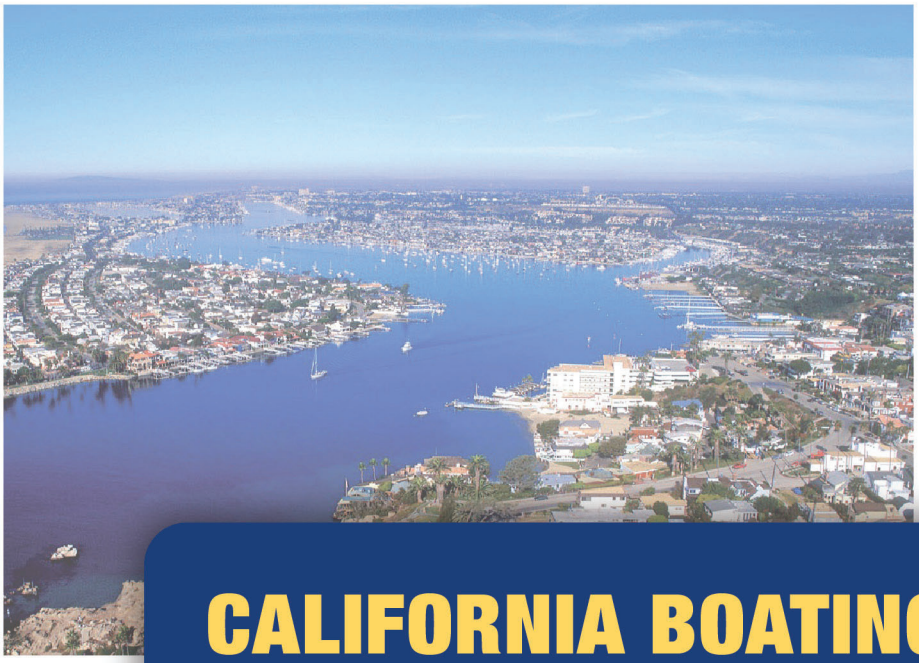
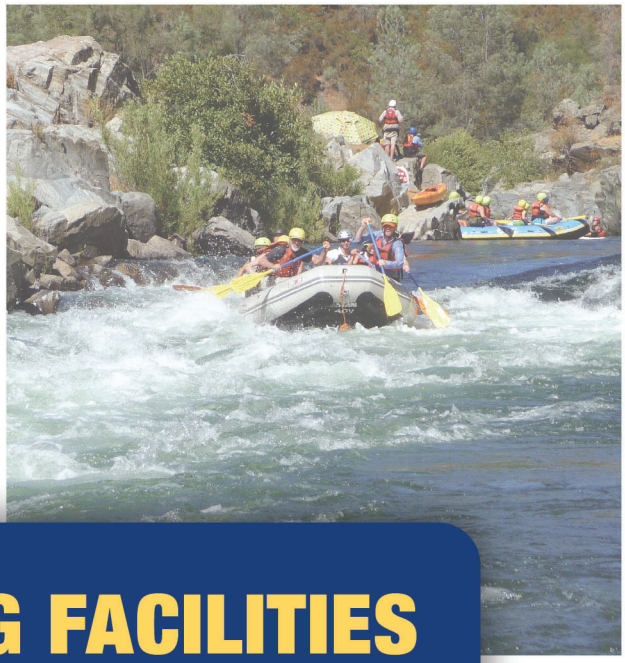
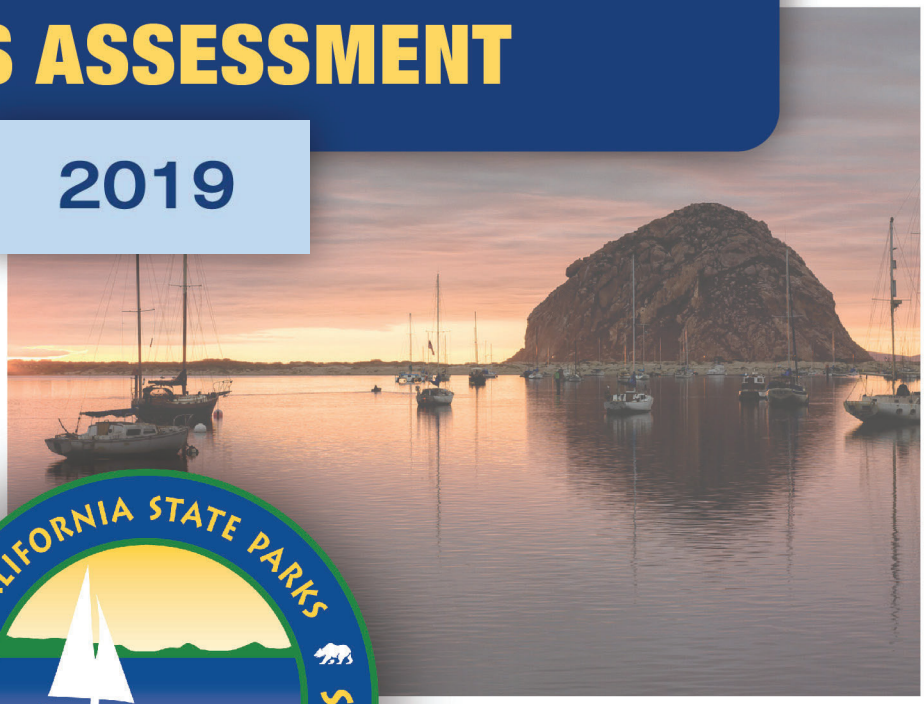




# CALIFORNIA BOATING FACILITIES NEEDS ASSESSMENT

2019



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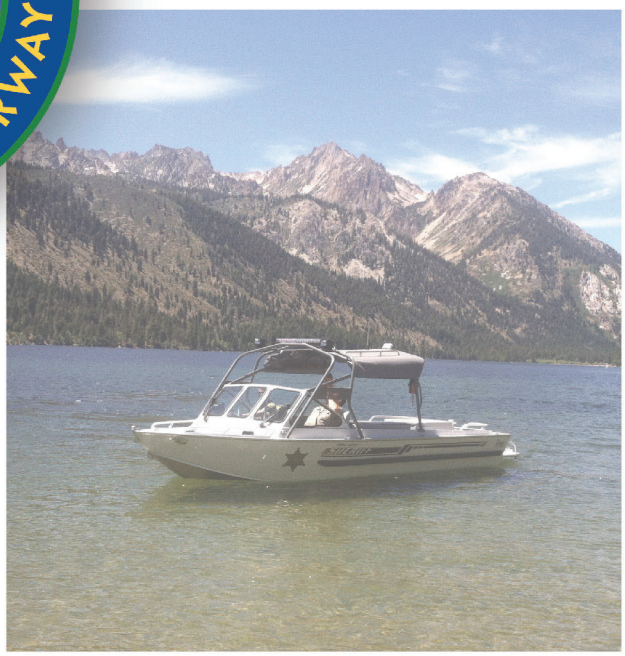
BOATING AND WATERWAYS



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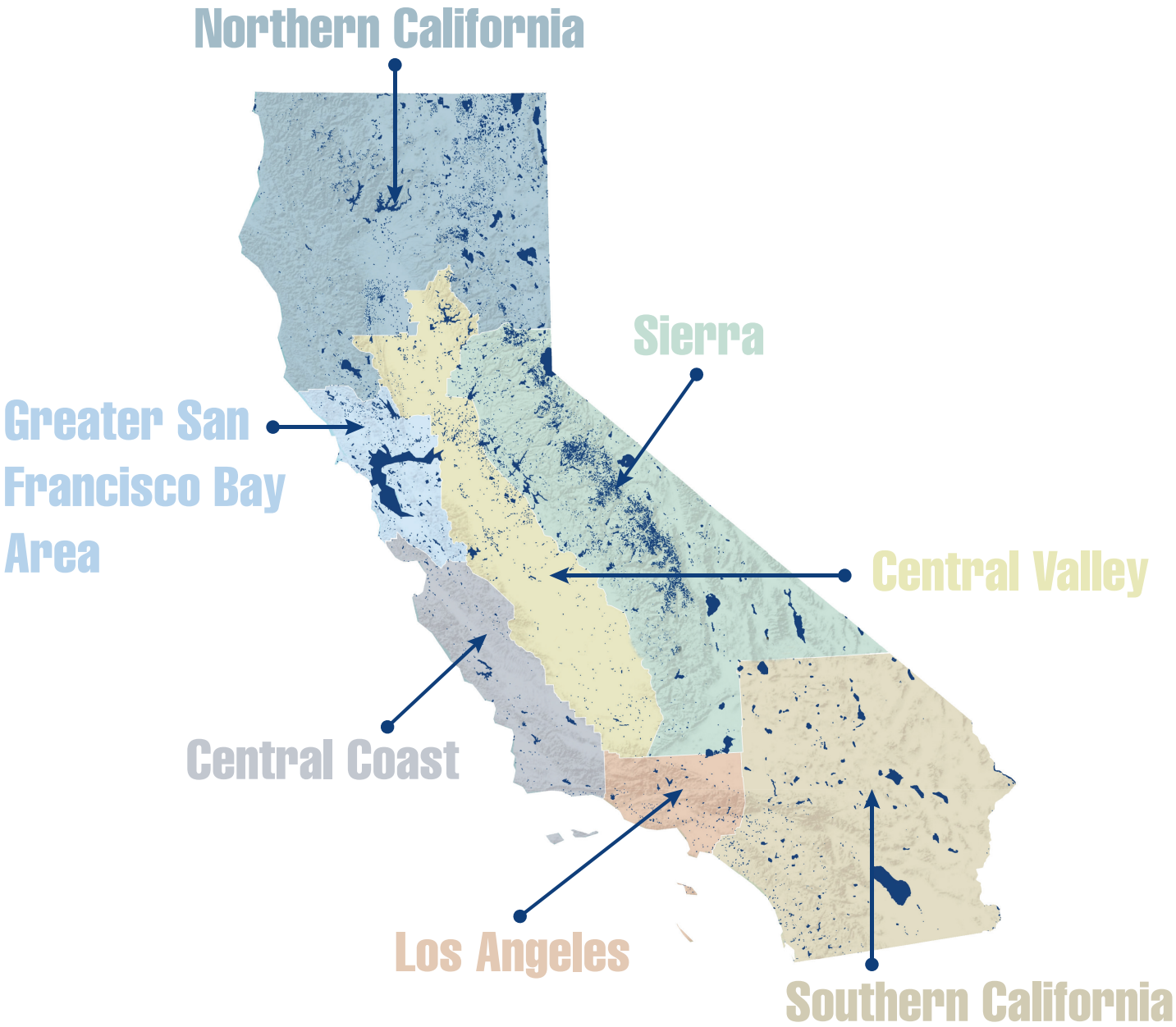


## CALIFORNIA BOATING FACILITIES NEEDS ASSESSMENT

# CALIFORNIA BOATING FACILITIES NEEDS ASSESSMENT

***State of California***

Gavin Newsom, Governor

***California Natural Resources Agency***

Wade Crowfoot, Secretary

***California Department of Parks and Recreation***

Armando Quintero, Parks Director

***Division of Boating and Waterways***

Ramona Fernandez, Acting Deputy Director

**December 2019**

**The California Boating Facility Needs Assessment was prepared under contract by:**

## *California State University, Sacramento*

SACRAMENTO STATE

### *Principal Investigators*


Dr. Amy Mickel, *College of Business Administration*

Dr. David Rolloff, *Department of Recreation, Parks and Tourism Administration* Dr.

Stanley Taylor, *College of Business Administration*


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**California Boating and Waterways Commission:** Randy Short, *Former-Chair;* Katherine Pettibone, *Vice Chair;* Brian Cooley, *Member;* David Livingston, *Member;* Virginia Madueño, *Member;* Douglas W. Metz, *Member;* Frank Peralta, *Member*

**CBFNA Project Managers:** Jeffrey Caudill, Charley Hesse, and Jared Zucker

**DBW Employees:** Keren Dill, Brian Carroll, Joleane King, and Amy Rigby.

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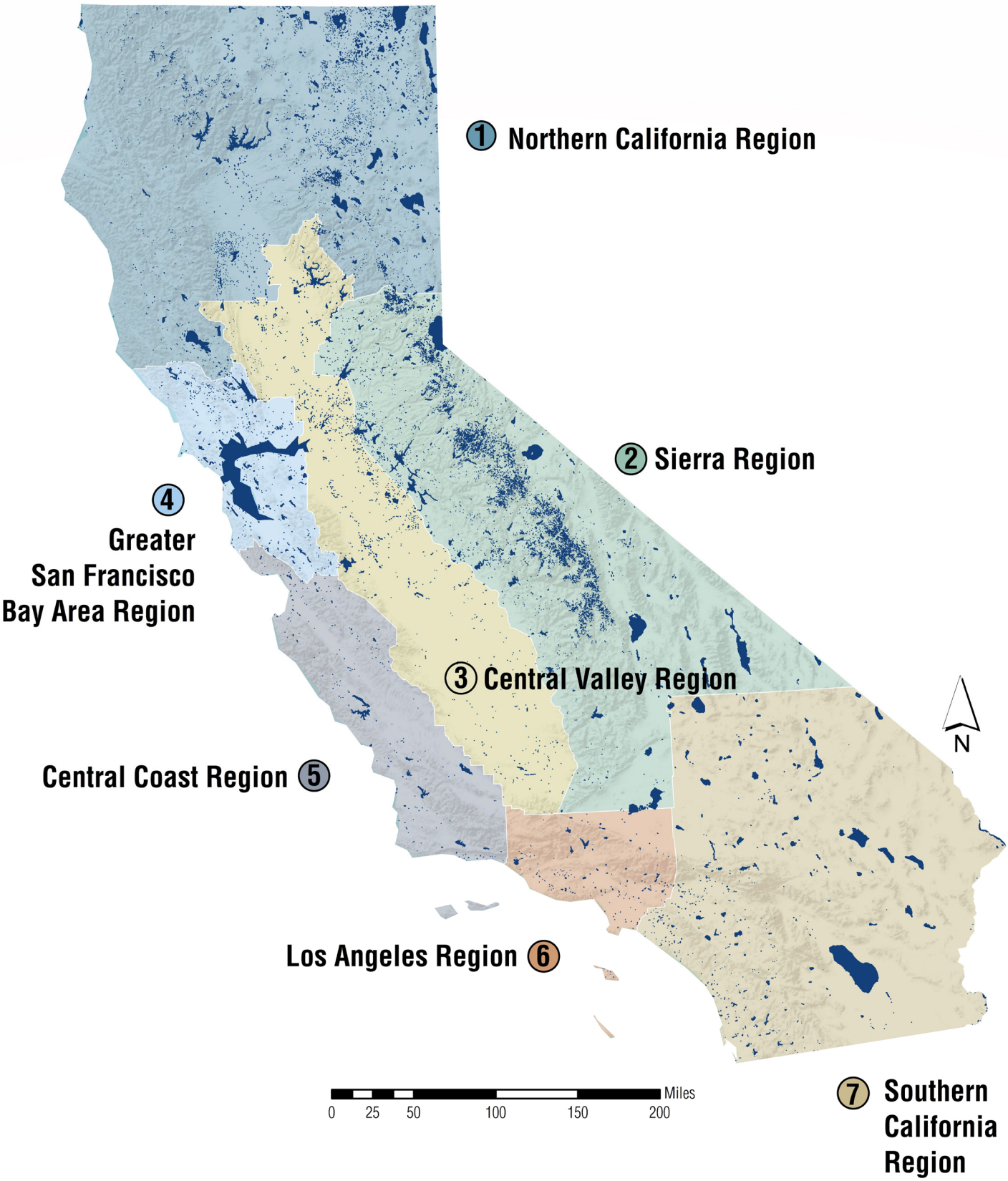
# Introduction

*Volume III: Statewide* provides a comprehensive overview of findings for the current CBFNA. More detailed findings related to specific regions and their waterways are presented in *Volumes IV – X: Regions*.

In the first part of this volume, the seven regions' counties and waterways are identified, followed by descriptions of motorized and non-motorized boater study participants in research efforts associated with the CBFNA. Findings related to recreational boating patterns such as distance to preferred waterways, boat launches, number of days boating, seasons, and types of trips are presented. Facility needs, issues, and reasons for boating are summarized from the perspectives of motorized and non-motorized boaters. An overview of existing facilities is also provided.

The second portion of this volume focuses on economic contributions of motorized recreation in the state, including UDVs and spending patterns. Forecasts for registered boaters are followed by a discussion of motorized and non-motorized boating trends. Final sections of this volume emphasize recommendations for future studies, including future California Boating Facilities Needs Assessments and the cost-benefit model used by the DBW.

# Regions' Counties & Waterways



For this study, California was divided into seven regions (see *Volume I: Introduction* for rationale). These regions were chosen to reflect regions associated with the *State Comprehensive Outdoor Recreation Studies* (DPR, 2008). Counties within the seven regions are listed below (Table 1). Four hundred-eight waterways in California have been identified as having recreational boating opportunities and are listed by region in Appendix A.

**Table 1. Counties within Each Region**





| Northern California | Sierra | Central Valley | San Francisco Bay Area |
|---|---|---|---|
| Del Norte | Alpine | Butte | Alameda |
| Glenn | Amador | Colusa | Contra Costa |
| Humboldt | Calaveras | Fresno* | Marin |
| Lake | El Dorado | Kern | Napa |
| Lassen | Inyo | Kings | San Francisco |
| Mendocino | Mariposa | Madera* | San Mateo |
| Modoc | Mono | Merced | Santa Clara |
| Plumas | Nevada | Sacramento | Solano |
| Shasta | Placer | San Joaquin | Sonoma |
| Sierra | Tuolumne | Stanislaus* | |
| Siskiyou | | Sutter | |
| Tehama | | Tulare | |
| Trinity | | Yolo | |
| | | Yuba* | |




| Central Coast | Los Angeles | Southern California |
|---|---|---|
| Monterey | Los Angeles | Imperial |
| San Benito | Ventura | Orange |
| San Luis Obispo | | Riverside |
| Santa Barbara | | San Bernardino* |
| Santa Cruz | | San Diego |

*A section of these counties is incorporated into the Sierra region, for the waterways more closely resemble those in the Sierra rather than Central Valley or Southern California. Sections of these counties met several criteria: (a) elevation at or above 3,500 feet and (b) waterways surrounded by (pine/fir) and/or granite.

# Motorized Boater Survey

A total of 3,774 registered boat owners responded to this online survey. The motorized boater survey produced 5,371 data points focused on specific waterways, due to the fact that study participants were asked to provide detailed information about one or two waterway(s) they most frequently visited. A breakdown of the number of survey participants from each region is provided in Table 2. The total number of waterway-data points produced for that region are also included.

## Participants' Characteristics & Boat Ownership

This results section provides information on study participants, including information on participants' demographics, their households, and types of boats owned.

## Characteristics of Online Study Participants

A range of demographic questions were asked of survey respondents. Questions included ones related to gender, age, number of adults and children in the household, income, education level, ethnicity, and primary language spoken. Completion of the demographic questions was voluntary, and just over half of the respondents (approximately 53%) chose to answer these questions.

Of those who chose to disclose their gender, the overwhelming majority were males (Table 3).

The average age of study participants is 72, and the median is 73 years old (Table 4).


