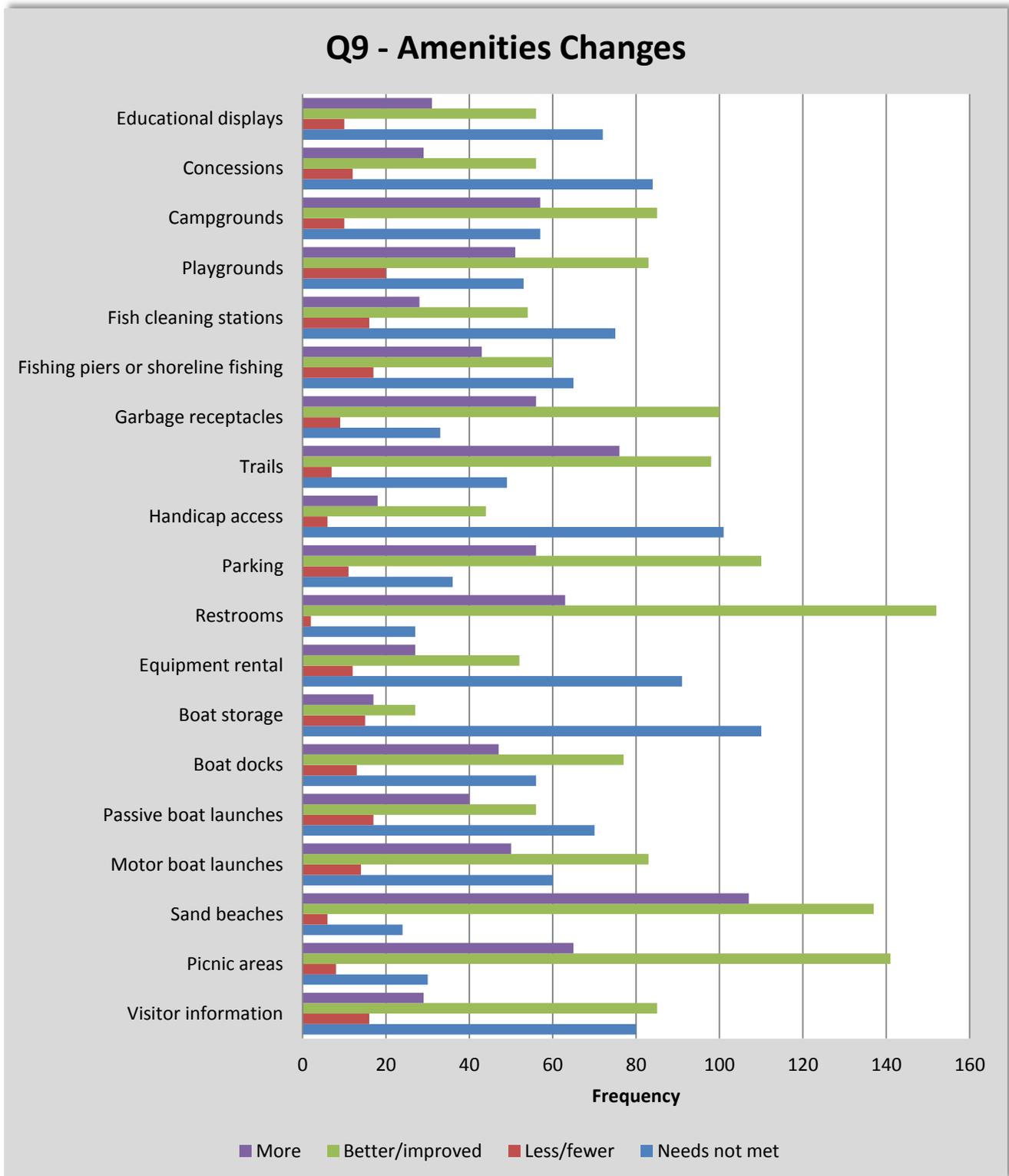| Amenity	Frequency
Do not use Utah Lake	45
Educational displays	13
Concessions	17
Campgrounds	72
Playgrounds	78
Fish cleaning station	22
Fishing piers or shoreline fishing	62
Garbage receptacles	70
Trails	132
Handicap access	17
Parking	194
Restrooms	260
Equipmen rental	33
Boat storage	11
Boat docks	112
Passive boat launches	51
Motor boat launches	159
Sand beaches	226
Picnic areas	188
Visitor information	44

Sand beaches remained a top priority amenity, with 26% of respondents indicating they would like more. More trails were also desired (18%), followed by picnic areas (15%), restrooms (15%), campgrounds (14%), garbage receptacles (13%), and parking (13%). Boat storage had the least demand, with only 4% of respondents desiring more.

The majority of respondents felt restrooms should be improved at Utah Lake, with 36%. This is followed by improving picnic areas (34%), improving sand beaches (33%), improving parking (26%), and improving fishing piers or shoreline fishing (24%).

Boat storage and handicap access were the amenities most respondents felt were not needed, with 26% and 24% respectively. Equipment rental (22%), concessions (20%) and visitor information (19%) were also at the top five of the not needed list. It is unclear whether respondents felt that way because those amenities are not needed by their household or not needed by the public. However, given the wording of the question, the assumption is that respondents answered as it relates to their household.

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[5] Percentages based on 419 responses for each amenity. This is also for questions 7, 9, 11, 13.

Respondents were evenly distributed towards decreasing amenities. Only 2 respondents felt that the amount of restrooms should be decreased, while less than 20 respondents in the other categories felt those amenities should be reduced.

Q9 - Amenities Changes

Legend: More (purple), Better/improved (green), Less/fewer (red), Needs not met (blue)

X-axis: Frequency (0 to 160)

Categories (top to bottom): Educational displays, Concessions, Campgrounds, Playgrounds, Fish cleaning stations, Fishing piers or shoreline fishing, Garbage receptacles, Trails, Handicap access, Parking, Restrooms, Equipment rental, Boat storage, Boat docks, Passive boat launches, Motor boat launches, Sand beaches, Picnic areas, Visitor information

Q10: Overall, how would you rate the physical condition of the areas of Utah Lake that you or members of your household visit?

Q10 - Rate the physical condition of areas used by household

Bar chart with Frequency on the y-axis (0 to 160):
- No response: 33
- Excellent: 16
- Good: 100
- Fair: 148
- Poor: 56
- No opinion: 65
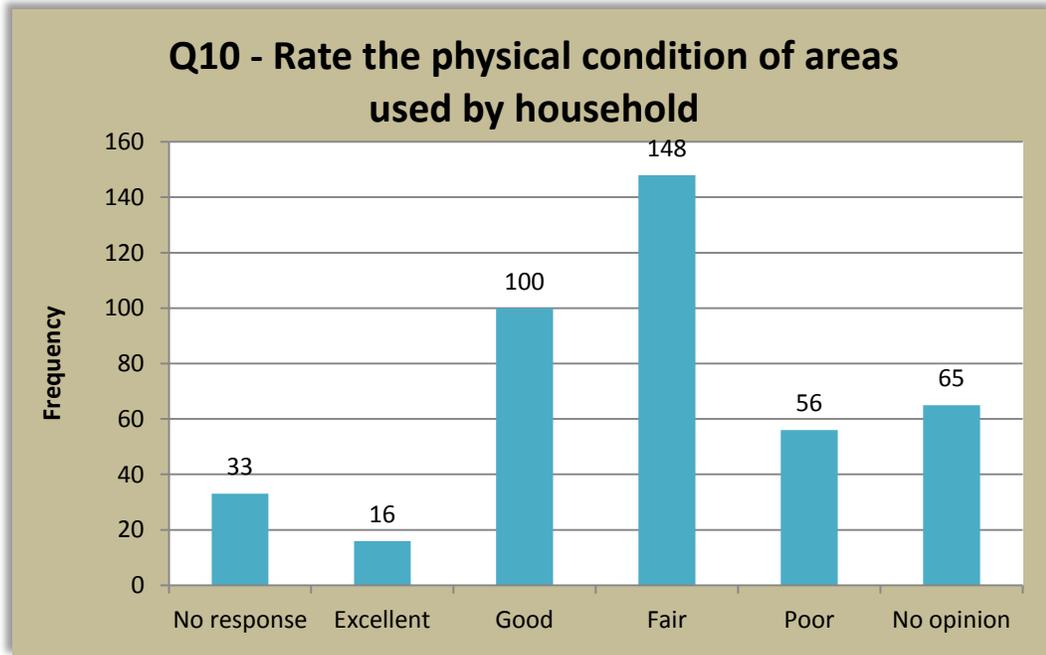
13% of respondents rated the physical condition of areas they use at Utah Lake as 'poor,' which is encouraging as to the current state of the lake and what improvements are necessary to make it a more desirable destination. 35% of respondents rated used areas as 'fair,' compared to 2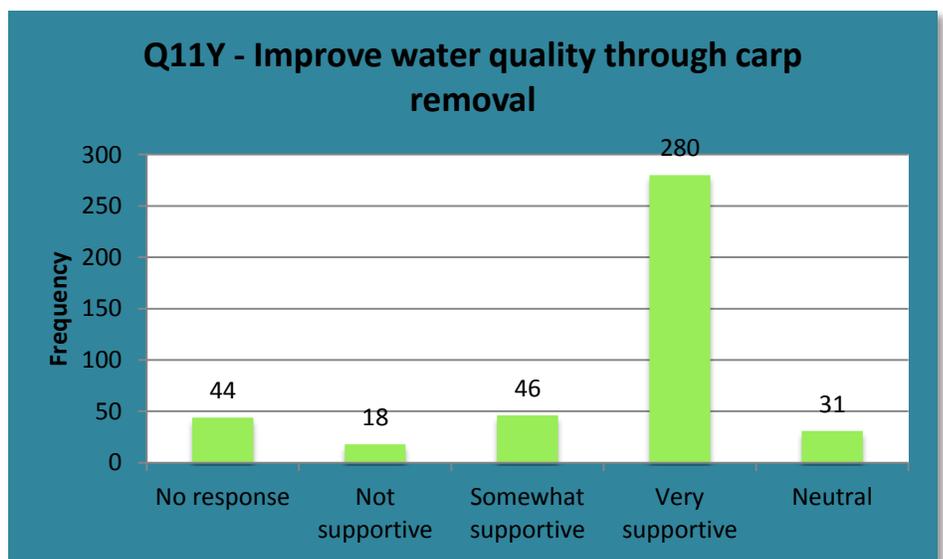4% rating it 'good.' Only 4% of respondents rated the areas they use as 'excellent,' suggesting there is room for improvement if officials wish to have the highest quality guest experience.

