RESULTS OF A HUMAN USE SURVEY FOR
SHORELINE AREAS OF
LAKE UNION, LAKE WASHINGTON, AND
LAKE SAMMAMISH

Sammamish-Washington Analysis and Modeling Program (SWAMP)

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EXECUTIVE SUMMARY

The King County Department of Natural Resources has developed the Sammamish-Washington Analysis and Modeling Program (SWAMP) to assist the Wastewater Treatment Division's capital planning process. One goal of this project is the characterization of current human recreational patterns along shoreline areas of Lake Union, Lake Washington and Lake Sammamish. A survey questionnaire was developed and implemented to collect information on various recreational activities throughout the project area. The goals of the SWAMP human use survey are:

1. To characterize patterns of people recreating on the shorelines of Lake Union, Lake Washington and Lake Sammamish.
2. To identify those locations in the project area that are frequently visited by recreational users.
3. To provide exposure information for use in a human health risk assessment for the SWAMP project area.

The results provided herein represent the first known study of freshwater recreational and fish consumption patterns conducted around Lakes Union, Washington, and Sammamish. Survey locations in this area identified with relatively high use include: Gene Coulon Park, Lake Sammamish State Park, Gasworks Park, Magnuson Park, Seward Park and Kennydale Park. Recreational patterns were detailed for fifteen frequently observed recreational activities (i.e., walking, sitting, biking, playing in sand in or away from water, playing sports, picnicking, nature observation, wading, swimming, scuba diving, surfing, water skiing, jet skiing and boating). Estimates of exposure duration and exposure frequency are provided for each activity. In addition, recreational fishing and consumption patterns are reported. A summary of significant exposure related information from the SWAMP survey follows:

1. The most frequently reported recreational activities included: walking/running/hiking (26%), sitting/sunbathing reading (22%), boating (10%), nature observation (9%), and swimming (7%).

2. People recreating in the SWAMP area have a higher potential for exposure from water related activities than sand/sediment related activities.

3. Geographical, age, gender and ethnic differences were identified for measures of exposure duration and exposure frequency for a number of activities. Details are provided in Section 4.0 and 5.0.

4. The overall mean fish consumption rate for anglers in the SWAMP area was estimated to be 10.3 grams/day. Children of anglers consumed a mean of 7.2 grams/day.

5. The major fish species preferred by SWAMP anglers included: perch, trout, bass, and salmon.

6. Site-specific exposure factors differed from US EPA recommended exposure factors for some activities.

1.0 INTRODUCTION

The King County Department of Natural Resources, Water and Land Resources Division has initiated the Sammamish-Washington Analysis and Modeling Program (SWAMP) to assist wastewater capital planning, habitat conservation, salmon recovery and watershed planning efforts by collecting and analyzing water quality information. To better understand risks to humans in the study area, a task was included in SWAMP to characterize current human recreational patterns along shoreline areas of Lake Union, Lake Washington and Lake Sammamish.

To accomplish this goal, site-specific sets of questions (i.e., survey instruments) were designed and used to gather information on recreational activities conducted in the project area. These activities can expose humans of all ages to potentially adverse chemicals and/or pathogens in the water. Outdoor recreational surveys have been frequently used to assist in water capital planning, land use planning or to assess risks to the surrounding population [King County 2002a; Burger 1997; Interagency Committee for Outdoor Recreation (ICOR) 2003]. The SWAMP survey was conducted over a period of one year, June 2002 to May 2003. The information collected during the survey was used to characterize the duration and frequency of occurrence of different recreational activities observed within the project area. These data were then used to describe the general patterns of human recreation across the site, which will help define exposure in the human health risk assessment of the SWAMP area.

An additional goal of this survey included describing potential exposure pathways and critical recreational activities for the assessment of risks from potential contaminants in Lakes Union, Washington, or Sammamish. A critical component of any risk assessment is the exposure assessment, an estimation of the type and magnitude of exposures from a contaminated site (US EPA 1989). The estimation of exposure typically includes a number of factors (e.g., time or frequency) that describe the nature of the each exposure-related behavior. The US EPA has reviewed the literature and provided recommendations for various exposure scenarios (US EPA 1989, 1999, 2002). However, these recommendations are not always relevant to every site or geographic location, thus, site-specific exposure factors were investigated in the current study.

The methods and results of the survey are provided in the main body of this report, and in two accompanying appendices. Tables and figures containing qualitative or quantitative results from the survey are provided in the appendices in the order they are referenced throughout the text.

2.0 SURVEY METHODS

The survey was the main tool used to identify, (1) where people could be exposed to waterborne constituents, (2) how they could be exposed and (3) the duration of their exposure.

2.1. SURVEY LOCATIONS

The SWAMP area includes three water bodies: Lake Union and the Ship Canal, Lake Washington, and Lake Sammamish. The survey design began with a review of public information on shoreline parks throughout these lakes. This included a review of city, county and state public park web pages, and the Washington State Thomas Guide. In addition, a preliminary assessment of existing park use information was conducted (King County 2002b) to identify any pre-existing recreational data. This review did not identify any previous surveys of shoreline use within the SWAMP area, and park officials reported minimal information regarding park usage.

Following the preliminary assessment, each of the identified shoreline parks was visited and evaluated for inclusion in the survey. A park was included in the survey if (1) it was publicly accessible (i.e., no private parks included) and (2) had direct water access (i.e., from a designated beach area, dock or boat launch). A list of the parks included in the survey by water body is shown in Table 1 and presented geographically in Figure 1. Those parks listed in Table 1 were visited at least once during the survey (i.e., June 2002 to May 2003).

2.2. SURVEY FORMS

Three survey forms were developed and approved by the SWAMP project team. The survey instruments were modeled after those used in a previously successful survey conducted by King County (2002a) and from US EPA survey guidance (EPA 1998). A description of the forms is presented below and example forms are provided in Appendix A.

- ***Survey Travel Log*** – This survey form was primarily for record-keeping purposes. Anytime a surveyor arrived at a site, they recorded the location, date, time, and weather conditions. Weather conditions were identified based on surveyor observation; exact temperature or precipitation measurements were not conducted. Upon arrival at each location, a brief 'head-count' of people recreating was conducted. The head count documented the number of people recreating on the shore or in the water and those fishing, based on the surveyors' best professional judgment. It is important to note that the head count represents a snapshot in time of the number of people recreating at the site when the surveyor arrived. This data cannot be readily used to predict total yearly park usage; however, it can give an indication of the relative use of each site.

- ***Water and Shoreline Use Survey*** – The Water and Shoreline Use Survey focused on identifying the type and frequency of activities being performed by each respondent. Survey respondents were asked about each activity in which they were involved on the day they were surveyed. Further questions were posed to determine how long and how often they engaged in each activity. In addition, if the activity involved contacting water or sediment, additional information was collected on the type of clothing the respondents were wearing and the surfaces of the body that come into contact with water or sediment, if any. Finally, demographic information was collected from each respondent (i.e., age, gender, and ethnicity).

The Water and Shoreline Use Survey and Freshwater Fish Consumption Survey forms were translated into Spanish, Japanese, and Filipino in the event that the survey participants did not speak English as their first language. These languages were chosen based on the high frequency of contact with these ethnic groups in similar surveys conducted in King County (Simmonds et al. 1998; King County 2002a). If a surveyor identified someone as non-English speaking, they presented their introduction card describing the survey and asked him or her to participate (See Appendix A)

- ***Freshwater Fish Consumption Survey –*** This form focused on identifying the fishing frequency and consumption patterns of anglers within the SWAMP area. Respondents were asked how long and how often they fished at each location. Information was gathered on the types of fish each angler preferred, as well as, what they collected. Length and weight measurements of the angler's catch were recorded (if allowed). The typical portion size of fish consumed during a meal was collected based on the respondent's best estimate, using a visual representation of typical serving sizes (see Appendix A). The visual aid was that same as that used by Williams et al. (2000) and Schaeffer et al. (1999). The respondents were also asked to estimate the number of times they ate self-caught fish[1] in the previous month (i.e., 30 days). Information on preferred cooking techniques was also collected. Finally, demographic information was recorded for each respondent. The fish consumption survey forms were also provided to the surveyors in three non-English languages as previously described.

2.3. SURVEY TRAINING

Advertisements were posted at local colleges and universities for a part-time 'shoreline surveyor.' Seven applicants were hired for the survey and each applicant attended a training session. An initial meeting was held over a period of 2-3 hours. During this meeting, the surveyors were informed of the goals of the project, trained on how to implement and complete the survey forms, and trained on techniques to avoid introducing bias. After the initial training, surveyors were sent into the field to practice using the survey forms until they became comfortable and completed the forms correctly. Completed surveys were monitored throughout the duration of the survey to ensure consistency.

2.4. SURVEY SCHEDULE

The survey was conducted using a stratified random design. Survey locations were visited randomly throughout the year based on day of the week (i.e., weekday or weekend) and time of day (7am to 8pm). Surveys were also conducted during varying weather conditions. Survey frequency was intensified in the spring and summer when weather conditions were likely to encourage higher recreational activity rates (i.e., more people recreating at these location).

Surveyors received a select number of parks to visit each month. During each site visit, the surveyor interviewed as many people as possible within a one-hour period. If no one was at the park, the surveyor moved on to the next park on his or her list. As time allowed, the surveyor would return to the "empty" parks at a later time to double check on its use. Thus, a park may have been visited more than once in a day. Anytime a surveyor arrived at a location, a Travel Log form was completed. Completed forms were typically returned to the office on a weekly basis and entered into an electronic database.

[1] Fish that were caught by the angler.

2.5. SURVEY DATA ANALYSIS

All of the completed survey forms were coded and entered into a Microsoft Excel® database. The survey data was assessed for each individual water body (i.e., Lakes Union, Washington, and Sammamish) and all data combined. Categorical information (e.g., number of respondent's by location) was calculated using Microsoft Excel®. Descriptive statistics were conducted in SPSS V11.0 for Windows® and included: sample size, average, mean, minimum, maximum, and percentiles. Statistical comparison of means was conducted for several variables: water body, age, gender, and ethnicity. Statistical testing was conducted using SPSS. An initial test of variance (i.e., Levene's Test for homogeneity of variance) was conducted to determine if the data sets were normally or lognormally distributed. If the dataset was normally distributed, a One-Way Analysis of Variance (ANOVA) was conducted and significance was set at $p<0.05$. If the ANOVA test was significant, multiple-comparison tests (i.e., Tukey's) were conducted to determine differences for each variable. If the data was lognormally distributed, a non-parametric test was implemented (i.e., Kruskall-Wallis) and significance was set at $p<0.05$. Sample sizes less than or equal to one were excluded from the statistical analysis. Statistical differences are presented in tables provided in Appendix B.

3.0 TRAVEL LOG RESULTS

The Travel Log survey form was completed after arriving at each site. During the year-long survey, a total of six hundred and ten site visits were performed (Table 2). A total of 31, 537, and 42 site visits were performed for Lake Union, Lake Washington, and Lake Sammamish, respectively. All sites were visited at least once per year and a majority of the survey sites (69%, 33 of 48) were visited at least ten times during the year (Table 2).

As previously described in Section 2.4, site visits occurred randomly throughout the year on both weekdays and weekends and at varying times (7am – 8pm). The number of visits by season and weekday are presented in Table 3 for each lake. The number of site visits was increased during the warmer months (i.e., spring and summer) to account for increased recreational activity. Site visits occurred throughout the day during the open hours designated by each site (i.e., typically dawn to dusk) (Figure 2). The majority of site visits occurred during the hours of 12pm to 2:29pm (40%), followed by 2:30pm-4:59pm (20%), 10:30am-11:59am (17%), 7am-10:29am (15%), and 5pm-8pm (8%). Figure 3 presents the number of sites visited by weather condition. A total of 299, 200, and 48 site visits were completed during cloudy/overcast, clear, or rainy conditions, respectively. The low number of visits conducted during rainy conditions was an artifact of the randomization scheme. The data from the survey Travel Logs show that survey visits were conducted over varying conditions, thus allowing for surveyors to contact numerous unique individuals engaged in different recreational activities.

The Travel Logs were also used to record the number of people engaged in different types of activities at each site. The number of people engaged in upper shore (non-water), in-water, or fishing activities were estimated during each visit. For each of these categories of activities, an average number of people observed per visit was calculated (Table 4). The ten sites with the highest averages are shown in Table 4, and these represent the shoreline parks that were found to have the highest activity during the survey. The sites with the most people engaged in upper shore activities for each water body were Gasworks Park (Lake Union), Gene Coulon Park (Lake Washington), and Lake Sammamish State Park (Lake Sammamish). Parks with the highest average number observed in water activities were Gene Coulon Park (Lake Washington) and Idylwood Park (Lake Sammamish). Water activity was infrequently recorded at Lake Union survey locations. Locations with the highest average number of anglers per visit were Clarke Beach (Lake Washington), Lake Sammamish boat launch (Lake Sammamish), Stan Sayers Park (Lake Washington), Gene Coulon Beach Park (Lake Washington), and Mount Baker Park (Lake Washington). Fishing activities were also recorded infrequently at Lake Union survey locations. The information in Table 4 is intended to identify which sites have relatively higher proportions of recreational activity.

4.0 WATER AND SHORELINE USE SURVEY RESULTS

During each site visit, the surveyors spent approximately one-hour interviewing people using each facility (at random). A total of 2151 interview attempts were conducted and 1838 interviews were successfully completed, a response rate of 85% (Table 5). Nine (<1%) of the completed interviews were repeat contacts and fifteen (<1%) were identified as having a language barrier. Thirty (1%) unsuccessful interview attempts were repeat-contacts and thirty-one (1%) were identified as having a language barrier. Surveyors were primarily English-speaking; however this did not limit our ability to conduct the survey, since a small proportion of the interview attempts were noted with a language barrier. Further discussion of the results focus on unique respondents only (n=1829), thus repeat contacts are excluded.

4.1. DEMOGRAPHICS

Demographic information is presented in Tables 6 through 9. Respondents were categorized within five age groups (0-6, >6-12, >12-18, >18-59, and 60+ years). These age categories were selected to be comparable to those from other exposure studies identified by the US EPA (1999, 2002). Interviews for children (i.e., less than or equal to 12 years of age) were completed by proxy from an accompanying parent. The majority of the respondents were between the ages of 19 and 59 (71%). Fifty-two percent of the respondents were male and 47% were female. A wide variety of ethnic groups were encountered during the survey. The majority of respondents were Caucasian (84%) followed by Asian (6%), African American (3%), and Hispanic (2%). Demographic results from the SWAMP survey are comparable to previously conducted surveys in Puget Sound (King County 2002; Simmonds et al. 1998). Finally, the city of residence was identified from zip code information from each of the respondents (Table 9). The majority of the respondents resided in the SWAMP area in the cities of Seattle (34%), Kirkland (14%), Bellevue (8%), Renton (6%), Mercer Island (5%), Bothell (5%), Redmond (4%), Kenmore (3%), Issaquah (3%), and Woodinville (2%).

4.2. RECREATIONAL ACTIVITIES

Fifteen specific recreational activities were identified during the survey and classified by the primary exposure media (i.e., sand/sediment or water contact). The most frequently reported activities for all locations combined included: walking/running/hiking (26%), sitting/sunbathing/reading (22%), boating (10%), nature observation (9%), and swimming (7%) (Table 10). Similarly, these activities were frequently identified within each location (i.e., Lake Union, Washington or Sammamish). The recreational activities identified in the SWAMP survey are consistent with those most frequently reported in comparable studies of outdoor recreation (King County 2002; ICOR 2002). SWAMP survey respondents primarily recreated on the shore (81%) rather than on boats (Figure 4). However, it should be noted that no interviews were conducted on-water (i.e., boat to boat), thus, the amount of people recreating on boats is likely to be greater than the amount encountered during the survey.

For each class of recreational activity (i.e., sand/sediment or water), respondents were questioned on their intended contact with sand or water. For example, information on the type of clothing during water contact activities was collected. Respondents primarily reported wearing bathing suits (46%) during potential water contact activities (Figure 5). Twenty-four percent of respondents engaged in

water-contact activities did not intend to contact the water. These respondents were typically engaged in boating activities not associated with high rates of water contact (e.g., kayaking or driving a motor-boat).

Respondents were also asked to identify body surface areas that were in contact with sand/sediment or water, if any (Figure 6). A large proportion of people engaged in water activities (49%) contacted the water with their entire body surface. In contrast, a majority of respondent's engaged in sand/sediment activities did not intend to contact the sand (68%) or only contacted with a smaller surface area (e.g. hands & arms [5%]). ***Thus, the results indicate that people recreating in the SWAMP area have a greater potential for exposure to water than sand/sediment due to the greater amount of exposed body surface area***.

4.3. EVENT DURATION

For each recreational activity, information describing the activity duration (time/event) was collected. Descriptive statistics for the event duration (minutes/event) by activity are presented in Tables 11 through 14. The mean time spent engaged in each recreational activity ranged from 57 to 184 minutes. Statistical comparisons for each activity by water body, gender, age, and ethnic group was conducted and are presented in Tables 11 through 14. For most activities, there were no significant differences between water bodies (i.e., Lakes Union, Washington, and Sammamish). Significant differences that were identified follow:

- Respondents at Lake Union [X (mean) = 72 minutes/event] were found to sit/sunbathe/read for shorter periods than respondents at Lake Washington (X = 115 minutes/event).

- Respondents at Lake Sammamish (X = 195 minutes/event) indicated biking longer than those at Lake Union (X = 53 minutes/event) or Lake Washington (X = 100 minutes/event). However, the significant differences may be due to an effect of the small sample size for Lake Sammamish (n=2).

- Respondents at Lake Union (X = 39 minutes/event) played in sand (away from water) for shorter periods of time than those from Lake Washington (X = 80 minutes/event) or Lake Sammamish (X = 76 minutes/event). This result is likely a reflection of the lack of available beach area at the sites at Lake Union compared to sites from the other lakes.

- Comparisons of people boating indicated differences between all locations. The mean event duration for each lake was 220 minutes/event (Lake Union), 175 minutes/event (Lake Washington), and 115 minutes/event (Lake Sammamish).

Comparisons of activities by gender or ethnic group were typically non-significant (Table 12). Gender differences, however, were identified for two recreational activities:

- Female respondents indicated biking (X = 75 minutes/event) for shorter periods of time than male respondents (X = 112 minutes/event).

- Female respondents reported boating (X = 191 minutes/event) for longer durations than males (X = 156 minutes/event).

Several statistically significant differences between age groups were identified (Table 13):

- Children (0-6 years and >6-12 years) were found to sit/sunbathe/read less than all other groups. Mean event duration for each age group was 48, 53, 148, 114, and 98 minutes/event for 0-6, >6-12, >12-18, >18-59, and 60+ years, respectively.

- Respondents from ages >12-18 were found to bike (X = 143 minutes/event) longer than children ages >6-12 (X = 53 minutes/event) or adults ages >18-59 (X = 93 minutes/event).

- Children (>6-12 years) played in sand (away from water) slightly less (X = 62 minutes/event) than all other groups (X = 77-131 minutes/event).

- Adults (>18-59) indicated picnicking longer (X = 95 minutes/event) than child respondents [X (0-6years) = 33 minutes/event, X (>6-12 years) = 51 minutes/event].

- Teenagers (>12-18) played sports/games for longer periods of time than older adults (60+ year) or young children (0-6 years). Older adults played sports/games for shorter durations (X = 55 minutes/event) than all other groups (X = 72-96 minutes/event).

- Young children (0-6 years) performed nature observations (X = 51 minutes/event) approximately half as long as all other groups (X = 87-105 minutes/event).

- Teenagers spent more time (X = 100 minutes/event) playing/digging in sand (near water) than all other age groups (X = 60-77 minutes/event).

4.4. EVENT FREQUENCY

The event frequency (days/year) for each activity was calculated by combining the number of times in the past month the person engaged in each activity and the months of the year respondents typically engaged in each activity (i.e., questions 6 and 7 on the Water Use Survey). For example, if a respondent walked 5 days in the past month, and typically walks in June and July, then the event frequency was estimated as 10 days/year (i.e., 5 days/month x 2 months/year = 10 days/year). Descriptive statistics for event frequency by activity are presented in Tables 15 through 18. Mean event frequencies for all activities ranged from 13 – 99 days/year.

Comparisons of activities by location yielded several significant differences (Table 15):

- Respondent's walked/ran/hiked more frequently at Lake Washington (X = 102 days/year) than at Lake Sammamish (X = 63 days/year).

- People at Lake Sammamish sat/sunbathed/read less often (X = 10 days/year) than respondents at Lake Washington (χ = 24 days/year) or Lake Union (X = 18 days/year).

- Respondents picnicked more frequently at Lake Washington (χ = 18 days/year) than at Lake Sammamish (X = 7 days/year).

- Lake Sammamish recreational users played sports/games less often (X = 16 days/year) than respondents at Lake Washington (X = 33 days/year).

- Finally, people at Lake Sammamish boated less often (X = 7 days/year) than respondents at Lake Washington (X = 21 days/year).

Gender differences were apparent for the activities of walking/running/hiking, sitting/sunbathing/reading, and boating (Table 16):

- Male respondents were found to perform each activity more frequently than female respondents. Mean event frequencies for male and female respondents were 111 and 89, 27 and 20, and 22 and 9 days/year for the activities of walking/running/hiking, sitting/sunbathing/reading, and boating, respectively.

Age differences were identified for several activities (Table 17):

- Respondents >12 years of age walked/ran/hiked (X = 95-142 days/year) more frequently than respondents <12 years (X = 13-38 days/year).
- Older adults (60+) were found to sit/sunbathe/read at survey sites more frequently (χ = 66 days/year) than all other age groups (X = 11-27 days/year).
- Older adults were found to play sports/games at survey sites less frequently (X = 4 days/year) than all other age groups (X = 17-37 days/year).
- Finally, older adults engaged in nature observation more frequently (X = 70 days/year) than all other age groups (X = 8-24 days/year).

Ethnic differences were only identified for the activities of playing sports/games and boating (Table 18). Sample sizes for non-Caucasian respondents were typically less than ten, thus significant differences should be interpreted with caution.

- Asian respondents reported playing sports/games less frequently (X = 9 days/year) than Native American or Hispanic respondents (X = 72 and 90 days/year).
- All ethnic groups reported boating less frequently (X = 4-27 days/year) than respondents in the 'All Other' category (X = 75 days/year). This group includes respondents of mixed or unspecified ethnic backgrounds.

4.5. Other Frequented Parks

The final activity related question on the Water and Shoreline Use Survey focused on identifying locations frequently visited by respondents other than the location of the interview. The results of this question were simplified to indicate the five most frequently reported locations for each water body (Table 19). The most frequently reported locations for sand/sediment related activities included Marymoor Park, Gasworks Park, Lake Sammamish State Park and Marina Park. The most frequently reported locations for water contact activities included Lake Sammamish State Park and boat launch, Gene Coulon Beach Park and boat launch, and Houghton Beach Park. Several of the parks shown in Table 19 were also indicated in Table 4 as having relatively high occupancy rates during the survey visits. Thus, information from Table 4 and 19 provide qualitative information on the relative visitation rates for several parks throughout the SWAMP area.

5.0 FRESHWATER FISH CONSUMPTION SURVEY RESULTS

During site visits, surveyors interviewed people fishing in addition to those engaged in other recreational activities. A total of 260 interview attempts were made with recreational anglers, and 216 (83%) agreed to be interviewed (Table 20). A total of 12 (5%) interview attempts were with repeat contacts, and 15 (6%) attempts indicated a language barrier. Further discussion of the results of the Fish Consumption Survey is limited to unique respondents (n=212), thus repeat contacts are excluded.

5.1. DEMOGRAPHICS

Demographic information from the consumption surveys is presented in Tabled 20 through 24. A majority (69%) of the anglers were within the >18-59 age group, followed by 60+ (13%) and >12-18 (11%) (Table 21). Respondents were primarily male (88%) (Table 22). The race of anglers was predominately Caucasian (71%), Asian (12%) or African American (8%) (Table 23). The city of residence (Table 24) indicated by most respondents was Seattle (24%), Kirkland (12%), Bellevue (7%), Redmond (7%), Mercer Island (6%), or Bothell (5%).