**Table 2. Survey Respondents & Waterway-data Points by Region**

| Region | Respondents | Data Points |
|---|---|---|
| Northern California | 302 | 725 |
| Sierra | 480 | 879 |
| Central Valley | 598 | 916 |
| San Francisco Bay Area | 628 | 563 |
| Central Coast | 470 | 518 |
| Los Angeles | 261 | 399 |
| Southern California | 1,035 | 1,371 |
| Outside of California | 0 | 0 |
| **TOTAL** | **3,774** | **5,371** |

**Table 3. Gender of Survey Respondents**

| Gender | Respondents | Percent |
|---|---|---|
| Female | 177 | 8.9% |
| Male | 1,792 | 90.0% |
| Prefer not to say | 22 | 1.1% |

*N = 1,991*

**Table 4. Age of Survey Respondents**

| Age Range | Respondents | Percent |
|---|---|---|
| 30-39 | 12 | 0.6% |
| 40-49 | 84 | 4.2% |
| 50-59 | 191 | 9.6% |
| 60-69 | 463 | 23.3% |
| 70-79 | 701 | 35.3% |
| 80-89 | 463 | 23.3% |
| Over 89 | 73 | 3.7% |

*N = 1,987*

The average and median number of adults reported in participants' household is 2 (see Table 5), with 0.4 being the reported average and 0 being the median for number of children in the household (Table 6).

**Table 5. Number of Adults in Household**

| Adults | Respondents | Percent |
|---|---|---|
| 1 | 210 | 10.6% |
| 2 | 1,397 | 70.5% |
| 3 | 239 | 12.1% |
| 4+ | 136 | 6.9% |

*N = 1,982*

For those that chose to respond to income-related questions, total household income and number of people contributing to household income can be found in Table 7 and Table 8, respectively.

The majority of respondents (72.1%) have completed some form of higher education, obtaining a 2-year degree, 4-year degree, or graduate school (Table 9).

**Table 6. Number of Children in Household**

| Children | Respondents | Percent |
|---|---|---|
| 0 | 1,550 | 78.9% |
| 1 | 179 | 9.1% |
| 2 | 164 | 8.4% |
| 3 | 52 | 2.6% |
| 4+ | 19 | 1.0% |

*N = 1,964*

**Table 7. Total Household Income (Before Taxes)**

| Income Range | Respondents | Percent |
|---|---|---|
| under $25,000 | 115 | 5.7% |
| $25,000 - $49,999 | 196 | 9.7% |
| $50,000 - $74,999 | 326 | 16.2% |
| $75,000 - $99,999 | 346 | 17.2% |
| $100,000 - $124,999 | 297 | 14.8% |
| $125,000 - $149,999 | 172 | 8.5% |
| $150,000 - $174,999 | 149 | 7.4% |
| $175,000 - $199,999 | 113 | 5.6% |
| $200,000 or more | 298 | 14.8% |

*N = 2,012*

**Table 8. Number Contributing to Household Income**

| Earners | Respondents | Percent |
|---|---|---|
| 1 | 651 | 32.4% |
| 2 | 1,308 | 65.0% |
| 3+ | 53 | 2.6% |

*N = 2,012*

**Table 9. Participants' Highest Education Level Completed**

| Education Level | Respondents | Percent |
|---|---|---|
| Did not complete high school | 26 | 1.3% |
| High School | 422 | 21.2% |
| 2-Year College Degree | 425 | 21.4% |
| 4-Year College Degree | 561 | 28.2% |
| Graduate School | 445 | 22.4% |
| Other | 107 | 5.4% |

*N = 1,986*

The ethnicity and primary language spoken reported by survey respondents can be found in Table 10 and Table 11, respectively.

**Table 10. Ethnicity of Survey Respondents**

| Ethnicity | Respondents | Percent |
|---|---|---|
| Asian | 74 | 3.9% |
| Prefer not to answer | 38 | 2.0% |
| White | 1,693 | 88.2% |
| Hispanic or Latino | 40 | 2.08% |
| Pacific Islander | 14 | 0.73% |
| Native American | 34 | 1.77% |
| Biracial/multiracial | 8 | 0.42% |
| African American | 19 | 0.99% |

*N = 1,920*

## Boat Ownership of Study Participants

Respondents were asked how many motorized boats they owned. The large majority (73%) indicated owning only one motorized boat (Table 12).

Survey respondents were also asked to identify the type of boat(s) they own. Participants who owned more than one boat registered with the DMV or USCG were asked to identify which of their registered motorized boats they consider their "primary" boat (i.e., used most frequently).

Approximately 53.2% of the registered boat owners reported powerboats as their primary boat. Bass/ jon boats were the second most frequently reported boat, followed by sailboats over 8 feet with auxiliary, rowboats with a motor, and cabin cruisers (Table 13).


**Table 11. Primary Language of Survey Respondents**

| Primary Language | Respondents | Percent |
|---|---|---|
| English | 1,953 | 97.9% |
| Other | 26 | 1.3% |
| Punjabi | 6 | 0.3% |
| Spanish | 9 | 0.5% |

*N = 1,994*

**Table 12. Number of Motorized Boats Owned**

| Number of Boats | Respondents | Percent |
|---|---|---|
| 1 | 2,684 | 73.0% |
| 2 | 713 | 19.4% |
| 3 | 196 | 5.3% |
| 4 | 58 | 1.6% |
| 5+ | 28 | 0.8% |

*N = 3,679*

**Table 13. Primary Motorized Boat**

| Types of Boats | Respondents | Percent |
|---|---|---|
| Powerboat | 1,883 | 53.2% |
| Bass boat / jon boat | 441 | 12.5% |
| Sailboat (> 8 ft) w/ aux | 300 | 8.5% |
| Rowboat w/ motor | 235 | 6.6% |
| Cabin cruiser | 217 | 6.1% |
| Pontoon boat | 183 | 5.2% |
| Inflatable w/ motor | 121 | 3.4% |
| Other | 121 | 3.4% |
| Houseboat | 28 | 0.8% |
| Rowboat w/o motor | 3 | 0.1% |
| Sailboat (> 8 ft) w/o aux | 2 | 0.1% |
| Sailboat (< 8 ft) | 2 | 0.1% |
| Barge | 2 | 0.1% |
| Amphibious vehicle | 1 | 0.0% |

*N = 3,539*

Participants were also asked how many non-motorized boats they own (Table 14). Approximately, 45.4% of the survey respondents did not own a non-motorized boat, while the other 54.6% reported owning a non-motorized watercraft. Those not owning a non-motorized boat were asked if they were interested in non-motorized boating, and 48% expressed interest in non-motorized boating activities (Table 15).

Participants who owned more than one boat (motorized or non-motorized) were asked which boat was their "secondary" boat (i.e., used second most frequently). There was a wide range of responses with kayaks being mentioned the most frequently (Table 16).

In response to a question about whether or not their boat was also their primary residence, the overwhelming majority of respondents (approximately 93.3%) reported "no" (Table 17).

**Table 14. Number of Non-motorized Boats**

| Number of Boats | Respondents | Percent |
|---|---|---|
| 0 | 2,061 | 54.6% |
| 1 | 697 | 18.5% |
| 2 | 549 | 14.5% |
| 3 | 219 | 5.8% |
| 4 | 127 | 3.4% |
| 5+ | 121 | 3.2% |

*N = 3,774*

**Table 15. Interest in Non-motorized Boating Activities**

| Interest | Respondents | Percent |
|---|---|---|
| No | 1,072 | 52.0% |
| Yes | 988 | 48.0% |

*N = 2,060*

**Table 16. Secondary Boat Types**

| Boat Type | Respondents | Percent |
|---|---|---|
| Kayak | 630 | 32.0% |
| Powerboat | 254 | 12.9% |
| Other | 186 | 9.5% |
| Inflatable w/ motor | 174 | 8.8% |
| Canoe | 134 | 6.8% |
| Paddleboard | 129 | 6.6% |
| Rowboat w/ motor | 96 | 4.9% |
| Bass boat / jon boat | 88 | 4.5% |
| Sailboat (> 8 ft) w/ aux | 84 | 4.3% |
| Rowboat w/o motor | 60 | 3.1% |
| Pontoon boat | 38 | 1.9% |
| Sailboat (< 8 ft) | 27 | 1.4% |
| Cabin cruiser | 25 | 1.3% |
| Windsurfer | 17 | 0.9% |
| Houseboat | 17 | 0.9% |
| Kitesurfer | 7 | 0.4% |
| Barge | 1 | 0.05% |

*N = 1,967*

**Table 17. Boat as Primary Residence**

| Primary Residence | Respondents | Percent |
|---|---|---|
| No | 3,460 | 93.3% |
| Yes | 248 | 6.7% |

*N = 3,708*

# Non-Motorized Boater Survey

A total of 1,575 non-motorized boaters participated in this online survey. The non-motorized boater survey produced 3,129 data points focused on specific waterways, due to the fact that study participants were asked to provide detailed information about one or two waterway(s) they most frequently visited. The breakdown of the number of survey participants from each region is listed in Table 18. The total number of waterway-data points produced for that region are also included.

## Participants' Characteristics & Boat Ownership/Rentals

This results section provides information on study participants, including information on participatnts' demographics, their households, and types of boats owned or rented.

## Characteristics of Online Study Participants

Survey participants were asked a range of demographic questions. Questions included ones related to gender, age, number of adults and children in the household, income, education level, ethnicity, and primary language spoken. These demographic questions were voluntary, and over half of the respondents (approximately 67%) chose to answer these questions.

Of those who chose to disclose their gender, 52.9% are males and 45.6% are females (Table 19).

Of those who indicated their age, the average age of study participants is 53, and the median is 55 years old (Table 20).

**Table 18. Survey Respondents & Waterway-data Points by Region**

| Region | Respondents | Data Points |
|---|---|---|
| Northern California | 90 | 242 |
| Sierra | 116 | 452 |
| Central Valley | 213 | 343 |
| San Francisco Bay Area | 600 | 835 |
| Central Coast | 113 | 237 |
| Los Angeles | 128 | 274 |
| Southern California | 308 | 746 |
| Outside of California | 7 | 0 |
| **TOTAL** | **1,575** | **3,129** |

**Table 19. Gender of Survey Respondents**

| Gender | Respondents | Percent |
|---|---|---|
| Female | 482 | 45.6% |
| Male | 559 | 52.9% |
| Other/Prefer not to say | 15 | 1.4% |

*N = 1,056*

**Table 20. Age of Survey Respondents**

| Age Range | Respondents | Percent |
|---|---|---|
| 18-29 | 69 | 6.5% |
| 30-39 | 118 | 11.1% |
| 40-49 | 168 | 15.9% |
| 50-59 | 298 | 28.2% |
| 60-69 | 312 | 29.5% |
| 70-79 | 87 | 8.2% |
| Over 80 | 6 | 0.6% |

*N = 1,058*

The average and median number of adults reported in participants' household is 2 (Table 21), with 0.3 being the reported average and 0 being the median for number of children in the household (Table 22).

**Table 21. Number of Adults in Household**

| Adults | Respondents | Percent |
|---|---|---|
| 1 | 244 | 23.7% |
| 2 | 651 | 63.3% |
| 3 | 100 | 9.7% |
| 4 | 33 | 3.2% |

*N = 1,028*

**Table 22. Number of Children in Household**

| Children | Respondents | Percent |
|---|---|---|
| 0 | 821 | 81.0% |
| 1 | 96 | 9.5% |
| 2 | 81 | 8.0% |
| 3 | 16 | 1.6% |

*N = 1,014*

For those that responded to income-related questions, total household income and number of people contributing to household income can be found in Table 23 and Table 24, respectively.

**Table 23. Total Household Income (Before Taxes)**

| Income Range | Respondents | Percent |
|---|---|---|
| under $25,000 | 49 | 4.6% |
| $25,000 - $49,999 | 87 | 8.2% |
| $50,000 - $74,999 | 167 | 15.7% |
| $75,000 - $99,999 | 175 | 16.4% |
| $100,000 - $124,999 | 176 | 16.5% |
| $125,000 - $149,999 | 98 | 9.2% |
| $150,000 - $174,999 | 99 | 9.3% |
| $175,000 - $199,999 | 61 | 5.7% |
| $200,000 or more | 154 | 14.4% |

*N = 1,066*

The majority of respondents (90.3%) have completed some form of higher education, obtaining a 2-year degree, 4-year degree, or completing graduate school (Table 25).

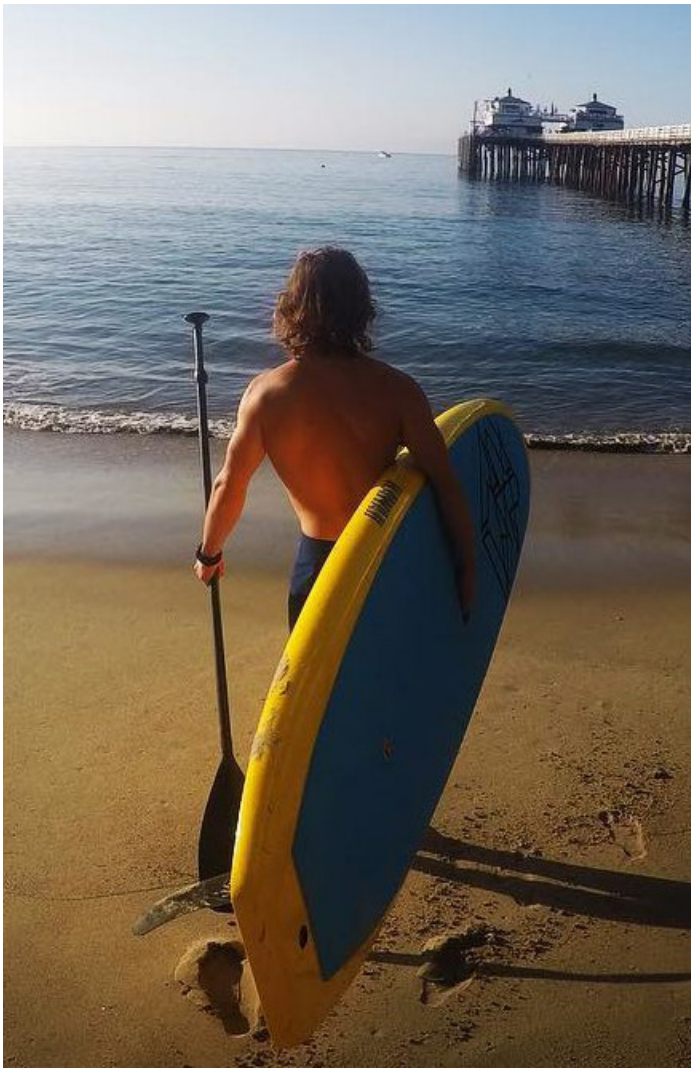


**Table 24. Number Contributing to Household Income**

| Earners | Respondents | Percent |
|---|---|---|
| 1 | 378 | 37.5% |
| 2 | 599 | 59.5% |
| 3 | 30 | 3.0% |

*N = 1,007*

**Table 25. Participants' Highest Education Level Completed**

| Education Level | Respondents | Percent |
|---|---|---|
| Did not complete high school | 1 | 0.1% |
| High School | 73 | 6.9% |
| 2-Year College Degree | 98 | 9.3% |
| 4-Year College Degree | 401 | 37.9% |
| Graduate School | 456 | 43.1% |
| Other | 29 | 2.7% |

*N = 1,058*

The ethnicity and primary language spoken reported by the survey respondents can be found in Table 26 and Table 27, respectively.

**Table 26. Ethnicity of Survey Respondents**

| Ethnicity | Respondents | Percent |
|---|---|---|
| White | 779 | 75.2% |
| Asian | 111 | 10.7% |
| Bi/multiracial | 59 | 5.7% |
| Prefer to not say | 34 | 3.3% |
| Hispanic or Latino | 23 | 2.2% |
| Native Hawaiian or Pacific Islander | 17 | 1.6% |
| Black or African American | 7 | 0.7% |
| American Indian or Alaska Native | 6 | 0.6% |

*N = 1,036*

**Table 27. Primary Language of Survey Respondents**

| Primary Language | Respondents | Percent |
|---|---|---|
| English | 1,016 | 96.2% |
| Other | 7 | 0.7% |
| Cantonese | 7 | 0.7% |
| Punjabi | 5 | 0.5% |
| Spanish | 4 | 0.4% |
| French | 4 | 0.4% |
| German | 4 | 0.4% |
| Russian | 3 | 0.3% |
| Mandarin | 3 | 0.3% |
| Vietnamese | 2 | 0.2% |
| Filipino | 1 | 0.1% |

*N = 1,056*

## Boat Ownership/Rentals of Study Participants

Respondents were asked if they owned, rented, or both owned and rented non-motorized boats. The majority (76.1%) indicated that they owned a boat(s) (Table 28).

Those indicating they owned a non-motorized watercraft were asked how many non-motorized boats they own. Approximately, 73.7% reported owning two or more boats (Table 29).

**Table 28. Own vs. Rent Boats**

| Number of Boats | Respondents | Percent |
|---|---|---|
| Both Rent and Own | 167 | 14.2% |
| Own | 730 | 61.9% |
| Rent | 282 | 23.9% |

*N = 1,179*

**Table 29. Number of Non-motorized Boats Owned**

| # of Boats Owned | Respondents | Percent |
|---|---|---|
| 1 | 223 | 26.3% |
| 2 | 179 | 21.1% |
| 3 | 124 | 14.6% |
| 4 | 92 | 10.8% |
| 5 | 62 | 7.3% |
| 6 - 10 | 112 | 13.2% |
| 11 or more | 56 | 6.6% |

*N = 848*

Respondents were also asked to identify the type of boat(s) they own. Boats most frequently reported include stand up paddleboards (SUP), outrigger canoes, and kayaks (river, touring, and sit-on-top) (Table 30).

Respondents who indicated they rented boats were asked to identify types of boats they rent. The boats most frequently reported include dragon boats, outrigger canoes, SUP, and ocean kayaks (sit-on-top) (Table 31).

**Table 30. Boat Types Owned by Participants**

| Boat Type | Responses | Percent |
|---|---|---|
| SUP | 291 | 16.2% |
| Outrigger canoe | 267 | 14.9% |
| River kayak | 205 | 11.4% |
| Ocean kayak (touring) | 199 | 11.1% |
| Ocean kayak (sit on top) | 185 | 10.3% |
| Canoe | 147 | 8.2% |
| Inflatable kayak | 104 | 5.8% |
| Whitewater raft | 69 | 3.8% |
| Scull/shell | 61 | 3.4% |
| Windsurfer | 51 | 2.8% |
| Dragon boat | 50 | 2.8% |
| Rowboat | 47 | 2.6% |
| Sailboat (<8 ft) | 42 | 2.3% |
| Prone paddleboard | 23 | 1.3% |
| Surfski /surf kayak | 21 | 1.2% |
| Kitesurfer | 20 | 1.1% |
| Dory | 9 | 0.5% |
| Dinghy/small raft | 4 | 0.2% |

*Total Count = 1,795*

**Table 31. Boat Types Rented by Participants**

| Boat Type | Responses | Percent |
|---|---|---|
| Dragon boat | 138 | 15.8% |
| Outrigger canoe | 130 | 14.9% |
| SUP | 114 | 13.1% |
| Ocean kayak (sit on top) | 104 | 11.9% |
| Canoe | 70 | 8.0% |
| Scull/shell | 61 | 7.0% |
| Ocean kayak (touring) | 60 | 6.9% |
| Sailboat (<8 ft) | 51 | 5.8% |
| River kayak | 41 | 4.7% |
| Whitewater raft | 28 | 3.2% |
| Rowboat | 20 | 2.3% |
| Windsurfer | 20 | 2.3% |
| Inflatable kayak | 14 | 1.6% |
| Prone paddleboard | 7 | 0.8% |
| Dory | 6 | 0.7% |
| Kitesurfer | 6 | 0.7% |
| Surfski /surf kayak | 2 | 0.2% |
| Dinghy/small raft | 1 | 0.1% |

*Total Count = 873*

# Recreational Boater Patterns

Motorized and non-motorized boaters were asked a range of questions about their typical boating patterns, including (a) distance (miles) from home to preferred waterways, (b) boat launching and take-outs, (c) typical number of days boating in a year, (d) typical boating months, (e) number of people on a boating trip, and (f) day vs. multi-day trips.