Q11: Please indicate the level of support you have for the following actions at Utah Lake.
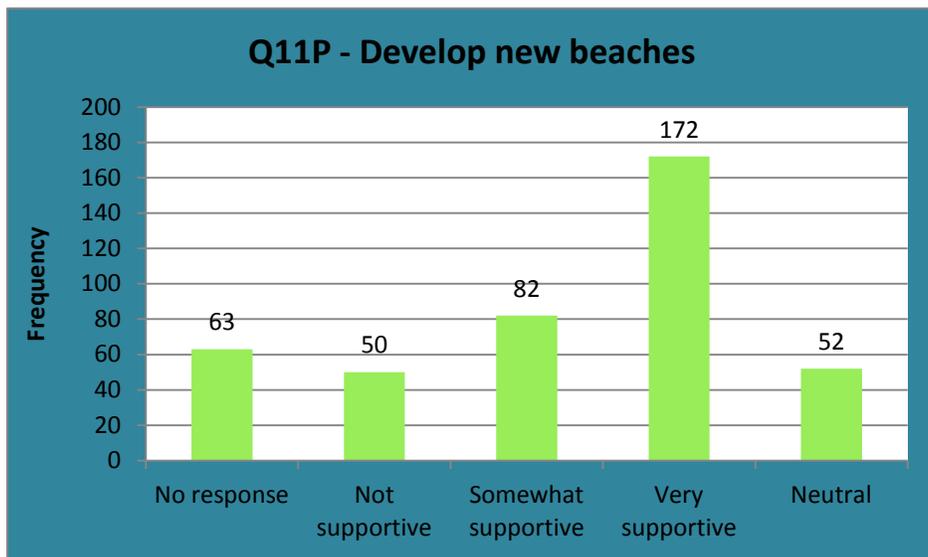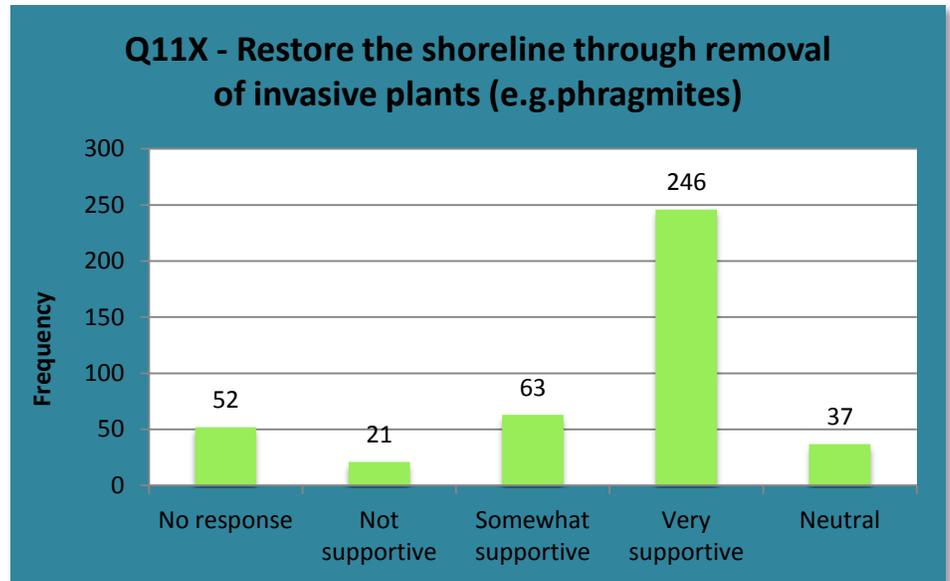
Shoreline restoration through invasive plant removal and improving water quality through carp removal were the most supported actions that Utah Lake officials are considering, with 59% and 69% indicating they were 'very supportive' of those actions. This could be due to the fact the media had recently covered the current projects at the lake, including the need and value the projects will bring to our region.

Other actions that received good support included developing new beaches and creation of an "Adopt a Shoreline" program to allow residents to help keep the lake clean. Graphs showing the most-supported improvements on the lake are below.
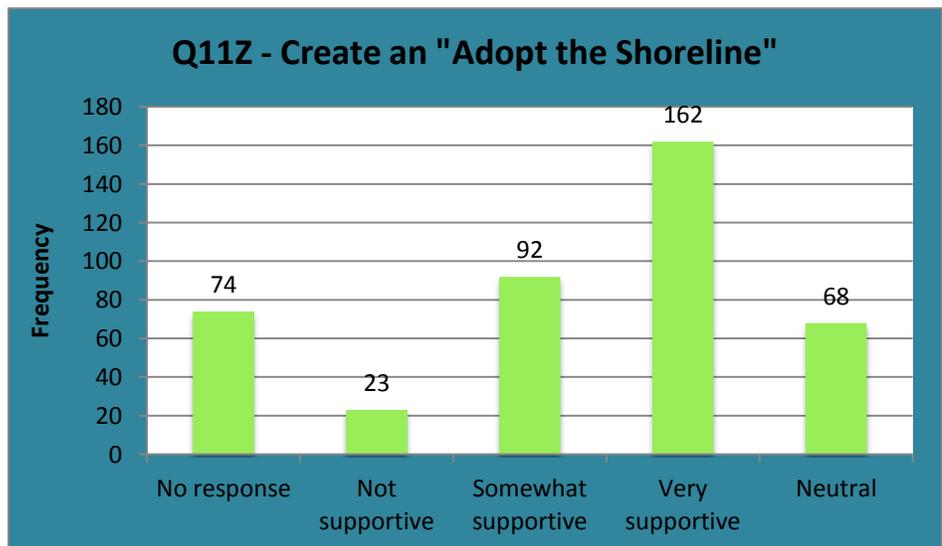
Actions that garnered the lowest levels of support, where respondents answered 'not supportive', included developing a dog park (37%), developing a resort

Q11Y - Improve water quality through carp removal

Bar chart with Frequency on the y-axis (0 to 300):
- No response: 44
- Not supportive: 18
- Somewhat supportive: 46
- Very supportive: 280
- Neutral: 31

(30%), developing a research facility (22%), developing a nature center (20%), and developing a wildlife habitat (18%).

Q11X - Restore the shoreline through removal of invasive plants (e.g.phragmites)

Category	Frequency
No response	52
Not supportive	21
Somewhat supportive	63
Very supportive	246
Neutral	37

Q11P - Develop new beaches

Category	Frequency
No response	63
Not supportive	50
Somewhat supportive	82
Very supportive	172
Neutral	52

The following page depicts a graph that indicates the number of responses for the level of support for each type of improvement.

Q11Z - Create an "Adopt the Shoreline"

Category	Frequency
No response	74
Not supportive	23
Somewhat supportive	92
Very supportive	162
Neutral	68

Q11 - Level of Support

Categories (top to bottom):
- Adopt the shoreline program
- Carp removal
- Phragmites removal
- Continue to develop trails
- Develop camping facilities
- Develop a dog park
- Develop a resort
- Develolp a research facility
- Develop a nature center
- Develop new recreation areas
- Develop new beaches
- Develop new passive launch areas
- Develop new marinas
- Develop new wildlife habitat
- Develop new access points
- Enhance existing recreation areas
- Enhance existing trails
- Enhance existing beaches
- Enhance existing passive launch areas
- Enhance existing marinas
- Enhance existing wildlife habitats
- Enhance existing access points
- Acquire property to provide access
- Acquire property for active activities
- Acquire property for passive activities
- Acquire property for open space

X-axis: Frequency (0 to 300)
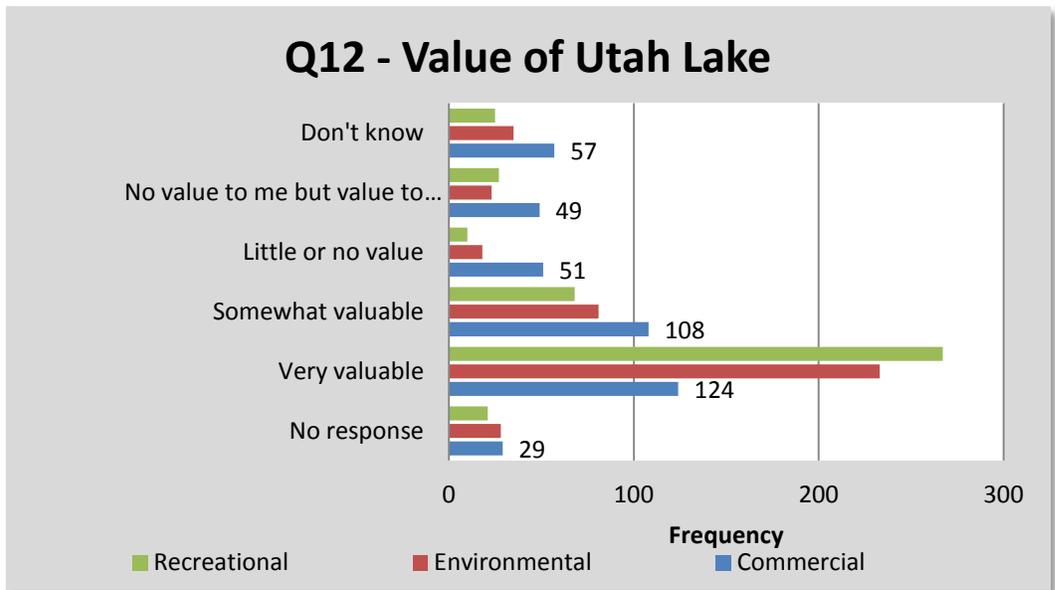
Legend: Neutral, Very supportive, Somewhat supportive, Not supportive