5.2. RECREATIONAL FISHING HABITS

Several questions were designed to characterize angler habits. Anglers interviewed on Lake Union or Lake Washington fished from either the shoreline or from a boat at relatively equal rates (Figure 7), while anglers from Lake Sammamish primarily reported fishing in boats. Approximately 98% of all anglers sought finfish rather than other types of aquatic organisms (Figure 8). One angler reported seeking freshwater mussels, two indicated crayfish and one indicated algae/seaweed. Finally, respondents reported minimal contact with the water during fishing trips (Figure 9). Approximately 51% of respondents reported only contacting water with their hands & arms and 36% indicated no intended contact with water. Therefore, results suggest that anglers in the SWAMP area primarily seek various finfish species and have relatively minor water contact.

Anglers were also asked if they fished from other sites in the SWAMP area (Table 25). A majority of the respondents (50%) reported that they did not fish from locations other than the site from which they were interviewed. This suggests that anglers consistently fish or launch their fishing boat from one unique location. Other sites that anglers did mention included Lake Sammamish State Park & boat launch, Gene Coulon Beach Park & boat launch, Mercer Island boat launch, Kenmore boat launch, Magnuson Park & boat launch, Waverly Beach Park.

5.3. EVENT DURATION

The amount of time spend fishing was estimated with the same methodology as for other recreational activities (Table 26). Respondents spent between 30 minutes to 10 hours fishing per event. No significant differences between locations were identified for the amount of time spent fishing. Similarly, there were no significant differences between gender and age groups. Caucasian respondents reported fishing (X = 219 minutes/event) for significantly longer periods of time than

African American (X = 163 minutes/event), Hispanic (X = 133 minutes/event), or Asian respondents (X = 159 minutes/event). No other statistical differences were identified.

5.4. EVENT FREQUENCY

The event frequency for anglers was calculated as described in Section 4.4. Table 27 presents the results for estimates of event frequency (days/year). The mean number of days spent fishing for Lake Union, Lake Washington, and Lake Sammamish were 6, 20, and 16 days/year, respectively. Statistical tests of event frequency did not show any differences between location, age groups, or ethnic groups. However, male respondents reported fishing (X = 21 days/year) more frequently than female respondents (X = 6 days/year).

5.5. FISH CONSUMPTION PATTERNS

A large portion of the fish consumption survey focused on characterizing the consumption patterns of anglers in the SWAMP area. Approximately 66% of respondents reported that they have consumed a self-caught fish from the project area (Figure 10). In addition, respondents often reported sharing their catch with other family members. The mean family size (including respondents) sharing the anglers' catch was 4.1 (standard deviation = 3.7). Approximately 46% of the respondents indicated sharing their catch with young children in the family (Figure 11).

Respondents were asked to indicate a typical portion or serving size for self-caught fish that they consume. A large proportion of the anglers (approximately 67%) reported eating eight or fewer ounces per meal (Table 28). An estimate of the typical serving size for children of the respondents was also provided (Table 29). Approximately 67% of the responses indicated that children consumed six ounces or less of self-caught fish. Survey respondents were also asked to report the number of self-caught fish-meals they had consumed in the past month (i.e., 30 days) (Table 30). Approximately 49% of the anglers had not consumed any fish in the past month, and approximately 38% had eaten 1 – 4 meals in the past 30 days.

The above information was used to estimate fish consumption rates for SWAMP area anglers and their children. The serving (portion) size method was used to calculate the consumption rates. This method has been used in a number of other surveys of freshwater fish consumption, and was considered appropriate for the current survey (West et al. 1989; 1993; Williams et al. 2000; Schaeffer et al. 1999; Meredith & Malvestuto 1996). The equations used to calculate the consumption rates are as follows:

Respondent consumption rate (grams/day) = (AS x AF x CF) / ED

Respondents' child consumption rate (grams/day) = (CS x AF x CF) / ED

AS = Adult typical serving size (ounces/meal)

CS = Child typical serving size (ounces/meal)

AF = Adult meal frequency (meals/month)[1]

CF = Conversion factor – (28.35 grams/ounce)

ED = Exposure duration – (30 days/month)

[1] It was assumed that children of respondents consumed at the same frequency as the adult respondent.

The estimates of self-caught fish consumption are provided in Tables 31 and 32. During the survey, no anglers from Lake Union were interviewed that provided information necessary to calculate consumption rates. Therefore, consumption rates are limited to Lake Sammamish and Lake Washington. The mean (95th percentile) consumption rates for all anglers surveyed are 10.3 (41.7)

grams/day. Mean (95th percentile) consumption rates for Lake Washington and Lake Sammamish are 10.8 (30.2) and 9.1 (56.7) grams/day, respectively. Statistical tests did not show any significant differences between anglers of varying location, gender, age, or ethnicity (Table 31).

Consumption rates for children of respondents are presented in Table 32. The mean (95th percentile) consumption rate for all children is 7.2 (28.9) grams/day. Consumption rates were also calculated for different age groups (0-6, >6-12, >12-18 years). Mean consumption rates for these age groups were 5.4, 10.5, and 1.4 grams/day, respectively. Statistical tests did not show any significant differences between locations or age groups (Table 32).

Anglers were also queried on their preferred cooking preparation methods. Ninety-one percent of respondents typically consume only the flesh/fillet portion of the fish they catch (Figure 12). The most frequently reported cooking techniques (Figure 13) included: fried (43%), grilled (26%), baked (14%), and smoked (8%). Respondents indicated that other than consuming the fish they catch, they frequently capture/release (64%) or give away (26%) their catch (Figure 14).

During the interviews, the surveyors also identified if anglers had caught anything at the time of the interview. A summary of the species of fish caught during the interviews is presented in Table 33. The majority of the fish species caught were perch, trout, bass, and salmon. Average length and weight measurements are also provided in Table 33. Anglers also indicated whether they typically consumed the species of fish that they had caught. Respondents from Lake Washington frequently reported that they would consume bass, bluegill, perch, salmon, and trout species. Lake Sammamish anglers frequently reported consuming perch and trout species.

6.0 DISCUSSION & CONCLUSIONS

The purpose of the SWAMP survey was to characterize recreational activities within the project area. This is the first known study of freshwater recreational and fish consumption patterns conducted around Lakes Union, Washington, and Sammamish. A number of other recreational or fishing surveys have been conducted near the SWAMP project area, but these have focused on marine locations (King County 2002a; Landolt et al. 1985, 1987; McCallum 1985; Pierce 1981; Sechena et al. 1999, 2003; Simmonds et al. 1998; Suquamish Tribe 2000; Toy et al. 1996). The recreational activities observed in this survey, however, are similar to those observed in other studies of outdoor recreation in Washington State (ICOR 2002; King County 2002a). Recreational activities, such as, walking/hiking/running, sports, picnicking, fishing, and swimming were frequently reported in (1) the current survey, (2) a survey of Puget Sound (King County 2002a) and (3) a statewide survey (ICOR 2002). Thus, the current survey achieved its goal of capturing the important recreational activities in the project area (see Appendix B for results).

In addition to the characterization of recreation by Lake, qualitative conclusions can be drawn about specific sites within the project area. For example, shoreline parks that were found with high activity or were reported frequently by respondents include (see Tables 4 and 19): Gene Coulon Park, Lake Sammamish State Park, Gasworks Park, Magnuson Park, Seward Park and Kennydale Park. The locations presented in Tables 4 and 19 represent parks where a large proportion of recreational users are potentially exposed to water or sediment from the SWAMP area.

An additional goal of this survey included describing potential exposure pathways and critical recreational activities. This analysis provides site-specific measures of exposure, which can be used to assess risks from potential contaminants in the project area. The US EPA has provided recommendations for various exposure scenarios (US EPA 1989, 1999, 2002). However, these recommendations are not always relevant to every site or geographic location, thus, the use of site-specific exposure factors reduces the uncertainty of the exposure models. A summary of the SWAMP survey results follows, with a focus on their application for exposure modeling.

The recreational activities observed during this survey primarily included either sand/sediment or water contact. Some of these activities are relatively more important with respect to exposure and associated risks. These activities include: digging in sand/sediment, swimming, wading, and waterskiing/wakeboarding. Each of these activities was reported frequently and, by their nature, include significant contact with either sediment or water. In addition, respondents engaged in water contact activities (i.e., swimming, wading or waterskiing/wakeboarding) reported that a large portion of their body surface area was in contact with the water (Figures 5 and 6). The event duration and frequency are summarized for these activities in comparison with rates recommended by the US EPA (Table 34). The duration and frequency estimates from the SWAMP survey are comparable with estimates from other recreational surveys (King County 2002a; Tsang & Klepeis 1996; US EPA 1989, 1999, 2002). However, duration and frequency estimates were slightly higher than those derived and recommended by the US EPA (1989; 1999; 2002). Thus, exposure for some activities is higher in the SWAMP area compared to the general US population.

Consumption of freshwater fish has not been described previously for the SWAMP project area. However, freshwater consumption patterns of other populations within Washington State have been published (CRITFC 1994; WA DOH 1997; WA DOH 2001). Several other consumption surveys have been conducted in Washington State, however, these focused on marine fish consumption (Landolt et al. 1985, 1987; McCallum 1985; Pierce 1981; Sechena et al. 1999, 2003; Simmonds et al. 1998;

Suquamish Tribe 2000; Toy et al. 1996). Further discussion will focus on freshwater fish consumption habits.

Surveys of freshwater fish consumption have been conducted on the Columbia River, Lake Roosevelt and Lake Whatcom (CRITFC 1994; WA DOH 1997; WA DOH 2001). The population of the Columbia River included Native Americans from the Umatilla, Nez Perce, Yakama, and Warm Springs Tribes. This group consists mainly of subsistence consumers, with a mean consumption rate (59.0 g/day) over five times as high as anglers from Lake Washington or Lake Sammamish (10.3 g/day) (Table 35). The consumption patters of anglers from the SWAMP area suggest that this population does not rely on self-caught fish as a large portion of their diet.

Recreational anglers from the SWAMP area are more comparable to those from Lake Roosevelt or Lake Whatcom (WA DOH 1997; WA DOH 2001). Recreational anglers from Lake Whatcom, like those from the SWAMP area, typically consumed a self-caught meal size of approximately 227 grams (i.e., 8 ounces) (WA DOH 2001). Recreational anglers from Lake Roosevelt reported consuming self-caught fish an average of 4.1 times per month (WA DOH 1997), while anglers from the SWAMP area consumed an average of 1.3 times per month. All groups of anglers frequently reported consuming trout, bass and perch.

Daily consumption rates were not calculated from the studies of Lake Whatcom or Lake Roosevelt, thus consumption estimates are not discussed. However, a number of other surveys of freshwater consumption have been conducted across the U.S. (Table 35). Adult and children consumption rates from SWAMP anglers are comparable to those from most other studies (Table 35). Adult consumers from Lake Washington and Lake Sammamish averaged a rate of 10.3 grams/day compared to a range of 2.6–30.3 grams/day from other sites in the U.S. Children consumed an average of 7.2 grams/day, similar to those estimated for children (5.6-7.9 grams/day) from a study in Michigan (West et al 1989; US EPA 2002).

The results from the present survey provide information designed to assist in the definition of exposure for the population recreating on the shorelines of Lake Union, Lake Washington, and Lake Sammamish. Specifically, estimates for exposure duration and frequency, and fish consumption can be directly inputted into exposure models of any risk assessment. The site-specific estimates provided herein may be preferable over default variables recommended by the US EPA (1999, 2002), as they reduce the uncertainty associated with generalized exposure factors.

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Appendix A
Survey Forms

Appendix B
Tables & Figures

Appendix B

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Table 1. Survey locations

Location Code	Park Name	City
Lake Union/Ship Canal		
1	Commodore Park (Hiram Chittendon Locks)	Seattle
2	14th Ave NW Boat Ramp	Seattle
3	Gas Works Park	Seattle
4	Sunnyside Ave N Boat Ramp	Seattle
5	Montlake Park (West)	Seattle
Lake Washington		
6	Washington Arboretum	Seattle
7	Magnuson Park & boat launch	Seattle
8	Mathews Beach Park	Seattle
9	Tracy Owen Station Park	Kenmore
10	Kenmore Boat Ramp	Kenmore
11	Saint Edward State Park	Kirkland
12	O. O. Denny Park	Kirkland
13	Juanita Beach Park	Kirkland
14	Juanita Bay Park	Kirkland
15	Kiwanis Park	Kirkland
16	Waverly Beach Park	Kirkland
17	Marina Park & boat launch	Kirkland
18	David E. Brink Park / Settler's Landing	Kirkland
19	Marsh Park	Kirkland
20	Haughton's Beach Park	Kirkland
21	Medina Beach Park	Medina
22	Clyde Beach Park	Bellevue
23	Chism Beach Park / Burrows Landing Park	Bellevue
24	Enatai Beach Park	Bellevue
25	Mercer island boat launch	Mercer Island
26	Clarke Beach	Mercer Island
27	Groveland Park	Mercer Island
28	Calkins Landing	Mercer Island
29	Luther Burbank Park	Mercer Island
30	SE 40TH St. boat launch	Renton
31	Newcastle Beach Park	Renton
32	Kennydale Beach Park	Renton
33	Gene Coulon Beach Park & boat launch	Renton
34	Atlantic City Park & boat launch	Renton
35	Pritchard Park	Seattle
36	Seward Park	Seattle
37	Lakewood Park	Seattle
38	Stan Sayres Memorial Park & boat launch	Seattle
39	Mount Baker Park	Seattle
40	Colman Park	Seattle
41	Day Street Park & boat launch	Seattle
42	Leschi Park	Seattle
43	Madrona Park	Seattle
Lake Sammamish		
44	Marymoor Park	Redmond
45	Idylwood Park	Redmond
46	Timberlake Park	Issaquah
47	Lake Sammamish State Park	Issaquah
48	Lake Sammamish State Park Boat Ramp	Issaquah

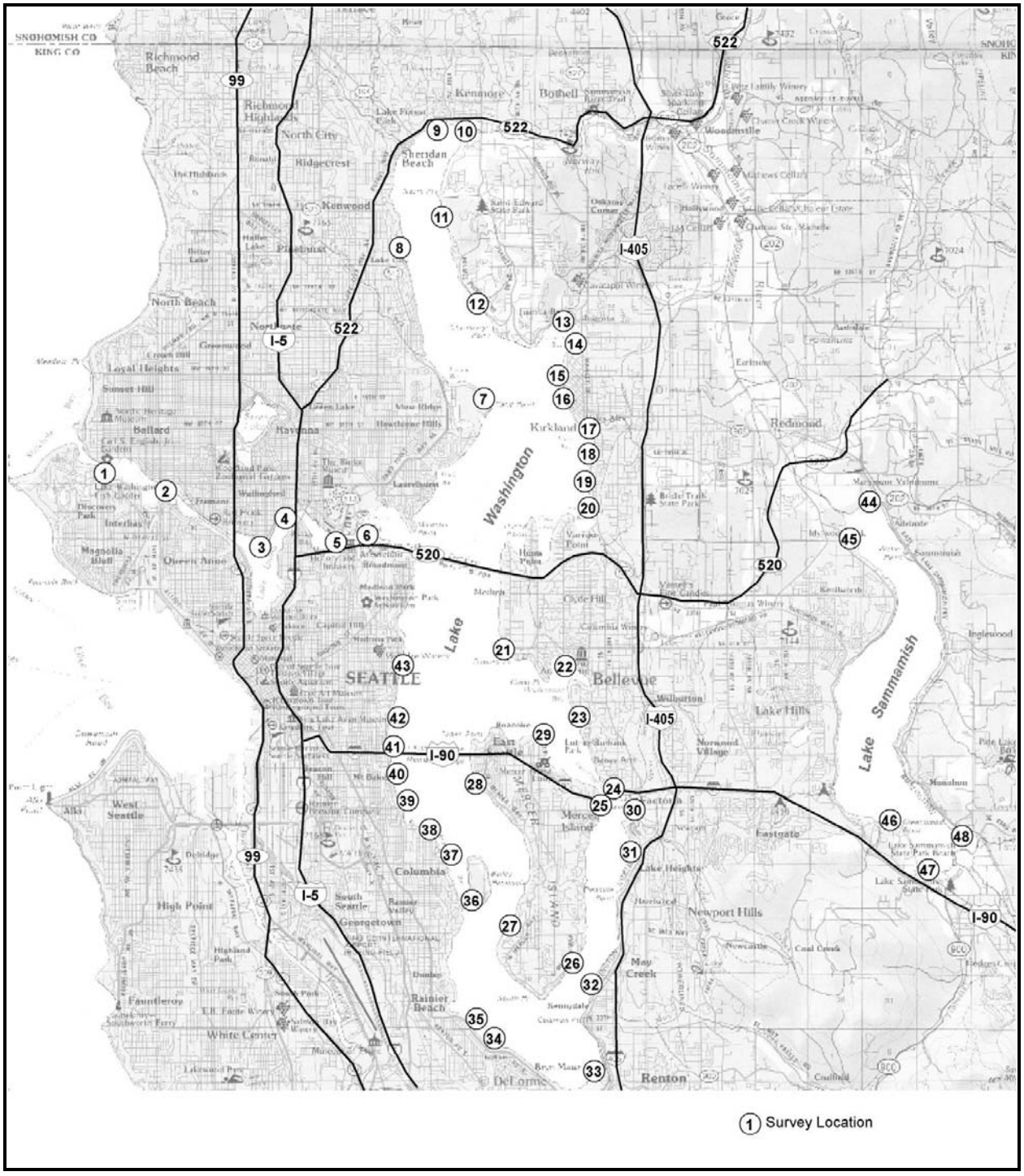


Figure 1. Survey locations

Table 2. Total yearly number of site visits by park

Location Code	Park Name	Number of Site Visits (Total = 610)
Lake Union/Ship Canal		
1	Commodore Park (Hiram Chittendon Locks)	1
2	14th Ave NW Boat Ramp	7
3	Gas Works Park	13
4	Sunnyside Ave N Boat Ramp	8
5	Montlake Park (West)	2
Lake Washington		
6	Washington Arboretum	8
7	Magnuson Park & boat launch	34
8	Mathews Beach Park	22
9	Tracy Owen Station Park	23
10	Kenmore Boat Ramp	29
11	Saint Edward State Park	15
12	O. O. Denny Park	16
13	Juanita Beach Park	28
14	Juanita Bay Park	2
15	Kiwanis Park	1
16	Waverly Beach Park	24
17	Marina Park & boat launch	21
18	David E. Brink Park / Settler's Landing	13
19	Marsh Park	14
20	Haughton's Beach Park	10
21	Medina Beach Park	11
22	Clyde Beach Park	11
23	Chism Beach Park / Burrows Landing Park	15
24	Enatai Beach Park	13
25	Mercer island boat launch	6
26	Clarke Beach	12
27	Groveland Park	11
28	Calkins Landing	2
29	Luther Burbank Park	19
30	SE 40TH St. boat launch	2
31	Newcastle Beach Park	8
32	Kennydale Beach Park	14
33	Gene Coulon Beach Park & boat launch	20
34	Atlantic City Park & boat launch	10
35	Pritchard Park	7
36	Seward Park	17
37	Lakewood Park	5
38	Stan Sayres Memorial Park & boat launch	15
39	Mount Baker Park	17
40	Colman Park	16
41	Day Street Park & boat launch	16
42	Leschi Park	16
43	Madrona Park	14
Lake Sammamish		
44	Marymoor Park	1
45	Idylwood Park	12
46	Timberlake Park	2
47	Lake Sammamish State Park	13
48	Lake Sammamish State Park Boat Ramp	14

Table 3. Total number of site visits by season and weekday

Season	Day	Lake Union	Lake Washington	Lake Sammamish	Total
Winter	Weekday	1	32	3	36
(Dec., Jan., Feb.)	Weekend	2	35	3	40
Spring	Weekday	6	186	13	205
(Mar., Apr., May)	Weekend	5	64	8	77
Summer	Weekday	11	112	6	129
(Jun., Jul., Aug.)	Weekend	3	52	3	58
Fall	Weekday	2	11	0	13
(Sep., Oct., Nov.)	Weekend	1	45	6	52