## Travel Distance to Preferred Waterways

The distributions of miles travelled by motorized (Figure 1) and non-motorized boaters (Figure 2) from their home to their preferred waterways are very similar. Over 50% (1 out of every 2) of both motorized and non-motorized boaters travelled less than 30 miles to their preferred waterway, while 25% (1 out of every 4) travelled 10 miles or less to their preferred waterway (Table 32, see quantiles).

**Figure 1. Distribution of Miles Travelled for Motorized Boaters**

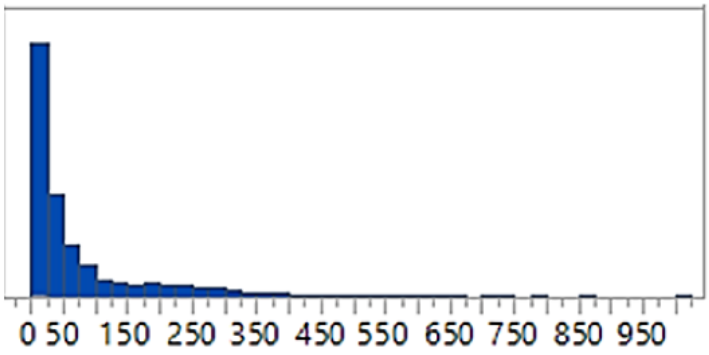



**Figure 2. Distribution of Miles Travelled for Non-motorized Boaters**

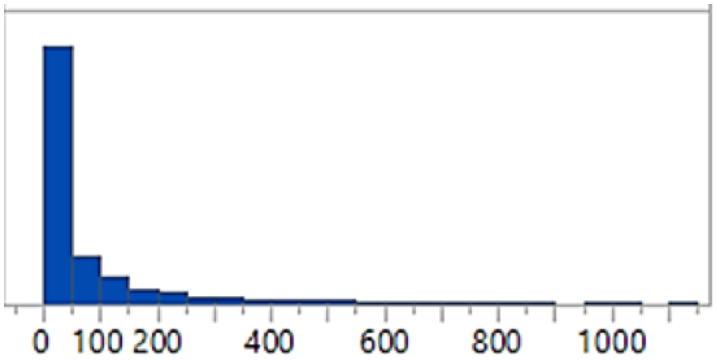



**Table 32. Miles Travelled to Preferred Waterway**

| Statistic | Miles Motorized | Miles Non-motorized |
|---|---|---|
| ***Mean*** | 65 | 63 |
| Upper 95% CI for Mean | 68 | 67 |
| Lower 95% CI for Mean | 63 | 59 |
| ***Quantile*** | | |
| 90% | 197 | 175 |
| 75% | 75 | 65 |
| 50% (Median) | 27 | 22 |
| 25% | 10 | 7 |
| 10% | 2 | 3 |

*Total Count for Motorized = 4,605*

*Total Count for Non-motorized = 2,906*

When viewed by region, there are significant differences in the distributions of miles travelled to preferred waterways as illustrated in Tables 33 and 34. Both motorized and non-motorized boaters whose preferred waterways are located in Northern California and Sierra typically travel longer distances to get to their preferred waterways. In contrast, boaters whose preferred waterways are located in the Greater San Francisco Bay Area typically travel shorter distances to get those waterways.

**Table 33. Motorized Boater Travel by Regions (in miles)**

| Statistic | Region 1: Northern California | Region 2: Sierra | Region 3: Central Valley | Region 4: San Francisco Bay Area | Region 5: Central Coast | Region 6: Los Angeles | Region 7: Southern California |
|---|---|---|---|---|---|---|---|
| ***Mean*** | 97 | 87 | 46 | 38 | 41 | 40 | 75 |
| Upper 95% CI for Mean | 107 | 94 | 51 | 44 | 42 | 46 | 80 |
| Lower 95% CI for Mean | 87 | 80 | 41 | 33 | 36 | 34 | 69 |
| ***Quantile*** | | | | | | | |
| 90% | 272 | 219 | 116 | 87 | 117 | 77 | 247 |
| 75% | 147 | 117 | 52 | 47 | 50 | 50 | 97 |
| 50% (Median) | 35 | 50 | 20 | 20 | 19 | 29 | 25 |
| 25% | 12 | 20 | 7 | 7 | 7 | 12 | 8 |
| 10% | 3 | 3 | 2 | 2 | 1 | 2 | 2 |

*Total Count = 4,605*

**Table 34. Non-motorized Boater Travel by Regions (in miles)**

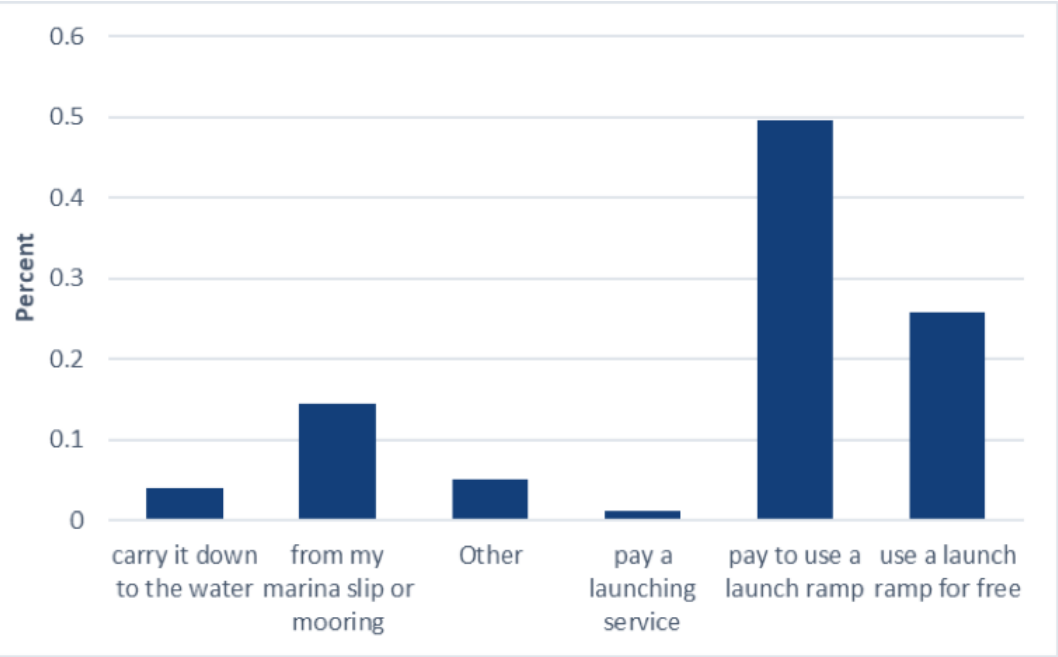
| Statistic | Region 1: Northern California | Region 2: Sierra | Region 3: Central Valley | Region 4: San Francisco Bay Area | Region 5: Central Coast | Region 6: Los Angeles | Region 7: Southern California |
|---|---|---|---|---|---|---|---|
| ***Mean*** | 97 | 114 | 64 | 38 | 65 | 62 | 48 |
| Upper 95% CI for Mean | 115 | 126 | 75 | 44 | 79 | 73 | 56 |
| Lower 95% CI for Mean | 80 | 102 | 53 | 32 | 52 | 51 | 41 |
| ***Quantile*** | | | | | | | |
| 90% | 230 | 260 | 160 | 80 | 208 | 180 | 120 |
| 75% | 147 | 145 | 70 | 35 | 90 | 80 | 35 |
| 50% (Median) | 45 | 65 | 20 | 15 | 20 | 25 | 15 |
| 25% | 12 | 37 | 11 | 7 | 4 | 7 | 6 |
| 10% | 10 | 9 | 5 | 3 | 2 | 3 | 2 |

*Total Count = 2,906*

## Boat Launch and Take Out

Motorized and non-motorized boaters were asked how they typically launch their boat(s). Almost half of the motorized boaters pay to use a launch ramp (49.6%), followed by using a launch ramp for free (25.8%), and launching from a personal marina slip or mooring (14.5%) (Figure 3 and Table 35).

### Figure 3. Launch Methods for Motorized Boats




### Table 35. Launch Method for Motorized Boaters

| Launch Method | Percent |
|---|---|
| Pay to use a launch ramp | 49.6% |
| Use a launch ramp for free | 25.8% |
| From my marina slip or mooring | 14.5% |
| Other | 5.0% |
| Carry it down to the water | 4.0% |
| Pay a launching service | 1.2% |

*Total Count for Motorized Boats = 5,051*

Over half of the non-motorized boaters carry their boats down to the water (54.7%), followed by storing their boats on or near the water (17.6%) and using a launch ramp for free (14.9%) (Figure 4 and Table 36).

**Figure 4. Launch Methods for Non-motorized Boats**

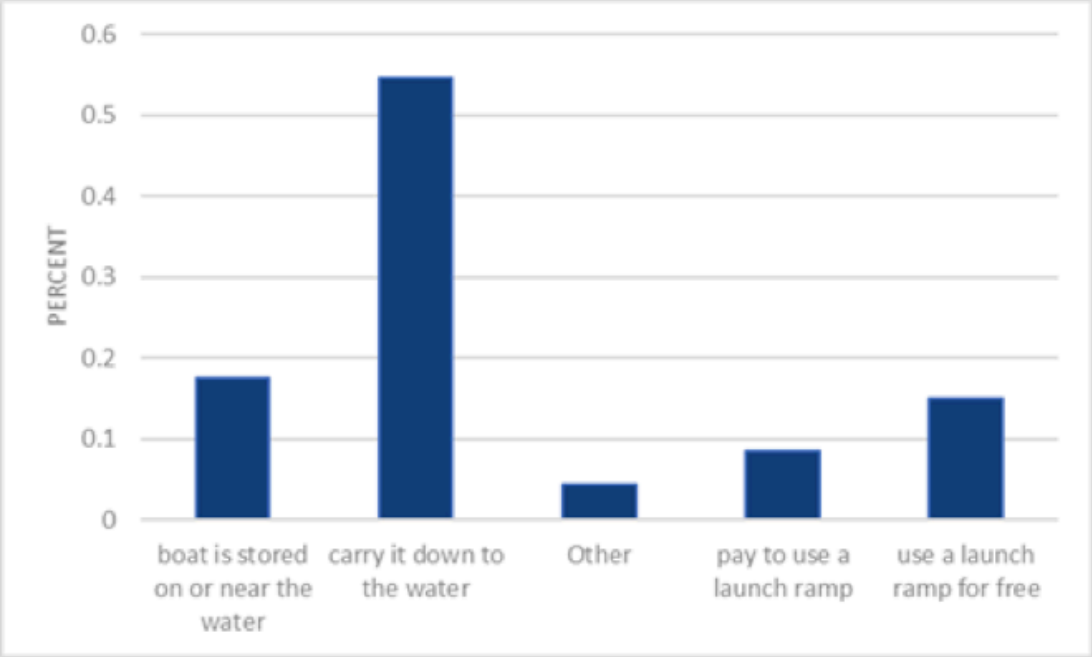



**Table 36. Launch Method for Motorized Boaters**

| Launch Method | Percent |
|---|---|
| Carry it down to the water | 54.7% |
| Boat is stored on or near the water | 17.6% |
| Use a launch ramp for free | 14.9% |
| Pay to use a launch ramp | 8.5% |
| Other | 4.4% |

*Total Count for Non-motorized Boats = 2,073*

Non-motorized boaters were also asked if they take out at a different location than where they initially launched or put in. Eighty percent reported putting in and taking out at the same location, and 20% reported taking their boat out a different location (Table 37).

**Table 37. Different Take Out Location for Non-motorized Boaters**

| Different Take Out | Percent |
|---|---|
| No | 80.0% |
| Yes | 20.0% |

*Total Count for Non-motorized Boats = 2,073*

## Recreational Boating Days in a Year

Both motorized and non-motorized boaters were asked how many days they typically use their boat over a span of a year (365 days). The distribution of days are depicted in Figure 5 for motorized and Figure 6 for non-motorized study participants. The number of days non-motorized boaters use their boats is notably higher than motorized boaters (Table 38).

**Figure 5. Distribution of Boating Days in a Typical Year for Motorized Boaters**

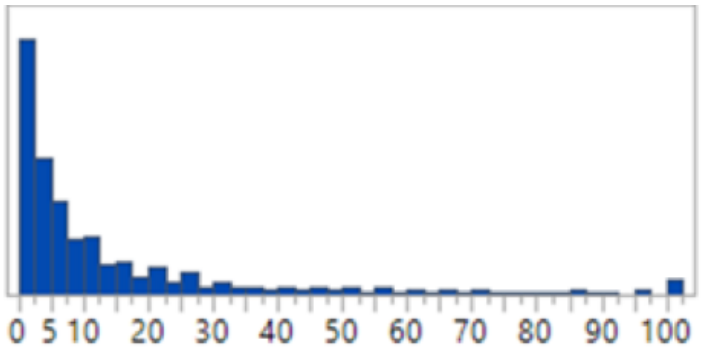



**Figure 6. Distribution of Boating Days in a Typical Year for Non-motorized Boaters**

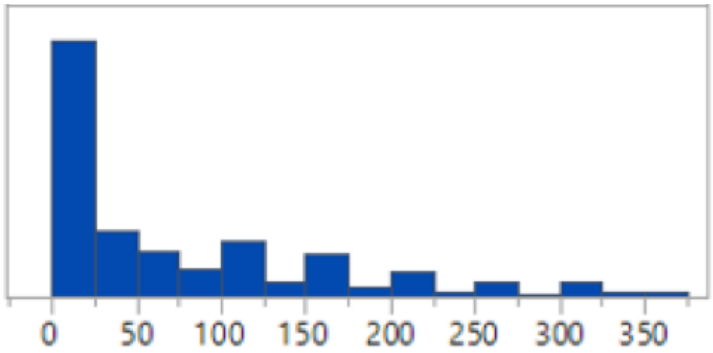
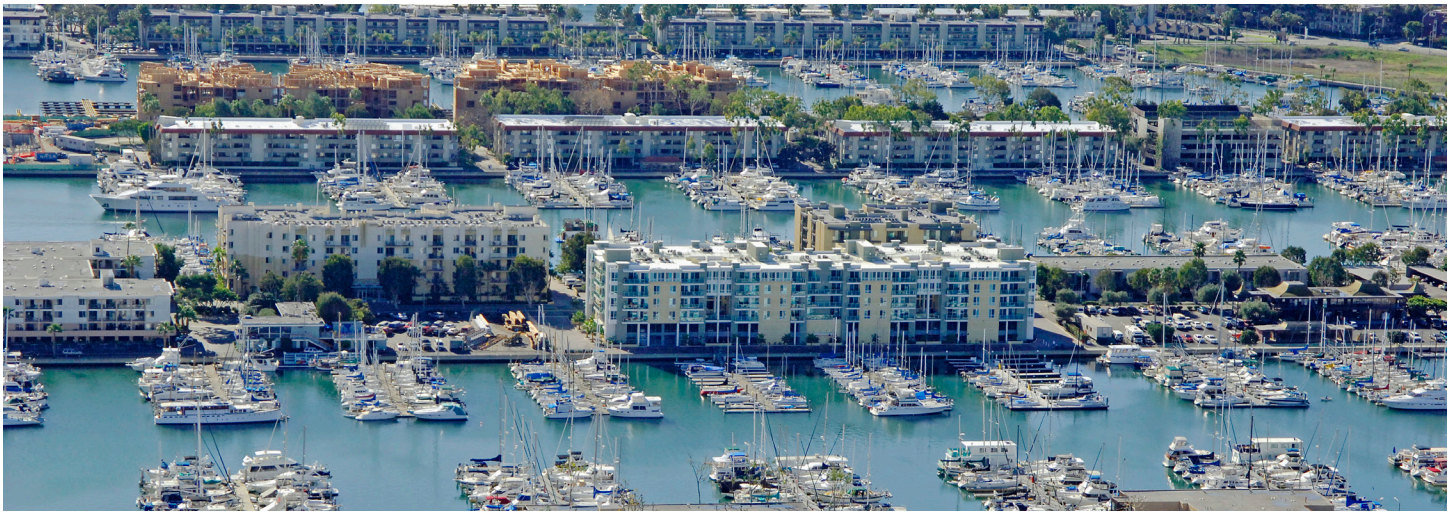



**Table 38. Typical Number of Days Boating per Year**

| Statistic | Days per Year Motorized | Days per Year Non-motorized |
|---|---|---|
| ***Mean*** | 13 | 67 |
| Upper 95% CI for Mean | 14 | 71 |
| Lower 95% CI for Mean | 12 | 64 |
| ***Quantile*** | | |
| 90% | 28 | 180 |
| 75% | 13 | 100 |
| 50% (Median) | 5 | 30 |
| 25% | 2 | 10 |
| 10% | 1 | 3 |
| *Total Count for Motorized = 4,605* | | |
| *Total Count for Non-motorized = 2,058* | | |



## Boating Months

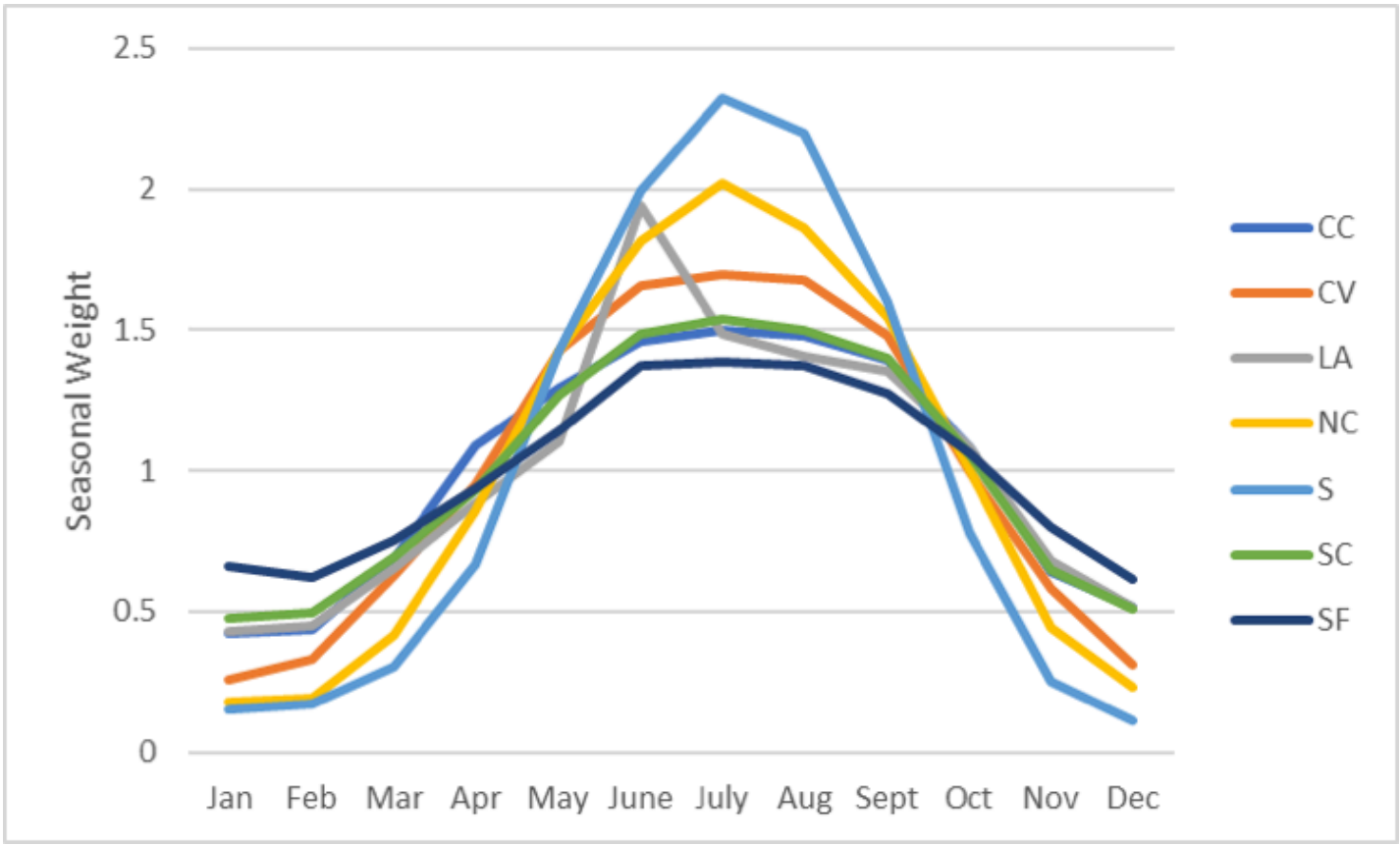
Motorized and non-motorized boaters were asked to indicate which months they typically boat on their preferred waterways. A seasonal profile was constructed for each region, and two overlay plots were created to illustrate the seasonal profiles by region for motorized (Figure 7) and non-motorized boaters (Figure 8).[1]

For each region, a seasonal weight (vertical axis) was calculated where the baseline has a value of 1.0. The baseline represents the average number of respondents boating in a particular region over a 12-month period. In other words, an index was created where a "normal" month has a value of 1.0. A value of 0.5 represents half the "normal," and a value of 2.0 represents double the "normal."