Q12: How valuable would you say Utah Lake is commercially, environmentally and recreationally?
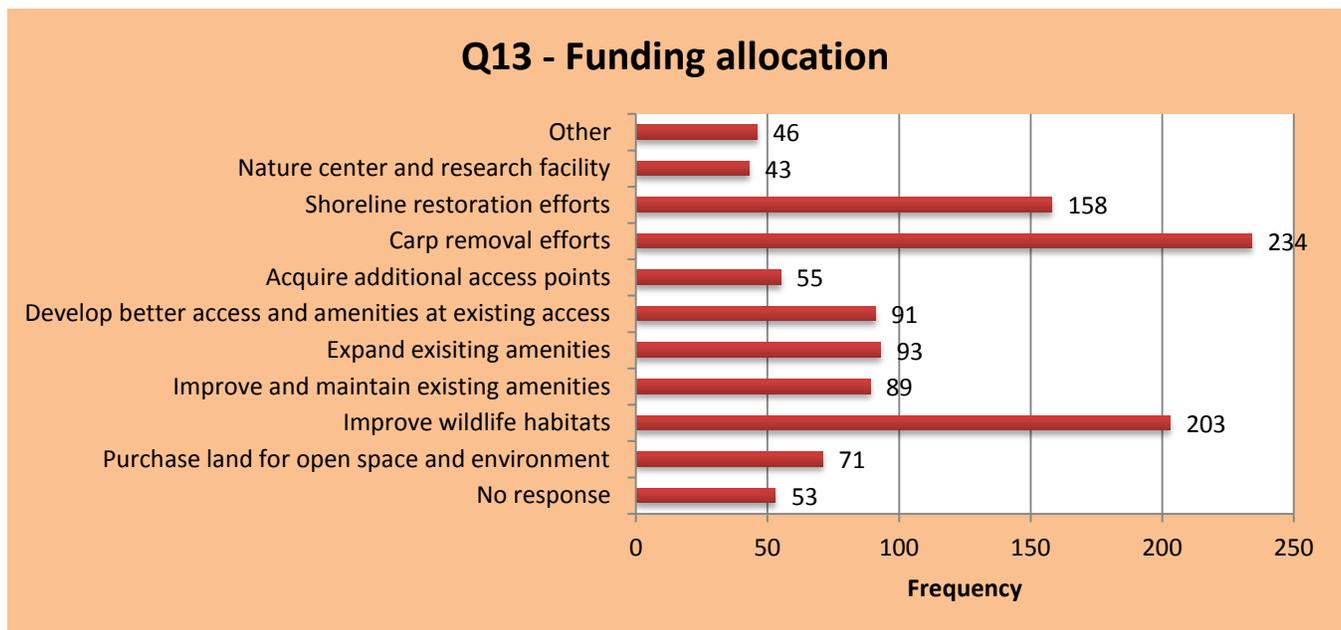
Most respondents indicated that they felt Utah Lake was 'very valuable,' both environmentally and recreationally (64%). Only 2% of respondents felt Utah Lake had 'little or no' recreational value, compared to 4% environmental and 12% commercial. This is encouraging, as it suggests that despite negative opinions respondents have towards certain aspects of Utah Lake, overall they recognize the recreational value of the resource.

Q12 - Value of Utah Lake

|	Recreational	Environmental	Commercial
Don't know			57
No value to me but value to…			49
Little or no value			51
Somewhat valuable			108
Very valuable			124
No response			29

Frequency

Q13: Please select up to three activities at Utah Lake that you would allocate funding to.

In this question, respondents were allowed to select up to three actions, without assigning an order of importance. Carp removal efforts (56%) and improving wildlife habitats (48%) were the actions respondents were most likely to allocate funding to, along with shoreline restoration efforts (38%). Funding for a nature center and research facility was the least popular action, with only 10% of respondents choosing this.

Q13 - Funding allocation

	Frequency
Other	46
Nature center and research facility	43
Shoreline restoration efforts	158
Carp removal efforts	234
Acquire additional access points	55
Develop better access and amenities at existing access	91
Expand exisiting amenities	93
Improve and maintain existing amenities	89
Improve wildlife habitats	203
Purchase land for open space and environment	71
No response	53

Q14: Which method of funding do you feel is the most favorable for improvements at Utah Lake?

Most respondents (42%) indicated that they would prefer user fees as the method of funding Utah Lake improvements, followed by legislative appropriation (34%), increased sales tax (11%), increased water/wastewater fees (8%) and increased property taxes (7%). However, 10% of respondents do not support funding Utah Lake improvements.

Q14 - Preferred method of funding for Utah Lake improvements

Legislative appropriation	Increased property tax	Increased sales tax	Increase in water or wastewater fees	User fees	Do not support funding UL improvements
143	28	48	34	177	42
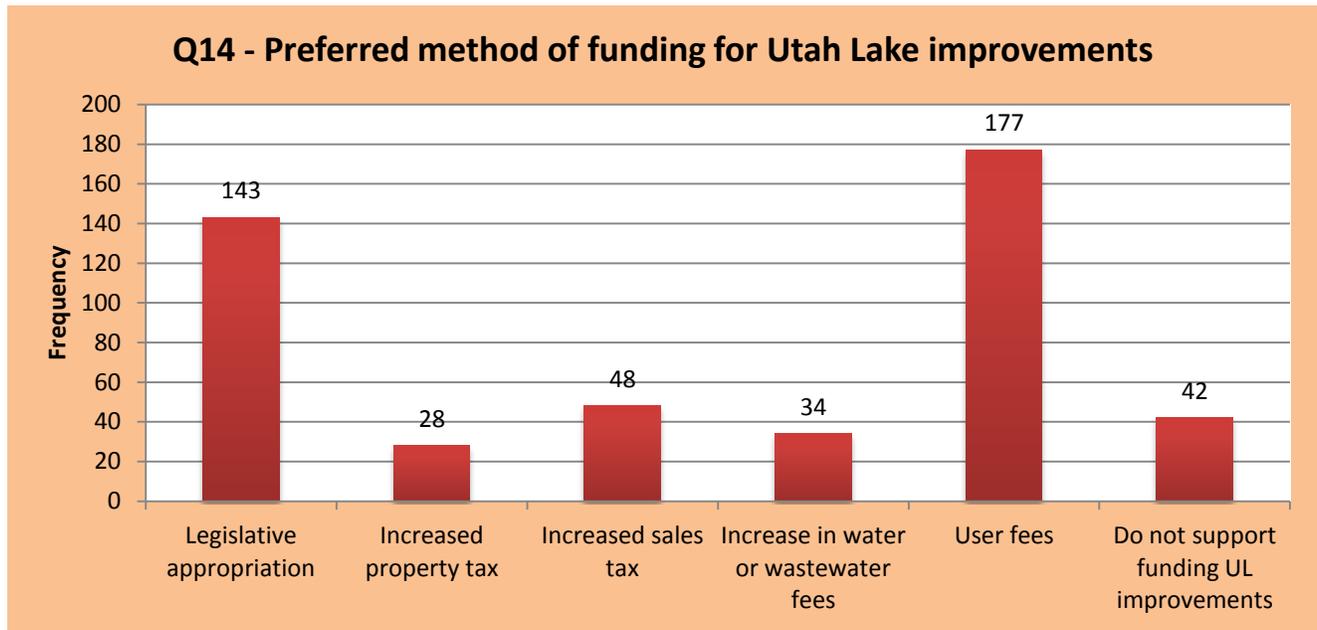
Q15: A sales tax helps share costs between residents and visitors in our county. If a vote were held to have a tenth-of-a-penny (1/10 of 1% or $.01 on a $10.00 purchase) sales and use tax for improvements at Utah Lake, how would you vote?

Most respondents (37%) indicated they would vote in favor of a tax increase to fund improvements at Utah Lake, compared to 21% who would vote against a tax increase. 17% of respondents indicated that they 'might vote in favor,' while 9% said they would vote in favor 'only if improvements were made to areas I use,' and 5% 'might vote in favor only if improvements were made to areas I use.' Additionally, 9% were unsure how they would vote.

Voting against a tax increase:

"The money has no guarantee to go directly into improving Utah Lake general fund."

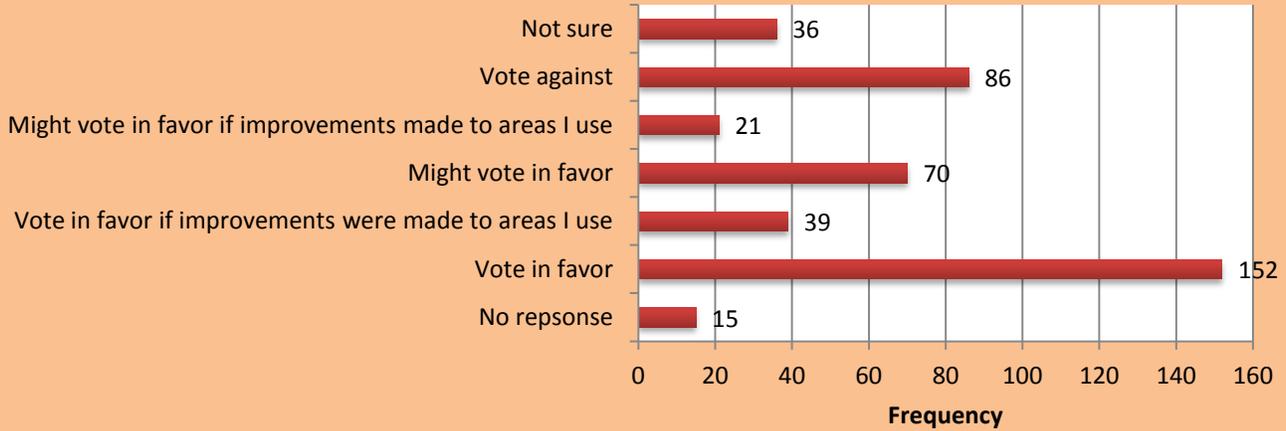"Unfair to those who don't / will never use at all. User fees."