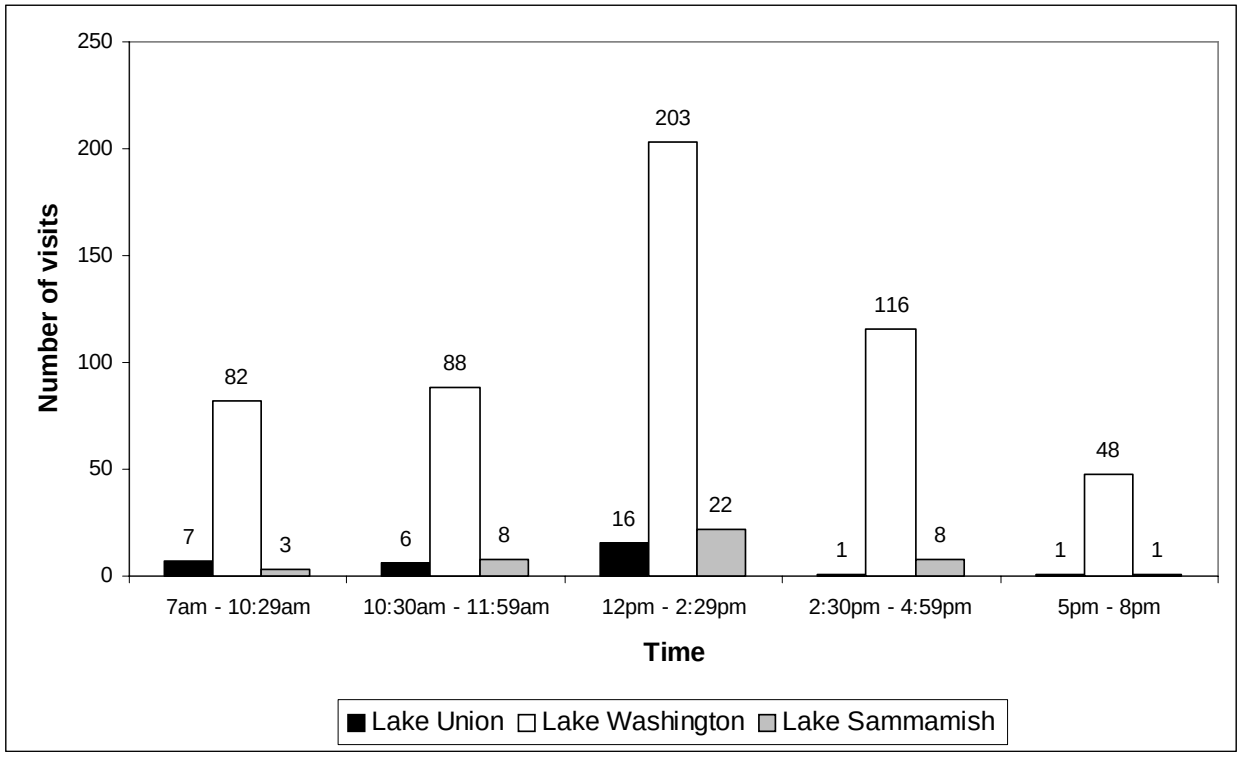


Figure 2. Total number of site visits by time of day

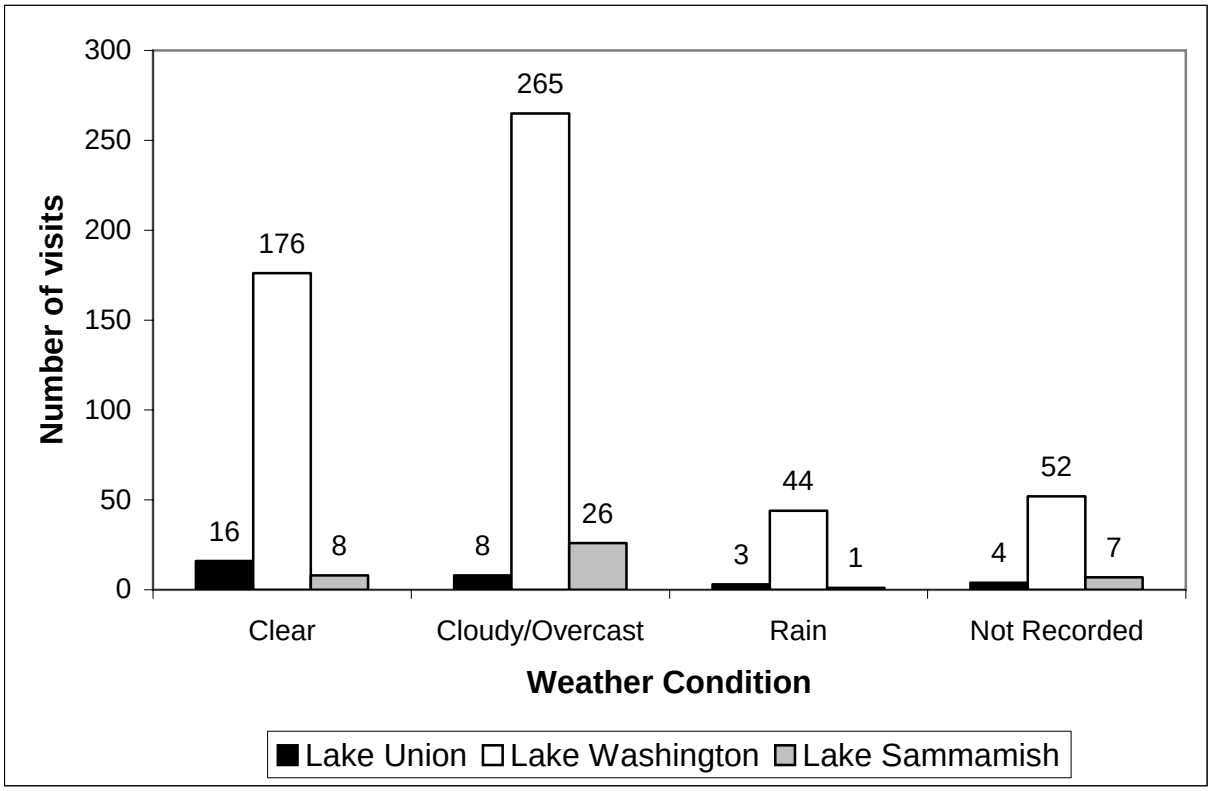


Figure 3. Total number of site visits by weather condition

Table 4. Parks with the highest average number of people observed

Park	Water Body	Number of Visits [1]	Average Number of People Observed per Visit
Upper Shore Activities (non-water)			
Gene Coulon Beach Park & boat launch	Lake Washington	17	47
Lake Sammamish State Park	Lake Sammamish	12	30
Seward Park	Lake Washington	17	29
Newcastle Beach Park	Lake Washington	7	23
Magnuson Park & boat launch	Lake Washington	32	21
Marina Park & boat launch	Lake Washington	19	20
Idylwood Park	Lake Washington	11	17
Kennydale Beach Park	Lake Washington	12	15
Juanita Beach Park	Lake Washington	27	14
Gasworks Park	Lake Union	11	11
In-Water Activities [2]			
Gene Coulon Beach Park & boat launch	Lake Washington	17	19
Kennydale Beach Park	Lake Washington	12	12
Juanita Beach Park	Lake Washington	27	9
Mount Baker Park	Lake Washington	17	9
Idylwood Park	Lake Sammamish	11	9
Chism Beach Park	Lake Washington	14	8
Groveland Park	Lake Washington	9	7
Madrona Park	Lake Washington	14	7
Enatai Beach Park	Lake Washington	13	6
Marina Park & boat launch	Lake Washington	19	6
Fishing Activities			
Clarke Beach	Lake Washington	10	1.0
Lake Sammamish boat launch	Lake Sammamish	14	1.0
Stan Sayers Park & boat launch	Lake Washington	15	0.9
Gene Coulon Beach Park & boat launch	Lake Washington	17	0.8
Mount Baker Park	Lake Washington	17	0.8
Waverly Beach Park	Lake Washington	21	0.8
Idylwood Park	Lake Sammamish	11	0.7
Seward Park	Lake Washington	17	0.6
Lake Sammamish State Park	Lake Sammamish	12	0.5
Tracy Owen Station Park	Lake Washington	23	0.5

[1] Only parks with site visits on two or more unique days are shown.

[2] Travel Log data does not include people observed on motor-boats.

Table 5. Interview status

Interview Status		Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Agree					
Non-Repeat Contact	No Language Barrier	82	1553	179	1814 (84%)
	Language Barrier	0	14	1	15 (<1%)
Repeat Contact	No Language Barrier	0	9	0	9 (<1%)
Disagree					
Non-Repeat Contact	No Language Barrier	6	222	25	253 (12%)
	Language Barrier	2	27	1	30 (1%)
Repeat Contact	No Language Barrier	0	27	2	29 (1%)
	Language Barrier	0	1	0	1 (<1%)
Total		**90**	**1853**	**208**	**2151**

Table 6. Number of interviews by age

Age Group	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
0 – 6 years	4	113	8	125 (~7%)
>6 – 12 years	1	65	7	73 (~4%)
>12 – 18 years	1	131	17	149 (~8%)
>18 –59 years	70	1102	130	1302 (~71%)
60+ years	6	143	15	164 (~9%)
Not recorded [1]	0	13	3	16 (<1%)
Total	**82**	**1567**	**180**	**1829**

[1] Data missing due to non-response to this question or surveyor error.

Table 7. Number of interviews by gender

Gender	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Male	51	793	106	950 (~52%)
Female	31	766	71	868 (~47%)
Not recorded [1]	0	8	3	11 (<1%)
Total	**82**	**1567**	**180**	**1829**

[1] Data missing due to surveyor error.

Table 8. Number of interviews by ethnic group

Gender	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Caucasian (total)	64	1311	161	1536 (~84%)
Eastern European	0	18	3	21 (~1%)
African American	3	41	2	46 (~3%)
Native American	0	9	0	9 (<1%)
Hispanic/Latino	1	36	3	40 (~2%)
Asian (total)	11	89	8	108 (~6%)
Chinese	0	32	2	34 (~2%)
Filipino	3	9	0	12 (<1%)
Japanese	3	16	1	20 (~1%)
Korean	2	10	3	15 (<1%)
Pacific Islander	2	12	0	14 (<1%)
Vietnamese	1	10	2	13 (<1%)
East Indian	0	7	0	7 (<1%)
Other (unspecified)	1	11	1	13 (<1%)
Multi-racial	2	28	2	32 (~2%)
Not recorded [1]	0	35	3	38 (~2%)
Total	**82**	**1567**	**180**	**1829**

[1] Data missing due to non-response to this question or surveyor error.

Table 9. Number of interviews by city

City	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Seattle	61	544	10	615 (34%)
Kirkland	2	241	14	257 (14%)
Bellevue	3	131	15	149 (8%)
Renton	0	109	6	115 (6%)
Mercer Island	0	89	0	89 (5%)
Bothell	3	81	3	87 (5%)
Redmond	2	33	34	69 (4%)
Kenmore	0	57	0	57 (3%)
Issaquah	0	18	34	52 (3%)
Woodinville	0	33	5	38 (2%)
Lynnwood	3	27	6	36 (2%)
Sammamish	0	11	21	32 (2%)
Medina	0	29	0	29 (2%)
Kent	0	21	1	22 (1%)
Auburn	0	14	1	15 (1%)
Snohomish	2	13	0	15 (1%)
Mountlake Terrace	0	13	0	13 (1%)
Duvall	0	7	6	13 (1%)
Everett	1	7	0	8 (<1%)
Federal Way	0	6	1	7 (<1%)
Black Diamond	0	6	0	6 (<1%)
Tacoma	0	3	3	6 (<1%)
Maple Valley	0	4	1	5 (<1%)
Sumner	0	3	2	5 (<1%)
Fall City	0	1	3	4 (<1%)
Gig Harbor	0	3	0	3 (<1%)

City	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Hobart	0	3	0	3 (<1%)
Puyallup	0	3	0	3 (<1%)
Edmonds	1	2	0	3 (<1%)
Arlington	0	1	2	3 (<1%)
Tri –Cities (Kennewick, Pasco, Richland)	0	2	0	2 (<1%)
Monroe	2	0	0	2 (<1%)
Bremerton	0	1	0	1 (<1%)
Clinton	0	1	0	1 (<1%)
Ferndale	0	1	0	1 (<1%)
Friday Harbor	0	1	0	1 (<1%)
Gold Bar	0	1	0	1 (<1%)
Marysville	0	1	0	1 (<1%)
Mukilteo	0	1	0	1 (<1%)
Olympia	0	1	0	1 (<1%)
South Colby	0	1	0	1 (<1%)
Stanwood	0	1	0	1 (<1%)
Redondo	0	0	1	1 (<1%)
Yakima	1	0	0	1 (<1%)
Out of State	1	21	7	29 (2%)
Not Recorded	0	21	4	25 (1%)
Total	**82**	**1567**	**180**	**1829**

Table 10. Number of interviews by recreational activity

Recreational Activity	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Sand/Sediment Activities				
Walking / running / hiking	30	658	44	732 (26%)
Sitting / sunbathing / reading	25	550	42	617 (22%)
Playing/digging in sand away from water	7	121	13	140 (5%)
Picnic or barbecue	2	121	25	148 (5%)
Playing sports / games or on playground	8	150	18	176 (6%)
Nature observation	20	208	23	251 (9%)
Biking	4	48	2	54 (2%)
Water Contact Activities				
Playing/digging in sand in water	1	73	6	80 (3%)
Wading (legs only)	1	77	9	87 (3%)
Swimming (full body)	1	185	10	196 (7%)
Scuba diving	0	4	0	4 (<1%)
Surfing (wind or other)	0	7	0	7 (<1%)
Water skiing / wakeboarding	4	8	22	34 (1%)
Jet skiing	0	16	16	32 (1%)
Boating (kayak / canoe / raft / boat)	22	205	52	279 (10%)
All Other Activities	0	25	3	28 (<1%)
Total	**125**	**2470**	**285**	**2865** [1]

[1] Respondents often reported conducting more than one activity, therefore the total number of activities is greater than the number of respondents (n=1829).

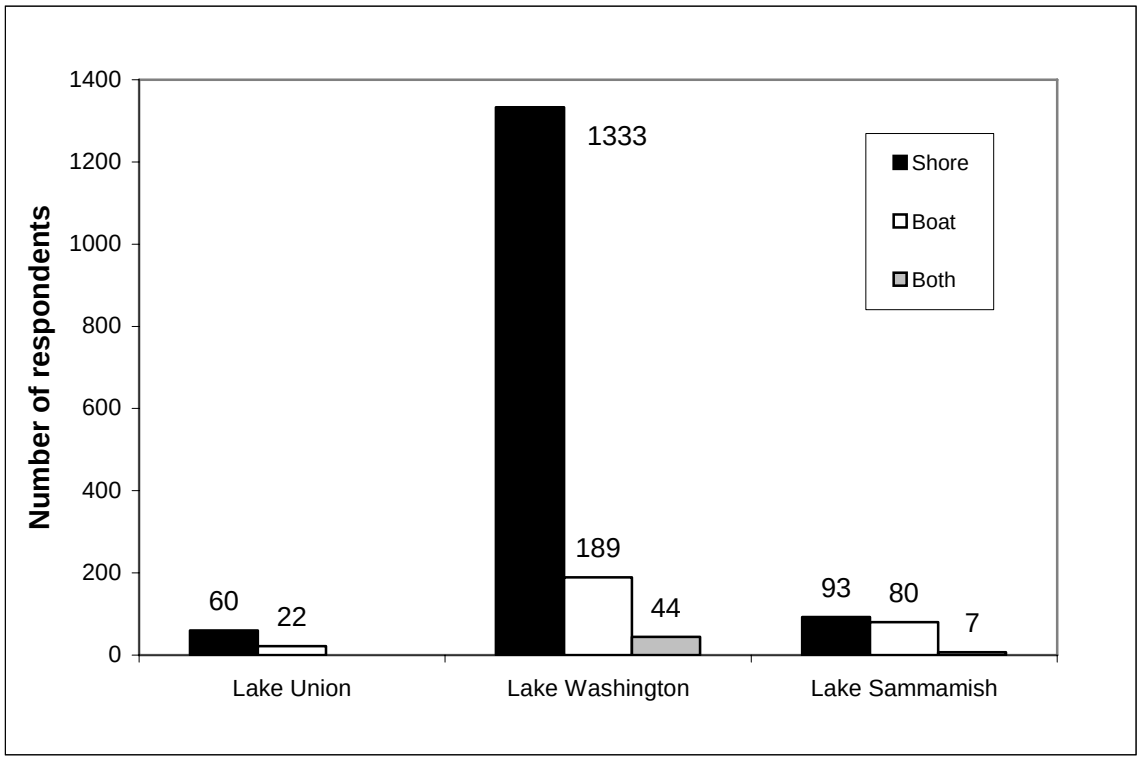


Figure 4. Number of respondents by recreational location

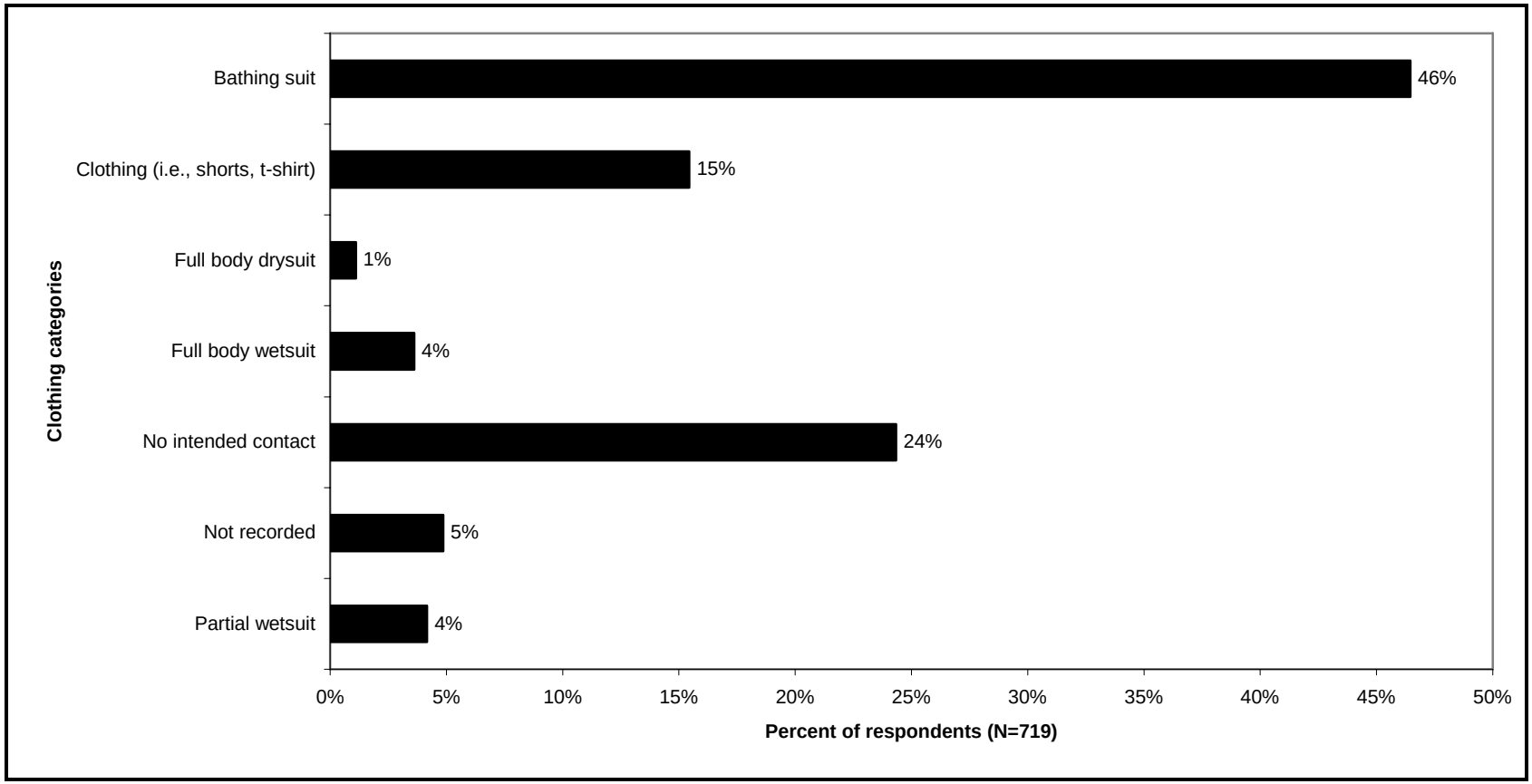


Figure 5. Percent of respondents engaged in water contact activities by clothing type

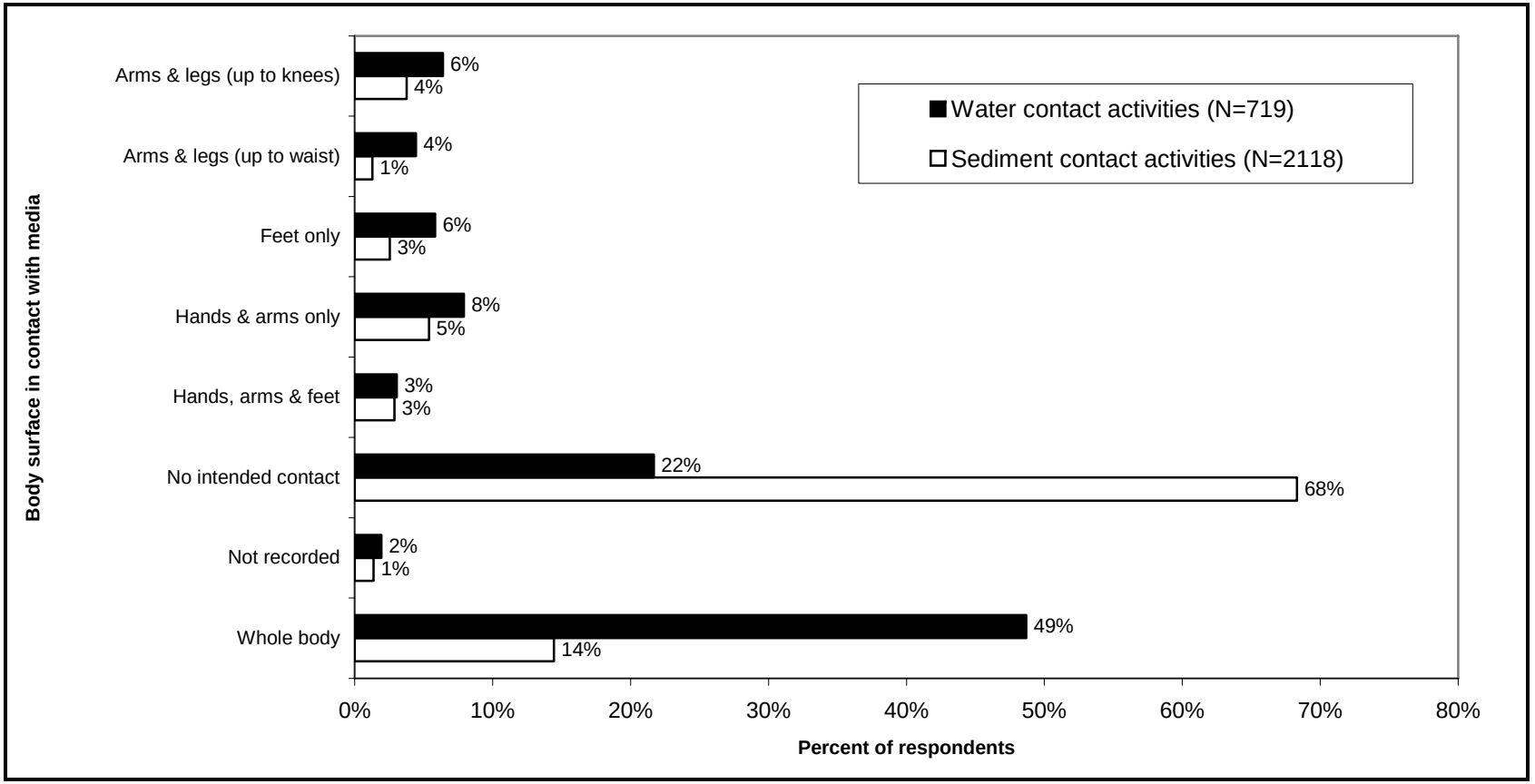


Figure 6. Percent of respondents engaged in water or sediment contact activities by body surface

Table 11. Event duration (minutes/event): descriptive statistics for recreational activities by location

Activity	Water Body	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Walking / running / hiking	Lake Union	30	71	10	53	30	240	30	30	60	68	207	a
	Lake Washington	653	66	1	37	5	300	30	30	60	90	120	a
	Lake Sammamish	42	64	5	34	30	180	30	30	60	68	146	a
	All Locations	725	66	1	37	5	300	30	30	60	90	120	
Sitting / sunbathing / reading	Lake Union	25	72	8	40	30	150	30	30	60	120	141	a
	Lake Washington	546	115	3	77	30	600	30	60	120	150	240	b, c
	Lake Sammamish	41	106	8	49	25	210	30	60	120	120	180	a, c
	All Locations	612	113	3	75	25	600	30	60	120	150	240	
Biking	Lake Union	4	53	23	45	30	120	30	30	30	98	120	a
	Lake Washington	46	100	8	54	30	240	30	60	90	120	200	a
	Lake Sammamish	2	195	45	64	150	240	150	150	195	240	240	b
	All Locations	52	100	8	58	30	240	30	60	90	120	221	
Playing / digging in sand (away from water)	Lake Union	7	39	6	15	30	60	30	30	30	60	60	a
	Lake Washington	117	80	5	57	30	300	30	30	60	120	180	b
	Lake Sammamish	13	76	22	78	30	300	30	30	60	60	300	b
	All Locations	137	78	5	59	30	300	30	30	60	120	180	
Picnic / barbecue	Lake Union	2	75	45	64	30	120	30	30	75	120	120	a
	Lake Washington	118	77	7	74	30	480	30	30	60	120	240	a
	Lake Sammamish	25	114	17	83	30	330	30	60	60	180	321	a
	All Locations	145	83	6	76	30	480	30	30	60	120	240	
Playing sports / games	Lake Union	8	94	17	49	30	180	30	60	90	120	180	a
	Lake Washington	149	84	4	53	20	480	30	60	90	120	150	a
	Lake Sammamish	16	75	17	69	27	300	27	30	60	105	300	a
	All Locations	173	84	4	54	20	480	30	50	60	120	150	
Nature observation	Lake Union	19	69	14	62	30	240	30	30	60	60	240	a
	Lake Washington	202	95	4	63	15	390	30	30	90	120	210	a
	Lake Sammamish	21	100	19	86	30	300	30	45	60	135	300	a
	All Locations	242	93	4	65	15	390	30	30	60	120	210	
Playing / digging in sand (in water)	Lake Union	1	60	--	--	60	60	--	--	--	--	--	--
	Lake Washington	71	71	5	45	30	180	30	30	60	120	180	a
	Lake Sammamish	6	55	5	12	30	60	30	53	60	60	60	a

Activity	Water Body	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
	All Locations	78	70	5	44	30	180	30	30	60	120	180	
Wading (legs only)	Lake Union	1	60	--	--	60	60	--	--	--	--	--	--
	Lake Washington	76	59	6	53	30	300	30	30	30	60	180	a
	Lake Sammamish	9	40	5	15	30	60	30	30	30	60	60	a
	All Locations	86	57	5	51	30	300	30	30	30	60	180	
Swimming (full body)	Lake Union	1	120	--	--	120	120	--	--	--	--	--	--
	Lake Washington	182	97	6	83	30	480	30	30	60	120	240	a
	Lake Sammamish	10	60	11	35	30	120	30	30	60	75	120	a
	All Locations	193	95	6	81	30	480	30	30	60	120	240	
Scuba diving	Lake Union	0	--	--	--	--	--	--	--	--	--	--	--
	Lake Washington	4	120	0	0	120	120	120	120	120	120	120	--
	Lake Sammamish	0	--	--	--	--	--	--	--	--	--	--	--
	All Locations	4	120	0	0	120	120	120	120	120	120	120	
Surfing	Lake Union	0	--	--	--	--	--	--	--	--	--	--	--
	Lake Washington	7	167	53	141	60	480	60	120	120	150	480	--
	Lake Sammamish	0	--	--	--	--	--	--	--	--	--	--	--
	All Locations	7	167	53	141	60	480	60	120	120	150	480	
Water skiing / wakeboarding	Lake Union	4	248	8	15	240	270	240	240	240	263	270	a
	Lake Washington	7	171	48	128	30	360	30	60	120	300	360	a
	Lake Sammamish	22	176	23	106	30	360	30	120	120	240	360	a
	All Locations	33	184	18	105	30	360	30	120	150	240	360	
Jet skiing	Lake Union	0	--	--	--	--	--	--	--	--	--	--	--
	Lake Washington	16	150	28	112	30	480	30	68	135	180	480	a
	Lake Sammamish	16	113	12	48	30	180	30	75	120	150	180	a
	All Locations	32	131	15	87	30	480	30	68	120	150	344	
Boating (all types)	Lake Union	22	220	19	87	5	330	9	180	240	270	330	a
	Lake Washington	202	175	8	116	15	600	30	60	180	240	411	b
	Lake Sammamish	52	115	10	69	5	360	10	90	120	120	282	c
	All Locations	276	168	7	110	5	600	30	90	150	240	360	

[1] Significant differences ($p \leq 0.05$) are indicated by varying letters (e.g., 'a' vs 'b' indicates a difference between groups).