Not surprisingly, the most popular months (i.e., those with the largest seasonal weights) for motorized boaters are the summer months of June, July, and August across all regions. Sierra and Northern California regions are more heavily influenced by the summer seasonal impact for motorized boating, compared to regions like San Francisco Bay Area with more temperate climates. The temperate (often coastal) regions have more year round boating.

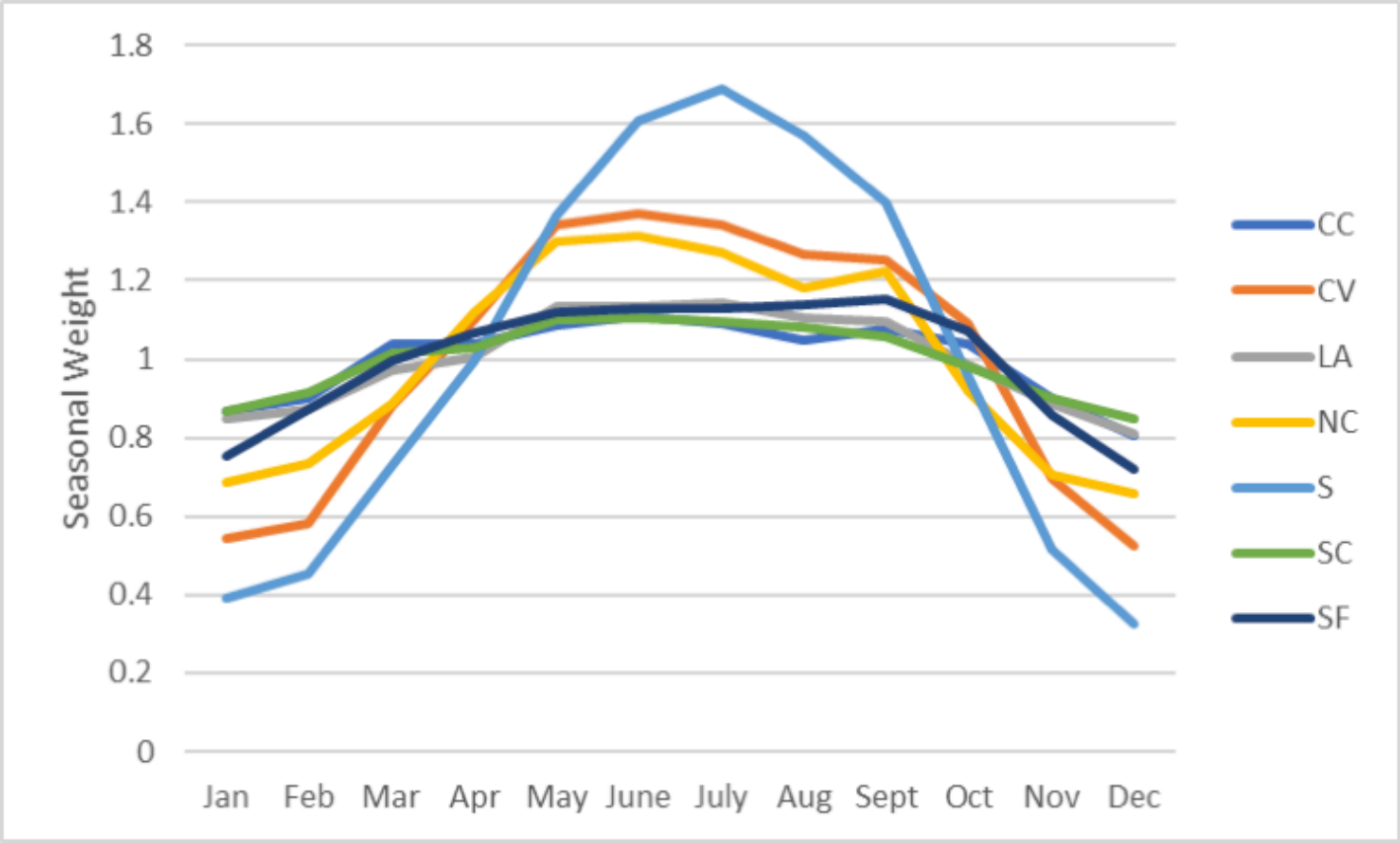
Boating patterns for non-motorized boats are very similar to motorized. However, the summer seasonal impact is less pronounced. The non-motorized boating season also extends further into spring (March and April) and fall months (September, October, and November).

**Figure 7. Seasonal Profile of Motorized Boaters by Region**




[1] *26,712 data points were used to generate the motorized boater season graph (Figure 7) and 17,352 data points for the non-motorized boater season graph (Figure 8).*

**Figure 8. Seasonal Profile of Non-motorized Boaters by Region**




## Number of People on a Boating Trip

Motorized and non-motorized boaters were asked how many people (if any) typically joined them on a boating trip. A majority of participants (both motorized and non-motorized) travelled in groups rather than solo. Table 39 provides summary statistics for the number of people on a boating trip. Findings suggest non-motorized trips have more people in a group when compared to motorized trips.

**Table 39. Number of People on a Boating Trip**

| Statistic | Number of People Motorized | Number of People Non-motorized |
|---|---|---|
| ***Mean*** | 3 | 8 |
| Upper 95% CI for Mean | 3 | 8 |
| Lower 95% CI for Mean | 3 | 7 |
| ***Quantile*** | | |
| 90% | 5 | 20 |
| 75% | 4 | 8 |
| 50% (Median) | 2 | 3 |
| 25% | 2 | 2 |
| 10% | 1 | 1 |

*Total Count for Motorized = 4,995*

*Total Count for Non-motorized = 2,017*

## Day vs. Multi-Day Trips

Motorized and non-motorized boaters were asked if their boating trips are typically day trips or multi-day trips. A majority of motorized (72%) and non-motorized (88%) boaters indicated that day trips were more typical (Table 40). While more motorized boaters (28%) went on multi-day trips compared to non-motorized boaters (12%), non-motorized boaters' multi-day trips tended to be for a longer period of time (see Table 41 for distribution of days).

**Table 40. Typical Type of Boating Trip (Day vs. Multi-day)**

| Type of Trip | Motorized | Non-motorized |
|---|---|---|
| Day Trip | 72.0% | 88.0% |
| Multi-day Trip | 28.0% | 12.0% |

*Total Count for Motorized Boats = 5,005*

*Total Count for Non-motorized Boats = 2,032*

**Table 41. Number of Days on Multi-day Trips (Trip Length)**

| Statistic | Multi-day Trip Length Motorized | Multi-day Trip Length Non-motorized |
|---|---|---|
| ***Mean*** | 4 | 8 |
| Upper 95% CI for Mean | 5 | 10 |
| Lower 95% CI for Mean | 4 | 7 |
| ***Quantile*** | | |
| 90% | 7 | 20 |
| 75% | 4 | 10 |
| 50% (Median) | 3 | 4 |
| 25% | 3 | 2 |
| 10% | 2 | 1 |

*Total Count for Motorized = 1,370*

*Total Count for Non-motorized = 237*

# Waterways Used by Recreational Boaters

In both the motorized and non-motorized boater surveys, participants were asked to identify two waterways in California they most frequently used for recreational boating activities within the past two years. Subsequent questions focused on aspects related to the particular waterway, including (a) what types of boats they use on the waterway and (b) perceptions of use and level of crowdedness. In this section, the most frequented waterways are highlighted, along with the type of boats used on them and perceptions of use/level of crowdedness.[2]

## Most Frequented Waterways

Survey participants were asked the question: *Which two waterways have you visited most frequently within the past 2 years?"* The 20 waterways most frequently visited by motorized and non-motorized boaters study participant throughout California are listed in Table 42.[3] This represents approximately 45% of all of the waterway counts, and the remaining 55% vary across a wide range of waterways.[4] Information about all frequented waterways can be found by regions in *Volumes IV – X: Regions*.

*[2] Similar tables are produced for each region in Volumes IV – X: Regions, and all regional waterway reports related to these topics can be found in Appendix A and B of the regional volumes.*

*[3] For San Francisco Bay, this represents the entire bay. In Volume VII: Greater San Francisco Bay Area, different areas on the bay are analyzed.*

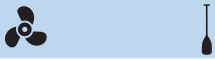
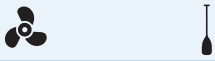
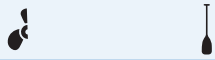
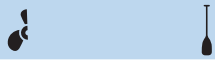
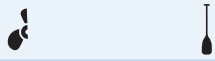
*[4] The total number of data points (waterway counts) for both motorized and non-motorized boaters is 8,500 (see Table 2 in Volume II: Methods). The 20 waterways represent 45% of these data points (i.e., 3,865).*


Lake Shasta
Lake Oroville
Lake Tahoe
American River
Sacramento River
Folsom Lake
Lake Natoma
Tomales Bay
Sacramento-
San Joaquin
Delta
San Francisco Bay
Monterey Bay
Lake Nacimiento
Pacific Ocean
N
Ventura Harbor
Marina Del Rey
Lake
Havasu
Colorado River
Newport Harbor
Dana Point Harbor
Oceanside Harbor
Mission Bay
San Diego Bay
Miles
0 25 50 100 150 200

For the 20 waterways most frequently reported, the total number of motorized boater responses is 2,349 and 1,516 for non-motorized boaters. To illustrate the frequency of use reported by study respondents, a system of symbols is used to show the volume of responses for each body of water. The "propeller" icon represents approximately 5% of motorized-boater waterway counts (2,349 counts). For example, San Francisco Bay represents 10% (2 propellers) of the most frequently visited waterways by motorized boaters. Similarly, the "paddle" icon represents approximately 5% of non-motorized-boater waterway counts (1,516 counts). For example, San Francisco Bay represents 25% (5 paddles) of the most frequently visited waterways by non-motorized boaters.

**More icons equate to being identified by study participants as their preferred waterway for recreational boating.**

**Table 42. Reported as Primary Waterway by Respondents**

| Primary Waterway | Motorized and Non-motorized Boaters |
|---|---|
| San Francisco Bay |  |
| Mission Bay |  |
| San Diego Bay |  |
| Colorado River |  |
| Pacific Ocean (Southern California) |  |
| Sacramento River |  |
| Folsom Lake |  |
| Monterey Bay |  |
| American River-South Fork |  |
| Shasta Lake |  |
| Lake Tahoe |  |
| Sacramento-San Joaquin Delta |  |
| Dana Point Harbor |  |
| Newport Harbor |  |
| Lake Nacimiento |  |
| Lake Havasu |  |
| Oceanside Harbor (Marina Del Mar) |  |
| Lake Oroville |  |
| Long Beach Harbor |  |
| Ventura Harbor |  |

*Total Count for Motorized = 2,349*

*Total Count for Non-motorized = 1,516*

## Types of Boats on Primary Waterways

Study participants were asked which boat(s) they use most frequently on those waterways.[5] These findings are presented in Table 43 for the primary waterways (those listed in Table 42 and in the same order). For each waterway, the total number of reported motorized boat types and total number of non-motorized reported boat types were generated. From those totals, percentages of the various boat types were calculated. In both the motorized and non-motorized boat type columns, the top two or three boat types reported for that waterway are included; boat types with small percentages are not included. For example, sailboats over 8 feet with auxiliary represent 53%, powerboats represent 30%, and cabin cruisers represent 13% of the total number of boat types reported on San Francisco Bay. The remaining 4% include a range of the other possible motorized boat types. If a boating sub-population (i.e., motorized or non-motorized) did not identify a waterway as primary, boat type data are not included in the cell.

**Table 43. Boat Types on Primary Waterways**

| Primary Waterway | Motorized Boaters | Non-motorized Boaters |
|---|---|---|
| San Francisco Bay | Sailboat (> 8 ft) w/ aux (53%)<br>Powerboat (30%)<br>Cabin Cruiser (13%) | Ocean Kayak(28%)<br>Outrigger Canoe (21%)<br>Dragon Boat (16%)<br>SUP (11%) |
| Mission Bay | Powerboat (61%) | Outrigger Canoe (31%)<br>SUP (21%) Ocean Kayak<br>(12%) Dragon Boat (10%) |
| San Diego Bay | Powerboat (48%)<br>Sailboat (> 8 ft) w/ aux (19%) | SUP (29%) Outrigger Canoe<br>(29%) Ocean Kayak (18%) |
| Colorado River | Powerboat (67%)<br>PWC (15%) | Outrigger Canoe (57%)<br>SUP (29%) |
| Pacific Ocean<br>(Southern California) | Powerboat (48%)<br>Sailboat (> 8 ft) w/ aux (22%) | Outrigger Canoe (49%)<br>SUP (20%) Ocean Kayak<br>(15%) |
| Sacramento River | Powerboat (57%)<br>Bass Boat / Jon Boat (18%) | Canoe (25%)<br>Ocean Kayak (25%)<br>River / Inflatable Kayak (25%) |
| Folsom Lake | Powerboat (65%)<br>Bass Boat / Jon Boat (11%) | Outrigger Canoe (33%)<br>Ocean Kayak (20%)<br>SUP (20%) |
| Monterey Bay | Powerboat (50%)<br>Sailboat (> 8 ft) w/ aux (33%) | Scull or Shell Boat (51%)<br>Ocean Kayak (24%) |
| American River-South Fork | _____ | River / Inflatable Kayak (75%)<br>White Water Raft (20%) |

*[5] Motorized watercrafts include barge, bass boat/jon boat, cabin cruiser, houseboat, inflatable with motor, pontoon boat, powerboat, PWC, rowboat with motor, sailboat (over 8 feet) with auxiliary, and others. Non-motorized watercrafts include canoe, dory, dragon boat, inflatable kayak, kite-surfer, ocean kayak (sit on top), ocean kayak (touring), outrigger canoe, prone paddleboard, river kayak, rowboat, sailboat (under 8 feet), scull or shell boat, SUP, surfski, whitewater raft, windsurfer, and other.*

| | | |
|---|---|---|
| Shasta Lake | Powerboat (46%)<br>Bass Boat / Jon Boat (22%)<br>Pontoon Boat (13%) | _____ |
| Lake Tahoe | Powerboat (72%) | SUP (36%)<br>Ocean Kayak (26%)<br>Outrigger Canoe (14%) Scull or Shell Boat (12%) |
| Sacramento-San Joaquin Delta | Powerboat (60%)<br>Bass Boat / Jon Boat (22%) | Ocean Kayak (30%)<br>Sailboat < 8 ft, windsurfer, kitsurfer (21%)<br>Scull or Shell Boat (15%) |
| Dana Point Harbor | Powerboat (49%)<br>Inflatable w/ motor (16%)<br>Cabin Cruiser (15%)<br>Sailboat (> 8 ft) w/ aux (15%) | Outrigger Canoe (50%)<br>SUP (25%) |
| Newport Harbor | Powerboat (53%)<br>Cabin Cruiser (16%) | Outrigger Canoe (53%)<br>SUP (20%)<br>Ocean Kayak (16%) |
| Lake Nacimiento | Powerboat (59%)<br>Bass / Jon Boat (24%) | _____ |
| Lake Havasu | Powerboat (72%) | _____ |
| Oceanside Harbor (Marina Del Mar) | Powerboat (33%)<br>Sailboat (> 8 ft) w/ aux (33%) | Outrigger Canoe (55%)<br>Ocean Kayak (21%) |
| Lake Oroville | Powerboat (55%)<br>Bass Boat / Jon Boat (14%) | _____ |
| Long Beach Harbor | Powerboat (54%)<br>Sailboat (> 8 ft) w/ aux (16%) | Dragon Boat (67%) |
| Ventura Harbor | Powerboat (38%)<br>Sailboat (> 8 ft) w/ aux (29%) | Outrigger Canoe (42%)<br>SUP (29%)<br>Ocean Kayak (16%) |

*Total Count for Motorized = 2,349*
*Total Count for Non-motorized = 1,516*

## Perceptions of Use and Levels of Crowdedness

To illustrate perceptions of use reported by study respondents, a system of symbols is also used to show the volume of responses for each body of water. Table 44 visually represents perceptions of use and levels of crowdedness of motorized and non-motorized watercrafts through "propeller" and "paddle" icons for the primary waterway (those listed in Table 42 and in the same order).

**More icons equate to perceptions of heavier usage and crowdedness.**

In both the motorized and non-motorized boater surveys, study participants were asked to indicate their perception of boat use and crowdedness of their most frequented waterways by checking one option to the following question: *How would you describe the usage of [WATERWAY NAME] by **motorized** [and **non-motorized**] boaters?*

- Extremely heavy use / over-crowding (scored as 4)
- Heavy use / frequent crowding (scored as 3)
- Moderate use / occasional crowding (scored as 2)
- Low use / rarely crowded (scored as 1)

Answers were scored from 1 (low use) to 4 (extremely heavy use). Motorized and non-motorized survey responses were combined for perceptions of watercrafts use, and an average was calculated for both motorized and non-motorized watercrafts.[6] By rounding the average to the nearest whole number, a waterway received a score of 1 – 4 where one icon represents a score of 1 (low use) and 4 icons represent a score of (extremely heavy use). For example, San Francisco Bay is perceived as having 'moderate use/occasional crowding' for motorized watercrafts (2 propellers) and 'moderate use/occasional crowding' for non-motorized watercrafts (2 paddles).