"Would need to know exactly what improvements would be made."

"Only if taxes used for Utah Lake, not appropriated for anything else."

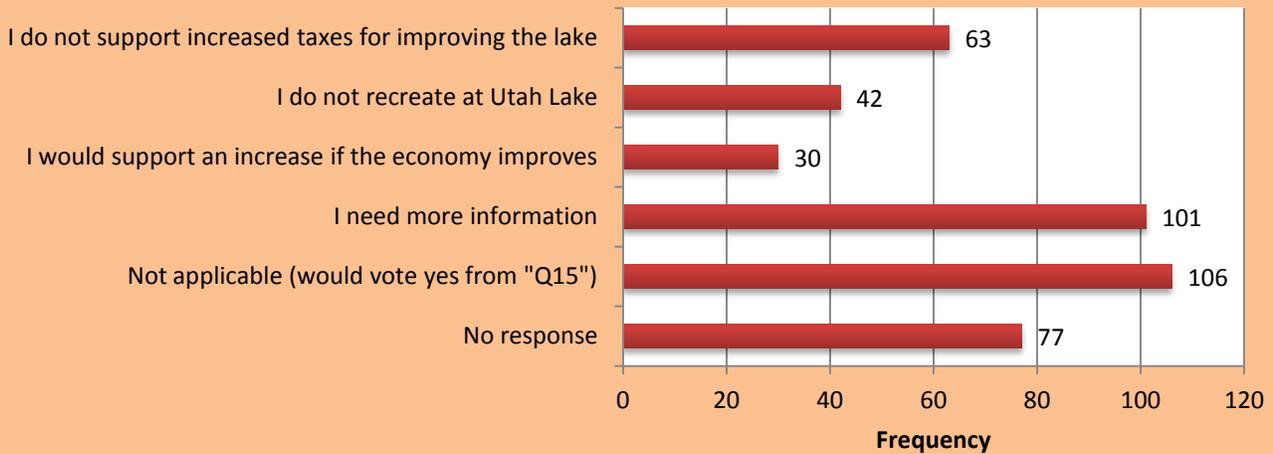"As long as it goes to this project or is a retired tax when appropriation is no longer for this event."

"I believe in a consumption/user fee model."

Q15 - How would you vote for an increased sales tax to fund improvements at Utah Lake?

Response	Frequency
Not sure	36
Vote against	86
Might vote in favor if improvements made to areas I use	21
Might vote in favor	70
Vote in favor if improvements were made to areas I use	39
Vote in favor	152
No repsonse	15

Q16: What is the major reason, if any, that you would vote against a tax increase for improving Utah Lake?

Q16 - Why would you vote against a tax increase?

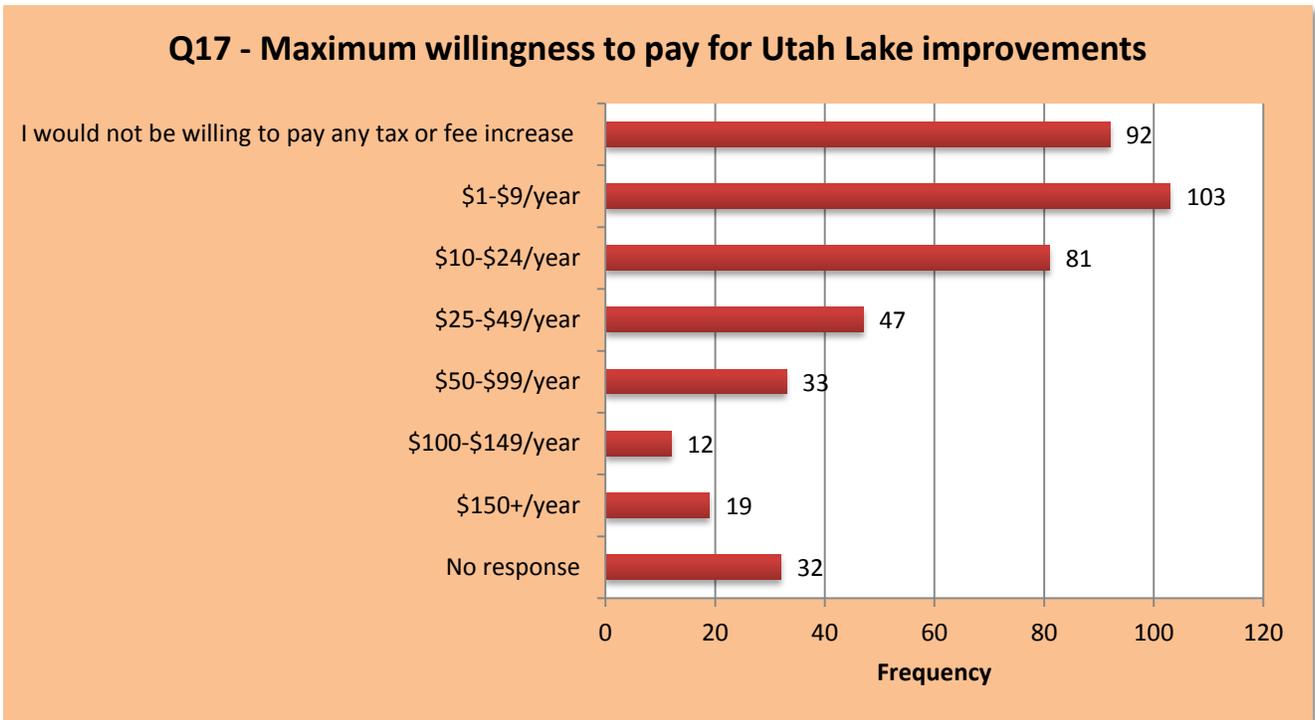| Response	Frequency
I do not support increased taxes for improving the lake	63
I do not recreate at Utah Lake	42
I would support an increase if the economy improves	30
I need more information	101
Not applicable (would vote yes from "Q15")	106
No response	77

Respondents cited needing more information as the main reason (24%) why they would vote against a tax increase for improving Utah Lake, while 15% 'just do not support tax increases for Utah Lake improvements.' Not recreating at Utah Lake was the reason 10% of respondents gave, along with supporting a tax increase if the economy improves (7%). Additionally, 18% of respondents did not answer this question.

This question yielded several open-ended responses, with respondents voicing specific concerns about any tax increases or fees related to Utah Lake improvements, as well as opinions and concerns about taxation in general.

Q17: Please select the maximum amount you would be willing to pay in increased taxes or fees to fund improvements at Utah Lake, including development of marinas, parks, trails, beaches and other amenities, as well as acquisition of open space.

25% of respondents indicated the maximum amount they would be willing to pay to fund Utah Lake improvements is an additional $1 - $9 per year, while 19% would be willing to pay $10 - $24 per year. Respondents willing to pay $25 - $49 per year (11%), $50 - $99 per year (8%), $100 - $149 per year (3%) and $150+ per year (4%) were less in number than those not willing to pay any tax increase. These suggest at this time, respondents support funding for Utah Lake improvements but are willing to bear a relatively small financial cost to do so. There are also respondents who are not willing to bear any additional costs, despite possibly supporting various actions to improve Utah Lake.

Q17 - Maximum willingness to pay for Utah Lake improvements

Category	Frequency
I would not be willing to pay any tax or fee increase	92
$1-$9/year	103
$10-$24/year	81
$25-$49/year	47
$50-$99/year	33
$100-$149/year	12
$150+/year	19
No response	32

Q18: Please select all the ways that you and/or members of your household have learned about Utah Lake during the past 12 months.
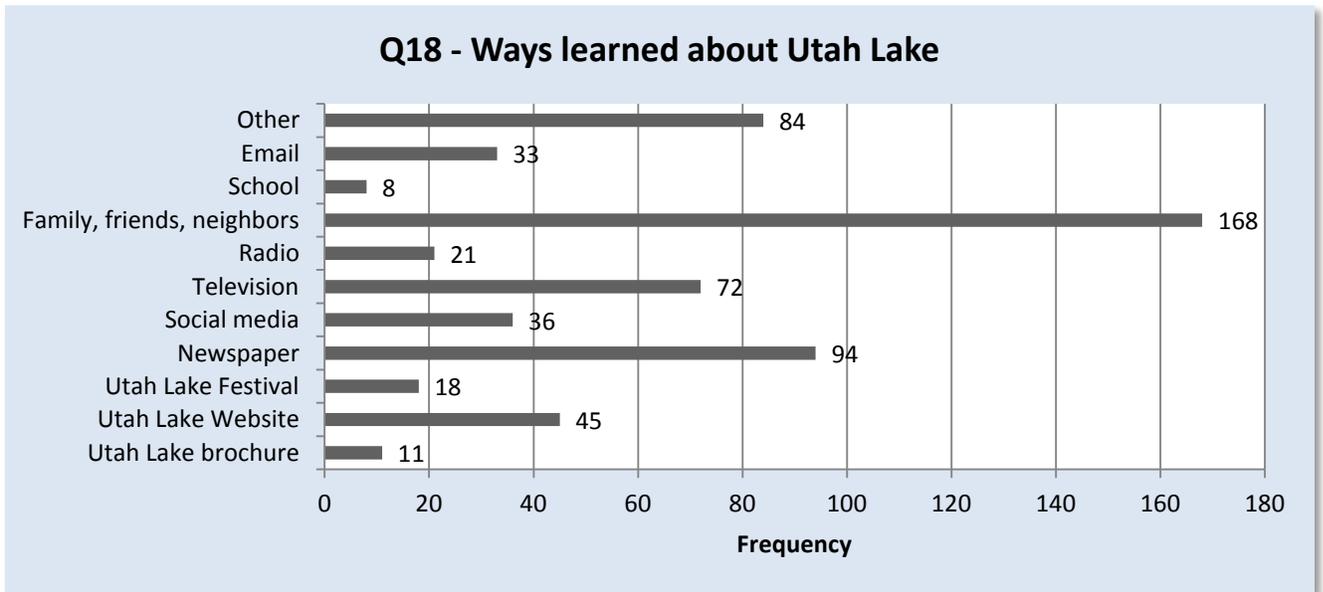
Word of mouth (via family, friends, neighbors) is the primary means respondents cited as learning about Utah Lake in the past 12 months, with 40%. Newspaper (22%), television (17%), Utah Lake website (11%), and social media comprise (9%) the top five ways respondents have heard about Utah Lake in the past year. The graph below indicates the frequency results of this question.