'-- Sample size is less than 2, no statistics computed.

Table 12. Event duration (minutes/event): descriptive statistics for recreational activities by gender

Activity	Gender	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Walking / running / hiking	Female	381	65	2	38	20	300	30	30	60	90	120	a
	Male	343	66	2	36	5	240	30	30	60	90	120	a
Sitting / sunbathing / reading	Female	366	117	4	71	30	600	30	60	120	180	240	a
	Male	242	107	5	80	25	480	30	60	90	120	300	a
Biking	Female	16	75	10	41	30	150	30	30	60	120	150	a
	Male	36	112	10	61	30	240	30	60	105	173	240	b
Playing / digging in sand	Female	70	77	7	61	30	300	30	30	60	90	180	a
(away from water)	Male	66	78	7	56	30	300	30	30	60	120	180	a
Picnic / barbecue	Female	76	86	8	73	30	330	30	30	60	120	275	a
	Male	68	79	10	80	30	480	30	30	45	120	240	a
Playing sports / games	Female	62	77	6	50	20	300	30	30	60	120	150	a
	Male	108	89	5	56	20	480	30	60	90	120	167	a
Nature observation	Female	138	93	6	66	30	360	30	30	60	120	211	a
	Male	102	93	7	66	15	390	30	30	83	120	210	a
Playing / digging in sand	Female	44	70	6	43	30	180	30	30	60	120	173	a
(in water)	Male	32	69	8	47	30	180	30	30	60	120	180	a
Wading (legs only)	Female	58	63	6	49	30	240	30	30	30	68	180	a
	Male	27	46	10	54	30	300	30	30	30	30	228	a
Swimming (full body)	Female	111	86	7	70	30	360	30	30	60	120	240	a
	Male	82	108	10	93	30	480	30	60	60	120	291	a
Scuba diving	Female	0	--	--	--	--	--	--	--	--	--	--	--
	Male	4	120	0	0	120	120	120	120	120	120	120	--
Surfing	Female	0	--	--	--	--	--	--	--	--	--	--	--
	Male	7	167	53	141	60	480	60	120	120	150	480	--
Water skiing / wakeboarding	Female	10	159	36	112	30	360	30	53	120	248	360	a
	Male	23	194	21	102	30	360	36	120	150	240	360	a
Jet skiing	Female	7	141	34	90	30	270	30	30	150	210	270	a
	Male	25	128	18	88	30	480	30	75	120	150	390	a
Boating (all types)	Female	92	191	12	116	30	600	60	90	180	263	420	a
	Male	182	156	8	105	5	600	30	60	120	240	360	b

[1] Significant differences ($p \leq 0.05$) are indicated by varying letters (e.g., 'a' vs 'b' indicates a difference between groups).

'-- Sample size is less than 2, no statistics computed.

Table 13. Event duration (minutes/event): descriptive statistics for recreational activities by age

Activity	Age Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Walking / running / hiking	0-6	48	65	6	44	15	150	30	30	38	90	150	a
	>6-12	22	63	8	37	30	120	30	30	60	98	120	a
	>12-18	43	57	3	19	30	120	30	60	60	60	90	a
	>18-59	500	67	2	37	15	300	30	30	60	90	120	a
	60+	108	67	4	42	5	240	30	30	60	90	150	a
Sitting / sunbathing / reading	0-6	12	48	8	27	30	120	30	30	30	60	120	a
	>6-12	8	53	19	53	30	180	30	30	30	53	180	a
	>12-18	43	148	13	85	30	360	30	60	120	240	288	b
	>18-59	502	114	3	75	25	600	30	60	120	150	240	c
	60+	37	98	10	62	30	240	30	45	90	120	240	c
Biking	0-6	1	30	--	--	30	30	--	--	--	--	--	--
	>6-12	4	53	8	15	30	60	30	38	60	60	60	a
	>12-18	12	143	13	46	60	210	60	98	150	180	210	b
	>18-59	34	93	10	57	30	240	30	30	90	120	240	a
	60+	1	120	--	--	120	120	--	--	--	--	--	--
Playing / digging in sand (away from water)	0-6	45	78	10	66	30	300	30	30	60	90	264	a
	>6-12	26	62	8	40	30	180	30	30	60	90	159	b
	>12-18	8	131	17	48	30	180	30	120	135	173	180	a
	>18-59	56	77	8	58	30	300	30	30	60	120	180	a
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Picnic / barbecue	0-6	18	33	2	10	30	60	30	30	30	30	60	a
	>6-12	10	51	15	47	30	180	30	30	30	60	180	a
	>12-18	1	120	--	--	120	120	--	--	--	--	--	--
	>18-59	109	95	8	82	30	480	30	30	60	120	285	b
	60+	3	60	30	52	30	120	30	30	30	120	120	a, b
Playing sports / games	0-6	35	72	6	35	20	150	28	30	60	90	150	a
	>6-12	21	74	9	43	30	180	30	30	60	120	174	a, b, c
	>12-18	24	96	9	42	30	180	30	60	120	120	180	b
	>18-59	85	91	7	64	20	480	30	60	90	120	171	a, b
	60+	6	55	16	40	30	120	30	30	30	98	120	a, c

Table 13. Event duration (minutes/event): descriptive statistics for recreational activities by age (continued)

Activity	Age Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Nature observation	0-6	18	51	6	24	15	90	15	30	60	60	90	a
	>6-12	2	105	75	106	30	180	30	30	105	180	180	a, b
	>12-18	6	100	26	65	30	180	30	53	75	180	180	a, b
	>18-59	175	99	5	70	15	390	30	30	90	120	240	b
	60+	39	87	8	48	30	180	30	60	60	120	180	b
Playing / digging in sand (in water)	0-6	23	60	9	42	30	180	30	30	60	60	174	a
	>6-12	16	77	11	42	30	180	30	60	60	120	180	a
	>12-18	6	100	32	77	30	180	30	30	90	180	180	b
	>18-59	32	66	6	35	30	120	30	30	60	113	120	a
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Wading (legs only)	0-6	17	55	18	73	30	300	30	30	30	30	300	a
	>6-12	10	36	4	13	30	60	30	30	30	38	60	a
	>12-18	1	30	--	--	30	30	--	--	--	--	--	--
	>18-59	55	62	6	47	30	240	30	30	30	60	180	a
	60+	2	30	0	0	30	30	30	30	30	30	30	a
Swimming (full body)	0-6	3	100	36	62	30	150	30	30	120	150	150	a
	>6-12	16	84	12	48	30	180	30	60	60	120	180	a
	>12-18	37	85	12	71	30	300	30	30	60	120	246	a
	>18-59	134	98	8	88	30	480	30	30	60	120	255	a
	60+	1	180	--	--	180	180	--	--	--	--	--	--
Scuba diving	0-6	0	--	--	--	--	--	--	--	--	--	--	--
	>6-12	0	--	--	--	--	--	--	--	--	--	--	--
	>12-18	0	--	--	--	--	--	--	--	--	--	--	--
	>18-59	4	120	0	0	120	120	120	120	120	120	120	--
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Surfing	0-6	0	--	--	--	--	--	--	--	--	--	--	--
	>6-12	0	--	--	--	--	--	--	--	--	--	--	--
	>12-18	0	--	--	--	--	--	--	--	--	--	--	--
	>18-59	7	167	53	141	60	480	60	120	120	150	480	--
	60+	0	--	--	--	--	--	--	--	--	--	--	--

Table 13. Event duration (minutes/event): descriptive statistics for recreational activities by age (continued)

Activity	Age Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Water skiing / wakeboarding	0-6	0	--	--	--	--	--	--	--	--	--	--	--
	>6-12	0	--	--	--	--	--	--	--	--	--	--	--
	>12-18	11	213	35	117	120	360	120	120	150	360	360	a
	>18-59	22	169	21	98	30	360	30	83	165	240	351	a
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Jet skiing	0-6	2	120	0	0	120	120	120	120	120	120	120	a
	>6-12	0	--	--	--	--	--	--	--	--	--	--	--
	>12-18	5	132	29	66	30	210	30	75	150	180	210	a
	>18-59	25	132	19	95	30	480	30	60	120	165	417	a
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Boating (all types)	0-6	11	166	26	85	60	270	60	90	120	240	270	a
	>6-12	13	134	21	77	60	270	60	60	90	210	270	a
	>12-18	12	158	36	125	30	360	30	60	105	285	360	a
	>18-59	222	175	8	113	5	600	30	113	150	240	360	a
	60+	16	111	17	69	30	270	30	60	90	180	270	a

[1] Significant differences ($p \leq 0.05$) are indicated by varying letters (e.g., 'a' vs 'b' indicates a difference between groups).

'-- Sample size is less than 2, no statistics computed.

Table 14. Event duration (minutes/event): descriptive statistics for recreational activities by ethnic group

Activity	Ethnic Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Walking / running / hiking	Caucasian	598	66	2	38	5	300	30	30	60	90	120	a
	African American	17	74	10	42	25	120	25	30	60	120	120	a
	Native American	5	54	6	13	30	60	30	45	60	60	60	a
	Hispanic	15	64	5	19	30	90	30	60	60	90	90	a
	Asian	50	61	4	28	30	120	30	30	60	60	120	a
	All Other	40	69	7	47	30	210	30	30	60	90	180	a
Sitting / sunbathing / reading	Caucasian	494	115	3	77	25	600	30	60	120	150	240	a
	African American	23	104	14	68	30	300	30	60	90	150	282	a
	Native American	1	180	--	--	180	180	--	--	--	--	--	--
	Hispanic	18	110	17	73	30	300	30	60	90	135	300	a
	Asian	41	94	8	50	30	240	30	60	90	120	180	a
	All Other	35	113	14	82	30	360	30	60	120	180	312	a
Biking	Caucasian	42	106	9	60	30	240	30	60	90	150	236	a
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	2	60	30	42	30	90	30	30	60	90	90	a
	Asian	6	100	15	36	60	150	60	60	105	128	150	a
	All Other	2	30	0	0	30	30	30	30	30	30	30	a
Playing / digging in sand (away from water)	Caucasian	121	80	5	60	30	300	30	30	60	120	180	a
	African American	2	45	15	21	30	60	30	30	45	60	60	a
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	2	60	0	0	60	60	60	60	60	60	60	a
	Asian	6	55	14	35	30	120	30	30	45	75	120	a
	All Other	6	75	25	62	30	180	30	30	45	135	180	a
Picnic / barbecue	Caucasian	115	84	7	80	30	480	30	30	60	120	276	a
	African American	5	72	20	45	30	120	30	30	60	120	120	a
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	4	83	33	67	30	180	30	38	60	150	180	a
	Asian	16	83	17	66	30	240	30	30	60	120	240	a
	All Other	5	84	17	39	30	120	30	45	90	120	120	a

Table 14. Event duration (minutes/event): descriptive statistics for recreational activities by ethnic group (continued)

Activity	Ethnic Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles 5%	25%	50%	75%	95%	Significant Differences [1]
Playing sports / games	Caucasian	135	86	5	58	20	480	30	30	90	120	156	a
	African American	6	95	22	55	30	180	30	53	90	135	180	a
	Native American	3	30	0	0	30	30	30	30	30	30	30	a
	Hispanic	5	84	15	33	60	120	60	60	60	120	120	a
	Asian	8	86	9	25	60	120	60	60	90	113	120	a
	All Other	16	69	8	33	27	120	27	38	60	90	120	a
Nature observation	Caucasian	205	96	5	68	15	390	30	30	60	120	231	a
	African American	7	73	18	49	30	150	30	30	60	120	150	a
	Native American	2	105	75	106	30	180	30	30	105	180	180	a
	Hispanic	3	140	40	69	60	180	60	60	180	180	180	a
	Asian	14	88	9	32	30	120	30	60	90	120	120	a
	All Other	11	45	9	29	30	120	30	30	30	60	120	a
Playing / digging in sand (in water)	Caucasian	65	70	6	45	30	180	30	30	60	120	180	a
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	2	90	30	42	60	120	60	60	90	120	120	a
	Asian	5	54	17	39	30	120	30	30	30	90	120	a
	All Other	6	75	17	41	30	150	30	53	60	105	150	a
Wading (legs only)	Caucasian	77	60	6	53	30	300	30	30	30	60	180	a
	African American	2	60	30	42	30	90	30	30	60	90	90	a
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	2	30	0	0	30	30	30	30	30	30	30	a
	Asian	2	30	0	0	30	30	30	30	30	30	30	a
	All Other	3	30	0	0	30	30	30	30	30	30	30	a
Swimming (full body)	Caucasian	170	96	6	85	30	480	30	30	60	120	240	a
	African American	3	70	26	46	30	120	30	30	60	120	120	a
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	6	120	27	66	60	240	60	60	120	150	240	a
	Asian	8	60	10	28	30	120	30	38	60	60	120	a
	All Other	6	110	23	56	30	180	30	53	120	158	180	a

Table 14. Event duration (minutes/event): descriptive statistics for recreational activities by ethnic group (continued)

Activity	Ethnic Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Scuba diving	Caucasian	4	120	0	0	120	120	120	120	120	120	120	--
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	0	--	--	--	--	--	--	--	--	--	--	--
	Asian	0	--	--	--	--	--	--	--	--	--	--	--
	All Other	0	--	--	--	--	--	--	--	--	--	--	--
Surfing	Caucasian	6	175	62	152	60	480	60	105	120	233	480	--
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	0	--	--	--	--	--	--	--	--	--	--	--
	Asian	1	120	--	--	120	120	--	--	--	--	--	--
	All Other	0	--	--	--	--	--	--	--	--	--	--	--
Water skiing / wakeboarding	Caucasian	32	182	19	106	30	360	30	120	135	240	360	--
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	1	240	--	--	240	240	--	--	--	--	--	--
	Asian	0	--	--	--	--	--	--	--	--	--	--	--
	All Other	0	--	--	--	--	--	--	--	--	--	--	--
Jet skiing	Caucasian	30	129	16	88	30	480	30	60	120	150	365	a
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	0	--	--	--	--	--	--	--	--	--	--	--
	Asian	2	165	45	64	120	210	120	120	165	210	210	a
	All Other	0	--	--	--	--	--	--	--	--	--	--	--
Boating (all types)	Caucasian	251	170	7	112	5	600	30	90	150	240	360	a
	African American	2	180	60	85	120	240	120	120	180	240	240	a
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	4	180	50	101	30	240	30	75	225	240	240	a
	Asian	5	114	35	78	30	180	30	30	150	180	180	a
	All Other	14	141	23	87	30	300	30	75	120	218	300	a

[1] Significant differences ($p \leq 0.05$) are indicated by varying letters (e.g., 'a' vs 'b' indicates a difference between groups).

'-- Sample size is less than 2, no statistics computed.

Table 15. Event frequency (days/year): descriptive statistics for recreational activities by location

Activity	Water Body	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Walking / running / hiking	Lake Union	29	83	23	121	1	360	1	12	12	120	360	a, b
	Lake Washington	635	102	5	123	1	360	2	9	40	160	360	a
	Lake Sammamish	43	63	14	92	1	360	1	6	14	96	298	b
	All Locations	707	99	5	121	1	360	1	8	36	147	360	
Sitting / sunbathing / reading	Lake Union	24	18	4	20	1	75	1	4	12	23	74	a
	Lake Washington	534	24	2	42	1	360	1	4	10	24	96	a
	Lake Sammamish	41	10	2	16	1	72	1	2	4	11	68	b
	All Locations	599	23	2	40	1	360	1	4	10	24	84	
Biking	Lake Union	3	44	11	18	24	60	24	24	48	60	60	a
	Lake Washington	42	91	15	100	2	360	3	12	40	153	291	a
	Lake Sammamish	2	67	17	24	50	84	50	50	67	84	84	a
	All Locations	47	87	14	95	2	360	3	12	48	120	276	
Playing / digging in sand (away from water)	Lake Union	6	8	3	8	1	20	1	2	8	14	20	a
	Lake Washington	117	20	3	31	1	180	2	4	10	16	80	a
	Lake Sammamish	13	20	7	25	2	72	2	4	6	29	72	a
	All Locations	136	20	3	30	1	180	2	4	10	16	80	
Picnic / barbecue	Lake Union	1	12	--	--	12	12	--	--	--	--	--	--
	Lake Washington	104	18	3	32	1	240	1	3	6	17	88	a
	Lake Sammamish	25	7	3	17	1	88	1	1	3	6	66	b
	All Locations	130	16	3	30	1	240	1	2	5	12	88	
Playing sports / games	Lake Union	8	8	2	5	1	14	1	3	7	14	14	a, b
	Lake Washington	144	33	4	48	1	264	3	5	12	36	138	a
	Lake Sammamish	18	16	7	30	1	113	1	2	3	13	113	b
	All Locations	170	30	4	46	1	264	1	5	12	33	120	
Nature observation	Lake Union	19	20	5	22	2	75	2	8	12	20	75	a
	Lake Washington	190	29	4	51	1	360	1	5	12	24	120	a
	Lake Sammamish	22	41	15	73	1	240	1	2	5	54	240	a
	All Locations	231	30	3	51	1	360	1	5	12	24	120	
Playing / digging in sand (in water)	Lake Union	1	12	--	--	12	12	--	--	--	--	--	--
	Lake Washington	70	19	5	45	1	300	1	3	8	13	112	a
	Lake Sammamish	6	10	3	6	3	18	3	4	9	16	18	a
	All Locations	77	18	5	43	1	300	1	4	8	14	81	

Activity	Water Body	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Wading (legs only)	Lake Union	1	20	--	--	20	20	--	--	--	--	--	--
	Lake Washington	61	15	3	21	1	100	1	4	6	14	60	a
	Lake Sammamish	9	7	2	6	1	18	1	3	5	14	18	a
	All Locations	71	14	2	19	1	100	1	4	6	15	60	
Swimming (full body)	Lake Union	1	5	--	--	5	5	--	--	--	--	--	--
	Lake Washington	178	15	1	20	1	120	1	4	8	18	60	a
	Lake Sammamish	10	8	2	7	1	18	1	2	6	15	18	a
	All Locations	189	14	1	20	1	120	1	4	8	16	58	
Scuba diving	Lake Union	--	--	--	--	--	--	--	--	--	--	--	--
	Lake Washington	4	49	0	0	49	49	49	49	49	49	49	--
	Lake Sammamish	--	--	--	--	--	--	--	--	--	--	--	--
	All Locations	4	49	0	0	49	49	49	49	49	49	49	
Surfing	Lake Union	--	--	--	--	--	--	--	--	--	--	--	--
	Lake Washington	7	43	24	63	5	180	5	10	12	60	180	--
	Lake Sammamish	--	--	--	--	--	--	--	--	--	--	--	--
	All Locations	7	43	24	63	5	180	5	10	12	60	180	
Water skiing / wakeboarding	Lake Union	4	26	8	16	18	50	18	18	18	42	50	a
	Lake Washington	5	15	4	9	4	28	4	8	12	23	28	a
	Lake Sammamish	22	18	4	18	1	64	1	5	6	28	61	a
	All Locations	31	18	3	16	1	64	1	5	12	28	56	
Jet skiing	Lake Union	--	--	--	--	--	--	--	--	--	--	--	--
	Lake Washington	16	19	7	30	1	120	1	5	9	22	120	a
	Lake Sammamish	16	8	1	4	2	15	2	4	9	12	15	a
	All Locations	32	13	4	22	1	120	2	4	9	12	73	
Boating (all types)	Lake Union	22	12	3	16	1	60	1	3	5	18	59	a, b
	Lake Washington	201	21	4	52	1	360	1	4	7	15	71	a
	Lake Sammamish	50	7	1	5	1	28	1	5	5	7	19	b
	All Locations	273	18	3	45	1	360	1	4	6	12	60	

[1] Significant differences ($p \leq 0.05$) are indicated by varying letters (e.g., 'a' vs 'b' indicates a difference between groups).

'-- Sample size is less than 2, no statistics computed.

Table 16. Event frequency (days/year): descriptive statistics for recreational activities by gender

Activity	Gender	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Walking / running / hiking	Female	372	89	6	117	1	360	1	8	24	120	360	a
	Male	334	111	7	125	1	360	2	10	54	180	360	b
Sitting / sunbathing / reading	Female	359	20	2	34	1	300	1	4	8	21	72	a
	Male	236	27	3	49	1	360	1	4	12	27	103	b
Biking	Female	14	89	30	113	4	360	4	12	36	168	360	a
	Male	33	86	15	88	2	300	3	12	50	120	258	a
Playing / digging in sand (away from water)	Female	72	18	4	33	1	180	2	4	9	12	93	a
	Male	63	21	3	26	1	100	2	4	10	27	80	a
Picnic / barbecue	Female	66	10	2	17	1	88	1	2	4	12	64	a
	Male	63	22	5	39	1	240	1	4	6	24	94	b
Playing sports / games	Female	63	32	6	49	1	216	1	5	12	32	174	a
	Male	104	28	4	43	1	264	2	5	10	33	120	a
Nature observation	Female	132	28	4	50	1	275	1	5	12	24	134	a
	Male	97	32	5	54	1	360	1	4	12	33	123	a
Playing / digging in sand (in water)	Female	44	22	8	55	1	300	1	4	8	12	175	a
	Male	31	13	3	15	1	72	2	3	8	16	56	a
Wading (legs only)	Female	48	13	3	18	1	100	1	4	6	15	60	a
	Male	22	16	5	23	1	84	1	3	6	13	80	a
Swimming (full body)	Female	111	14	2	17	1	100	2	4	9	16	58	a
	Male	78	15	3	23	1	120	1	3	6	17	81	a
Scuba diving	Female	0	--	--	--	--	--	--	--	--	--	--	--
	Male	4	49	0	0	49	49	49	49	49	49	49	--
Surfing	Female	0	--	--	--	--	--	--	--	--	--	--	--
	Male	7	43	24	63	5	180	5	10	12	60	180	--
Water skiing / wakeboarding	Female	9	20	5	16	1	50	1	3	18	28	50	a
	Male	22	18	4	17	1	64	2	6	9	28	61	a
Jet skiing	Female	7	8	2	5	2	15	2	3	10	12	15	a
	Male	25	15	5	24	1	120	1	4	7	12	98	a
Boating (all types)	Female	91	9	1	11	1	60	1	4	5	10	32	a
	Male	181	22	4	55	1	360	1	5	7	16	79	b

[1] Significant differences ($p \leq 0.05$) are indicated by varying letters (e.g., 'a' vs 'b' indicates a difference between groups).

'-- Sample size is less than 2, no statistics computed.