**Table 44. Perceptions of Use/Crowdedness**

| Primary Waterway | Watercrafts |
|---|---|
| San Francisco Bay | |
| Mission Bay | |
| San Diego Bay | |
| Colorado River | |
| Pacific Ocean (Southern California) | |
| Sacramento River | |
| Folsom Lake | |
| Monterey Bay | |
| American River-South Fork | |
| Shasta Lake | |
| Lake Tahoe | |
| Sacramento-San Joaquin Delta | |
| Dana Point Harbor | |
| Newport Harbor | |
| Lake Nacimiento | |
| Lake Havasu | |
| Oceanside Harbor (Marina Del Mar) | |
| Lake Oroville | |
| Long Beach | |
| Ventura Harbor | |

*Total Count for Motorized = 2,349*

*Total Count for Non-motorized = 1,516*

*[6] Similar tables are prepared for all waterways within each region (see Volumes IV – X: Regions), and averages are calculated for all waterways (see Appendix C in those volumes).*

# Facility Needs, Issues, & Reasons for Visiting

In this section, facility needs and boating issues from the perspectives of motorized and non-motorized boaters are summarized, along with reasons they visit particular waterways. Summary tables are presented for each section, followed by specifics related to the 20 preferred waterways identified in Table 42. This section concludes with summaries from the series of focus group meetings held to collect more information on non-motorized facility needs and boating issues.

## Facility Needs: Recreational Boater Perspectives

In both the motorized and non-motorized boater surveys, study participants were asked to respond to the following question for their most frequented waterways: *Please check all of the facilities and services that either need to be improved upon and/or added to [WATERWAY NAME] for **motorized** boats [and **non-motorized**] (check all that apply).*[7] The perceived facility needs from motorized and non-motorized boater perspectives are summarized Tables 45 and 46.

**Table 45. Motorized Boater Facility Needs for State**

| Motorized Boater Facility Need | Count of Needs Identified | Percent of All Needs |
|---|---|---|
| Restrooms | 1236 | 10.8% |
| Launch Ramps | 1221 | 10.7% |
| Day Docks | 1043 | 9.1% |
| Boating Access | 912 | 8.0% |
| Parking Vehicles / Trailers | 881 | 7.7% |
| Fish Cleaning Stations | 767 | 6.7% |
| Floating Docks/Piers | 605 | 5.3% |
| Slips (Marinas) | 553 | 4.8% |
| Supply Stores | 551 | 4.8% |
| Landings/Boat-in Sites | 548 | 4.8% |
| Showers | 527 | 4.6% |
| Transient Facilities / Tie-Ups | 387 | 3.4% |
| Navigational Aids | 371 | 3.2% |
| Marine Service and Repairs | 358 | 3.1% |
| Pump-out Stations | 309 | 2.7% |
| Mooring Fields | 294 | 2.6% |
| Boarding Floats | 269 | 2.4% |
| Utilities | 226 | 2.0% |
| Dry Storage | 225 | 2.0% |
| Emergency Services | 161 | 1.4% |

*Total Count = 11,444*

**Table 46. Non-motorized Boater Facility Needs for State**

| Non-motorized Facility Need | Count of Needs Identified | Percent of All Needs |
|---|---|---|
| Restrooms | 790 | 13.9% |
| Parking | 772 | 13.5% |
| Launch Spots -by Hand | 682 | 12.0% |
| Boating Access | 498 | 8.7% |
| Showers | 475 | 8.3% |
| Landings | 403 | 7.1% |
| Access to Fresh Water | 376 | 6.6% |
| Take-out Spots | 327 | 5.7% |
| Boat-in Campsites | 267 | 4.7% |
| Security | 224 | 3.9% |
| Boat-in Day-use Areas | 209 | 3.7% |
| Launch Spots -by Other Means | 195 | 3.4% |
| Navigational Aids | 151 | 2.7% |
| Emergency Services | 133 | 2.3% |
| Supply Stores | 111 | 1.9% |
| Boat Storage | 69 | 1.2% |
| Rinse Station-Boats/ Gear | 7 | 0.1% |
| Garbage Cans | 4 | 0.1% |
| Personal Storage | 3 | 0.1% |
| Campgrounds | 2 | 0.0% |

*Total Count = 5,698*

[7] *Shared facility need options include boating access, parking, restrooms, showers, supply stores, emergency services, and navigation aids. Motorized facility needs include boarding floats, day docks (short-term dockage), dry storage, fish cleaning stations, floating docks/piers, landings/boat-in sites, launch ramps, marinas (slips), marine service & repairs, mooring fields, pump-out stations, transient facilities/tie-ups, utilities, and other. Non-motorized facility needs include: landings, boat-in campsites, boat-in day-use areas, launch spots (by hand), access to fresh water, launch spots (by other ways e.g., trailer), take-out spots, rinse station (boats/gear), boat storage, security, personal storage, campgrounds, garbage cans, and other.*

Findings are also summarized in Table 47 for the 20 preferred waterways (those listed in Table 42 and in the same order). For each waterway, the total number of reported facility needs for both motorized and non-motorized boats were generated. From those totals, percentages of the various needs were calculated. For the shared, motorized, and non-motorized needs columns, the top three or four needs reported for that waterway are included; needs with small percentages are not included. If a boating sub-population (i.e., motorized or non-motorized) did not identify a waterway as primary or indicate a need, data are not included in the cell. [8]

**Table 47. Facility Needs on Primary Waterways**

| Primary Waterway | Shared Facility Needs | Motorized Facility Needs | Non-motorized Facility Needs |
|---|---|---|---|
| San Francisco Bay | Restrooms (28%)<br>Parking (22%)<br>Boating Access (20%) | Day Docks (short-term) (16%)<br>Marinas (slips) (12%)<br>Pump-Out Stations (9%)<br>Landings/Boat-in Sites (9%) | Launch Spots (by hand) (22%)<br>Boat Storage (17%)<br>Access to Fresh Water (17%)<br>Landings (17%) |
| Mission Bay | Parking (27%)<br>Restrooms (24%)<br>Showers (19%) | Day Docks (short-term) (22%)<br>Fish Cleaning Stations (14%)<br>Floating Docks/Piers (11%) | Launch Spots (by hand) (32%)<br>Access to Fresh Water (18%)<br>Landings (11%) |
| San Diego Bay | Parking (28%)<br>Boating Access (24%)<br>Restrooms (21%) | Launch Ramps (19%)<br>Day Docks (short-term) (15%)<br>Pump-Out Stations (10%) | Launch Spots (by hand) (28%)<br>Boat-In Day-Use Areas (15%)<br>Access to Fresh Water (15%) |
| Colorado River | Restrooms (25%)<br>Boating Access (24%)<br>Parking (19%) | Launch Ramps (26%)<br>Day Docks (short-term) (19%)<br>Marinas (slips) (11%) | Boat-In Campsites (30%)<br>Boat-In Day-Use Areas (30%)<br>Launch Spots (by hand) (28%) |
| Pacific Ocean (Southern California) | Parking (29%)<br>Boating Access (24%)<br>Restrooms (21%) | Launch Ramps (15%)<br>Fish Cleaning Stations (13%) | Launch Spots (by hand) (36%)<br>Access to Fresh Water (19%)<br>Boat-In Campsites (15%) |
| Sacramento River | Restrooms (30%)<br>Boating Access (27%)<br>Parking (15%) | Launch Ramps (27%)<br>Day Docks (short-term) (15%)<br>Fish Cleaning Stations (14%) | Launch Spots (by hand) (30%)<br>Take-Out Spots (21%)<br>Landings (12%)<br>Access to Fresh Water (12%) |
| Folsom Lake | Boating Access (24%)<br>Restrooms (21%)<br>Parking (17%) | Launch Ramps (22%)<br>Day Docks (short-term) (15%) | Launch Spots (by hand) (43%)<br>Boat-In Campsites (19%)<br>Boat-In Day-Use Areas (17%) |
| Monterey Bay | Parking (35%)<br>Boating Access (19%)<br>Restrooms (15%) | Fish Cleaning Stations (14%)<br>Marinas (slips) (12%)<br>Day Docks (short-term) (11%)<br>Launch Ramps (11%) | Launch Spots (by hand) (35%)<br>Boat-In Campsites (18%)<br>Boat-In Day Use Areas (18%)<br>Access to Fresh Water (18%) |
| American River-South Fork | Parking (32%)<br>Boating Access (23%)<br>Restrooms (18%) | _____ | Boat-In Campsites (20%)<br>Take-Out Spots (18%)<br>Launch Spots (by hand) (17%) |

*[8] Please note that all of the facility need data for all waterways can be found in Volumes IV – X: Regions (Appendix D for motorized boaters and Appendix E for non-motorized boaters). Additional comments from survey participants regarding facility needs can also be found in the regional volumes (Appendix F).*

| | | | |
|---|---|---|---|
| Shasta Lake | Restrooms (25%)<br>Parking (24%)<br>Boating Access (16%)<br>Navigation Aids (16%) | Launch Ramps (25%)<br>Fish Cleaning Stations (17%)<br>Day Docks (short-term) 15%) | Launch Spots (by hand) (40%)<br>Boat-In Day-Use Areas (27%)<br>Boat-In Campsites (20%) |
| Lake Tahoe | Parking (38%)<br>Boating Access (29%)<br>Restrooms (14%) | Launch Ramps (31%)<br>Day Docks (short-term) (14%)<br>Landings/Boat-In Sites (12%) | Launch Spots (by hand) (40%)<br>Boat-In Campsites (21%)<br>Boat-In Day-Use Areas (16%) |
| Sacramento-San Joaquin Delta | Restrooms (26%)<br>Parking (19%)<br>Boating Access (18%) | Launch Ramps (23%)<br>Fish Cleaning Stations (14%)<br>Day Docks (short-term) (13%) | Launch Spots (by hand) (28%)<br>Boat-In Campsites (20%)<br>Boat-In Day-Use Areas (11%)<br>Access to Fresh Water (11%) |
| Dana Point Harbor | Parking (32%)<br>Restrooms (22%)<br>Showers (18%) | Day Docks (short-term) (17%)<br>Marinas (slips) (14%)<br>Fish Cleaning Stations (11%) | Launch Spots (by hand) (37%)<br>Access to Fresh Water (14%)<br>Security (12%) |
| Newport Harbor | Parking (27%)<br>Restrooms (26%)<br>Boating Access (15%) | Day Docks (short-term) (20%)<br>Launch Ramps (16%)<br>Floating Docks/Piers (8%)<br>Landings/Boat-In Sites (8%) | Launch Spots (by hand) (37%)<br>Access to Fresh Water (16%)<br>Boat-In Campsites (14%)<br>Take-Out Spots (14%) |
| Lake Nacimiento | Restrooms (25%)<br>Navigation Aids (22%)<br>Parking (17%) | Launch Ramps (27%)<br>Day Docks (short-term) (22%)<br>Landings/Boat-In Sites (12%) | Access to Fresh Water (33%)<br>Boat-In Campsites (25%)<br>Launch Spots (by hand) (25%) |
| Lake Havasu | Parking (21%)<br>Restrooms (21%)<br>Boating Access (19%) | Launch Ramps (24%)<br>Day Docks (short-term) (16%)<br>Marinas (slips) (14%) | Launch Spots (by hand) (44%)<br>Boat-In Day-Use Areas (22%)<br>Boat-In Campsites (17%)<br>Access to Fresh Water (17%) |
| Oceanside Harbor (Marina Del Mar) | Parking (37%)<br>Restrooms (16%)<br>Boating Access (14%) | Day Docks (short-term) (17%)<br>Fish Cleaning Stations (13%)<br>Launch Ramps (13%) | Launch Spots (by hand) (37%)<br>Landings (17%)<br>Take-Out Spots (13%) |
| Lake Oroville | Boating Access (22%)<br>Parking (17%)<br>Restrooms (17%) | Launch Ramps (17%)<br>Day Docks (short-term) (15%)<br>Floating Docks/Piers (11%) | Launch Spots (by hand) (39%)<br>Boat-In Campsites (22%)<br>Boat-In Day-Use Areas (17%)<br>Access to Fresh Water (17%) |
| Long Beach Harbor | Restrooms (27%)<br>Showers (25%)<br>Parking (17%) | Day Docks (short-term) (16%)<br>Mooring Fields (12%)<br>Pump-Out Stations (10%)<br>Transient Facilities/Tie-Ups (10%) | Launch Spots (by hand) (30%)<br>Access to Fresh Water (17%)<br>Landings (11%)<br>Security (11%) |
| Ventura Harbor | Showers (25%)<br>Restrooms (23%)<br>Parking (21%) | Marine Service & Repairs (17%)<br>Mooring Fields (17%) | Launch Spots (by hand) (30%)<br>Landings (15%)<br>Access to Fresh Water (15%) |

## Main Issues: Recreational Boater Perspectives

In both boater surveys, study participants were asked to respond to another question about their most frequented waterways: *What are the biggest problems you have experienced at [WATERWAY NAME]? (Check up to three)*.[9] The perceived main issues from motorized and non-motorized boater perspectives are summarized in Tables 48 and 49.

**Table 48. Motorized Boater Issues for State**

| Motorized Boater Issue | Count of Issues Reported | Percent of All Issues |
|---|---|---|
| Insufficient Water Depth | 994 | 15.3% |
| Overcrowded | 888 | 13.7% |
| Reckless PWC Operators | 807 | 12.4% |
| Lack of Parking | 650 | 10.0% |
| High Use Fee | 585 | 9.0% |
| Poor Ramp Conditions | 526 | 8.1% |
| Floating Debris | 419 | 6.4% |
| Issues with Motorized Boaters | 332 | 5.1% |
| Poor Water Conditions | 323 | 5.0% |
| Invasive Species | 188 | 2.9% |
| Rude/Excessive Law Enforcement | 187 | 2.9% |
| Lack of Law Enforcement | 185 | 2.8% |
| Issues with Non-motorized Boaters | 142 | 2.2% |
| Poor Road Access | 129 | 2.0% |
| Reservations Required | 108 | 1.7% |
| Issues with Shipping Vessels | 42 | 0.6% |

*Total Count = 6,505*

**Table 49. Non-motorized Boater Issues for State**

| Non-motorized Boater Issue | Count of Issues Reported | Percent of All Issues |
|---|---|---|
| Lack of Parking | 590 | 26.2% |
| Overcrowded | 295 | 13.1% |
| Poor Water Conditions | 214 | 9.5% |
| Boating Access | 203 | 9.0% |
| Issues with Motorized Boaters | 192 | 8.5% |
| Reckless PWC Operators | 167 | 7.4% |
| Floating Debris | 164 | 7.3% |
| Poor Ramp Conditions | 118 | 5.2% |
| Lack of Law Enforcement | 92 | 4.1% |
| Invasive Species | 60 | 2.7% |
| Poor Road Access | 57 | 2.5% |
| Issues with Non-motorized Boaters | 32 | 1.4% |
| Rude/Excessive Law Enforcement | 31 | 1.4% |
| Issues with Shipping Vessels | 27 | 1.2% |
| Reservations Required | 14 | 0.6% |

*Total Count = 2,256*

[9] *Problems/issue options include lack of parking, overcrowding, reservations required, poor ramp condition, poor water quality, poor road access, floating debris, issues with motorized boaters, reckless PWC operators, issues with non-motorized boaters, issues with shipping vessels, excessive/rude law enforcement, lack of law enforcement, invasive species, high facility use fee, insufficient water depth, difficult to access waterway, other, and I have not experienced problems at this waterway.*

Findings are also summarized in Table 50 for the 20 preferred waterways (those listed in Table 42 and in the same order). For each waterway, the total number of reported issues/problems for both motorized and non-motorized boaters were generated. From those totals, percentages of the various issues were calculated. For the motorized and non-motorized issues columns, the top three or four problems reported for that waterway are included; problems with small percentages are not included. If a boating sub-population (i.e., motorized or non-motorized) did not identify a waterway as primary or indicate an issue, data are not included in the cell.[10]

**Table 50. Issues on Primary Waterways**

| Primary Waterway | Motorized Boater Perspective | Non-motorized Boater Perspective |
|---|---|---|
| San Francisco Bay | Have Not Experienced Any Problems (28%)<br>Floating Debris (12%)<br>Lack of Parking (10%)<br>High Facility Use Fee (9%) | Lack of Parking (20%)<br>Have not Experienced Any Problems (18%)<br>Poor Ramp Conditions (10%)<br>Floating Debris (9%) |
| Mission Bay | Reckless PWC Operators (27%)<br>Overcrowding (18%)<br>Have Not Experienced Any Problems (15%) | Lack of Parking (21%)<br>Reckless PWC Operators (18%)<br>Poor Water Quality (13%)<br>Issues with Motorized Boaters (13%) |
| San Diego Bay | Reckless PWC operators (16%)<br>Have Not Experienced Any Problems (16%)<br>Lack of Parking (11%) | Lack of Parking (26%)<br>Overcrowding (17%)<br>Have Not Experienced Any Problems (15%) |
| Colorado River | Reckless PWC Operators (23%)<br>Insufficient Water Depth (18%)<br>Overcrowding (16%) | Have Not Experienced Any Problems (40%)<br>Overcrowding (20%)<br>Issues with Motorized Boaters (20%)<br>Difficult to Access Waterway (20%) |
| Pacific Ocean (Southern California) | Have Not Experienced Any Problems (24%)<br>Lack of Parking (15%)<br>Reckless PWC Operators (13%) | Lack of Parking (35%)<br>Have Not Experienced Any Problems (17%)<br>Overcrowding (12%)<br>Difficult to Access Waterway (12%) |
| Sacramento River | Floating Debris (18%)<br>Poor Ramp Condition (13%)<br>Insufficient Water Depth (11%) | Have Not Experienced Any Problems (22%)<br>Lack of Parking (13%)<br>Issues with Motorized Boaters (13%)<br>Lack of Law Enforcement (13%) |
| Folsom Lake | Insufficient Water Depth (29%)<br>Overcrowding (20%)<br>High Facility Use Fee (16%) | Issues with Motorized Boaters (22%)<br>Overcrowding (17%)<br>Floating Debris (17%) |
| Monterey Bay | Lack of Parking (25%)<br>Have Not Experienced Any Problems (21%)<br>High Facility Use Fee (15%) | Have Not Experienced Any Problems (42%)<br>Issues with Motorized Boaters (26%)<br>Lack of Parking (19%) |
| American River-South Fork | _____ | Overcrowding (38%)<br>Lack of Parking (25%)<br>Have Not Experienced Any Problems (11%) |

*[10] Please note that all of the facility need data for all waterways can be found in Volumes IV – X: Regions (Appendix G for motorized boaters and Appendix H for non-motorized boaters).*

| | | |
|---|---|---|
| Shasta Lake | Poor Ramp Condition (12%)<br>Floating Debris (12%)<br>Reckless PWC Operators (12%)<br>Have Not Experienced Any Problems (12%) | _____ |
| Lake Tahoe | Lack of Parking (19%)<br>High Facility Use Fee (16%)<br>Have Not Experienced Any Problems (13%) | Lack of Parking (25%)<br>Issues with Motorized Boaters (23%)<br>Reckless PWC Operators (16%) |
| Sacramento-San Joaquin Delta | Floating Debris (26%)<br>Invasive Species (15%)<br>Reckless PWC Operators (10%) | Issues with Motorized Boaters (15%)<br>Invasive Species (14%)<br>Reckless PWC Operators (12%)<br>Have Not Experienced Any Problems (12%) |
| Dana Point Harbor | Lack of Parking (23%)<br>Overcrowding (18%)<br>Have Not Experienced Any Problems (18%) | Lack of Parking (42%)<br>Overcrowding (19%)<br>Have Not Experienced Any Problems (13%) |
| Newport Harbor | Lack of Parking (17%)<br>Have Not Experienced Any Problems (17%)<br>Overcrowding (12%) | Lack of Parking (24%)<br>Poor Water Quality (18%)<br>Have Not Experienced Any Problems (16%) |
| Lake Nacimiento | Insufficient Water Depth (26%)<br>Overcrowding (19%)<br>Reckless PWC Operations (16%) | _____ |
| Lake Havasu | Reckless PWC Operators (21%)<br>Overcrowding (20%)<br>Have Not Experienced Any Problems (12%) | _____ |
| Oceanside Harbor<br>(Marina Del Mar) | Lack of Parking (24%)<br>Overcrowding (18%)<br>Have Not Experienced Any Problems (16%) | Lack of Parking (30%)<br>Overcrowding (17%)<br>Reckless PWC Operator (13%)<br>Have Not Experienced Any Problems (13%) |
| Lake Oroville | Have Not Experienced Any Problems (19%)<br>Insufficient Water Depth (18%)<br>Floating Debris (17%) | Have Not Experienced Any Problems (100%) |
| Long Beach Harbor | Overcrowding (22%)<br>Have Not Experienced Any Problems (19%)<br>High Facility Use Fee (12%) | Lack of Parking (22%)<br>Have Not Experienced Any Problems (22%)<br>Poor Water Quality (17%) |
| Ventura Harbor | Have Not Experienced Any Problems (27%<br>Reckless PWC Operators (15%)<br>Issues with Non-motorized Boaters (12%) | Have Not Experienced Any Problems (48%)<br>Lack of Parking (21%)<br>Poor Water Quality (10%) |

## Reasons for Visiting Waterways: Recreational Boater Perspectives

In both the motorized and non-motorized boater surveys, study participants were asked to respond to the following questions for their most frequented waterways: *What are the top reasons you visit [WATERWAY NAME]? (Check up to three).* [11] Primary reasons for visiting a waterway from motorized and non-motorized boater perspectives are summarized in Tables 51 and 52.