Q18 - Ways learned about Utah Lake

Category	Frequency
Other	84
Email	33
School	8
Family, friends, neighbors	168
Radio	21
Television	72
Social media	36
Newspaper	94
Utah Lake Festival	18
Utah Lake Website	45
Utah Lake brochure	11

Frequency

Q19A: Do you belong to any sporting, wildlife, environmental or other group with an interest in Utah Lake?

Most respondents did not belong to any groups with an interest in Utah Lake, with 88% indicating they did not. However, this may not necessarily include groups such as church groups that may not be formally associated with Utah Lake but occasionally use the amenities for social functions.

Q19 - User group participation

	Frequency
No response	15
Yes	34
No	370
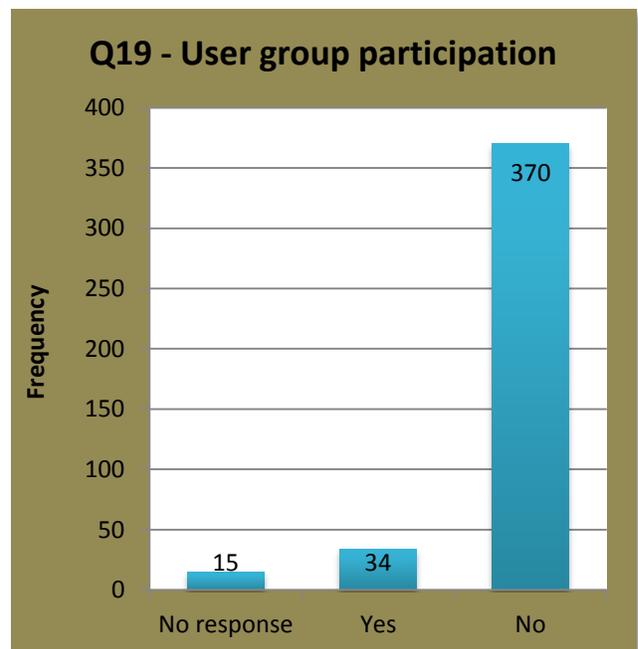
Q19B: If you answered "yes", please list the group(s).
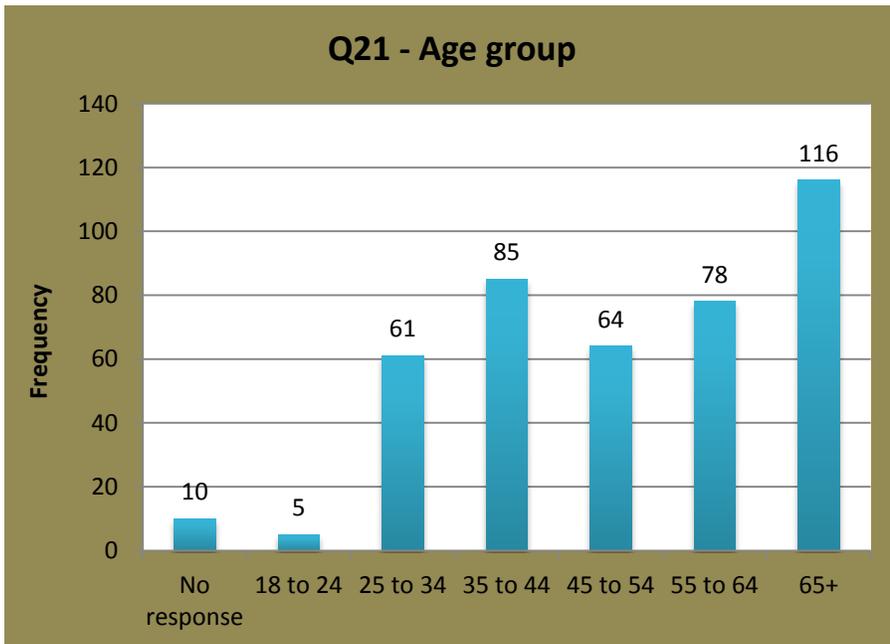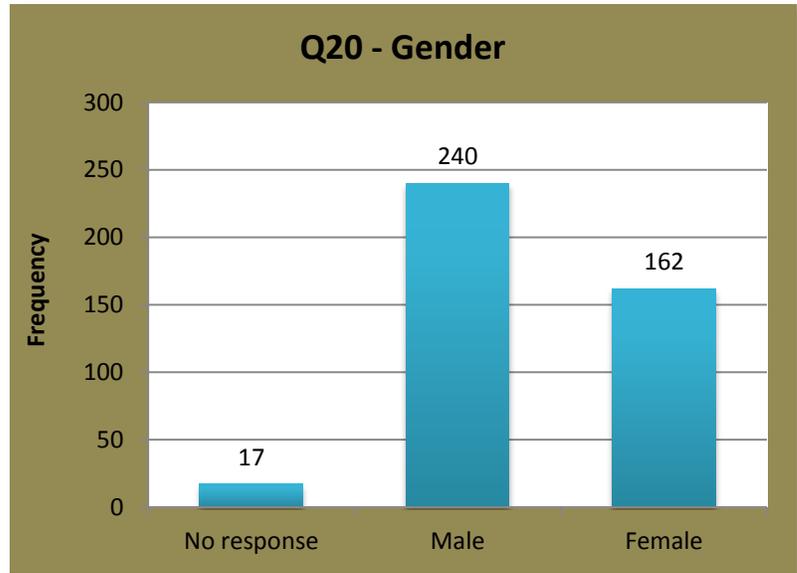
Groups that were listed include:

- Utah Waterski Club
- Utah Valley Earth Forum
- Timp Tri Club
- The Nature Conservancy

- Bonneville Cycling Club
- Scouts
- Utah Outdoors
- Utah Lake Yacht Club Sea Scout Ships

Q20: Gender

Male respondents outnumbered females, 240 to 162, with 17 not providing gender information.

Q21: Age group

45% of respondents were aged 55 and up, compared to 51% who were younger than 55. The 65+ category had the most respondents, with 116. It should be noted this age group probably had respondents from up to three or more 10-year categories, which could be why it seems inflated. Those in the 18 - 24 category had the least amount of respondents, with 5.

Q20 - Gender

No response	Male	Female
17	240	162

Q21 - Age group

No response	18 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65+
10	5	61	85	64	78	116

The older age groups, despite Utah's fairly young population, may be attributed in part to renters being limited and possibly excluded from the survey sample, as younger people typically rent in comparison to older residents. Younger residents may also live with their parents and did not respond because their parents did.

We may also have seen higher ages represented so greatly due to older people being typically more responsive to surveys for various reasons, as well as property owners may tend to have higher ages and incomes.

Q22: Household ages

In the 'under 5 years' category, 10% of respondents reported that they had two children under the age of 5 and 6% had either one child or three under the age of 5, along with 3% who had four children. Overall, the majority of respondents reported that they did not have any children in their household that were under the age of 5 (75%).
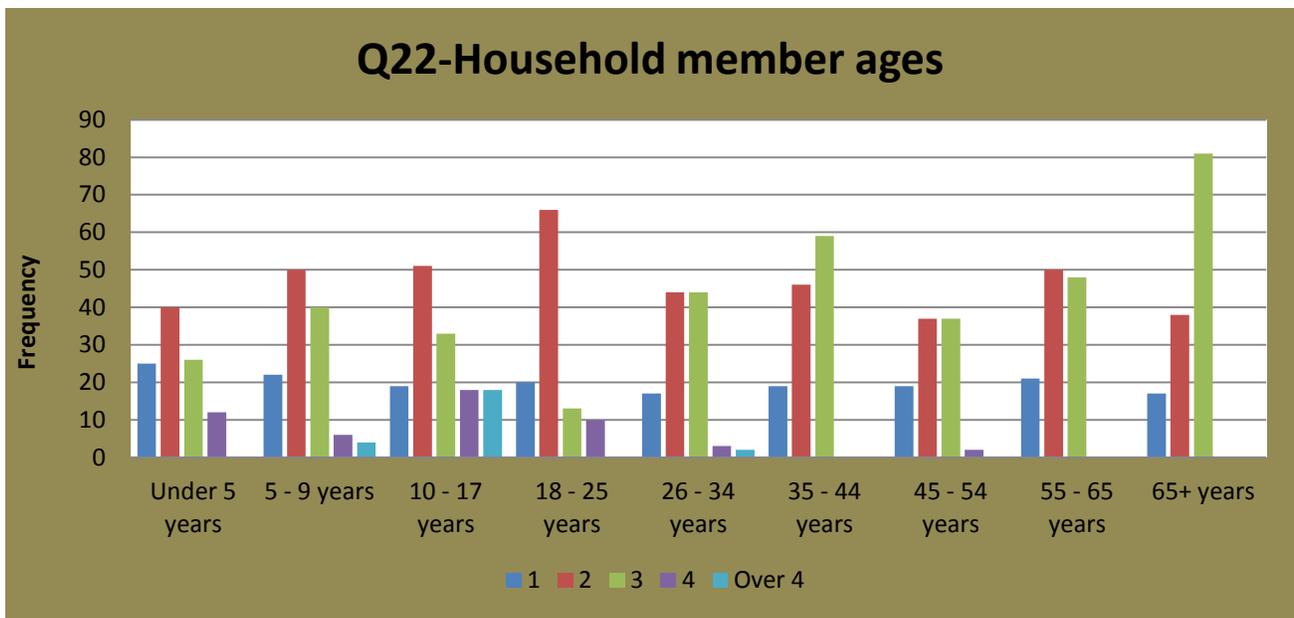
For the '5 – 9' category, 12% of respondents reported that they had two children, compared to 10% having three children and 5% having one child, while only 1% reported having four or more children that were between 5 and 9. Most respondents did not have any children living with them in this age category (71%).