Table 17. Event frequency (days/year): descriptive statistics for recreational activities by age group

Activity	Age Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Walking / running / hiking	0-6	42	38	10	66	1	360	1	4	12	42	147	a
	>6-12	23	13	4	20	1	96	1	4	6	12	86	a
	>12-18	42	138	21	135	1	360	4	12	115	240	360	b
	>18-59	487	95	5	120	1	360	1	9	30	120	360	c
	60+	109	142	12	126	1	360	4	16	120	240	360	b
Sitting / sunbathing / reading	0-6	11	27	7	23	3	84	3	12	24	36	84	a
	>6-12	9	11	5	14	1	45	1	3	5	12	45	b
	>12-18	43	26	8	54	1	300	1	4	10	20	163	a, b, c
	>18-59	489	20	1	33	1	360	1	4	10	21	72	a, b
	60+	37	66	13	81	1	360	1	4	30	120	241	a, c
Biking	0-6	1	3	--	--	3	3	--	--	--	--	--	--
	>6-12	3	50	47	82	2	144	2	2	3	144	144	a
	>12-18	12	115	28	98	4	300	4	26	115	210	300	a
	>18-59	30	84	18	97	4	360	4	12	48	135	294	a
	60+	1	24	--	--	24	24	--	--	--	--	--	--
Playing / digging in sand (away from water)	0-6	44	16	3	19	1	84	2	4	12	16	72	a
	>6-12	26	11	2	12	2	48	2	4	8	12	47	a
	>12-18	8	35	13	38	4	80	4	5	11	80	80	a
	>18-59	56	25	5	39	1	180	2	4	11	25	136	a
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Picnic / barbecue	0-6	15	30	9	37	1	88	1	5	6	88	88	a
	>6-12	8	8	1	3	4	12	4	5	8	12	12	a, b
	>12-18	1	1	--	--	1	1	--	--	--	--	--	--
	>18-59	99	15	3	31	1	240	1	2	5	12	88	b, c
	60+	3	3	1	2	1	4	1	1	4	4	4	c
Playing sports / games	0-6	34	37	8	46	3	180	3	5	12	71	135	a
	>6-12	20	17	5	21	1	72	1	5	12	15	72	a
	>12-18	23	35	10	48	2	150	2	4	12	80	149	a
	>18-59	85	30	5	50	1	264	1	5	12	24	162	a
	60+	6	4	2	4	1	12	1	1	3	7	12	b
Nature observation	0-6	17	24	7	29	1	108	1	6	12	38	108	a

Table 17. Event frequency (days/year): descriptive statistics for recreational activities by age group (continued)

Activity	Age Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
	>6-12	1	8	--	--	8	8	--	--	--	--	--	--
	>12-18	6	8	1	4	2	12	2	4	9	10	12	a
	>18-59	166	22	3	37	1	275	1	4	12	21	102	b
	60+	39	70	14	88	1	360	1	6	24	120	252	a
Playing / digging in sand (in water)	0-6	23	13	3	15	1	72	1	6	10	16	65	a
	>6-12	17	10	3	11	2	45	2	3	5	11	45	a
	>12-18	6	11	4	9	2	28	2	7	9	16	28	a
	>18-59	30	28	12	66	1	300	1	3	6	15	234	a
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Wading (legs only)	0-6	12	19	8	26	3	84	3	6	6	25	84	a
	>6-12	7	13	8	21	1	60	1	2	5	9	60	a
	>12-18	1	12	--	--	12	12	--	--	--	--	--	--
	>18-59	48	13	3	18	1	100	1	4	6	15	60	a
	60+	2	17	16	22	1	32	1	1	17	32	32	a
Swimming (full body)	0-6	3	14	6	11	2	24	2	2	15	24	24	a
	>6-12	15	10	3	12	1	45	1	2	4	12	45	a
	>12-18	36	17	4	23	1	100	1	4	10	19	89	a
	>18-59	131	14	2	19	1	120	1	4	6	16	51	a
	60+	2	42	38	54	4	80	4	4	42	80	80	a
Scuba diving	0-6	0	--	--	--	--	--	--	--	--	--	--	--
	>6-12	0	--	--	--	--	--	--	--	--	--	--	--
	>12-18	0	--	--	--	--	--	--	--	--	--	--	--
	>18-59	4	49	0	0	49	49	49	49	49	49	49	--
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Surfing	0-6	0	--	--	--	--	--	--	--	--	--	--	--
	>6-12	0	--	--	--	--	--	--	--	--	--	--	--
	>12-18	0	--	--	--	--	--	--	--	--	--	--	--
	>18-59	7	43	24	63	5	180	5	10	12	60	180	--
	60+	0	--	--	--	--	--	--	--	--	--	--	--

Table 17. Event frequency (days/year): descriptive statistics for recreational activities by age group (continued)

Activity	Age Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Water skiing / wakeboarding	0-6	0	--	--	--	--	--	--	--	--	--	--	--
	>6-12	0	--	--	--	--	--	--	--	--	--	--	--
	>12-18	11	13	3	10	5	28	5	5	6	28	28	a
	>18-59	20	21	4	18	1	64	1	5	18	39	63	a
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Jet skiing	0-6	2	10	0	0	10	10	10	10	10	10	10	a
	>6-12	0	--	--	--	--	--	--	--	--	--	--	--
	>12-18	5	11	2	4	7	15	7	7	12	14	15	a
	>18-59	25	14	5	24	1	120	1	4	5	12	98	a
	60+	0	--	--	--	--	--	--	--	--	--	--	--
Boating (all types)	0-6	11	9	3	10	2	36	2	3	5	10	36	a
	>6-12	15	10	2	9	2	36	2	4	6	10	36	a
	>12-18	12	11	2	5	4	20	4	4	12	14	20	a
	>18-59	218	20	3	50	1	360	1	4	6	14	60	a
	60+	16	13	7	26	1	108	1	1	5	11	108	a

[1] Significant differences ($p \leq 0.05$) are indicated by varying letters (e.g., 'a' vs 'b' indicates a difference between groups).

'-- Sample size is less than 2, no statistics computed.

Table 18. Event frequency (days/year): descriptive statistics for recreational activities by ethnic group

Activity	Ethnic Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
Walking / running / hiking	Caucasian	587	98	5	121	1	360	1	8	36	147	360	a
	African American	16	103	34	136	3	360	3	8	18	216	360	a
	Native American	5	66	36	80	6	180	6	9	12	150	180	a
	Hispanic	14	141	33	123	2	360	2	12	150	195	360	a
	Asian	48	114	18	127	1	360	1	11	72	165	360	a
	All Other	37	83	20	121	1	360	1	5	15	119	360	a
Sitting / sunbathing / reading	Caucasian	485	24	2	43	1	360	1	4	10	24	96	a
	African American	22	13	3	14	1	60	1	4	8	12	57	a
	Native American	1	12	--	--	12	12	--	--	--	--	--	--
	Hispanic	16	35	15	59	2	180	2	4	12	33	180	a
	Asian	40	19	3	21	1	84	1	6	11	30	83	a
	All Other	35	18	4	22	1	80	1	3	12	24	74	a
Biking	Caucasian	37	83	15	91	2	300	3	12	32	132	246	a
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	2	71	50	70	21	120	21	21	71	120	120	a
	Asian	6	130	56	137	24	360	24	42	55	270	360	a
	All Other	2	36	12	17	24	48	24	24	36	48	48	a
Playing / digging in sand (away from water)	Caucasian	122	18	3	28	1	180	2	4	9	16	79	a
	African American	1	15	--	--	15	15	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	1	2	--	--	2	2	--	--	--	--	--	--
	Asian	6	30	20	50	3	132	3	8	12	42	132	a
	All Other	6	38	13	31	12	84	12	12	26	74	84	a
Picnic / barbecue	Caucasian	104	18	3	33	1	240	1	3	6	15	88	a
	African American	3	4	1	3	1	6	1	1	4	6	6	a
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	4	8	5	11	1	24	1	1	4	20	24	a
	Asian	15	5	1	6	1	21	1	1	4	5	21	a

Table 18. Event frequency (days/year): descriptive statistics for recreational activities by ethnic group (continued)

Activity	Ethnic Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
	All Other	4	4	3	5	1	12	1	1	2	10	12	a
Playing sports / games	Caucasian	133	25	4	42	1	264	1	5	10	22	120	a, b
	African American	6	41	16	40	4	116	4	7	36	65	116	a, b
	Native American	3	72	0	0	72	72	72	72	72	72	72	b
	Hispanic	5	90	38	85	7	180	7	11	70	180	180	b
	Asian	8	9	2	6	1	18	1	5	9	12	18	a
	All Other	15	51	14	54	1	120	1	5	12	113	120	a, b
Nature observation	Caucasian	199	27	3	45	1	252	1	4	12	24	120	a
	African American	4	12	6	12	4	30	4	4	6	24	30	a
	Native American	2	66	54	76	12	120	12	12	66	120	120	a
	Hispanic	2	38	26	36	12	63	12	12	38	63	63	a
	Asian	12	13	7	23	1	84	1	4	7	12	84	a
	All Other	12	86	33	116	1	360	1	12	36	108	360	a
Playing / digging in sand (in water)	Caucasian	65	14	4	29	1	180	1	4	7	12	42	a
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	2	3	1	1	2	4	2	2	3	4	4	a
	Asian	4	12	2	4	9	18	9	9	11	17	18	a
	All Other	6	69	47	116	3	300	3	3	18	129	300	a
Wading (legs only)	Caucasian	65	13	2	18	1	100	1	4	6	15	60	a
	African American	2	7	3	4	4	10	4	4	7	10	10	a
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	1	5	--	--	5	5	--	--	--	--	--	--
	Asian	0	--	--	--	--	--	--	--	--	--	--	--
	All Other	3	33	26	45	2	84	2	2	12	84	84	a
Swimming (full body)	Caucasian	170	15	2	20	1	120	1	4	8	18	60	a
	African American	2	9	3	4	6	12	6	6	9	12	12	a
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	5	6	3	6	1	15	1	2	4	12	15	a
	Asian	8	8	3	9	2	30	2	3	5	10	30	a

Table 18. Event frequency (days/year): descriptive statistics for recreational activities by ethnic group (continued)

Activity	Ethnic Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
	All Other	4	11	5	10	2	24	2	3	10	22	24	a
Scuba diving	Caucasian	4	49	0	0	49	49	49	49	49	49	49	--
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	0	--	--	--	--	--	--	--	--	--	--	--
	Asian	0	--	--	--	--	--	--	--	--	--	--	--
	All Other	0	--	--	--	--	--	--	--	--	--	--	--
Surfing	Caucasian	6	49	28	67	5	180	5	9	18	90	180	--
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	0	--	--	--	--	--	--	--	--	--	--	--
	Asian	1	12	--	--	12	12	--	--	--	--	--	--
	All Other	0	--	--	--	--	--	--	--	--	--	--	--
Water skiing / wakeboarding	Caucasian	30	18	3	17	1	64	1	5	12	28	56	--
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	1	18	--	--	18	18	18	18	18	18	18	--
	Asian	0	--	--	--	--	--	--	--	--	--	--	--
	All Other	0	--	--	--	--	--	--	--	--	--	--	--
Jet skiing	Caucasian	30	14	4	22	1	120	2	4	9	12	80	a
	African American	0	--	--	--	--	--	--	--	--	--	--	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	0	--	--	--	--	--	--	--	--	--	--	--
	Asian	2	10	6	8	4	15	4	4	10	15	15	a
	All Other	0	--	--	--	--	--	--	--	--	--	--	--
Boating (all types)	Caucasian	250	15	2	36	1	360	1	4	6	12	60	a
	African American	1	4	--	--	4	4	4	4	4	4	4	--
	Native American	0	--	--	--	--	--	--	--	--	--	--	--
	Hispanic	4	27	16	31	1	72	1	5	17	59	72	a
	Asian	5	7	4	10	1	24	1	1	4	15	24	a

Table 18. Event frequency (days/year): descriptive statistics for recreational activities by ethnic group (continued)

Activity	Ethnic Group	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences [1]
								5%	25%	50%	75%	95%	
	All Other	13	75	35	127	5	360	5	13	24	48	360	b

[1] Significant differences ($p \leq 0.05$) are indicated by varying letters (e.g., 'a' vs 'b' indicates a difference between groups).

'-- Sample size is less than 2, no statistics computed.

Table 19. Parks most frequently mentioned by respondents by activity class

Lake Union	Lake Washington	Lake Sammamish
Sand/Sediment Contact Activities		
Marymoor Park	Seward Park	Marymoor Park
Washington Arboretum	Gasworks Park	Lake Sammamish State Park
Hiram Chittendon Locks	Lake Sammamish State Park	Vasa Park
Magnuson Park	Marina Park	Gasworks Park
Madison Park	Marymoor Park	Marina Park
Water Contact-Activities		
Magnuson Park	Lake Sammamish State Park/ boat launch	Gene Coulon Park/boat launch
Stay Sayers Park	Seward Park	Lake Sammamish State Park/ boat launch
Gasworks Park	Gene Coulon Park/boat launch	SE 40th boat launch
Washington Arboretum	Gasworks Park	Houghton Beach Park
14th Ave NW boat ramp	Houghton Beach Park	Marymoor Park

Table 20. Interview status (Fish Consumption Survey)

Interview Status		Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Agree					
Non-Repeat Contact	No Language Barrier	3	150	55	208 (80%)
	Language Barrier	0	4	0	4 (~2%)
Repeat Contact	No Language Barrier	0	4	0	4 (~2%)
Disagree					
Non-Repeat Contact	No Language Barrier	0	22	3	25 (~10%)
	Language Barrier	0	7	4	11 (4%)
Repeat Contact	No Language Barrier	0	5	3	8 (3%)
	Language Barrier	0	0	0	0 (0%)
Total		**3**	**192**	**65**	**260**

Table 21. Number of interviews by age (Fish Consumption Survey)

Age Group	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
0 – 6 years	0	0	0	0 (0%)
>6 – 12 years	0	3	4	7 (3%)
>12 – 18 years	0	15	8	23 (~11%)
>18 –59 years	1	113	33	147 (69%)
60+ years	2	17	9	28 (13%)
Not recorded [1]	0	6	1	7 (3%)
Total	**3**	**154**	**55**	**212**

[1] Data missing due to non-response to this question or surveyor error.

Table 22. Number of interviews by gender (Fish Consumption Survey)

Gender	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Male	3	136	47	186 (88%)
Female	0	17	7	24 (11%)
Not recorded [1]	0	1	1	2 (<1%)
Total	3	154	55	212

[1] Data missing due to surveyor error.

Table 23. Number of interviews by ethnic group (Fish Consumption Survey)

Gender	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Caucasian (total)	3	96	51	150 (71%)
Eastern European	0	6	1	7
African American	0	16	0	16 (8%)
Native American	0	1	0	1 (<1%)
Hispanic/Latino	0	7	0	7 (3%)
Asian (total)	0	22	3	25 (12%)
Cambodia	0	3	2	5
Chinese	0	3	0	3
Filipino	0	6	0	6
Japanese	0	3	0	3
Laotian	0	1	1	2
Korean	0	1	0	1
Pacific Islander	0	1	0	1
Vietnamese	0	4	0	4
Other (unspecified)	0	2	0	2 (<1%)
Multi-racial	0	4	0	4 (2%)
Not recorded [1]	0	6	1	7 (3%)
Total	**3**	**154**	**55**	**212**

[1] Data missing due to non-response to this question or surveyor error.

Table 24. Number of interviews by city (Fish Consumption Survey)

City	Lake Union	Lake Washington	Lake Sammamish	Total (% of Total)
Seattle	3	47	1	51 (24%)
Kirkland	0	25	0	25 (12%)
Bellevue	0	8	6	14 (7%)
Redmond	0	8	6	14 (7%)
Mercer Island	0	12	0	12 (6%)
Bothell	0	11	0	11 (5%)
Renton	0	6	3	9 (4%)
Issaquah	0	1	7	8 (4%)
Lynwood	0	6	1	7 (3%)
Kenmore	0	5	0	5 (2%)
Black Diamond	0	0	4	4 (2%)
Edmonds	0	2	2	4 (2%)
Maple Valley	0	0	4	4 (2%)
North Bend	0	0	4	4 (2%)
Snoqualmie	0	0	4	4 (2%)
Puyallup	0	3	0	3 (1%)
Sammamish	0	1	2	3 (1%)
Carnation	0	0	2	2 (<1%)
Everett	0	1	1	2 (<1%)
Monroe	0	0	2	2 (<1%)
Mountlake Terrace	0	2	0	2 (<1%)
Tacoma	0	1	1	2 (<1%)
Arlington	0	1	0	1 (<1%)
Bremerton	0	1	0	1 (<1%)
Buckley	0	0	1	1 (<1%)
Duvall	0	1	0	1 (<1%)
Fall City	0	0	1	1 (<1%)
Federal Way	0	1	0	1 (<1%)
Kent	0	0	1	1 (<1%)
Marysville	0	1	0	1 (<1%)
Medina	0	1	0	1 (<1%)
Olympia	0	1	0	1 (<1%)
Preston	0	1	0	1 (<1%)
Woodinville	0	1	0	1 (<1%)
Out of State	0	1	0	1 (<1%)
Not Recorded	0	5	2	7 (3%)
Total	**3**	**154**	**55**	**212**

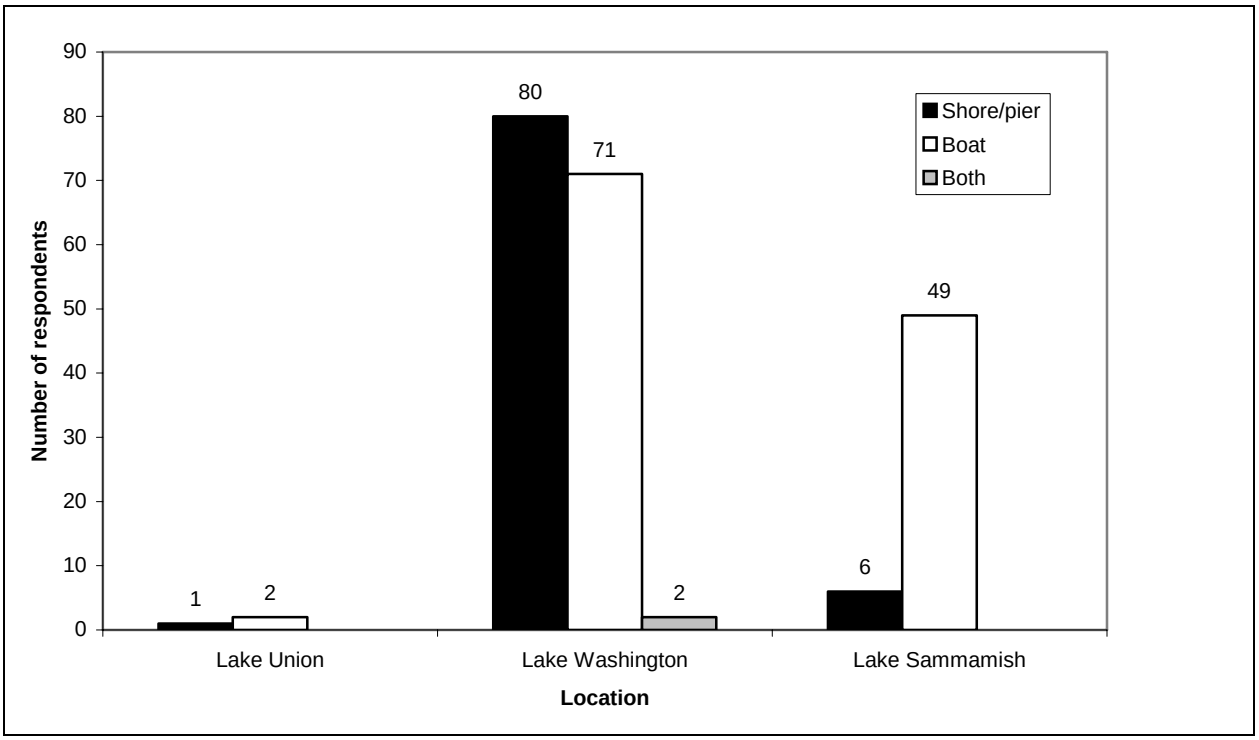


Figure 7. Number of anglers by recreational location

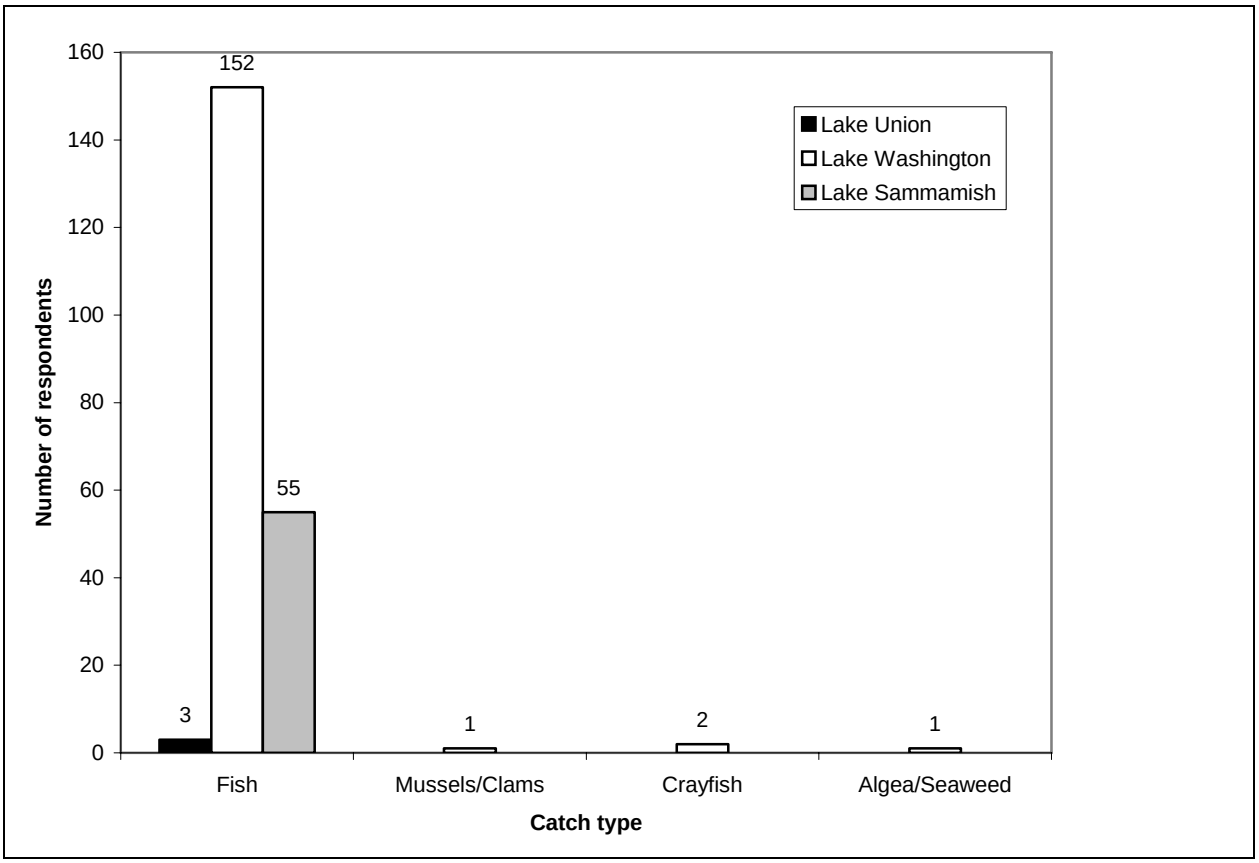


Figure 8. Number of anglers by type of catch

Table 25. Most frequently reported fishing sites other than the site interviewed

Location	Percent Reporting
No other location	50%
Lake Sammamish State Park & boat launch	7%
Gene Coulon Beach Park & boat launch	5%
Mercer Island boat launch	3%
Kenmore boat launch	2%
Magnuson Park & boat launch	2%
Waverly Beach Park	2%