**Table 51. Reasons Motorized Boaters Visit a Waterway**

| Reasons for Motorized Boaters | Count of Reasons Reported | Percent of All Reasons |
|---|---|---|
| Close to Home | 2601 | 23.0% |
| Scenery / Natural Beauty | 1641 | 14.5% |
| Good Fishing | 1614 | 14.3% |
| Large Water Area | 1441 | 12.7% |
| Clean Water | 1095 | 9.7% |
| Not crowded | 634 | 5.6% |
| No fees | 597 | 5.3% |
| Good Facilities | 507 | 4.5% |
| Good Camping | 393 | 3.5% |
| Close to Vacation Home/Camp | 365 | 3.2% |
| Warm Water | 262 | 2.3% |
| No restrictions | 166 | 1.5% |

*Total Count = 11,316*

**Table 52. Reasons Non-motorized Boaters Visit a Waterway**

| Reasons for Non-motorized Boaters | Count of Reasons Reported | Percent of All Reasons |
|---|---|---|
| Close to Home | 1091 | 28.4% |
| Scenery / Natural Beauty | 919 | 23.9% |
| No fees | 480 | 12.5% |
| Clean Water | 332 | 8.7% |
| Not crowded | 247 | 6.4% |
| Good Facilities | 242 | 6.3% |
| Few Motorized Boats | 192 | 5.0% |
| No restrictions | 84 | 2.2% |
| Good Camping | 79 | 2.1% |
| Close to Vacation Home/Camp | 70 | 1.8% |
| Good Fishing | 51 | 1.3% |
| Warm Water | 51 | 1.3% |

*Total Count = 3,838*

Findings are also summarized in Table 53 for the primary waterways statewide for (those listed in Table 42 and in the same order). For each waterway, the total number of reported reasons for both motorized and non-motorized boaters were generated. From those totals, percentages of the various reasons were calculated. For the motorized and non-motorized reasons columns, the top three or four reasons reported for that waterway are included; reasons with small percentages are not included. If a boating sub-population (i.e., motorized or non-motorized) did not identify a waterway as primary or indicate a reason, data are not included in the cell.

[11] *Reasons options include close to home, good camping, good facilities, good fishing, close to vacation home or camp, not crowded, no fees, no restrictions, scenery, natural beauty, warm water, large water area, and other. The additional reasons emerged for the non-motorized boaters: few motorized boats, good whitewater, reliable releases, regattas, good wind, and club site.*

**Table 53. Reasons for Boating Primary Waterways**

| Primary Waterway | Motorized Boater Reasons | Non-motorized Boater Reasons |
|---|---|---|
| San Francisco Bay | Close to Home (24%)<br>Large Water Area (24%)<br>Scenery / Natural Beauty (23%) | Close to Home (33%)<br>Scenery / Natural Beauty (23%)<br>No Fees (18%) |
| Mission Bay | Close to Home (27%)<br>No Fees (24%)<br>Large Water Area (13%) | Close to Home (31%)<br>No Fees (22%)<br>Scenery / Natural Beauty (15%) |
| San Diego Bay | Close to Home (24%)<br>Large Water Area (21%)<br>No Fees (18%) | Close to Home (31%)<br>No Fees (21%)<br>Scenery / Natural Beauty (21%) |
| Colorado River | Scenery / Natural Beauty (22%)<br>Large Water Area (19%)<br>Close to Vacation Home or Camp (10%) | Scenery / Natural Beauty (43%)<br>Good Camping (14%)<br>Good Facilities (14%)<br>Good Fishing (14%)<br>Not Crowded (14%) |
| Pacific Ocean (Southern California) | Large Water Area (21%)<br>Close to Home (19%)<br>Good Fishing (17%) | Close to Home (32%)<br>Scenery / Natural Beauty (26%)<br>No Fees (20%) |
| Sacramento River | Close to Home (32%)<br>Good Fishing (27%)<br>Scenery / Natural Beauty (15%) | Scenery / Natural Beauty (36%)<br>Close to Home (25%) |
| Folsom Lake | Close to Home (46%)<br>Large Water Area (23%)<br>Scenery / Natural Beauty (9%) | Close to Home (43%)<br>Scenery / Natural Beauty (30%)<br>Warm Water (9%) |
| Monterey Bay | Close to Home (33%)<br>Good Fishing (21%)<br>Scenery / Natural Beauty (20%) | Close to Home (39%)<br>Scenery / Natural Beauty (39%)<br>Good Facilities (7%) |
| American River-South Fork | _____ | Close to Home (30%)<br>Scenery / Natural Beauty (30%)<br>Good Whitewater (13%) |
| Shasta Lake | Large Water Area (24%)<br>Close to Home (21%)<br>Good Fishing (21%) | _____ |
| Lake Tahoe | Scenery / Natural Beauty (37%)<br>Large Water Area (25%)<br>Close to Vacation Home or Camp (19%) | Scenery / Natural Beauty (42%)<br>Close to Home (22%)<br>Close to Vacation Home / Camp (9%)<br>No Fees (9%) |
| Sacramento-San Joaquin Delta | Large Water Area (27%)<br>Close to Home (23%)<br>Good Fishing (19%) | Scenery / Natural Beauty (27%)<br>Close to Home (24%)<br>No Fees (10%) |

| | | |
|---|---|---|
| Dana Point Harbor | Close to Home (34%)<br>Good Fishing (18%)<br>Scenery / Natural Beauty (18%) | Close to Home (38%)<br>No Fees (31%)<br>Scenery / Natural Beauty (17%) |
| Newport Harbor | Close to Home (38%)<br>Scenery / Natural Beauty (20%)<br>Large Water Areas (13%) | Close to Home (31%)<br>Scenery / Natural Beauty (24%)<br>No Fees (20%) |
| Lake Nacimiento | Close to Home (32%)<br>Large Water Area (17%)<br>Scenery / Natural Beauty (14%) | _____ |
| Lake Havasu | Large Water Area (27%)<br>Scenery / Natural Beauty (18%)<br>Warm Water (12%) | _____ |
| Oceanside Harbor<br>(Marina Del Mar) | Close to Home (44%)<br>Good Facilities (13%)<br>No Fees (12%) | Close to Home (41%)<br>No Fees (22%)<br>Scenery / Natural Beauty (18%) |
| Lake Oroville | Large Water Area (25%)<br>Close to Home (23%)<br>Good Fishing (16%) | Close to Home (50%)<br>Few Motorized Boats (50%) |
| Long Beach Harbor | Close to Home (26%)<br>Scenery / Natural Beauty (22%)<br>Good Facilities (14%) | Close to Home (40%)<br>Scenery / Natural Beauty (18%0<br>No Fees (15%) |
| Ventura Harbor | Scenery / Natural Beauty (25%)<br>Good Facilities (20%)<br>Close to Home (18%) | Close to Home (34%)<br>Scenery / Natural Beauty (19%)<br>No Fees (17%) |

# Focus Group Interviews with Non-motorized Boaters

This section of the report documents the results of discussions held with a variety of non-motorized boating groups during 2017-2018. Five group interviews were conducted by project researchers during fall 2017 and winter 2018. Focus groups were structured by interest and geography with two groups meeting in Sacramento, one in the San Francisco Bay Area, and two proximate to Los Angeles and San Diego. The focus group methodology is described in *Volume II: Methods.*

## Sacramento – Leaders of Non-Motorized Affiliated Boating Groups

The focus group held in Sacramento was built upon recommendations of several boating community leaders who identified a group of stakeholders from the leaders in the non-motorized boating community. This meeting was held in the evening on Wednesday, October 25, 2017 at the Sacramento State Aquatic Center. Eighteen leader/members of area paddle groups came to the Sacramento State Aquatic Center to attend the meeting. Attendees represented a variety of boaters from the Sacramento region, with three former state agency staff in the group, a current member of the California Lands Commission, as well as a boating business owner, and several officers from affiliated boater interest groups.

The meeting was facilitated by one of the project faculty researchers, with three graduate research assistants and one other faculty researcher present, as well. The meeting opened with the researcher introducing the research team present, as well as the Deputy Director of the DBW. The scope of the CBFNA was covered, as well as a description of progress at this point in time on the project.

### *Non-motorized Boating Issue Identification*

At the meeting's outset, each participant was asked to introduce themselves, indicate if they were from a particular boating interest group, and describe their primary issues related to non-motorized boating opportunities in the region.

The following topic list was generated during this initial go-around:

- Boating access fees on the Lower American River
- Boater education issues
- Boating safety issues
- Environmental quality
- Informal access preservation
- Sanitation
- Legislation/policy background on the CBFNA
- Boating trails – inland and ocean
- Boating use estimates
- Structural hazards to boating: threats of new dams/rips from UCACE projects/boating hazards/weirs as well as incomplete dam removals
- California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) mitigation
- Instream flow levels and their effects on boating opportunities
- Aquatic Invasive species impacts
- Paddle craft registration concerns

### *Identification of Priority Issues for Discussion*

Participants were next asked to choose their top three in terms of what they thought was a priority impacting non-motorized boating in the region by placing a mark next to the issues. Seven of the issues received three or more marks, and these were as follows (along with the number of votes each received).

- Boating safety issues (7)
- Environmental quality (6)
- Informal access preservation (4)
- Boating trails – inland and ocean (3)
- Structural hazards (3)
- Paddlecraft registration concerns (3)

### *Boating safety issues*

Heated comments characterized this portion of the meeting, with a few of the meeting attendees recalling traumatic safety near-accidents while boating on area rivers. "How do we get them to behave?" was a question asked, referring to two participants' recollections of what they observed was poor boating behavior by area law enforcement officers. Other comments focused on agencies needing to direct education programs toward motorized recreational boaters whom they viewed as untrained and reckless. A DBW staff member attending the meeting pointed out the initiation of the upcoming recreational boating safety certificate program which will require all licensed boat owners (but not boaters who rent boats) to view an online safety program.

Other safety issues addressed by those at the meeting included the presence of physical hazards along river shorelines. One example of such a hazard pointed to degrading rip-rap on the banks of the North Fork Feather River, and along the shores of the Woodson Bridge area of the Sacramento River. "Identification of hazards is not happening" commented one attendee. Discussion ensued in which attendees felt that some kind of smartphone app could be developed where boaters could report hazards directly to DBW.

### *Environmental quality*

Non-point source pollution source identification was the topic that opened up this portion of the discussion. Management of invasive water hyacinth, especially during drought, was cited as another issue related to environmental quality. Meeting attendees cited the "One Truckee River" management model as a possible solution.

### *Informal access preservation*

Concerns over decreasing access to area rivers framed this portion of the meeting, with participants citing a number of occasions where parking near rivers and paths down shorelines have been blocked by private landowners or CalTrans projects. One attendee with a planning background pointed to the opportunity for members of the public to comment on public access during feasibility studies that must occur whenever CalTrans conducts a bridge construction project.

### *Boating Trails Programs*

Discussion related to progress on statewide boating trails focused on requesting an update from DBW on the progress of this effort. Boaters expressed a desire for multi-day trip opportunities, and wondered if lists of proposed boating trails were available through the agency. A number of those present commented on problems with instream flows for recreation which needed to be part of assuring trails were available. An example of hazard mitigation success was the abandoned vessel program managed by DBW.

### *Structural hazards*

Discussion related to structural hazards to recreation boating focused on the desire to have some kind of website or phone app where issues could be reported. Questions circulated in the meeting regarding rules related to hazard removal, as well as grants available for such hazard mitigation. Once again, one attendee in the meeting currently serving as a resource planner indicated that an avenue for hazard mitigation being in the project environmental review process associated with NEPA and CEQA efforts.

### *Potential for Paddlecraft Registration*

The meeting concluded with strong concerns expressed by a number of those in attendance against the idea of assessing a registration fee for non-motorized watercraft in California. The DBW staff member in attendance pointed out that, at the current moment, this kind of proposal is not being considered by the agency, and that if such a program were to be proposed it would come through the state legislative arena.

## Sacramento – Attendees at the California Boating and Waterways Commission Meeting

Held in conjunction with the November 29, 2017 Boating and Waterways Commission meeting, this focus group interview was comprised of 8 people who stayed after the commission meeting to give input. Those in attendance included representatives from industry interest groups (e.g. the National Marine Manufacturers Association) as well as marina managers in California. The meeting began with introductions and a study overview, including a synopsis of the study objectives as well as a summary of how facilities and/or non-motorized boaters have been contacted to take the surveys.

When asked to identify their issues and priorities for boating and facilities in California, the group produced these primary areas of discussion: the need for boating forecasting, inclusive planning, and future boating studies. A synopsis of the discussion for each of the areas is included below.

### *Trend Forecasting for Boating*

One of the issues brought up by attendees was the importance and need for data related to forecasting current future non-motorized boating trends. Non-motorized boater trends are difficult to obtain because it is challenging to reach this population. Attendees spoke about the need to reach out to yacht clubs/ sailing clubs for those populations to take the online non-motorized boating survey so their needs and opinions would register in the current research effort.

### *Inclusive Planning for Facilities*

Another issue deemed important by the group who participated in the focus group interview after the commissioners meeting focused on the need for boating facilities to be focusing on inclusivity rather than exclusivity. It was noted that the Marine Recreation Association focuses on how to rebuild marinas based on use, so that this might be one avenue to expand the welcome to underrepresented groups, for example, taking the opportunity to push for accessible docks/ marinas.

### *Future Boating Studies*

A number of areas of discussion with the group related to information needs for future boating studies, particularly as non-motorized boating information related to topics of inclusion. More broadly, however, one of the group members asked “How do we forecast who boaters are and who they will be in the future?” Relating to the needs and trends of future boaters and facility studies, a “hot button issue” is knowing who is using the waterway so that the state of California recognizes the importance of water infrastructure economically.

## San Francisco - Leaders of Bay Area Dragon Boat Groups

In contrast to some of the other groups interviewed for this portion of the study, the group assembled on a Sunday in January of 2018 represented a fairly homogenous group in terms of their orientation to boating interests and issues. An invitation was sent out to various leaders of dragon boat groups in the Bay Area by the California Dragon Boat Association. Six leaders from various Bay Area dragon boat groups were able to attend the interview. Because of the similarity in boating involvements with the assembled group, the two faculty researchers in attendance were able to approach the interview in a less general fashion. For example, instead of the prioritizing activity typically used with groups with more general interests in boating, researchers jumped directly into asking the group to discuss both facility needs and issues related more to waterways they use for boating.

Because of the small size of the group and the common nature of their boating interest, the discussion was able to alternate between the dragon boaters' perspectives on boating facility needs, general boating issues, and issues specific to area waterways. For the purposes of this report, however, these topics are presented separately.

### *Dragon Boating Facility Needs*

A number of facility-related issues surfaced in the discussion with the dragon boating group, primarily involving 5 areas:

- Storage
- Launch ramps
- Site upkeep and maintenance
- Security improvements
- Sea level and navigational issues (climate and tides)

*Storage.* Group members remarked that on-site storage issues can be challenging on a number of levels, with difficulties associated with security and fears of theft. When asked what additional storage would be desirable, there were explanations of the challenges of storing the large, 600+ lb. dragon boats. For example, a 46+' storage container is used to house a typical dragon boat. Other comments related to needed storage included a desire for areas where lockers for personal belongings could be stored (esp. for youth members, who arrive on site using public transport and don't have vehicles to store their belongings in).

*Launch Ramps.* The group was in agreement about a general lack of boat launches that are considered safe for dragon boat launching in the Bay Area, indicating that their groups are able to "make do" with available facilities. An example of a specific boat launch problem associated with launching dragon boats focused on issues related to being unable to back large watercraft into boat ramps, particularly in the aquatic center facilities.

*Site Upkeep and Maintenance.* Problems were cited related to the challenges of sharing docks among a variety of user groups. Other comments mentioned problems associated with the presence of garbage at boat launches, e.g. liquor bottles.

*Security Improvements.* Concerns over car break-ins were something that dragon boaters consider often when accessing Bay Area waterways. Security issues were something that the group felt has an impact on their membership. A desire for better lighting and more security was expressed, with patrols requested in particular for Jack London Aquatic Center.

***Sea level and navigational issues (climate and tides).*** The impact of king tides on shoreline/boat launch access was connected also to climate change and sea level issues during the group interview. The effects of sea level were particularly noted at Oyster Point, the Jack London Aquatic Center, and Alameda. Channel identification at San Leandro was cited as an

issue in a subsequent conversation about the importance of maintaining navigational markers.

***General boating issues.*** Six general boating issues surfaced in the discussion:

- Health-related concerns
- Storage
- Access and egress to boating facilities
- Youth involvement and access
- Conflicts

***Health-related issues.*** Mold occurring from a lack of ventilation in storage was a concern which arose promptly when pressing issues were inquired about by researchers.