For the '10 – 17' category, 12% had two members of their household within that age group, followed by 8% having three members, 4% having four and 4% having five members. Most respondents (72%) did not have anyone in this age group living in their household.

For the '18 – 25' category, 16% reported that they had two members of their household within this age group, compared to less than 1% who had five members. 3% reported three members and 2% reported four.

For the '26 – 34' category, 11% of respondents reported that they had either two or three members of their household in that age group. This was followed by 4% having one member and less than 1% have either four or five members. Overall, 74% of respondents did not have anyone in this age group in their household.

For the '35 – 44' category, 14% reported that they had three people in this age group living with them, followed by 11% having two and 5% having one person. No respondents reported that they had four or five members in this age group living with them. Overall, 70% of respondents did not have anyone in

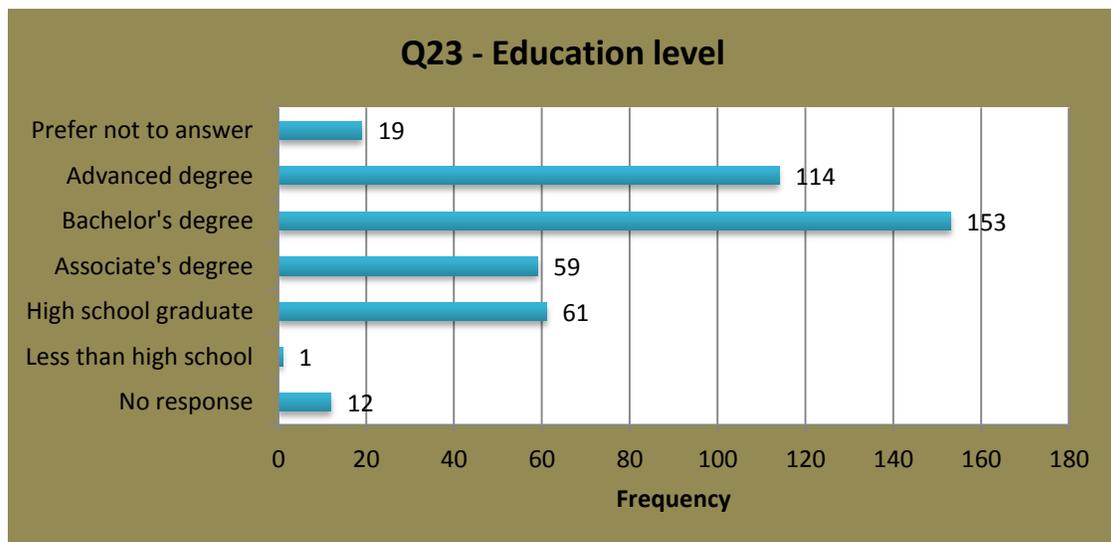this age group living with them.

For the '45 – 54' category, 16% of respondents reported that they had either two or three people in that age group living with them, followed by 4% having one person and less than 1% having four. No respondents had five people in this age group, while overall 64% of respondents did not have anyone in this age category in their household.

For the '55 – 65' category, 12% of respondents reported that they had two people in their household in that age group, followed by 11% having three, 5% had one and no respondents had four of five people in in their household.

For the '65+' category, 19% of respondents reported that they had three people in their household in that age group, followed by 9% with two and 4% with one. No respondents reported that they had four or more people in their household. Overall, 68% of respondents did not have anyone in this age group in their household.
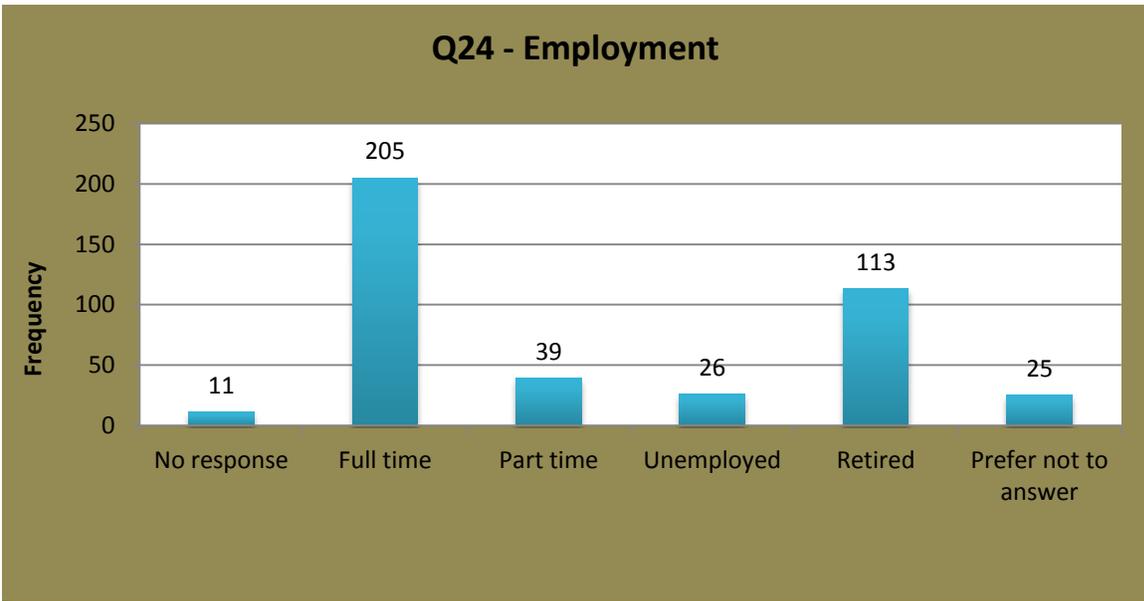
Q23: Education

64% of respondents had either a Bachelor's degree or some type of advanced degree, compared to just one respondent who had not graduated high school.
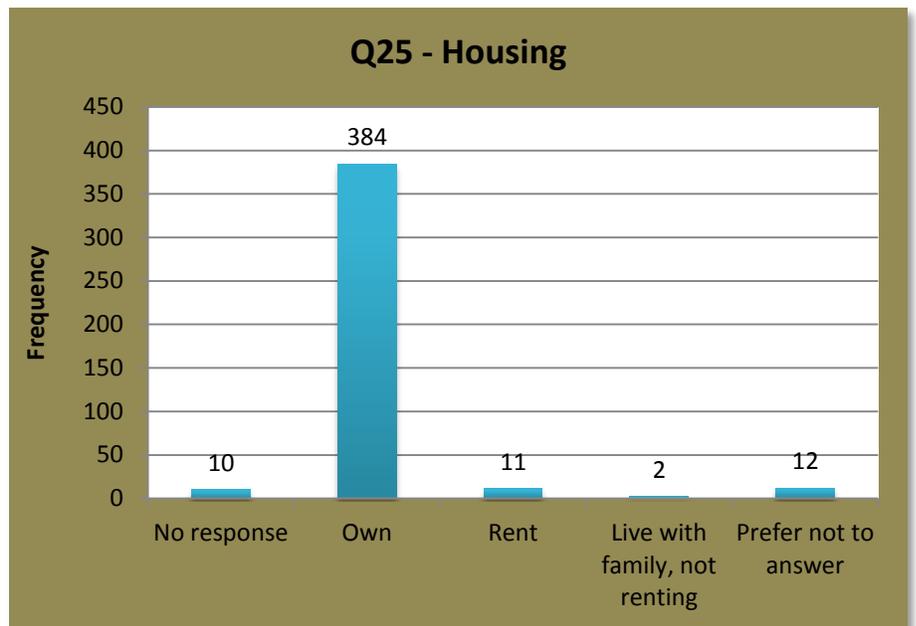
Q23 - Education level

Category	Frequency
Prefer not to answer	19
Advanced degree	114
Bachelor's degree	153
Associate's degree	59
High school graduate	61
Less than high school	1
No response	12

Q24: Employment

Most respondents were employed, with 49% reporting they were employed full time. 27% reported they were retired, consistent with the proportion of the sample that is over 65. 9% reported they were employed part-time and 6% were unemployed.

Q24 - Employment

Frequency

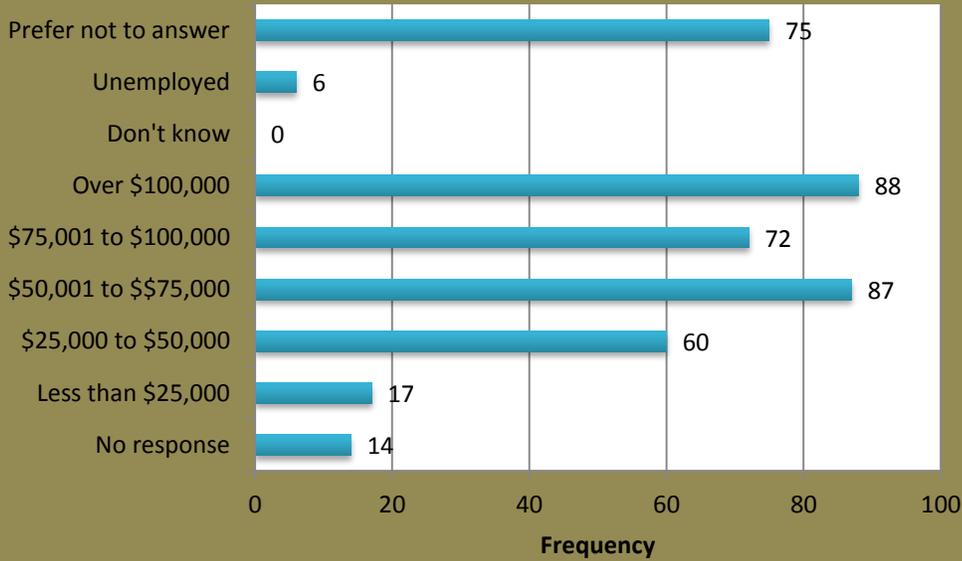|	
No response	11
Full time	205
Part time	39
Unemployed	26
Retired	113
Prefer not to answer	25

Q25: Housing

As noted in the methodology section, there is a strong possibility that renters were mainly excluded from the sample population. This theory arose due to the limited amount respondents in the survey being renters, despite census data indicating that 30% of Utah County residents are renters. Respondents reported that 92% of them were homeowners, compared to just 3% reporting they were renters.