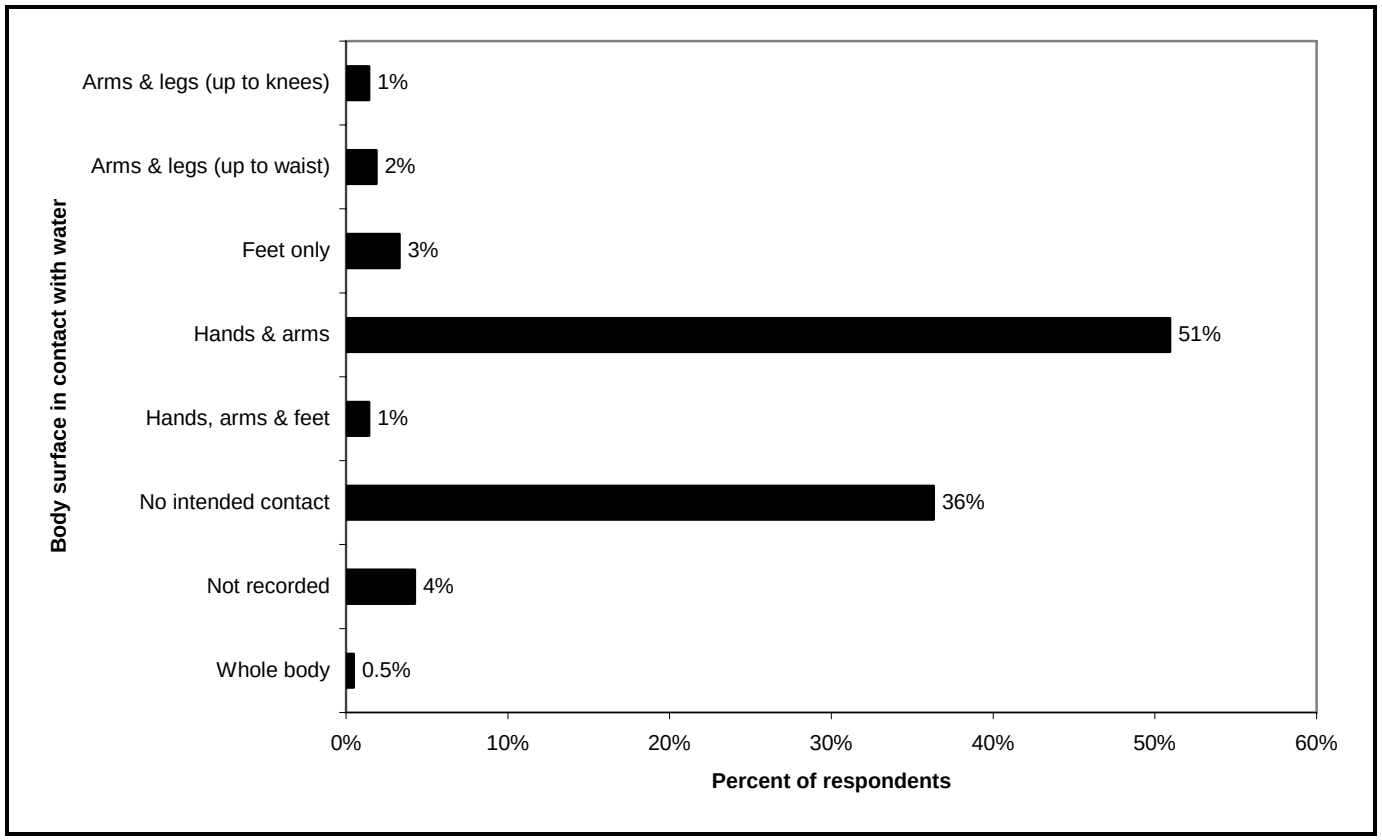


Figure 9. Percent of anglers contacting water by body surface

Table 26. Event duration for fishing (minutes/event)

Location	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences
							5%	25%	50%	75%	95%	
Lake Union	3	150	30	52	90	180	90	90	180	180	180	a
Lake Washington	154	203	10	122	30	600	41	120	180	240	458	a
Lake Sammamish	54	233	14	104	90	480	113	150	195	270	480	a
All Locations	211	210	8	117	30	600	60	120	180	270	462	
Gender												
Female	24	222	27	132	60	600	60	124	195	263	563	a
Male	185	208	9	116	30	600	60	120	180	255	471	a
Age												
>6-12	7	167	18	49	90	240	90	120	180	180	240	a
>12-18	23	223	24	117	30	570	30	150	240	270	522	a
>18-59	147	214	10	124	30	600	60	120	180	270	480	a
60+	28	194	17	88	30	480	44	150	180	240	399	a
Ethnic Group												
Caucasian	149	219	9	110	30	600	60	150	210	270	435	a
African American	16	163	18	71	30	300	30	120	165	210	300	b
Native American	1	120	--	--	120	120	--	--	--	--	--	--
Hispanic/Latino	7	133	30	79	30	240	30	30	150	180	240	b
Asian	27	159	17	90	60	420	60	60	135	240	372	b
All Other	11	330	64	213	30	600	30	120	270	570	600	a

Table 27. Event frequency for fishing (days/year)

Location	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences
							5%	25%	50%	75%	95%	
Lake Union	3	6	1	2	4	7	4	4	7	7	7	a
Lake Washington	149	20	4	44	1	360	1	3	6	13	101	a
Lake Sammamish	52	16	3	19	1	84	1	4	10	22	65	a
All Locations	204	19	3	39	1	360	1	3	7	14	74	
Gender												
Female	23	6	1	4	1	14	1	2	5	9	14	a
Male	179	21	3	42	1	360	1	4	8	20	81	b
Age												
>6-12	7	12	5	12	1	36	1	2	14	14	36	a
>12-18	23	12	5	25	1	120	1	3	5	10	105	a
>18-59	143	20	3	41	1	360	1	3	7	16	74	a
60+	25	22	9	43	1	216	1	6	9	18	171	a
Ethnic Group												
Caucasian	145	21	4	43	1	360	1	4	8	14	83	a
African American	16	14	3	11	1	36	1	5	10	23	36	a
Native American	1	6	--	--	6	6	--	--	--	--	--	--
Hispanic/Latino	6	17	7	17	5	48	5	6	10	30	48	a
Asian	27	10	3	17	1	75	1	2	3	9	64	a
All Other	9	28	19	57	3	180	3	5	6	23	180	a

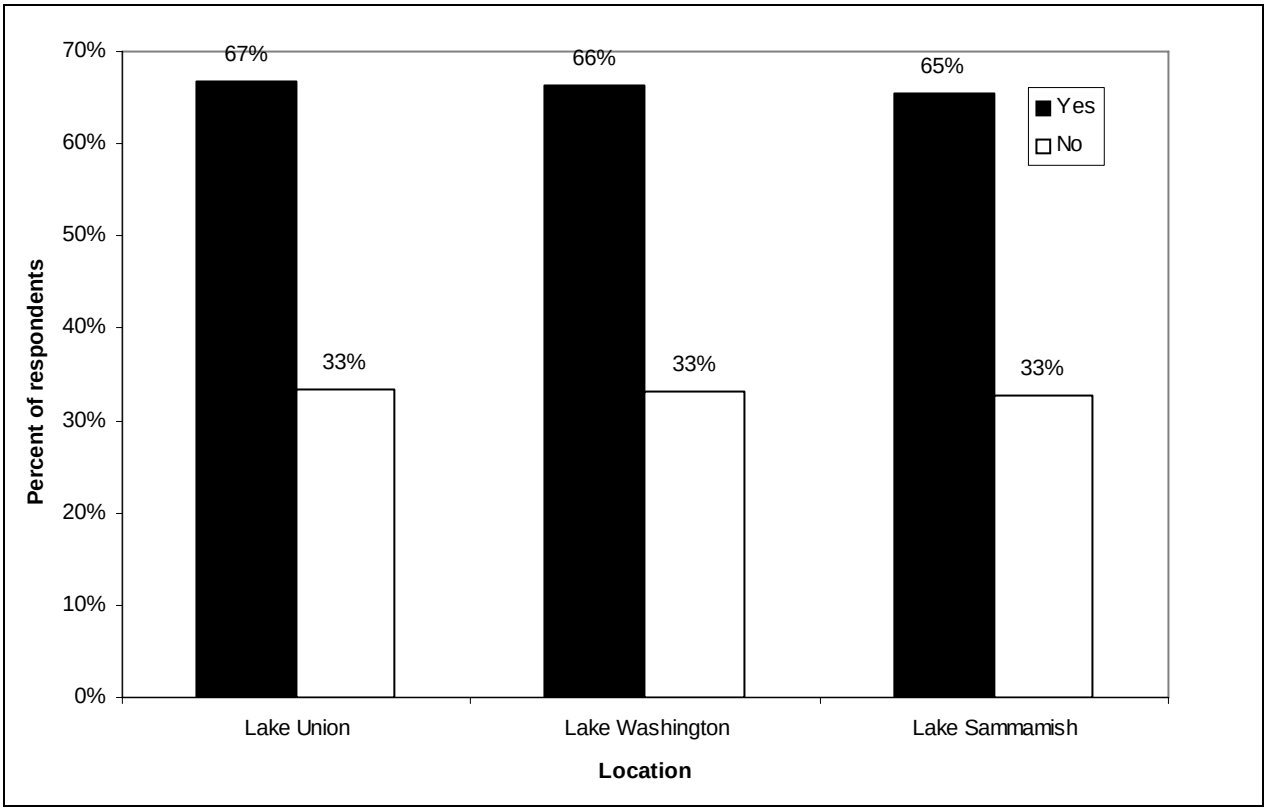


Figure 10. Percent of anglers who have consumed a self-caught fish

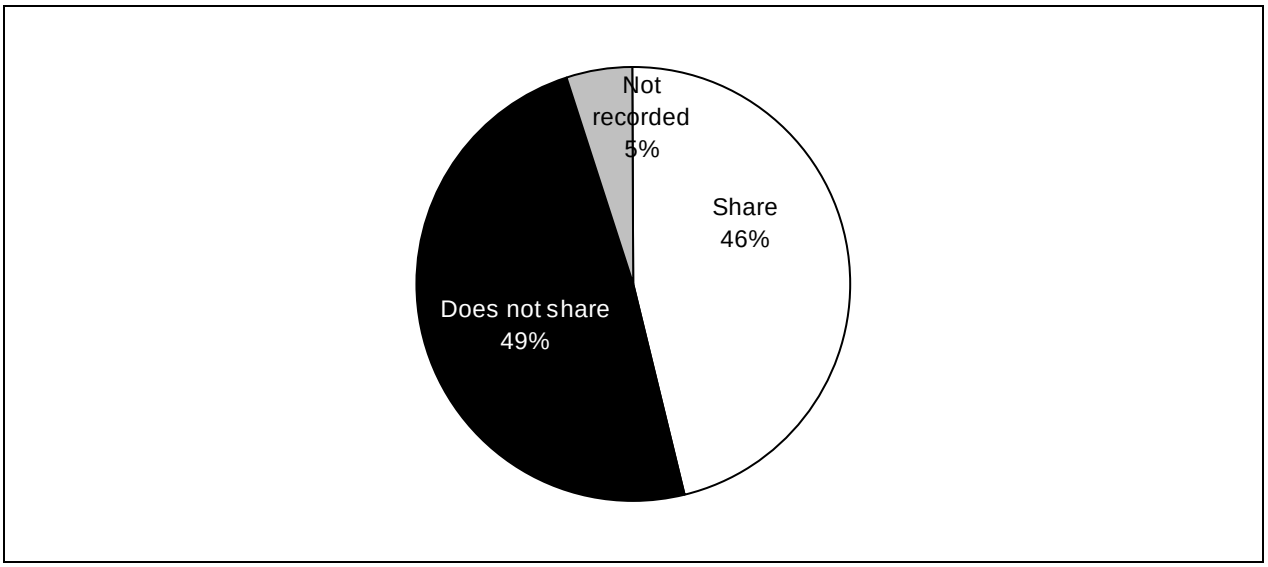


Figure 11. Percent of anglers who share self-caught fish with young children

Table 28. Typical self-caught fish meal size

Typical Meal Size (ounces)	Lake Union	Lake Washington	Lake Sammamish	Total
<4	0	1	0	1 (<1%)
4	0	3	1	4 (3%)
6	2	32	10	44 (31%)
7	0	4	6	10 (7%)
8	0	29	8	37 (26%)
9	0	1	3	4 (3%)
10	0	12	3	15 (10%)
11	0	1	0	1 (<1%)
12	0	12	2	14 (10%)
14	0	1	0	1 (<1%)
16	0	1	2	3 (2%)
Not recorded [1]	0	8	2	10 (7%)
Total	**2**	**105**	**37**	**144**

[1] Data missing due to non-response to this question or surveyor error.

Table 29. Typical self-caught fish meal size consumed by young children

Meal Size (ounces)	Ages 0-6		Ages >6-12		Ages >12-18	
	Lake Washington	Lake Sammamish	Lake Washington	Lake Sammamish	Lake Washington	Lake Sammamish
<4	4	0	0	2	0	0
4	3	1	6	2	1	1
5	2	0	2	0	0	0
6	7	0	12	9	2	0
7	0	0	4	1	5	0
8	1	1	0	3	0	2
9	0	1	1	0	3	1
10	0	0	1	0	1	0
12	0	0	0	0	0	2
Total	**17**	**3**	**26**	**17**	**12**	**6**

Table 30. Number of reported self-caught fish-meals in the past month

Number of Meals	Lake Union	Lake Washington	Lake Sammamish	Total
0	0	48	23	71 (49%)
1	0	22	3	25 (17%)
2	0	13	2	15 (10%)
3	0	8	3	11 (8%)
4	0	2	1	3 (2%)
4.5	0	0	3	3 (2%)
5	0	1	0	1 (<1%)
6	0	1	0	1 (<1%)
8	0	1	0	1 (<1%)
10	0	1	0	1 (<1%)
12	0	0	1	1 (<1%)
20	0	1	0	1 (<1%)
Not recorded [1]	2	7	1	10 (7%)
Total	**2**	**105**	**37**	**144**

[1] Data missing due to non-response to this question or surveyor error.

Table 31. Respondent consumption rates (grams/day)

Parameter	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences
							5%	25%	50%	75%	95%	
Location												
Lake Union	0	--	--	--	--	--	--	--	--	--	--	--
Lake Washington	93	10.8	2.7	26.4	0.0	226.8	0.0	0.0	5.7	13.2	30.2	a
Lake Sammamish	35	9.1	3.1	18.2	0.0	79.4	0.0	0.0	0.0	15.1	56.7	a
All Locations	128	10.3	2.2	24.4	0.0	226.8	0.0	0.0	0.0	14.2	41.7	
Gender												
Female	18	4.3	2.1	9.0	0.0	28.4	0.0	0.0	0.0	2.4	28.4	a
Male	109	11.4	2.5	26.1	0.0	226.8	0.0	0.0	5.7	15.1	51.0	a
Age												
>6-12	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	a
>12-18	13	14.5	7.2	26.1	0.0	94.5	0.0	0.0	0.0	18.0	94.5	a
>18-59	87	11.7	2.9	27.1	0.0	226.8	0.0	0.0	5.7	15.1	42.7	a
60+	20	5.6	2.7	12.2	0.0	51.0	0.0	0.0	0.0	5.7	49.8	a
Ethnic Group												
Caucasian	94	8.0	1.6	15.7	0.0	94.5	0.0	0.0	0.0	9.5	35.4	a
African American	11	26.1	20.3	67.2	0.0	226.8	0.0	0.0	0.0	11.3	226.8	a
Native American	0	--	--	--	--	--	--	--	--	--	--	--
Hispanic/Latino	3	5.7	3.3	5.7	0.0	11.3	0.0	0.0	5.7	11.3	11.3	a
Asian	14	13.2	4.2	15.6	0.0	60.5	0.0	0.0	11.3	17.5	60.5	a
All Other	3	9.5	9.5	16.4	0.0	28.4	0.0	0.0	0.0	28.4	28.4	a

Table 32. Children's consumption rates (grams/day)

Age Group	Location	N	Mean	Standard Error	Standard Deviation	Min	Max	Percentiles					Significant Differences
								5%	25%	50%	75%	95%	
All Ages	All Locations	81	7.2	2.2	19.9	0.0	113.4	0.0	0.0	0.0	5.7	28.9	--
All Ages	Lake Washington	55	9.5	3.2	23.6	0.0	113.4	0.0	0.0	0.0	9.5	86.2	a
All Ages	Lake Sammamish	26	2.4	1.0	5.1	0.0	17.0	0.0	0.0	0.0	0.5	16.3	a
0-6	All Locations	20	5.4	1.5	6.9	0.0	17.0	0.0	0.0	0.9	13.7	17.0	a
>6-12	All Locations	43	10.5	4.0	26.5	0.0	113.4	0.0	0.0	0.0	5.7	106.6	a
>12-18	All Locations	18	1.4	0.8	3.4	0.0	11.3	0.0	0.0	0.0	0.0	11.3	a
0-6	Lake Washington	17	5.4	1.7	6.8	0.0	17.0	0.0	0.0	1.9	12.3	17.0	a
>6-12	Lake Washington	26	15.9	6.5	32.9	0.0	113.4	0.0	0.0	3.8	9.9	113.4	a
>12-18	Lake Washington	12	1.1	0.8	2.8	0.0	9.5	0.0	0.0	0.0	0.0	9.5	a
0-6	Lake Sammamish	3	5.0	5.0	8.7	0.0	15.1	0.0	0.0	0.0	15.1	15.1	a
>6-12	Lake Sammamish	17	2.1	1.2	4.9	0.0	17.0	0.0	0.0	0.0	0.9	17.0	a
>12-18	Lake Sammamish	6	1.9	1.9	4.6	0.0	11.3	0.0	0.0	0.0	2.8	11.3	a