***Storage issues.*** Those participating in the group interview described a number of problems associated with boat storage, including issues with in-water storage and problems associated with barnacle colonization.

***Access issues.*** Difficulties working with aquatic center and cities were cited as a primary issue for dragon boaters. Bair Island in Newport was cited as an effective, functional model.

***Youth involvement and access issues.*** Youth-aged participants access to facilities was cited as a concern, with areas and services accessing boating facilities needing improvement. Issues related to public transportation as well as cross-walk and traffic issues were cited as limitations to young people's participation in dragon boat programs. Specific problem areas cited included the Jack London Aquatic Center and Lake Merced.

***Conflict issues.*** Competition for access with rowers was cited as a challenge. Sailboats (both large and small) presented a particular area of conflict for dragon boaters.

### *Specific Waterway Issues for Dragon Boaters*

Throughout the afternoon discussion, participants had a number of things to say about three specific geographic areas or boating facilities.

***Lake Merced.*** Congestion at access points, launch ramps were mentioned by focus group participants, as well as challenges with backing trailers on the curved access road. Other issues for Lake Merced included garbage and recycling challenges.

***Oyster Point.*** Issues needing attention at this site included storage, parking, and the need for elevated ground for king tides.

***Alameda/Jack London Aquatic Center (JLAC).*** Focus group interview participants indicated better markers for the boating channels were needed, particularly in the San Leandro Bay area at low tides. Security arose as an issue, particularly related to JLAC with complaints of break-ins and a need for surveillance cited by interview participants. Concerns were expressed over water quality, as well as the presence of litter (in the form of discarded alcohol bottles).

## Newport Beach – Facility Managers, Outrigger Event Coordinators, Aquatic Center Staff

The Newport Aquatic Center was the site of the first southern California focus group interview on February 19, 2018. Attendees represented facility managers, paddling event coordinators, and experienced aquatic center staff. The meeting was facilitated by three senior research assistants. The meeting opened with the researchers introducing the study team in attendance as well as providing an overview of the scope of the *Boating Facilities Needs Assessment*. An overview of the progress on the assessment to this point was discussed as well.

### *Non-motorized Boating Needs Identification*

Next, each participant was asked to introduce themselves, indicate if they were from a particular boating interest group, and describe their primary needs related to non-motorized boating opportunities in the region. Based on the attendees' expertise in facility needs and non-motorized boating needs in the Southern California area, the following list of issues were identified:

- Parking access
- Safety
- Lack of consistency in enforcing regulations on the waterways
- Vendors without licenses providing services and equipment for non-motorized boaters
- Education
- Night time operations on waterways

The topics listed above were discussed in detail by the attendees, especially by the facility manager (Newport Aquatic Center).

### *Parking Access*

Discussion related to the need for "free and ample parking for car toppers." Car toppers were discussed in reference to non-motorized boaters who carry their vessels on top of their vehicles to their desired destinations. The issue discussed was lack of access which is close enough to the waterway in order to carry vessels to launch points (both formal and informal access points). Lastly, residential parking mandates are "getting in the way" of convenient parking locations for non-motorized boaters.

### *Safety and Enforcement of Regulations on the Waterways*

There are large numbers of non-motorized boaters participating in a variety of activities on the waterways in the Southern California region. Between the non-motorized boater and motorized boater traffic on waterways, especially in busier seasons, it has been difficult to safely monitor access to the water as well as right-of-way issues on the water. Meeting attendees noted that liability issues arise when cities and law enforcement agencies do not have a consistent mandate to enforce specific waterway regulations (e.g. right-of-way issues).

One meeting attendee (the facility manager) suggested implementing a program to assist with right-of-way issues by utilizing motorized boats with volunteers on board. The attendee suggested utilizing volunteers from the Junior Lifeguard program who would use loud speakers to caution non-motorized boaters of safety issues and right-of-way protocols. The program could be funded through advertisements placed on the sides of the boats and the volunteers can also focus on educating the boaters for preventative purposes rather than dealing with issues after they arise. The attendee offered the Newport Aquatic Center as a testing site for this kind of program.

The facility manager was also concerned with regulations that are implemented but do not serve the intended purpose of increasing safety on the water. Specifically, the regulation stating that life jackets must be either worn or tethered to the board while stand up paddle boarding was a primary concern. If an individual falls in the water and their life jacket is connected to the board, both board and PFD are separated from the paddler. Rather, a leash law should be implemented to prevent the paddler from being separated from their board should they fall in the water.

### *Vendors without Licenses*

Discussion related to the excess of "vendors who are not legitimate" setting up "meet-up" paddling days and selling paddling equipment on waterways. Attendees noted that this is an issue during the busy season and that there is an inconsistency in enforcing rules with this group of vendors and therefore with their participants as well.

### *Education*

Education on boating safety issues and conduct is needed for both non-motorized and motorized boaters. One attendee stated, "It seems impossible to enforce because there is no incentive." The attendee noted that because non-motorized boaters are not forced to participate in education for the activities, they do not do so.

### *Night Time Operations on Waterways*

Two non-motorized boaters (in outrigger canoes) who had RSVP'd to attend this meeting were unable to do so due to a safety issue. The two boaters started their evening paddle too close to sunset and were forced to come ashore at a location other than their designated takeout point. This issue brought into discussion with the meeting attendees that "after work paddlers" often encounter night time operation issues. If paddlers are not prepared to paddle after dark, they often have to come ashore at undesignated takeout points and may encounter further safety issues.

Attendees noted on a positive trend of night time operations as well. Discussion was related to the ease of parking at facilities for night time paddling. Additionally, LED lights have become more popular for stand up paddle boarders. One attendee stated that "night time programs are becoming very popular."

## Oceanside Harbor – Leaders in Paddling Communities in Southern California

Fourteen participants came to the Apotheque Lifestyle Spa (Oceanside) on February 20, 2018 to attend the second of the two Southern California meetings. Attendees represented a retired Coastal Commission employee, experienced non-motorized boaters (outrigger canoes and SUPs), a novice sailor, a retired lifeguard from the city of Oceanside, local business owners, a candidate for State Assembly, and Southern California Outrigger Racing Association board members and former members. The meeting was facilitated by three graduate research assistants. The meeting opened with the research assistants introducing the research team in attendance as well as providing an overview of the scope of the CBFNA.

### *Non-motorized Boating Needs Identification*

Each participant introduced themselves, discussed their participation in non-motorized boating, and described their primary needs as non-motorized boaters in the Southern California region. Based on the attendees' expertise in a variety of non-motorized boating opportunities, the following list of issues were identified:

- Lack of parking/paying for walk-in access
- Education/safety
- Lack of bilingual signage
- Permitting for seasonal events
- Commercial buildings blocking waterway access
- Pollution (garbage) in the water
- Difficulty accessing grant opportunities
- Seals on docks
- Lack of up-to-date legislation for non-motorized boaters
- Lack of funding for non-motorized boating programming for underrepresented populations
- Individuals who are experiencing homelessness (beach crowding and contamination)
- Erosion
- Fresh water (for drinking)

Each item was summarized by the attendee and then documented by the research assistants. The top three issues identified through this process included parking and access, safety needs, and education for non-motorized boaters.

### *Lack of Parking and Access*

Non-motorized boaters often need walk-in access for their recreational opportunities. There is a lack of parking near beach areas, especially beach areas "with no surf." Attendees noted that more access is needed in areas where the surf is calm. This is especially an issue in residential areas where parking is limited or prohibited.

Discussion also related to locations (e.g. Carlsbad Lagoon/ Agua Hedionda) where non-motorized boaters now have to pay to access the water by foot. One attendee stated, "there aren't even facilities there, I just want to walk down with my boat." Attendees also noted the need to protect current access and to add more where possible.

### *Education and Safety*

As with the Newport Aquatic Center focus group, this group of attendees stated concern with right-of-way issues. Discussion was related to implementing volunteer based programs to provide education for non-motorized boaters locally. Attendees suggested utilizing individuals who are retired for such a program. Discussion was also related to the danger of people who rent boats (both motorized and non-motorized) who do not know how to properly utilize the vessels. These individuals also may not be aware of right-of-way issues or safety concerns of the area.

### *Bilingual Signage*

Attendees were concerned with the lack of bilingual signage in the area, noting that the signs "should at the very least be in Spanish as well as English." One attendee mentioned that planning agencies should take into consideration the local cultural needs of each area when planning signage for waterways. In some areas, more than English and Spanish may be necessary.

### *Seasonal Event Permits*

At locations where larger non-motorized boating events occur, individuals have experienced rejection when applying for seasonal event permits (other than the major annual events which are already booked well in advance). Discussion was related to the lack of response from local park and recreation agencies when attempting to acquire special event permits. Lastly, crowding on waterways during special events was discussed.

### *Commercial Buildings Blocking Access*

Attendees noted that areas (e.g. Marina Del Rey, Redondo Beach, San Diego, and Mission Bay) have had a substantial amount of new commercial buildings put in at previous waterway access points. The primary concern during this discussion was hotels.

### *Pollution (Garbage)*

Discussion was related to the need for a larger scale effort to be taken in order to clean up the pollution and garbage in waterways (discussion was primarily about the Pacific Ocean). One attendee was especially concerned with fish hooks being caught in wildlife.

### *Access to Grant Opportunities*

Many attendees stated that accessing grant funding for programs and facility upgrades has been difficult to find.

### *Seals on Docks*

Discussion was related to the increase in the seal population in non-motorized boater access areas. The attendee who was a retired lifeguard stated that "the population has increased dramatically over the last ten years or so." This is a safety issue for non-motorized boaters. It also causes crowding due to tourists coming in to take pictures of the seals. The seals are also blocking areas where non-motorized boaters should be rinsing their boats. Due to the seals blocking access, boaters are not cleaning their boats as often. This raised the concern of an increase in contamination in waterways.

### *Lack of Legislation for Non-motorized Boaters*

Attendees noted that all new legislation about boating has to do with motorized boating, not non-motorized boating. One attendee was especially concerned with the new motorized boating laws which apply to boat owners only and not to renters. This was related to the safety concerns of lack of education for boaters in general.

### *Programming for Underrepresented Populations (Non-Motorized Boating)*

One attendee was interested in acquiring more funding and awareness for boating opportunities for underrepresented populations, such as children from the Pacific Islands who have moved with their families to Southern California. This attendee noted that programming for underrepresented populations on waterways is positive for the community and decreases negative behaviors of teenagers "such as gang violence."

### *Beach Crowding and Contamination (Individuals who are Experiencing Homelessness)*

Discussion was related to the increase of individuals who are experiencing homelessness who tend to crowd in beach areas and access locations. Attendees were concerned with the "lack of action" taken by local officials about this issue. Additionally, one attendee stated that "there is a drug problem, and that needles are found on beaches. It is often unsafe to walk on."

### *Erosion*

Construction of docks and facilities have caused an increase in erosion on coastline. Developers and homeowners are taking advantage of the "low tide" private property law and dredging when the tide is exceptionally low.

### *Fresh Drinking Water*

There is a need for increased access to clean drinking water at access locations for non-motorized boaters.

### *Non-motorized Boater Survey*

Additionally, one attendee noted that on the next survey which addresses UDV for waterways, that an additional option should be added to the choices to determine value. The attendee stated that respondents should have the opportunity to state that waterway access is a "right" and that this choice would indicate that the respondent holds the waterway in high regard. Lastly, attendees were interested in learning more about the economic impact of non-motorized boating on their communities.

# Existing Facilities

In *Volume II: Methods*, a description of the boating facility database is provided. This database was analyzed to summarize total counts of different facility types by the seven regions (Tables 54, 55, and 56).[1]

**Table 54. Number of Existing Facilities by Region**

| REGION | Boat Launch | Dry Storage | Marina | Mooring Field |
|---|---|---|---|---|
| Northern California | 173 | 25 | 76 | 7 |
| Sierra | 128 | 33 | 71 | 16 |
| Central Valley | 154 | 41 | 67 | 11 |
| San Francisco Bay Area | 107 | 51 | 116 | 6 |
| Central Coast | 35 | 19 | 23 | 5 |
| Los Angeles | 40 | 22 | 84 | 19 |
| Southern California | 93 | 48 | 98 | 7 |
| **STATE** | **730** | **239** | **535** | **71** |

*Total Count = 1,575*

**Table 55. Number of Additional Facilities by Region**

| REGION | Aquatic Center/ BISC | Boating Access | Fuel Dock | Landing/Boat-In Sites |
|---|---|---|---|---|
| Northern California | 2 | 62 | 0 | 2 |
| Sierra | 0 | 39 | 0 | 5 |
| Central Valley | 1 | 84 | 2 | 4 |
| San Francisco Bay Area | 6 | 65 | 2 | 4 |
| Central Coast | 0 | 11 | 1 | 0 |
| Los Angeles | 9 | 16 | 5 | 6 |
| Southern California | 7 | 35 | 9 | 2 |
| **STATE** | **25** | **312** | **19** | **23** |

*Total Count =379*

**Table 56. Number of Additional Facilities by Region**

| REGION | Marine Services/Repair | SSR Facility | Yacht Club |
|---|---|---|---|
| Northern California | 2 | 1 | 1 |
| Sierra | 0 | 4 | 2 |
| Central Valley | 1 | 6 | 21 |
| San Francisco Bay Area | 6 | 1 | 22 |
| Central Coast | 2 | 4 | 2 |
| Los Angeles | 3 | 2 | 11 |
| Southern California | 4 | 7 | 14 |
| **STATE** | **18** | **25** | **73** |

*Total Count = 116*

*[1] These facilities are identified with respective waterways in Volumes IV – X: Regions—Appendix I. As discussed in Volume II: Methods, not all facilities and boating access points are captured in this database. In the Recommendations section of this volume, the research team recommends a DBW staff member(s) be responsible for updating the database on an ongoing basis.*

# Economic Contributions

## Unit Day Values

Described in *Volume II: Methods*, a UDV is an established way to measure recreational benefits boaters gain from the experience of boating on a particular body of water. How UDVs are calculated for this *CBFNA* are also discussed in detail in *Volume II: Methods*. Because California is comprised of many different types of waterways and geographic regions (see regions below), one can rationalize that recreational value differs across types of waterways and regions. For example, the recreational value of San Francisco Bay is likely different than Lake Perris. In an effort to reflect the variation, study researchers and DBW agreed that generating multiple UDVs for the range of waterways within each region made sense (instead of applying a universal UDV).

To accomplish this, waterways were first classified into different types: salt water, lakes/reservoirs, and rivers. Next within those major groups, waterways were characterized by the use of various boat types. Ten waterway categories emerged (see classification descriptions *Volume II: Methods* – Tables 3-5). Four hundred and eight California waterways were classi fied into the 10 different waterway categories (see *Volume II: Methods – Appendix M*).

The UDVs generated for each of the waterway types within the different regions are presented in Tables 57, 58, and 59.[2]

**Table 57. Unit Day Values for Salt Water Classifications**

| REGION | Small Bay/Harbor | Large Bay/Harbor | Ocean |
|---|---|---|---|
| Northern California | $35.08 | $39.60 | $46.19 |
| Sierra | ------- | ------- | ------- |
| Central Valley | ------- | ------- | ------- |
| San Francisco Bay Area | $33.51 | $32.08 | $38.77 |
| Central Coast | $50.74 | $39.60 | $47.18 |
| Los Angeles | ------- | $45.51 | $44.29 |
| Southern California | ------- | $29.50 | $40.37 |

*Total Count = 3,231*

**Table 58. Unit Day Values for Lake/Reservoir Classifications**

| REGION | Restricted Lake | Motorized Lake | Overnight Lake |
|---|---|---|---|
| Northern California | $38.43 | $36.92 | $43.78 |
| Sierra | $48.81 | $40.38 | $45.04 |
| Central Valley | $34.42 | $42.07 | $38.35 |
| San Francisco Bay Area | $21.03 | $33.77 | $47.80 |
| Central Coast | $38.43 | $47.71 | ------- |
| Los Angeles | $45.19 | $60.69 | ------- |
| Southern California | $45.19 | $49.03 | $68.19 |

*Total Count = 3,153*

*[2] Cells with missing values reflect those waterway types that do not exist in certain regions. For example, salt water classifications do not exist in the Central Valley or Sierra regions. In some instances, there were not enough data points for a particular waterway type in a region. In these scenarios, the waterway data points were merged across regions and are reflected as cells with the same UDV. For example, restricted river data points from all regions were used to generate the UDV for this category.*

**Table 59. Unit Day Values for River Classifications**

| REGION | Whitewater River | Restricted River | Motorized River | Overnight River |
|---|---|---|---|---|
| Northern California | $49.20 | $40.02 | ------- | ------- |
| Sierra | $45.77 | $40.02 | $41.57 | ------- |
| Central Valley | ------- | $40.02 | $41.57 | $46.75 |
| San Francisco Bay Area | ------- | $40.02 | ------- | ------- |
| Central Coast | ------- | $40.02 | ------- | ------- |
| Los Angeles | ------- | $40.02 | ------- | ------- |
| Southern California | ------- | $40.02 | $57.21 | ------- |

*Total Count = 1,117*

## Trip Expenditures

Total trip expenditures were calculated for all boaters travelling 25 miles or less from home and more than 25 miles from home (Table 60). These numbers are based on the dollar amount spent per person per day. The 25-mile distinction is important when performing economic impact analysis.

**Table 60. Boating Trip Expenditures (amount per person/per day)**

| Statistic | Trips <= 25 Miles from Home | Trips > 25 Miles from Home |
|---|---|---|
| Mean | $29.51 | $73.17 |
| Upper 95% CI for Mean | $31.53 | $76.80 |
| Lower 95% CI for Mean | $27.50 | $69.55 |
| Quantile | | |
| 90% | $58.20 | $141.75 |
| 75% | $33.68 | $79.48 |
| 50% (Median) | $17.53 | $46.39 |
| 25% | $7.30 | $25.62 |
| 10% | $2.18 | $14.53 |

*Total Count for Trips <= 25 Miles from Home = 3,708*

*Total Count for Trips > 25 Miles from Home = 3,699*

# Motorized Boating Forecasts & Trends

In this section, forecasts of registered recreational motorized boats for California are provided. In addition, there is a brief summary of motorized boating trends, along with a comparison of the forecasts from the previous *Boating Facilities Needs Assessment* (2002).