Q25 - Housing

Frequency

No response	10
Own	384
Rent	11
Live with family, not renting	2
Prefer not to answer	12

Q26: Household Income

Respondents were fairly affluent, with 21% of respondents reporting an income of over $100,000, as well as those with incomes between $50,000 and $75,000. 17% of respondents reported they had an income between $75,000 and $100,000, with 14% reporting an income between $25,000 and $50,000 and only 4% with a household income of less than $25,000.
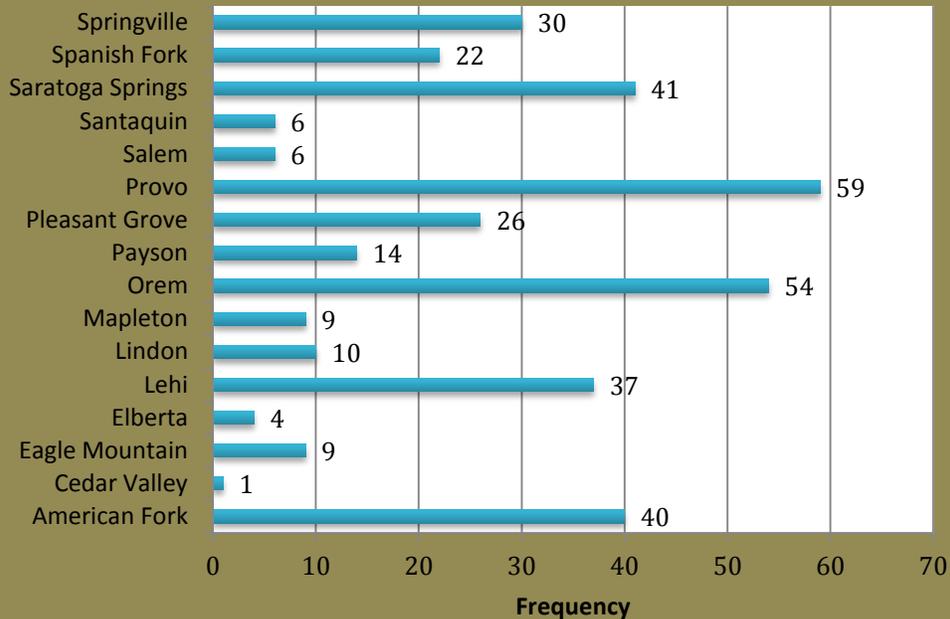
Q26 - Income

Category	Frequency
Prefer not to answer	75
Unemployed	6
Don't know	0
Over $100,000	88
$75,001 to $100,000	72
$50,001 to $$75,000	87
$25,000 to $50,000	60
Less than $25,000	17
No response	14

Frequency

Q27: Zip code

Respondents from Provo composed 14%, followed by Orem (13%), Saratoga Springs (10%), American Fork (10%) and Lehi (9%). Additional respondents were reported outside of Utah County and included Salt Lake City, Draper, Bountiful, Clearfield, South Jordan, West Jordan, Holladay, Sandy and Woods Cross.

Q27-Zip code

City	Frequency
Springville	30
Spanish Fork	22
Saratoga Springs	41
Santaquin	6
Salem	6
Provo	59
Pleasant Grove	26
Payson	14
Orem	54
Mapleton	9
Lindon	10
Lehi	37
Elberta	4
Eagle Mountain	9
Cedar Valley	1
American Fork	40

Frequency

Means – Demographic information and indices

For this portion of analysis, the mean score for each index was calculated and then compared between each type of survey. Mean values were calculated by assigning a numeric value to each of the responses we could then use, identical to the method we used to calculate frequency scores as well.[6] We also calculated the mean score for demographic variables, to supplement the ANOVA analysis, explained in further detail in the next section.

Table 2: Demographic means by survey group

Variable	Survey	Mean	Variable	Survey	Mean
Age group	Email	3.27	Income	Email	4.3
	Paper	4.36		Paper	4.26
	Website	2.25		Website	3
Education	Email	3.92	Housing	Email	1.2
	Paper	3.83		Paper	1.09
	Website	3		Website	1
Employment	Email	1.8			
	Paper	2.38			
	Website	1.06			

Table 3: Indices means by survey group

Variable	Survey	Mean	Variable	Survey	Mean
Financial support	Email	9.23	Amenities changes-improve	Email	5.36
	Paper	11.19		Paper	3.35
	Website	8.38		Website	4.88
Activities participation	Email	2.84	Amenities changes-more	Email	3.16
	Paper	1.99		Paper	1.84
	Website	7.75		Website	4
Amenities ratings	Email	68.77	Acquire	Email	9.38
	Paper	53.92		Paper	8.56
	Website	59		Website	8.5
Amenities changes-not needed	Email	5.08	Enhance	Email	17.06
	Paper	2.28		Paper	16.02
	Website	4.75		Website	15.69
Amenities changes -fewer	Email	.73	Develop	Email	21.89
	Paper	.48		Paper	20.54
	Website	.63		Website	21.5

Paper survey respondents had the highest mean age group values (45-54 and above), followed by email respondents (35-44) and website respondents (25-34). This is somewhat expected, as the paper survey was distributed mainly to property owners.

The income and education groups had somewhat higher levels in the paper form compared to the other mediums, with many respondents having at least a Bachelor's. Paper form respondents also had the

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[6] Appendix B shows the numerical values assigned to each response.

highest means for employment status as well, likely resulting from an older sample, where retirement would increase the mean.

Those in the email survey group had the highest levels of support for acquiring, enhancing and developing Utah Lake, which is not unexpected as these respondents include known existing Utah Lake users.

The paper survey respondents indicated a higher level of support for financial initiatives overall, while website respondents had the lowest mean values.

ANOVA tests for variance – survey type and age group

ANOVA is a statistical method that is used to determine if the mean values of a variable vary between two or more groups. Our null hypothesis is that there is no difference in responses between the survey types. If the results are significant, then we can reject our hypothesis and conclude that there is some variation in responses between survey types. We decided to run this type of analysis to alleviate concerns that using three different mediums and survey groups had significantly affected how people responded to various questions. The intent is that if responses do not vary significantly, then we can assume that the frequency data we collected is a generalizable representation of the population. The caveat with this has been addressed previously, where the random sample (paper survey) is under-covered, as it likely limited the rental population. We also performed this analysis between age groups, as the frequency data indicated that the respondents were mainly 45 and over and we wished to see if age had an impact on those same data. We did not perform an ANOVA analysis on the indices for variance between the surveys due to the complex nature of index, were individual causes are often difficult, if not impossible to determine with great accuracy. However, we did feel that it would be interesting to see how various index levels had differed between surveys.

The key variables that we looked at for analysis were the ones related to financial outcomes, as those are likely the most pertinent for a publicly funded project, in addition to demographic information and support for the more popular amenities and proposed actions.

The funding allocation and proposed actions variables included shoreline restoration, carp removal, improving existing amenities, and developing sand beaches.

Demographic variables used for analysis included age, education level, income and housing type.

The financial questions of the survey included:

- "Which method of funding do you feel is the most favorable for improvements at Utah Lake?"
- "A sales tax helps share the cost between both residents and visitors in our county. If a vote were held to have a tenth-of-a-penny (1/10 of 1% or $.01 on a $10.00 purchase) sales and use tax for improvements at Utah Lake, how would you vote?"
- "What is the major reason, if any, that you would vote against a tax increase for improving Utah Lake?"
- "Please select the maximum you would be willing to pay in increased taxes or fees to fund improvements at Utah Lake…"

Table 4: ANOVA test for variance
Pairwise relationships – statistically significant pairs for survey type and age group
0=Non-response, 1=18-24, 2=25-34, 3=35-44, 4=45-54, 5=55-64, 6=65 and older

IV	DV	R^2	P<t	Pairs
Survey type	Number of visits to Utah Lake in a year	.077	<.0001	Website-paper, email-paper
Survey type	Funding allocation: construct new amenities	.06	<.0001	Email-paper
Survey type	User fees as preferred funding method	.018	.024	Email-paper
Survey type	Do not supporting funding improvements	.015	.042	Model significant but no pairs listed
Survey type	Sales and use tax increase as preferred funding method	.037	.0004	Email-paper
Survey type	User group participation	.046	<.0001	Email-paper
Survey type	Age group	.114	<.0001	Email-paper, email-website, website-paper
Survey type	Education level	.017	.03	Email-website, paper-website
Survey type	Employment status	.04	<.0001	Email-paper, paper-website
Age group	Number of visits to Utah Lake in a year	.035	.02	3-6
Age group	Support for developing new beaches	.083	<.0001	2-6, 2-0, 3-6, 3-0, 4-0
Age group	Funding allocation: shoreline restoration	.085	<.0001	2-6, 2-0, 3-6, 3-0, 4-0, 5-0
Age group	Funding allocation: carp removal	.04	.0107	0-2, 0-3, 0-4
Age group	Funding allocation: improve existing amenities	.048	.0024	0-1, 0-2, 0-4, 0-5
Age group	Funding allocation: construct new amenities	.046	.0034	2-6, 3-6
Age group	Does not support funding improvements	.03	.045	Model significant but no pairs listed
Age group	Support of sales tax increase for improvements	.042	.007	0-4, 0-6
Age group	Reason to vote against a sales tax	.047	.002	0-2, 0-5, 0-6
Age group	User group membership	.26	<.0001	0-1, 0-2, 0-3, 0-4, 0-5, 0-6
Age group	Education level	.155	<.0001	0-1, 0-2, 0-3, 0-4, 0-5, 0-6
Age group	Employment	.32	<.0001	0-6
Age group	Housing	.056	.0006	0-1, 0-2, 0-3, 0-5, 0-6, 1-4
Age group	Income	.054	.0008	0-3, 0-5, 2-5

alpha = .05 for statistical significance

The results in Table 4 indicate the significant differences that were found comparing the means of variables separated by survey type, as well age group. [7] The results do show us that respondents did vary somewhat demographically by survey type, though surprisingly, there was no statistical variance of housing type between the surveys, possibly because the majority of respondents were homeowners who received the paper survey.