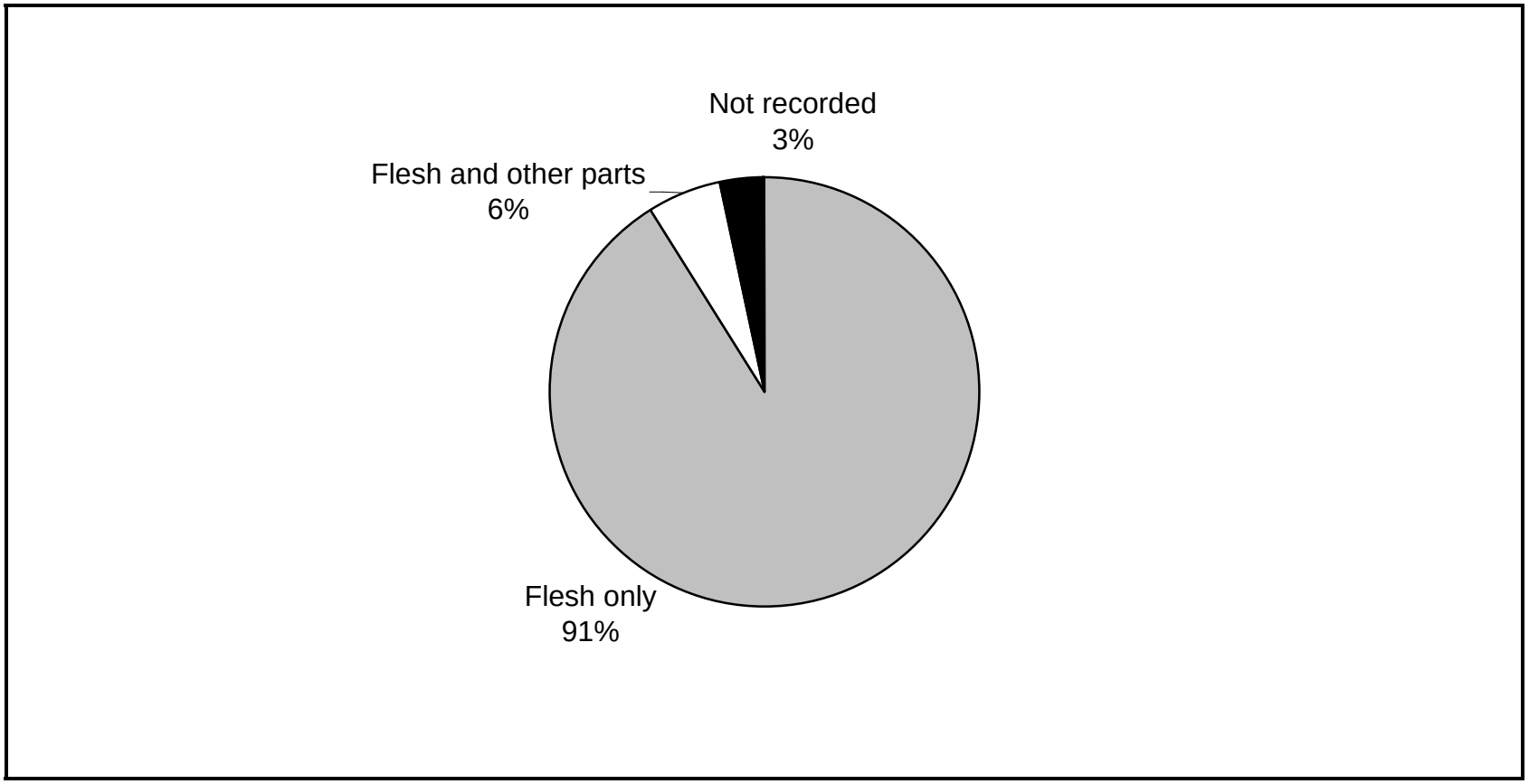


Figure 12. Percent of anglers by consumption preference

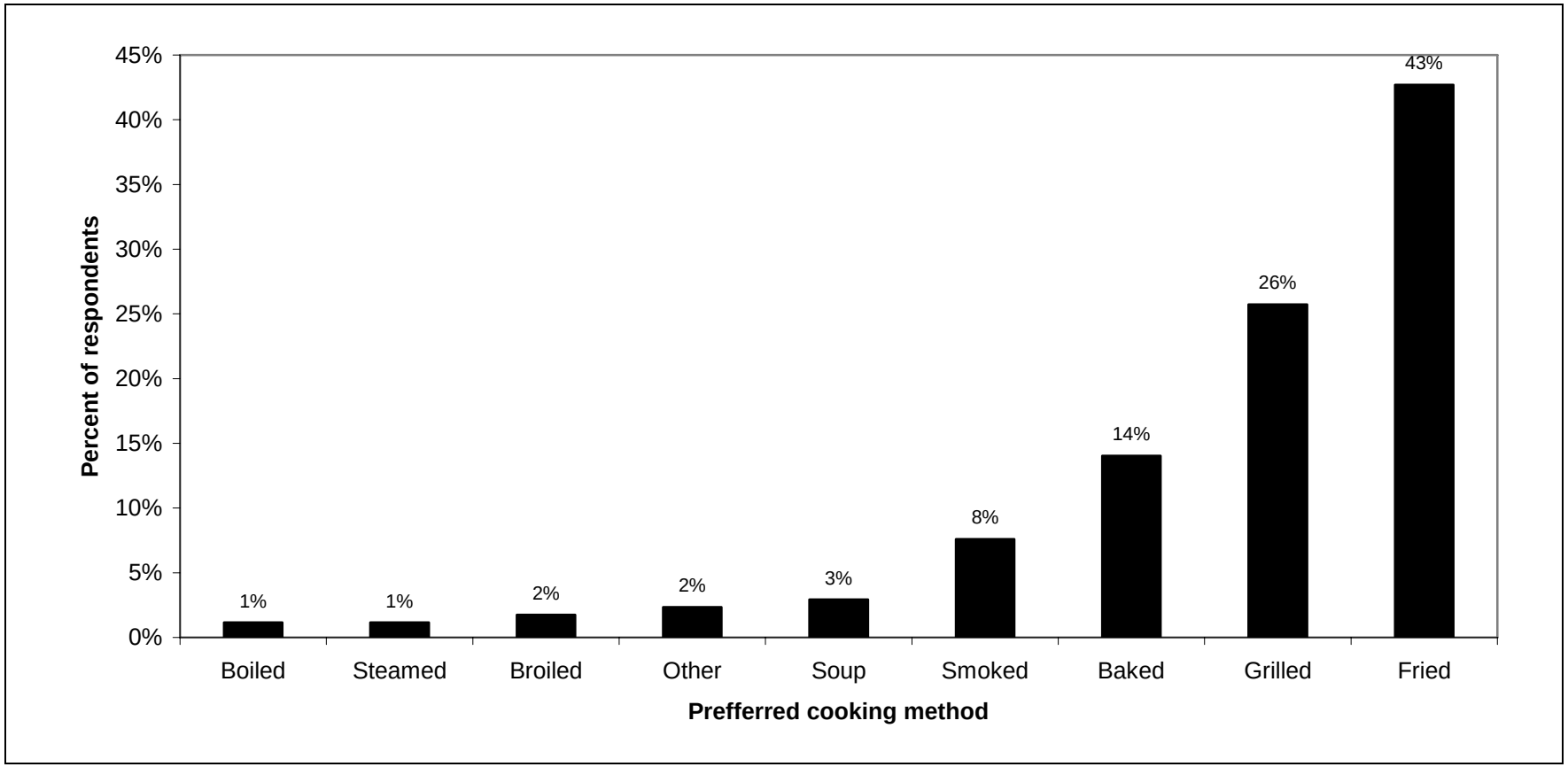


Figure 13. Percent of anglers by cooking method

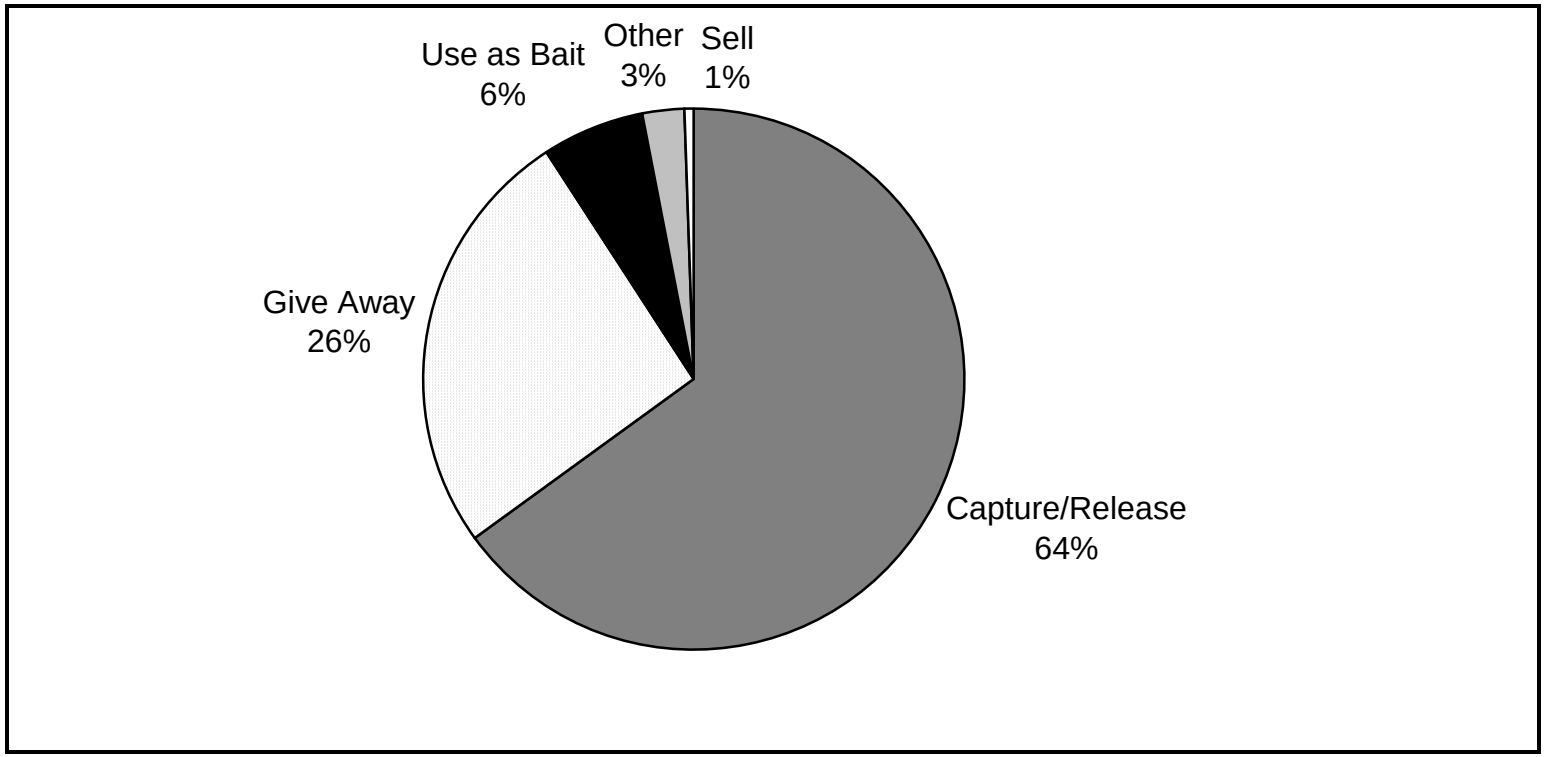


Figure 14. Percent of anglers intended use of non-consumed fish

Table 33. Measures of respondent catch

Location	Species Caught	# Anglers	# Fish	Average Length (inches)	Average Weight (pounds)	Consume this Species (% Yes)
Lake Washington	Bass (Smallmouth)	1	1	18.0	3.0	0
	Bass (Yellow)	1	2	15.0	7.5	100
	Bluegill	3	3	5.0	0.1	100
	Bullhead	1	12	5.5	0.2	0
	Perch	12	71	6.9	0.1	83
	Salmon (Coho)	1	1	30.0	16.0	100
	Salmon (Sockeye)	8	29	22.0	6.3	100
	Trout (Brown)	1	2	25.0	10.5	100
	Trout (Cutthroat)	3	5	13.4	1.0	100
	Trout (Rainbow)	3	5	10.9	2.7	100
	Trout (Unidentified)	2	2	9.0	0.4	100
Lake Sammamish	Bass (Smallmouth)	1	3	16.5	2.0	0
	Bass (Unidentified)	3	10	14.8	2.3	10
	Perch	2	4	9.5	--	100
	Trout (Cutthroat)	6	15	15.3	2.5	100
	Trout (Rainbow)	1	2	16.0	2.3	100

'—' Not measured

Table 34. Comparison of activity factors for critical exposure-related activities

Activity	Exposure Media	Exposure Duration (minutes/event)	Exposure Frequency (days/year)	Reference
Digging/playing in sand (away from water)	Sand/ Sediment	78 (180)[1] 52 (120) 60	20 (80)[1] 33 (84) Not reported	SWAMP Survey (all sites combined) King County (2002a) Tsang & Klepeis 1996; US EPA 1999, 2002
Digging/playing in sand (in/near water)	Sand/ Sediment & Water	70 (180) 69 (150) 60	18 (81) 36 (123) Not reported	SWAMP Survey (all sites combined) King County (2002a) Tsang & Klepeis 1996; US EPA 1999, 2002
Swimming (full body)	Water	95 (240) 88 (300) 60 156	14 (58) 31 (177) 12 7	SWAMP Survey (all sites combined) King County (2002a) Tsang & Klepeis 1996; US EPA 1999, 2002 US EPA 1989
Wading (legs only)	Water	57 (180) 70 (210)	14 (60) 14 (48)	SWAMP Survey (all sites combined) King County (2002a)
Water skiing / wakeboarding	Water	184 (360)	18 (56)	SWAMP Survey (all sites combined)

[1] mean (95th percentile)

Table 35. Recreational self-caught freshwater fish consumption rates

Location	N	Mean (grams/day)	95th percentile (grams/day)	Reference
Washington State				
King County (Lakes Washington & Sammamish)	128 81	10.3 7.2	41.7 28.9	Adults - Current Study (all sites combined) Children (≤12) - Current Study (all sites combined)
Columbia River (subsistence population)	513 153	59.0 25.0	170.0 73.0	Adults - CRITFC 1994; US EPA 1999 Children (≤5) CRITFC 1994; US EPA 2002
Other Freshwater Studies (adult estimates unless otherwise noted)				
Alabama	1303	30.3	Not reported	Meredith & Malvestuto 1996
Connecticut	202	2.6	12.0	Ebert et al. 1996
Indiana	582	9.8	37.8	Williams et al. 2000
Indiana	1261	16.4	60.5	Schaeffer et al. 1999
Lake Ontario	366	4.9	17.9	Connelly et al. 1996; US EPA 1999
Maine	1369	5.0	21.0	Ebert et al. 1993
Michigan	738	12.0	39.0	West et al. 1989; US EPA 1999
Michigan	121 151 349	5.6 7.9 7.3	Not reported	Children (1-5) West et al. 1989; US EPA 2002 Children (6-10) Children (11-20)
Michigan	2475	16.7	Not reported	West et al. 1993; US EPA 1999
Wisconsin	801	12.3	37.3	Fiore et al. 1989

Appendix A
Survey Forms

SURVEY TRAVEL LOG

Name: ______________________ **Form #:** ________________

SITE INFORMATION								**NUMBER OF PEOPLE PRESENT**								
								Upper Shore Activities (non-water)			**Water Activities (non-boat)**			**Fishing Activities (shore/pier)**		
DATE	**TIME**	**LOC#**	**# MILES**	**WEATHER CONDITIONS** (circle all that apply)				**Child**	**Teen**	**Adult**	**Child**	**Teen**	**Adult**	**Child**	**Teen**	**Adult**
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									
	am / pm			Clear	Cloudy (partly / overcast)	Rain (light / heavy)	Wind (light / breezy)									

WATER AND SHORELINE USE SURVEY

Surveyor Name:_____ Survey Date:_____ Survey Form #:_____

Survey Location:_____ Survey Start Time: _____ AM or PM (circle)

Interview Status: 1. Agree 2. Disagree Repeat Contact: 1. Yes 2. No Language Barrier: 1. Yes 2. No

Activity Questions

1. What will you be doing today at this location? (circle all that apply)

Sand/Sediment Activities	*Water Contact Activities*	
A. Walking/running/hiking	G. Playing digging in sand (in water)	O. Other:
B. Sitting/sunbathing/reading	H. Wading (legs only)	_____
C. Playing/digging in sand	I. Swimming (full body)	
(away from water)	J. Scuba diving	_____
D. Picnic/BBQ/Bonfire	K. Surfing (wind, or other)	
E. Sports/Games	L. Water skiing	_____
(volleyball, frisbee, etc.)	M. Jet skiing	
F. Nature observation	N. Kayak/Canoe/Raft/Boat	(Remember to use other form if fishing!!!)

2. Will you be recreating on the shore or on a boat? (circle one) A. Shore B. Boat C. Both

3. (if a water contact activity) What will you wear in the water? (circle one)

A. Bathing suit B. Partial wetsuit C. Full body wetsuit D. Other _____

4. (if a water or sand activity) Will you contact the water or sand with: (circle one)

A. Feet only B_1. Hands only B_2. Hands & arms C. Arms & legs (knees only) D. Arms & legs (up to waist) E. Whole body

5. How many hours will you spend _____ today? (circle one)

Activity: _____	< 1 hr	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	8 hrs	> 8 hrs	Other:_____
Activity: _____	< 1 hr	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	8 hrs	> 8 hrs	Other:_____
Activity: _____	< 1 hr	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	8 hrs	> 8 hrs	Other:_____

6. Including today, how many days in the past month have you _____ at this location?

Activity:_____ dys/month_____ Activity:_____ dys/month_____ Activity:_____ dys/month_____

7. Which months of the year do you typically _____ at this location? (circle all that apply)

Activity: _____	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Activity: _____	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Activity: _____	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

8. Are there any other locations that you frequently _____? (present list)

Activity:_____ Loc.#_____ Activity:_____ Loc.#_____ Activity:_____ Loc.#_____

Respondent Information

9. May I ask you your age? _____ **10.** Sex: A. Male B. Female **11.** What is your Zip Code? _____

12. May I ask you to describe your ethnicity?

A. Caucasian B. Eastern European C. African American D. Native American E. Hispanic F. Chinese

G. Filipino H. Japanese I. Korean J. Pacific Islander K. Vietnamese L. Other_____

FRESHWATER FISH AND SHELLFISH CONSUMPTION SURVEY

Surveyor Name:_____ Survey Date:_____ Survey Form #:_____

Survey Location:_____ Survey Start Time: _____ AM or PM (circle)

Interview Status: 1. Agree 2. Disagree Repeat Contact: 1. Yes 2. No Language Barrier: 1. Yes 2. No

Activity Questions

1. Will you be collecting fish or shellfish from the shore/pier or a boat? A. Shore/pier B. Boat C. Both

2a. What type of fish or shellfish will you be collecting today? (circle all that apply)

A. Fish B. Mussels C. Clams D. Snails E. Algae / Seaweed F. Other_____

2b. When you collect fish/shellfish, will you contact the water with: (circle one)

A. Feet only B_1. Hands only B_2. Hands & arms C. Arms & legs (knees only) D. Arms & legs (up to waist) E. Whole body

3. How many hours will you spend collecting _____ today? (circle one)

< 1 hr	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	8 hrs	> 8 hrs	Other:_____

4. Including today, how many days in the past month have you collected at this location? _____ (days / month)

5. Which months of the year do you typically collect at this location? (circle all that apply)

Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.

6. Are there any other locations that you frequently collect? (present list) Locations: _____

7a. Do you ever eat what you have caught? A. Yes B. No (If 'No' skip to question 13)

7b. (If 7a = 'Yes') How many people, including yourself, will eat what you collect? _____ (specify number of people)

7c. (If 7a = 'Yes') Will young children eat? A. Yes B. No

7d. (If 7c = 'Yes') What ages are your children? _____

8a. What is the typical meal size that you consume? (present pictures, circle one).

<4 oz	4 oz.	6 oz.	8 oz.	10 oz.	12 oz.	14 oz.	16 oz.	Other:_____

8b. (If 7c = 'Yes') What is the typical meal size that young children will consume? (present pictures, circle one).

<4 oz	4 oz.	6 oz.	8 oz.	10 oz.	12 oz.	14 oz.	16 oz.	Other:_____

9. How many times in the past month have you eaten fish or shellfish from Lake Washington, Lake Union, Lake Sammamish or the Sammamish river? _____(#meals/month)

10. What parts of the fish or shellfish do you usually consume? (circle one)

A. Flesh only B. Flesh and other parts (specify other parts) _____

11. How do you usually prepare the fish or shellfish you collect? (circle one)

A. Raw B. Boiled C. Steamed D. Baked E. Grilled F. Fried G. Soup H. Other:_____

FRESHWATER FISH OR SHELLFISH CONSUMPTION SURVEY (CONTINUED)

12a. Have you caught anything today? A. Yes B. No

12b. May I weigh and measure your catch? A. Yes B. No

Species	# Caught	Length (in.)	Weight (lbs.)	Do you usually eat this species?
_____	_____	_____	_____	Yes / No
_____	_____	_____	_____	Yes / No
_____	_____	_____	_____	Yes / No
_____	_____	_____	_____	Yes / No
_____	_____	_____	_____	Yes / No

13. Besides eating, what do you typically do with the fish or shellfish you collect? (circle one)

A. Give away B. Sell C. Use as bait D. Capture/Release E. Other: _____

Respondent Information

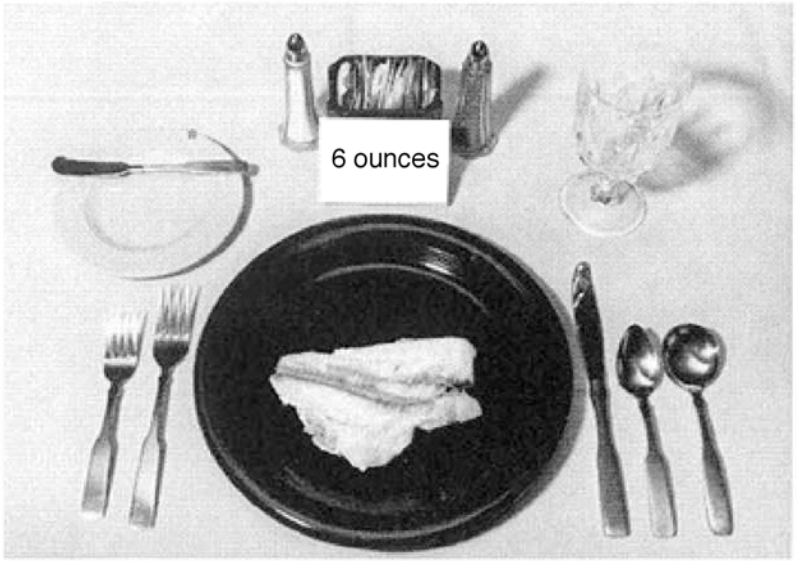
14. May I ask you your age? _____ **15.** Sex: A. Male B. Female **16**. What is your Zip Code? _____

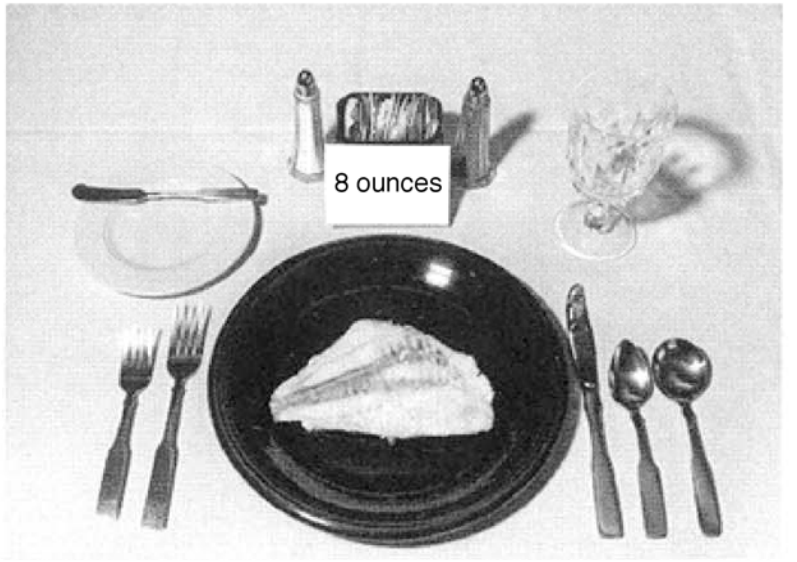
17. May I ask you to describe your ethnicity?

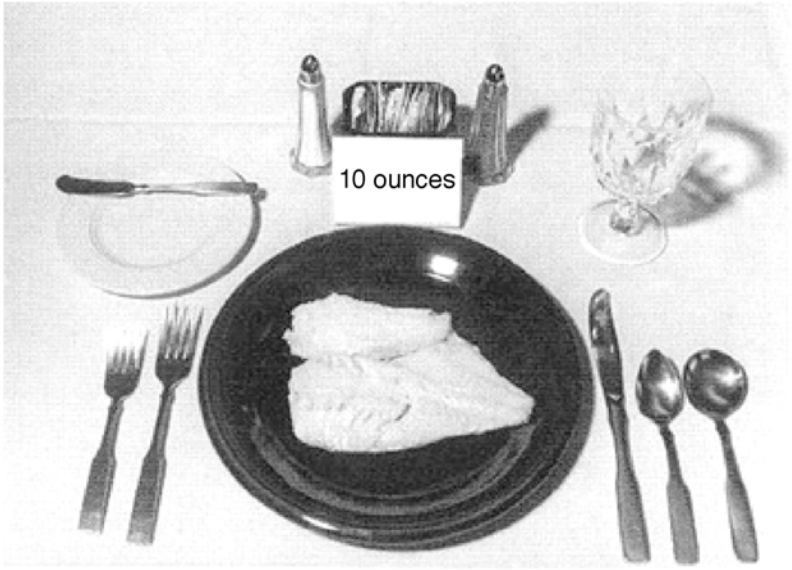
A. Caucasian B. Eastern European C. African American D. Native American E. Hispanic F. Chinese

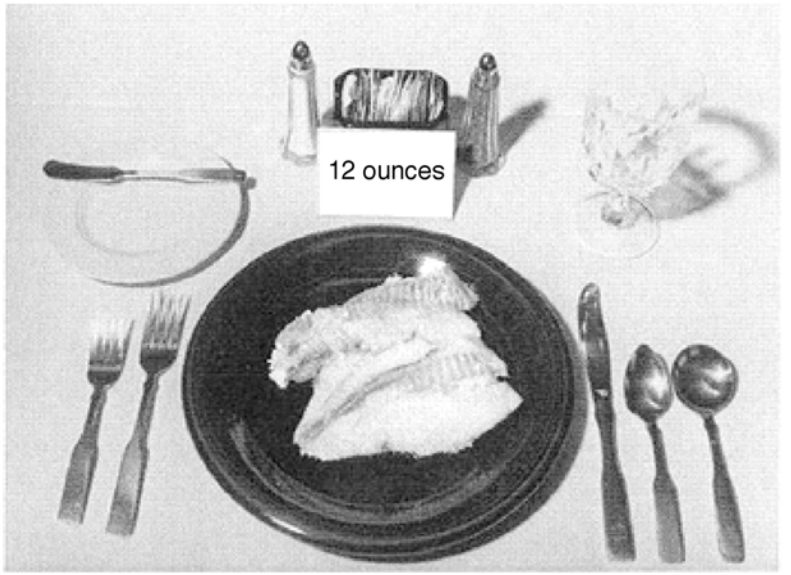
G. Filipino H. Japanese I. Korean J. Pacific Islander K. Vietnamese L. Other_____

Fish Meal Portion Size – Visual Aid









English

Hello, my name is _____. I am conducting a survey on fishing and recreational activities on Lake Sammamish, Lake Washington and Lake Union. Would you like to participate in this survey? If so, please complete this survey form.

Thank you for your time!

Japanese

こんにちは、私は_____と申します。レーク サマミッシュ、レーク ワシントンおよびレーク ユニオンでの魚介類の漁獲とリクレーション活動について調査を行っています。この調査にご協力いただけるでしょうか？もしご協力いただけるようでしたら、この調査用紙に必要事項をもれなくご記入ください。

お時間を取っていただき、誠に有難うございます!

Spanish

Hola, mi nombre es _____ . Estoy llevando a cabo una encuesta sobre pesca y actividades recreativas en los lagos Sammamish, Washington y Union. ¿Le gustaría participar en esta encuesta? Si es así, por favor complete el formulario de encuesta.

¡Gracias por su tiempo!

Tagalog

Helo, ang pangalan ko ay _____. Namamahala ako ng pagsuri sa pangingisda at pang-aliwan na mga gawain sa Lake Sammamish, Lake Washington at Lake Union. Nais mo bang makilahok sa pagsuri na ito? Kung gayon, pakikumpleto po ang pormularyong pagsuri na ito.

Salamat po sa iyong panahon!

ENCUESTA DE CONSUMO DE PECES Y MARISCOS DE AGUA DULCE

Surveyor Name:_____ Survey Date:_____ Survey Form # _____

Survey Location:_____ Survey Start Time: _____ AM or PM (circle)

Interview Status: 1. Agree 2. Disagree Repeat Contact: 1. Yes 2. No Language Barrier: 1. Yes 2. No

Preguntas sobre actividades

1. ¿Recogerá peces o mariscos de la costa, un muelle o un barco? A. Costa o muelle B. Barco C. Ambas cosas

2a. ¿Qué tipo de peces o mariscos recogerá hoy? (Encierre en círculo todo lo que se aplique)

A. Peces B. Mejillones C. Almejas D. Caracoles E. Algas y plantas acuáticas F. Otras cosas _____

2b. Cuando recoja peces o mariscos, entrará en contacto con el agua con: (Encierre uno en un círculo)

A. Sólo los pies B. Sólo las manos B. Las manos y los brazos C. Los brazos y las piernas (solo las rodillas)
D. Los brazos y las piernas (hasta la cintura) E. Todo el cuerpo

3. ¿Cuántas horas estará pescando _____ hoy? (encierre uno en un círculo)

< 1 hr	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	8 hrs	> 8 hrs	Otra cosa:_____

4. Cuántos días del mes pasado estuvo pescando en este lugar? _____ (días / mes)

5. ¿En qué meses del año pesca por lo común en este lugar? (encierre en un círculo todos los que sean aplicables)

Ene.	Feb.	Mar.	Abr.	May.	Jun.	Jul.	Ago.	Set.	Oct.	Nov.	Dic.

6. ¿Hay otros lugares en los que pesca con frecuencia? (dé una lista) Lugares: _____

7a. ¿Come alguna vez lo que ha pescado? A. Sí B. No (Si es que no, pase a la pregunta 13)

7b. (Si responde sí a 7a) ¿Cuántas personas además de usted comerán lo que pesca? _____ (especifique la cantidad de personas)

7c. (Si responde sí a 7a) ¿Comen también los niños pequeños? A. Sí B. No	**7d.** (Si responde sí a 7c) ¿Qué edades tienen sus niños? _____

8a. ¿De qué tamaño es por lo común la comida que consume? (presente imágenes, encierre una en un círculo).

<113 g (4 onzas)	113 g (4 onzas).	170 g (6 onzas).	227 g (8 onzas).	284 g (10 onzas).	340 g (12 onzas).	397 g (14 onzas).	454 g (16 onzas).	Otro:_____

8b. (Si responde sí a 7c) ¿De qué tamaño es por lo común la comida de los niños pequeños? (presente imágenes, encierre una en un círculo).