Though there were several models that were significant, none of the variations of the means were very strong. In the social sciences field, an r-squared value of .5 or higher can be considered a strong model, though in some fields .3 and .4 can be a strong model. In our findings, none of the relationships that were significant had a value in that realm and within the age group analysis, occurred mainly between the non-respondents and the remaining age groups. The results indicate to us that while there was statistical significance in the variance of some responses by survey type (there was a difference between the mean responses), in reality, the variations were not strong.

An additional point we must consider is that many of the statistically significant differences resulted from the differences from non-response and individual age groups when means were compared by age group. If non-response was omitted, we may see less significant difference in the mean responses for the chosen questions. Non-response may be an issue here and moving forward, much effort should be placed on increasing response rates to mitigate issues of non-response bias.

Regression

The focus of the regression model is to determine which, if any, variables are significant predictors as to how someone may respond to our financial questions. For this analysis, we continued to focus on the financial variables and used a series of control variables, including demographic information, as well as responses to questions about specific topics such as carp removal. Significant results are reported in the table below.

Overall, user group affiliation proved to be the most significant predictor of all the variables across the models, with those who indicated that they had membership with a user group that was affiliated with Utah. Number of visits to Utah Lake was a significant predictor in multiple models, including support of a sales and use tax, user fees and legislative appropriation. However, as in the case with the ANOVA results, the impact of many of the significant variables were fairly weak.

As the focus of the survey was to gauge public opinion using frequency of responses, we did not rely as heavily on this type of analysis.

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[7] Results are further examined in Appendix D, where pairwise relationships were also calculated. Pairwise analysis shows us specifically which surveys (or other independent variables) had significant differences with each other within the model as a whole. Box plots indicating mean values for key questions stratified by age and survey groups are located in Appendix D.

Table 5: Statistically significant results - regression

Model	Variable	Parameter	Pr > f
Funding method-legislative appropriation		.123	<.0001
	Number of visits	.07	<.0001
	Funding allocation-restore shore	.064	.002
Funding method-property tax		.08	.0013
	Age group	-0.02	.014
	Number of visits	.021	.015
	Commercial value	-0.02	.021
	Paper survey type	.16	.02
Funding method-increased sales tax		.073	.003
	Carp removal	.089	.006
Funding method-user fees		.06	.023
	Number of visits	-0.043	.01
Does not support funding		.124	<.0001
	Environmentally	.050	<.0001
	Restore shoreline	-0.03	.01
Sales and use tax		.214	<.0001
	Number of visits	-0.134	.03
	Recreational value	.34	.0007
	User group participation	.638	.004
	Funding allocation-restore shore	-0.159	.04

Recommendations

Based on the responses received from this survey, efforts should be made to both begin and continue efforts to improve the lake in the following ways:

Improved Access

Sand beaches were frequently mentioned in open comment questions, as well as scoring high marks as an amenity that needs to be improved and increased in quantity. Efforts should be to maintain the existing beaches on the lake as well as creating new beaches for recreation.

Restoration of the lake shoreline, including continued efforts to remove phragmites was widely supported by the survey results. Efforts to continue the phragmites removal program, including ongoing maintenance of the removal work, should be a priority.

Improving access to the lake, including enhancing existing access points as well as creating and acquiring additional access points around the lake was widely supported. Examples of access improvements that were supported by the survey include construction of new and maintenance of existing trails; creation of restroom and parking facilities; creation of overnight camping facilities; creation of picnic areas and playgrounds; construction and maintenance of trails.

Despite the perception of the public that there are adequate launches for motor boats and their needs are met, the increasing population and the often overcrowded marinas indicate that expansion of existing marinas or creation of new marinas in strategic locations should still be considered a priority. As planning efforts for the lake continue, accommodating this apparent future need should not be ignored because of the current opinions of the general public.

Water Quality

Carp removal received great support from the survey. Efforts to continue the removal program should be a priority. Media outreach discussing the progress of the project could also be helpful.

Measures focused towards improving overall water quality or cleanliness, including dredging, was also frequently discussed as a priority to respondents. Efforts should be made to explain the existing water quality characteristics to the general public to assure them that the water is clean. This includes the consequences of large scale dredging.

Increase communication to community

Open comments indicated that some respondents had not heard much, if anything about Utah Lake and would like to know more. This could increase support of improvements and increased fees if community members felt they knew more about the challenges Utah Lake is facing at meeting the needs of its users. Some respondents indicated they knew little to nothing about Utah Lake, while others only knew of Utah Lake as a result of what they heard secondhand from friends, family and neighbors. While this is an important medium to spread knowledge of activities and proposals for Utah Lake, increasing the organization's presence on a larger scale is critical to continue to develop the area appropriately.

Transparency of increased taxes and fees

Several respondents had expressed concern in open comments [Appendix E] that in general, they do not support any type of tax increase to fund improvements at Utah Lake. If community members and users could be shown where their money was being used and specific improvements that were being made as a result of their contribution, this may increase the overall support community members have towards to financial support of improvements.

Encourage participation in user groups that frequent Utah Lake

Efforts should be made to reach out to user groups that would directly benefit from improvements to Utah Lake. These groups can provide a catalyst to participation and help show public support for improving the lake. They can also help identify the best locations for appropriate improvements and will be a key in maintaining the improvements once they have been completed. They might also be a good population to approach about future Adopt-A-Shore participation.

Future survey efforts and improvements

The real benefit of outreach surveys is to gauge public opinion to direct efforts and set priorities of achieving the goals of the Utah Lake Master Plan and will become apparent over time. Regular outreach efforts, including surveying, to determine where efforts should be focused on Utah Lake should be continued and improved.

The first measure we can do to improve survey quality is to increase our sample population to include younger respondents, as the majority of respondents in this survey were over 45. We cannot necessarily increase the total number of younger respondents, as we cannot force people to respond but we can increase the sample population in an attempt to get a larger response. A possible means to achieve this could be through a partnership between BYU, UVU and community colleges, where those institutions could provide us with either email or physical addresses of students to contact them with survey information. Email may be preferable in this instance, as the trend is that most students have email access either through school, home or smartphones, and it is also less expensive to reach a large group of people through this medium. Reaching out to students may also increase the rental population, as students that do not live at home or on campus are typically renters.

We also need to reach the rental population more, as only 3% of respondents were renters (most of that through website and email respondents). We cannot know for sure that all renters were excluded or simply did not respond because we had 76% of paper surveys unreturned at the time analysis was completed. At that point, three respondents had indicated they were renters but it seems likely less renters would appear in a sample drawn mainly from people who pay property taxes. Measures to accomplish this may include using random addresses addressed "To Current Resident," rather than relying on property tax addresses addressed to specific people. Using the email addresses that other departments have collected may also be a possibility, but those people could not be part of the random sample, as they are preselected by being affiliated with other Utah DNR departments in some capacity. They could be added to the targeted sample pool, greatly increasing that population.

There are also additional questions that can be added to the survey in some capacity, that are focused on gauging the level of knowledge that respondents have about the biological/ecological components and

challenges the lake has. As most respondents indicated that they felt the lake was dirty and the number one reason why they do not visit it more, additional questions that determine why they think the lake is dirty could be helpful. Those results could potentially steer public education campaigns about Utah Lake and clear up misconceptions potential visitors may have.

Another measure we could take to save costs and conduct public opinion surveys more frequently is to transition to a more web-based approach. This could be potentially be accomplished by sending out informational cards to random sample of residents with the purpose of the survey and a link to a web-based survey, though the caveat to this is that residents without internet access could be excluded. Reminder cards could also be mailed out to this same residents to encourage participation.

Finally, we could also make copies of the survey available in Spanish, for the non-English speaking population. There are likely Utah County residents who are excluded from the survey due to a language barrier that may be frequent lake users. They may also be limited in representation, further demonstrating the need to select addresses in general rather than addresses of people who pay property taxes.

Seek long-term funding from a variety of sources

Efforts to identify and obtain acceptable long-term funding to make desired improvements to the lake should be made through a variety of sources, including legislative appropriations, user fees, tax increases, private donations and sponsorships, and other approaches as necessary.

Appendices

Appendix A

Complete copy of the survey that was mailed out. This version is worded identically to the ones that were distributed electronically.

Appendix B

Complete copy of the codes used for data analysis, including variable names and the numerical assignments to each response. One code sheet is the original form as it was entered into Excel and the other sheet is the renamed variables once they were imported into SAS 9.3. These codes and variables names are the ones used in the report.

Appendix C

All frequency graphs that were created, including those that were not in the report. Graphs are arranged by survey type, including a set that was created by combining all survey types (featured in the report).

Appendix D

Complete list of all statistical analysis conducted. This includes much data that was not featured in the report, including all frequencies, means, ANOVA and regression models.

Appendix E

Unedited comments that were made on the open-ended questions, arranged by category and whether they were positive or negative.