<113 g (4 onzas)	113 g (4 onzas).	170 g (6 onzas).	227 g (8 onzas).	284 g (10 onzas).	340 g (12 onzas).	397 g (14 onzas).	454 g (16 onzas).	Otro:_____

9. ¿Cuántas veces durante el mes pasado comió peces o mariscos del lago Washington, el lago Union, el Sammamish o el río Sammamish? _____(cantidad de comidas / mes)

ENCUESTA DE CONSUMO DE PECES Y MARISCOS DE AGUA DULCE (CONTINÚA)

10. ¿Qué partes de los peces o mariscos consume por lo común? (encierre una en un círculo)

A. Sólo carne B. Carne y otras partes (especifíque éstas últimas) _____

11. ¿Cómo suele preparar los peces o mariscos que pesca? (encierre uno en un círculo)

A. Crudos B. Cocidos C. Al vapor D. Horneados E. A la parrilla F. Fritos G. En sopa H. de otro modo:_____

12a. ¿Ha pescado algo hoy? A. Sí B. No

12b. ¿Puedo pesar y medir lo que pesque? A. Sí B. No

Especie	Cantidad de pesca	Longitud (cm)	Peso (kg)	¿Suele comer esta especie?
_____	_____	_____	_____	Si / No
_____	_____	_____	_____	Sí / No
_____	_____	_____	_____	Sí / No
_____	_____	_____	_____	Sí / No
_____	_____	_____	_____	Sí / No

13. Además de comerlos, ¿qué hace por lo común con los peces o mariscos que pesca? (encierre uno en un círculo)

A. Los regalo B. Los vendo C. Los uso como cebo D. Los pesco y libero E. Otra cosa: _____

Información del que responde

14. ¿Puedo preguntarle qué edad tiene? _____

15. Sexo: A. Masculino B. Femenino

16. ¿Cuál es su código postal? _____

17. ¿Puedo pedirle que describa su origen étnico?

A. Caucásico B. Europeo oriental C. Afroamericano D. Nativo americano E. Hispano F. Chino G. Filipino H. Japonés I. Coreano J. Isleño del Pacífico K. Vietnamita L. Otra_____

ENCUESTA DE USO DEL AGUA Y LA COSTA

Surveyor Name:_____ Survey Date:_____ Survey Form # _____

Survey Location:_____ Survey Start Time: _____ AM or PM (circle)

Interview Status: 1. Agree 2. Disagree Repeat Contact: 1. Yes 2. No Language Barrier: 1. Yes 2. No

Preguntas sobre actividades

1. ¿Qué va a hacer hoy en este lugar? (encierre en un círculo todo lo que sea aplicable)

Actividades en arena o sedimentos

A. Caminar, correr y marchar
B. Sentarse, tomar el sol y leer
C. Juegos, excavando en la arena (lejos del agua)
D. Excursiones, barbacoas y hogueras
E. Deportes y juegos (voleibol, frisbee, etc.)
F. Observación de la naturaleza

Actividades en contacto con el agua

G. Juegos, excavando la arena (en el agua)
H. Mojarse (sólo las piernas)
I. Nadar (todo el cuerpo)
J. Buceo con escafandra
K. Acuaplano (viento u otro tipo)
L. Esquí acuático
M. Esquí a chorro
N. Kayak, canoa o barco

O. Otras cosas:
_____
_____
_____

2. ¿Se recreará en la costa o en un barco? (encierre uno en un círculo) A. Costa B. Barco C. Ambas cosas

3. (En una actividad en contacto con el agua) ¿Qué llevará en el agua? (encierre uno en un círculo)

A. Traje de baño B. Traje de hombre rana parcial C. Traje de hombre rana completo D. Otra cosa _____

4. (Si se trata de una actividad en el agua o la arena) Entrará en contacto con la arena o el agua con: (Encierre uno en un círculo)

A. Sólo los pies B. Sólo las manos B. Las manos y los brazos C. Los brazos y las piernas (sólo las rodillas) D. Los brazos y las piernas (hasta la cintura) E. Todo el cuerpo

5. ¿Cuántas horas se pasará hoy _____? (Encierre uno en un círculo)

Actividad: _____	< 1 hr	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	8 hrs	> 8 hrs	Other:_____
Actividad: _____	< 1 hr	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	8 hrs	> 8 hrs	Other:_____
Actividad: _____	< 1 hr	1 hr	2 hrs	3 hrs	4 hrs	5 hrs	6 hrs	7 hrs	8 hrs	> 8 hrs	Other:_____

6. -Cuántos días del mes pasado estuvo _____ en este lugar?

Actividad:_____ dias /mes_____ Actividad:_____ días /mes_____ Actividad:_____ días /mes_____

7. ¿En qué meses del año _____ por lo común en este lugar? (encierre en un círculo todo lo que sea aplicable)

Actividad: _____	Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Set	Oct	Nov	Dic
Actividad: _____	Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Set	Oct	Nov	Dic
Actividad: _____	Ene	Feb	Mar	Abr	May	Jun	Jul	Ago	Set	Oct	Nov	Dic

8. ¿Hay otros lugares en los que _____ con frecuencia? (Dé una lista)

Actividad:_____ Sitio n° Actividad:_____ Sitoo n° Actividad:_____ Sitio n°

Información del que responde

9. ¿Puedo preguntarle qué edad tiene? _____ **10.** Sexo: A. Masculino B. Femenino **11**. ¿Cuál es su código postal? _____

12. ¿Puedo pedirle que describa su origen étnico?

A. Caucásico B. Europeo oriental C. Afroamericano D. Nativo americano E. Hispano F. Chino

G. Filipino H. Japonés I. Coreano J. Isleño del Pacífico K. Vietnamita L. Otra_____

淡水魚介類消費状況調査

Surveyor Name:_____ Survey Date:_____ Survey Form #:_____

Survey Location:_____ Survey Start Time:_____ AM or PM (circle)

Interview Status: 1. Agree 2. Disagree Repeat Contact: 1. Yes 2. No Language Barrier: 1. Yes 2. No

活動に関する質問

1. 沿岸/突堤またはボートから魚介類を獲る予定はありますか? A. 沿岸/突堤 B. ボート C. いずれも

2a. 今日は、どんな魚介類を獲る予定ですか? (該当項目はすべて ○ で囲む)

A. 魚 B. ムール貝 C. ハマグリ D. カタツムリ E. 藻/海藻類 F. その他_____

2b. あなたは魚介類を獲る際、次のうちのどこまで水に浸りますか? (該当する項目を○で囲む)

A. 足だけ B. 手だけ B. 手および腕 C. 腕と脚 (膝まで) D. 腕と脚 (腰まで) E. 全身

3. 今日は_____ を獲るのに何時間くらい費やす予定ですか? (該当する項目をひとつ○で囲む)

1 時間未満	1 時間	2 時間	3 時間	4 時間	5 時間	6 時間	7 時間	8 時間	8 時間以上	その他:_____

4. 先月は何日間その場所で魚介類を獲りましたか? _____ (日 / 月)

5. 通常一年のうち何月にその場所で魚介類を獲りますか? (該当項目はすべて ○ で囲む)

1 月	2 月	3 月	4 月	5 月	6 月	7 月	8 月	9 月	10 月	11 月	12 月

6. 頻繁に魚介類を獲る場所は、ほかにもありますか? (リストを見せる) 場所: _____

7a. 獲った魚介類を食べますか? A. はい B. いいえ ('いいえ' の場合は、質問 13 に進む)

7b. (7a が 'はい' の場合) あなたが獲った魚介類は、あなた自身を含め何人の人が食べますか? _____ (人数を記入)

7c. (7a が 'はい' の場合) お子様も食べますか? A. はい B. いいえ

7d. (7c が 'はい' の場合) お子様の年齢はいくつですか? _____

8a. あなたの 1 回の食事量はどのくらいですか? (写真見せて、ひとつに○をつける)

4 オンス未満	4 オンス	6 オンス	8 オンス	10 オンス	12 オンス	14 オンス	16 オンス	その他:_____

8b. (7c が 'はい' の場合) あなたのお子様の 1 回の食事量はどのくらいですか? (写真見せて、ひとつに○をつける)

4 オンス未満	4 オンス	6 オンス	8 オンス	10 オンス	12 オンス	14 オンス	16 オンス	その他:_____

淡水魚介類消費状況調査（続き）

9. 先月、レーク ワシントン、レーク ユニオン、レーク サマミッシュ、またはサマミッシュ川から獲った魚介類を何回食べましたか? _____(摂取回数/月)

10. 通常、魚介類のどの部分を食べますか? (該当項目をひとつ○でむ)

A. 身の部分　　B. 身と他の部分 (他の部分についての説明を記入) _____

11. 獲った魚介類は、通常どのように料理しますか? (該当項目をひとつ○で囲む)

A. 生で　B. ゆでる　C. 蒸す　D. オーブンで焼く　E. グリルする　F. 油で揚げる　G. スープに入れる
H. その他:_____

12a. 今日は何か漁獲がありましたか? A.はい B.いいえ

12b. あなたの獲った魚介類の寸法と重量を測ってもいいですか?　A. はい　B. いいえ

種	個体数	長さ (インチ)	重量 (ポンド)	通常この種を食べますか?
_____	_____	_____	_____	はい / いいえ
_____	_____	_____	_____	はい / いいえ
_____	_____	_____	_____	はい / いいえ
_____	_____	_____	_____	はい / いいえ
_____	_____	_____	_____	はい / いいえ

13. 食べる以外に、獲った魚介類はどんなことに利用しますか? (該当項目をひとつ○で囲んでください。)

A. 誰かにあげる　B. 売る　C. 釣りのエサに使う　D. 釣った後逃がす　E. その他 _____

回答者に関する情報

14. あなたの年齢は? _____　**15.** 性別: A. 男　B. 女　**16**. あなたの住所のジップコードは? _____

17. あなたの人種的分類をお尋ねしてもいいですか?

A. 白人　B. 東欧系　C. アフリカ系　D. アメリカ原住民　E. スペイン系　F. 中国系
G. フィリピン系　H. 日系　I. 朝鮮系　J. 太平洋諸島系　K. ベトナム系　L. その他_____

湖水および沿岸の利用状況調査

Surveyor Name:_____ Survey Date:_____ Survey Form #:_____

Survey Location:_____ Survey Start Time: _____ AM or PM (circle)

Interview Status: 1. Agree 2. Disagree Repeat Contact: 1. Yes 2. No Language Barrier: 1. Yes 2. No

活動に関する質問

1. その場所であなたは今日何を行う予定ですか? (該当項目はすべて ○で囲む)

砂/堆積土にかかわる活動

A. 散歩/ランニング/ハイキング
B. 休憩/日光浴/読書
C. 砂掘りなどの遊び (水から離れて)
D. ピクニック/バーベキュー/焚き火
E. スポーツ/ゲーム (バレーボール、フリスビーなど)
F. 自然観察

水にかかわる活動

G. 砂を掘る (水中で)
H. 水中を歩く (足だけ浸る)
I. 水泳 (全身浸る)
J. スキューバ ダイビング
K. サーフィング (ウインド サーフィングその他)
L. 水上スキー
M. ジェット スキー
N. カヤック/カヌー/ラフト/ボート

O. その他:
_____
_____
_____

2. あなたは沿岸で遊びますか、それともボートで遊びますか? (該当項目をひとつ○で囲む) A. 沿岸 B. ボート C. いずれも

3. (水遊びの場合) 水中では何を着用しますか? (該当項目をひとつ○で囲む)

A. 水着 B. ウェットスーツの一部 C. 完全なウエットスーツ D. その他 _____

4. (水遊びまたは砂遊びの場合) 水または砂にどの程度接触しますか? (該当項目をひとつ○で囲む)

A. 足だけ B. 手だけ B. 手および腕 C. 腕と脚 (膝まで) D. 腕と脚 (腰まで) E. 全身

5. 今日は_____ をするのに何時間くらい費やす予定ですか? (該当する項目をひとつ○で囲む)

活動: _____	1 時間未満	1 時間	2 時間	3 時間	4 時間	5 時間	6 時間	7 時間	8 時間	8 時間以上	その他:_____
活動: _____	1 時間未満	1 時間	2 時間	3 時間	4 時間	5 時間	6 時間	7 時間	8 時間	8 時間以上	その他:_____
活動: _____	1 時間未満	1 時間	2 時間	3 時間	4 時間	5 時間	6 時間	7 時間	8 時間	8 時間以上	その他:_____

6. 先月は何日間その場所で_____をしましたか?

活動:_____ 日/月_____ 活動:_____ 日/月_____ 活動:_____ 日/月_____

7. 通常一年のうち何月にその場所で_____をして遊びますか? (該当項目はすべて ○ で囲む)

活動: _____	1 月	2 月	3 月	4 月	5 月	6 月	7 月	8 月	9 月	10 月	11 月	12 月
活動: _____	1 月	2 月	3 月	4 月	5 月	6 月	7 月	8 月	9 月	10 月	11 月	12 月
活動: _____	1 月	2 月	3 月	4 月	5 月	6 月	7 月	8 月	9 月	10 月	11 月	12 月

8. あなたが頻繁に_____をする場所は、ほかにもありますか? (リストを見せる)

活動:_____ 場所 No._____ 活動:_____ 場所 No._____ 活動:_____ 場所 No._____

湖水および沿岸の利用状況調査 (続き)

回答者に関する情報

9. あなたの年齢は? _____ **10.** 性別: A. 男 B. 女 **11.** あなたの住所のジップコードは? _____

12. あなたの人種的分類をお尋ねしてもいいですか?

A. 白人 B. 東欧系 C. アフリカ系 D. アメリカ原住民 E. スペイン系 F. 中国系

G. フィリピン系 H. 日系 I. 朝鮮系 J. 太平洋諸島系 K. ベトナム系 L. その他_____

PAGSURI SA PAGKAKAIN NG ISDA NA TUBIG-TABANG 'FRESHWATER FISH' AT ANO MANG HAYOP NA NABUBUHAY SA TUBIG NA MAY BALAT NA MATIGAS AT KINAKAIN NG TAO ANG LAMAN 'SHELLFISH'

Surveyor Name:_____ Survey Date:_____ Survey Form #:_____

Survey Location:_____ Survey Start Time: _____ AM or PM (circle)

Interview Status: 1. Agree 2. Disagree Repeat Contact: 1. Yes 2. No Language Barrier: 1. Yes 2. No

Mga Katanungan sa Gawain

1. Mangongolekta ka ba ng isda o shellfish mula sa dalampasigan/piyer o sa bangka? A. Dalampasigan/piyer B. Bangka C. Pareho

2a. Anong uri ng isda o shellfish ang kokolektahin mo sa araw na ito? (bilugan ang lahat na aangkop)

A. Isda | B. *Mussels* Mga tulya | C. *Clams*Mga kabibi, paros, atbp | D. Mga Suso | E. Alga / Halamang-dagat | F. Iba_____

2b. Kapag mangongolekta ka ng isda/shellfish, didiit ka ba sa tubig sa pamamagitan ng: (bilugan ang isa)

A. Mga paa lamang B. Mga kamay lamang B. Mga kamay at mga braso C. Mga braso at mga binti (mga tuhod lamang) D. Mga braso at mga binti (hanggang sa baywang) E. Buong katawan

3. Ilang mga oras ang iyong gagamitin sa pangongolekta ng _____ sa araw na ito? (bilugan ang isa)

< 1 oras	1 oras	2 oras	3 oras	4 oras	5 oras	6 oras	7 oras	8 oras	> 8 oras	Iba:_____

4. Ilang mga araw sa nakaraang buwan na nakakolekta ka sa lugar na ito? _____ (mga araw / buwan)

5. Aling mga buwan sa taon na karaniwang nangongolekta ka sa lugar na ito? (bilugan ang lahat na aangkop)

Ener.	Peb.	Mar.	Abr.	Mayo	Hun.	Hul.	Agos.	Sept.	Okt.	Nob.	Disy.

6. Mayroon bang saan mang iba pang mga lugar na kadalasan kang nangongolekta? (maglista) Mga lugar: _____

7a. Kinakain mo ba ang ano mang iyong nahuli? A. Oo B. Hindi (Kung 'Hindi' maglakdaw patungo sa katanungang 13)

7b. (Kung ang 7a = 'Oo') Ilang mga tao, kasama ang iyong sarili, ay kakainin kung ano ang iyong nakolekta? _____ (banggitin ang bilang ng mga tao)

7c. (Kung ang 7a = 'Oo') Kakain ba ang mga bata pang mga anak? A. Oo B. Hindi

7d. (Kung ang 7c = 'Oo') Anong mga gulang ang iyong mga anak? _____

8a. Ano ang karaniwang kalaki ng pagkain na iyong kinakain? (magsalarawan, bilugan ang isa).

<4 onsa	4 onsa	6 onsa	8 onsa	10 onsa	12 onsa	14 onsa	16 onsa	Iba:_____

8b. (Kung ang 7c = 'Oo') Ano ang karaniwang kalaki ng pagkain na kakainin ng mga bata pang mga bata? (magsalarawan, bilugan ang isa).

<4 onsa	4 onsa	6 onsa	8 onsa	10 onsa	12 onsa	14 onsa	16 onsa	Iba:_____

PAGSURI SA PAGKAKAIN NG ISDA NA TUBIG-TABANG 'FRESHWATER FISH' AT ANO MANG HAYOP NA NABUBUHAY SA TUBIG NA MAY BALAT NA MATIGAS AT KINAKAIN NG TAO ANG LAMAN 'SHELLFISH' (PAGTUTULOY)

9. Ilang beses sa nakaraang buwan na nakakain ka ng isda o shellfish mula sa Lake Washington, Lake Union, Lake Sammamish o sa Sammamish na ilog? _____(#mga pagkain/buwan)

10. Anong mga bahagi ng isda o shellfish na iyong karaniwang kinakain? (bilugan ang isa)

A. Laman lamang B. Laman at iba pang mga bahagi (banggitin ang iba pang mga bahagi) _____

11. Paano mo karaniwan na hinahanda ang isda o shellfish na iyong kinokolekta? (bilugan ang isa)

A. Hilaw B. Nilaga C. Singaw D. Paghurno E. Inihaw F. Prito G. Sopas H. Iba:_____

12a. Nakahuli ka ba ng ano man sa araw na ito? A. Oo B. Hindi

12b. Maari ko bang timbangin at sukatin ang iyong hinuli? A. Oo B. Hindi

Mga Uri	# Nahuli	Haba (in.)	Bigat (lbs.)	Karaniwan mo bang kinakain ang mga uri na ito?
_____	_____	_____	_____	Oo / Hindi
_____	_____	_____	_____	Oo / Hindi
_____	_____	_____	_____	Oo / Hindi
_____	_____	_____	_____	Oo / Hindi
_____	_____	_____	_____	Oo / Hindi

13. Maliban sa pagkakain, ano ang karaniwang ginagawa mo sa isda o shellfish na iyong kinokolekta? (bilugan ang isa)

A. Pinapahingi B. Tinitinda C. Ginagamit bilang pain D. Hinuhuli/Pinapakawalan E. Iba: _____

Impormasyon Ukol sa Taong Sumasagot sa Mga Katanungan

14. Maari ko bang tanungin sa iyo ang iyong gulang? _____

15. Kasarian: A. Lalaki B. Babae

16. Ano ang iyong Kodigo Postal? _____

17. Maari ko bang tanungin ka na isalarawan ang iyong panlipi?

A. Caucasian B. Eastern European C. African American D. Native American E. Hispanic F. Chinese G. Filipino H. Japanese I. Korean J. Pacific Islander K. Vietnamese L. Iba_____

PAGSURI SA PAGGAMIT NG TUBIG AT DALAMPASIGAN

Survey Name:_____ Survey Date:_____ Survey Form #:_____

Survey Location:_____ Survey Start Time: _____ AM or PM (circle)

Interview Status: 1. Agree 2. Disagree Repeat Contact: 1. Yes 2. No Language Barrier: 1. Yes 2. No

Mga Katanungan sa Gawain

1. Ano ang gagawin mo sa araw na ito sa lugar na iyan? (bilugan ang lahat na aangkop)

Mga Gawain sa Buhangin/Banlik

A. Maglalakad/tatakbo/malayong paglalakad

B. Uupo/magbibilad ng katawan sa init ng araw/magbabasa

C. Maglalaro/maghuhukay sa buhangin (malayo sa tubig)

D. Piknik/BBQ/Malaking siga

E. Isports/Mga laro (balibol, frisbee, atbp.)

F. Pagmamasid ng kalikasan

Mga Gawain na Pagdidiit sa Tubig

G. Paglalaro paghuhukay sa buhangin (sa tubig)

H. Paglalakad nang painut-inot (mga binti lamang)

I. Paglalangoy (buong katawan)

J. Paninisid na Scuba

K. Surfing-pagsasakay sa daluyong o malalaking along sumasalpok sa dalampasigan (hangin, o iba pa)

L. Water skiing- pagsalida sa tubig

M. Jet skiing- pagsalida na diyet

N. Kayak/Canoe-bangkang makitid, magaan at medyo patulis ang magkabilang dulo/Balsa/Bangka

O. Iba: _____

_____

_____

2. Maglilibang ka ba sa dalampasigan o sa bangka? (bilugan ang isa) A. Dalampasigan B. Bangka C. Pareho

3. (kung gawain na may pagdidiit sa tubig) Ano ang iyong isusuot sa tubigan? (bilugan ang isa)

A. Damit-pampaligo B. Bahagi lamang na wetsuit C. Buong katawan na wetsuit D. Iba _____

4. (kung gawain na sa tubig o buhangin) Didiit ka ba sa tubig o buhangin sa pamamagitan ng: (bilugan ang isa)

A. Mga paa lamang B. Mga kamay lamang B. Mga kamay at mga braso C. Mga braso at mga binti (mga tuhod lamang) D. Mga braso at mga binti (hanggang sa baywang) E. Buong katawan

5. Ilang mga oras ang iyong gagamitin sa _____ sa araw na ito? (bilugan ang isa)

Gawain: _____	< 1 oras	1 oras	2 oras	3 oras	4 oras	5 oras	6 oras	7 oras	8 oras	> 8 oras	Iba:_____
Gawain: _____	< 1 oras	1 oras	2 oras	3 oras	4 oras	5 oras	6 oras	7 oras	8 oras	> 8 oras	Iba:_____
Gawain: _____	< 1 oras	1 oras	2 oras	3 oras	4 oras	5 oras	6 oras	7 oras	8 oras	> 8 oras	Iba:_____

6. Ilang mga araw sa nakaraang buwan na _____ ka sa lugar na ito?

Gawain:_____ mga araw/buwan_____ Gawain:_____ mga araw/buwan_____ Gawain:_____ mga araw/buwan_____

7. Aling mga buwan sa taon na karaniwan kang _____ sa lugar na ito? (bilugan ang lahat na aangkop)

Gawain: _____	Ener.	Peb.	Mar.	Abr.	Mayo	Hun.	Hul.	Agos.	Sept.	Okt.	Nob.	Disy.
Gawain: _____	Ener.	Peb.	Mar.	Abr.	Mayo	Hun.	Hul.	Agos.	Sept.	Okt.	Nob.	Disy.

PAGSURI SA PAGGAMIT NG TUBIG AT DALAMPASIGAN (PAGTUTULOY)

Gawain: _____	Ener.	Peb.	Mar.	Abr.	Mayo	Hun.	Hul.	Agos.	Sept.	Okt.	Nob.	Disy.

8. Mayroon bang iba pang mga lugar na kadalasan kang _____? (maglista)

Gawain:_____ Loc.#_____ Gawain:_____ Loc.#_____ Gawain:_____ Loc.#_____

Impormasyon Ukol sa Taong Sumasagot sa Mga Katanungan

9. Maari ko bang tanungin sa iyo ang iyong gulang? _____

10. Kasarian: A. Lalaki B. Babae

11. Ano ang iyong Kodigo Postal? _____

12. Maari ko bang tanungin ka na isalarawan ang iyong panlipi?

A. Caucasian B. Eastern European C. African American D. Native American E. Hispanic F. Chinese G. Filipino H. Japanese I. Korean J. Pacific Islander K. Vietnamese L. Other_____