## Forecasts

Forecasts include total number of boats, boats by propulsion type, and boats by length. The methods used in generating these forecasts are described in *Volume II: Methods*. The data used in generating these forecasts are from the DMV for 2012, 2014, and 2016. In the figures, the actual data used to generate the forecasts from the DMV are in blue, while the forecasts are in yellow. These numbers are also found in Tables 61 and 62. [3]

**Figure 9. Total Number of DMV-Registered Motorized Boats**

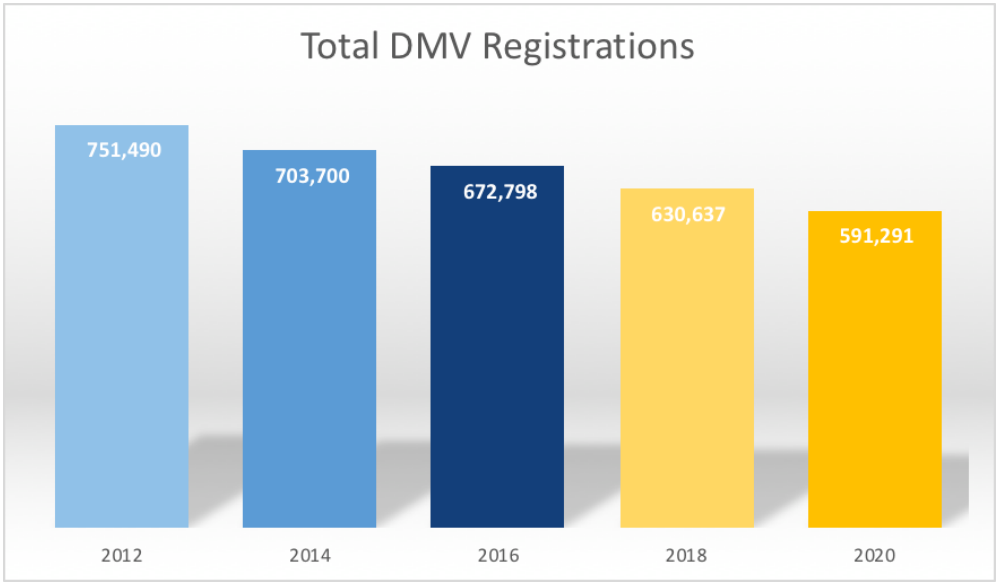
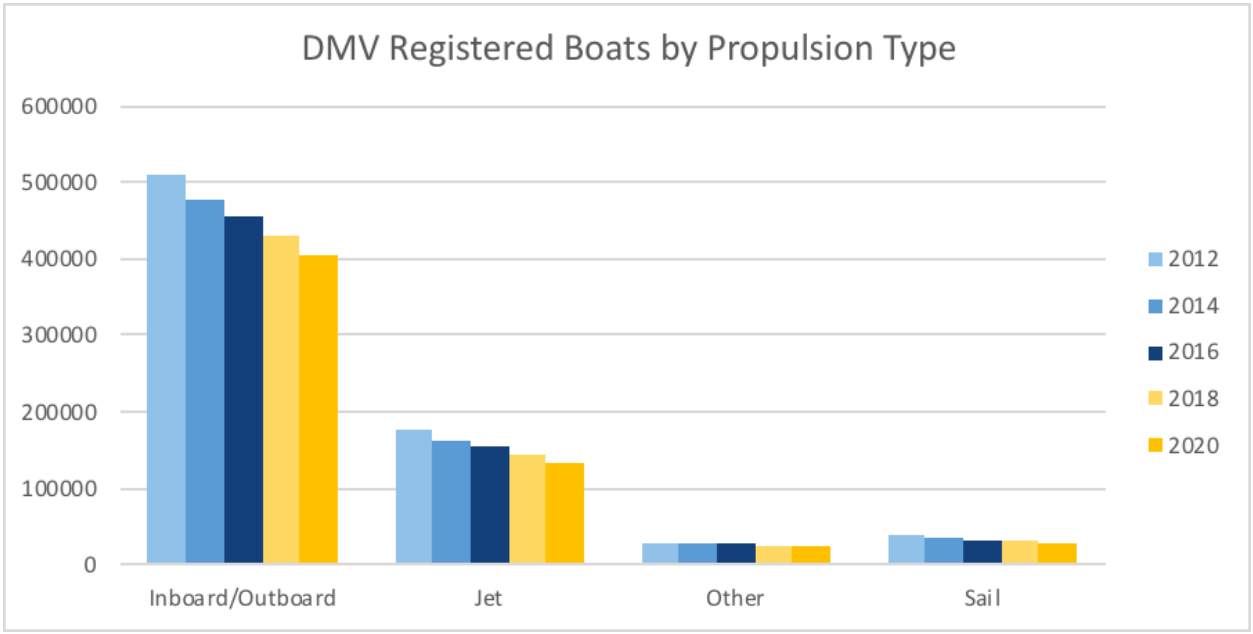



**Figure 10. Motorized Boats by Propulsion Type**




[3] *Similar figures and tables are included for each region in Volumes IV – X: Regions. The forecasts for those who live out-of-state but have a boat registered with the DMV are included in Appendix B.*

**Table 61. Motorized Boat by Propulsion (Figure 10)**

| Propulsion Type | 2012 | 2014 | 2016 | 2018 | 2020 |
|---|---|---|---|---|---|
| Inboard/ Outboard | 508,767 | 478,379 | 457,084 | 429,727 | 403,886 |
| Jet | 175,017 | 161,457 | 154,834 | 143,586 | 133,495 |
| Other | 29,867 | 28,403 | 27,610 | 26,370 | 25,239 |
| Sail | 37,839 | 35,461 | 33,284 | 30,973 | 28,696 |
| **TOTAL** | **751,490** | **703,700** | **672,812** | **630,656** | **591,316** |

*Actual Values: 2012, 2014, 2016*

*Forecasted Values: 2018, 2020*

The next three figures illustrate the trends by length: all boats (Figure 11), those under 26 feet (Figure 12), and those equal to or greater than 26 feet (Figure 13).[4]

**Figure 11. Motorized Boats by Length**

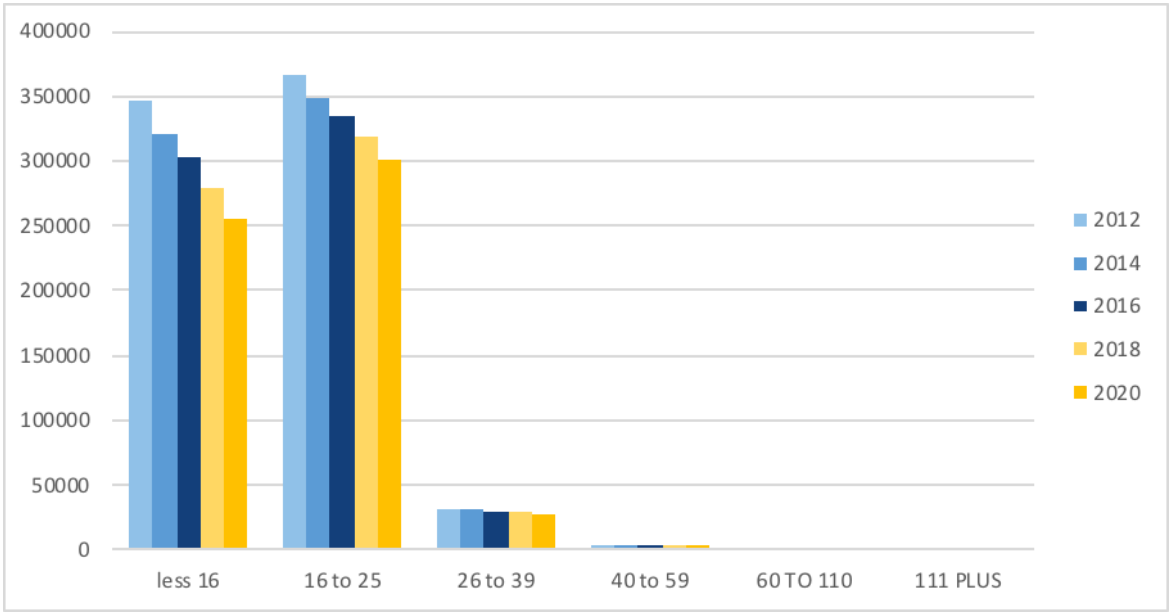
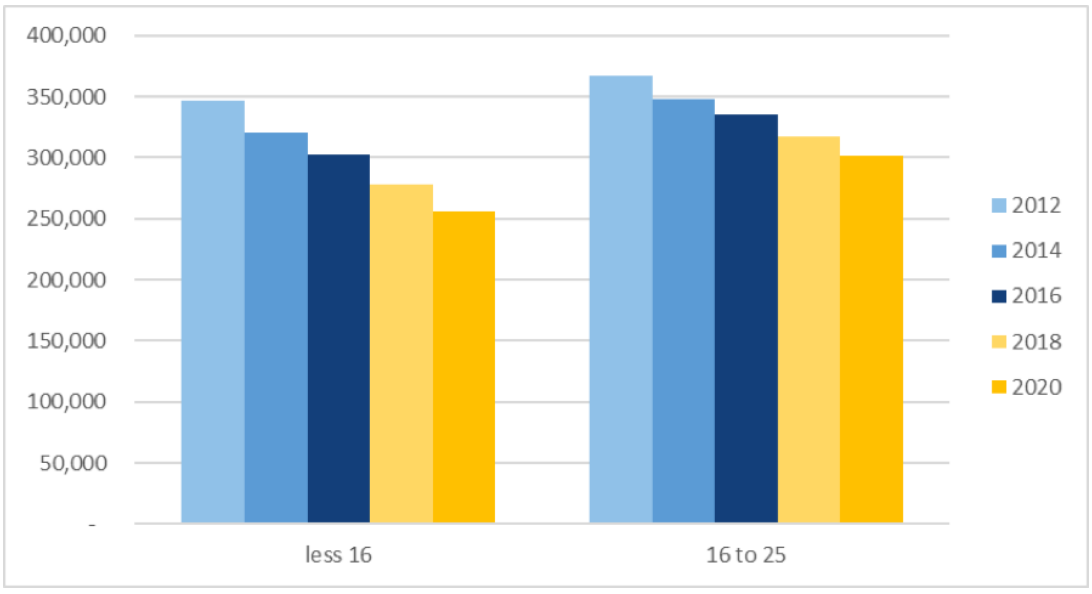



**Figure 12. Motorized Boats by Length (Less than 26 feet)**




[4] *For easier viewing purposes, Figures 12 and 13 have different scales (vertical axis) compared with Figure 11.*

**Figure 13. Motorized Boats by Length (Greater than or equal to 26 feet)**

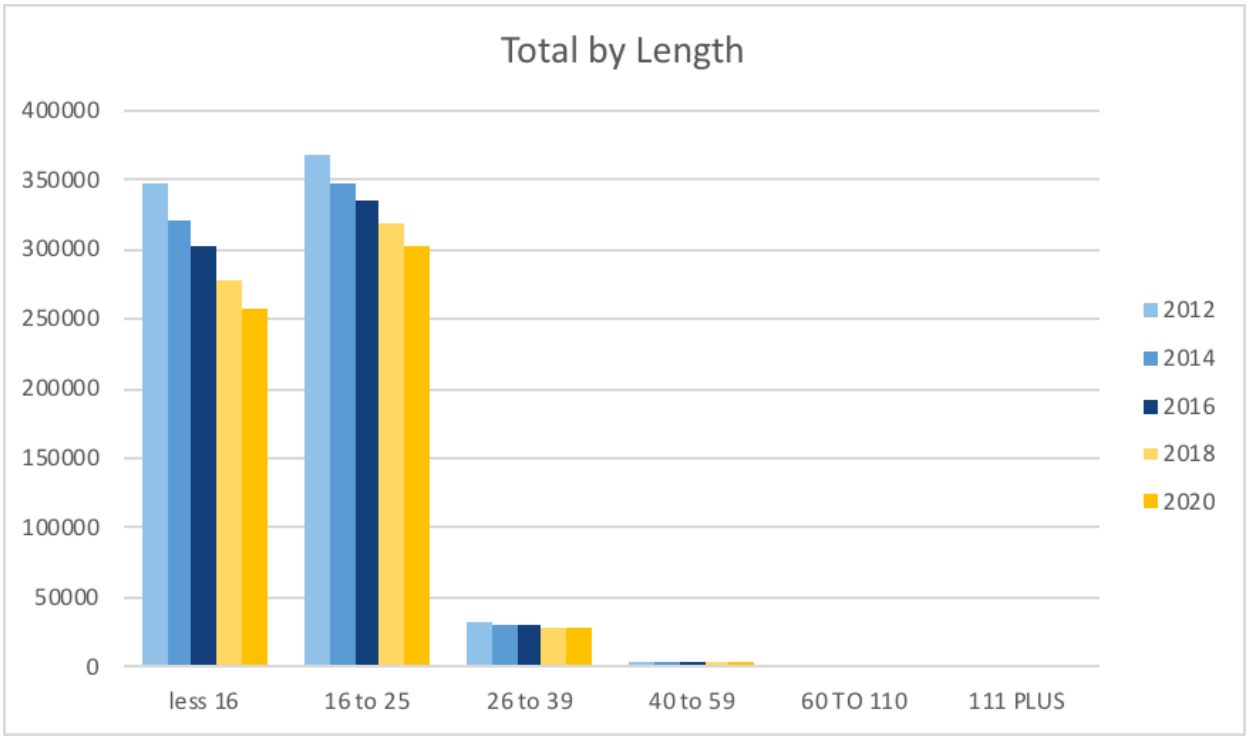



**Table 62. Motorized Boat by Length (Figures 10, 11, and 12)**

| Length in Feet | 2012 | 2014 | 2016 | 2018 | 2020 |
|---|---|---|---|---|---|
| less than 16 | 347,221 | 320,040 | 302,584 | 278,645 | 256,326 |
| 16 to 25 | 366,837 | 347,597 | 334,908 | 317,852 | 301,887 |
| 26 to 39 | 32,222 | 30,942 | 30,320 | 29,259 | 28,308 |
| 40 to 59 | 3,741 | 3,712 | 3,630 | 3,583 | 3,528 |
| 60 to 110 | 493 | 457 | 443 | 414 | 389 |
| 111 or more | 976 | 952 | 927 | 903 | 878 |
| **TOTAL** | **751,490** | **703,700** | **672,812** | **630,656** | **591,316** |

*Actual Values: 2012, 2014, 2016*

*Forecasted Values: 2018, 2020*

The large majority of recreational motorized boats (approximately 96.5%) are registered with DMV. The remaining 3.5% of boats is registered with the USCG. As discussed in *Volume II: Methods*, USCG data were unavailable except for the current year (2018). This dataset had information about length but not propulsion type and is presented in Table 63. Boats under 16 feet in length are not registered with the USCG.

**Table 63. Boats Registered with USCG by Length (in feet) and Region for 2018**

| REGION | Under 16' | 16' to 25' | 26' to 39' | 40' to 59' | 60' to 110' | Over 110' | TOTAL |
|---|---|---|---|---|---|---|---|
| Northern California | 0 | 2 | 83 | 51 | 10 | | **146** |
| Sierra | 0 | 4 | 210 | 129 | 13 | | **356** |
| Central Valley | 0 | 10 | 750 | 455 | 71 | | **1,286** |
| San Francisco Bay Area | 0 | 35 | 4,151 | 2,920 | 197 | 5 | **7,308** |
| Central Coast | 0 | 11 | 1,276 | 825 | 46 | | **2,158** |
| Los Angeles | 0 | 28 | 3,988 | 3,004 | 222 | 3 | **7,245** |
| Southern California | 0 | 34 | 5,045 | 3,572 | 350 | 2 | **9,003** |
| **ENTIRE STATE** | **0** | **124** | **15,503** | **10,956** | **909** | **10** | **27,502** |

*Total Registered with USCG for 2018 = 27,502*

The total number of motorized registered boats are forecasted for California and the seven regions (Table 64). These forecasts were generated using DMV data from 2012, 2014, and 2016; the 2018 USCG data are added into the forecasts to calculate total number of registered recreational motorized vessels in California. Table 65 summarizes these forecasts by boat length within each region.

**Table 64. Forecasts for Boats Registered with DMV and USCG**

| Region | 2018 | 2020 |
|---|---|---|
| Northern California | 47,410 | 45,145 |
| Sierra | 47,703 | 45,801 |
| Central Valley | 141,663 | 133,931 |
| San Francisco Bay Area | 120,250 | 113,847 |
| Central Coast | 30,214 | 27,868 |
| Los Angeles | 95,142 | 87,156 |
| Southern California | 171,481 | 161,196 |
| Out-of-State | 4,295 | 3,874 |
| **ENTIRE STATE** | **658,158** | **618,818** |

## Table 65. Forecasts for Boats Registered with DMV and USCG by Length (in feet) and Region

| Region | Length | 2018 | 2020 |
|---|---|---|---|
| **Northern California** | | | |
| | Under 16’ | 19,637 | 18,228 |
| | 16’ to 25’ | 26,108 | 25,272 |
| | 26’ to 39’ | 1,103 | 1,083 |
| | 40’ to 59’ | 466 | 471 |
| | 60’ to 110’ | 35 | 36 |
| | Over 110 | 61 | 56 |
| **Sierra** | | | |
| | Under 16’ | 19,664 | 18,552 |
| | 16’ to 25’ | 26,072 | 25,312 |
| | 26’ to 39’ | 1,503 | 1,469 |
| | 40’ to 59’ | 381 | 390 |
| | 60’ to 110’ | 43 | 42 |
| | Over 110’ | 40 | 36 |
| **Central Valley** | | | |
| | Under 16’ | 59,343 | 55,039 |
| | 16’ to 25’ | 75,859 | 72,621 |
| | 26’ to 39’ | 4,731 | 4,566 |
| | 40’ to 59’ | 1,377 | 1,362 |
| | 60’ to 110’ | 176 | 169 |
| | Over 110’ | 177 | 174 |
| **San Francisco Bay Area** | | | |
| | Under 16’ | 45,910 | 42,735 |
| | 16’ to 25’ | 58,570 | 55,614 |
| | 26’ to 39’ | 11,436 | 11,193 |
| | 40’ to 59’ | 3,861 | 3,834 |
| | 60’ to 110’ | 287 | 286 |
| | Over 110’ | 186 | 186 |
| **Central Coast** | | | |
| | Under 16’ | 11,238 | 10,154 |
| | 16’ to 25’ | 15,127 | 13,918 |
| | 26’ to 39’ | 2,769 | 2,727 |
| | 40’ to 59’ | 988 | 987 |
| | 60’ to 110’ | 56 | 51 |
| | Over 110’ | 36 | 32 |

| Region | Length | 2018 | 2020 |
|---|---|---|---|
| **Los Angeles** | | | |
| | Under 16’ | 43,509 | 38,947 |
| | 16’ to 25’ | 38,463 | 35,294 |
| | 26’ to 39’ | 9,411 | 9,190 |
| | 40’ to 59’ | 3,334 | 3,309 |
| | 60’ to 110’ | 284 | 282 |
| | Over 110’ | 141 | 134 |
| **Southern California** | | | |
| | Under 16’ | 77,619 | 71,174 |
| | 16’ to 25’ | 76,079 | 72,428 |
| | 26’ to 39’ | 13,143 | 12,969 |
| | 40’ to 59’ | 3,938 | 3,934 |
| | 60’ to 110’ | 433 | 421 |
| | Over 110’ | 269 | 271 |
| **Out-of-State** | | | |
| | Under 16’ | 1,724 | 1,498 |
| | 16’ to 25’ | 1,697 | 1,552 |
| | 26’ to 39’ | 666 | 614 |
| | 40’ to 59’ | 195 | 197 |
| | 60’ to 110’ | 11 | 13 |
| | Over 110’ | 2 | 0 |
| **CALIFORNIA** | | | |
| | Under 16’ | 278,645 | 256,326 |
| | 16’ to 25’ | 317,976 | 302,011 |
| | 26’ to 39’ | 44,762 | 43,811 |
| | 40’ to 59’ | 14,539 | 14,484 |
| | 60’ to 110’ | 1,323 | 1,298 |
| | Over 110’ | 913 | 888 |
| | **TOTAL** | **658,158** | **618,818** |

## Boating Trends

Data show that there has been a steady decline in the total number of registered motorized recreational boats in California, regardless of propulsion type and length. Figure 14 illustrates this ongoing decline since 2006 (numbers reported by National Marine Manufacturers Association (NMMA), 2016).

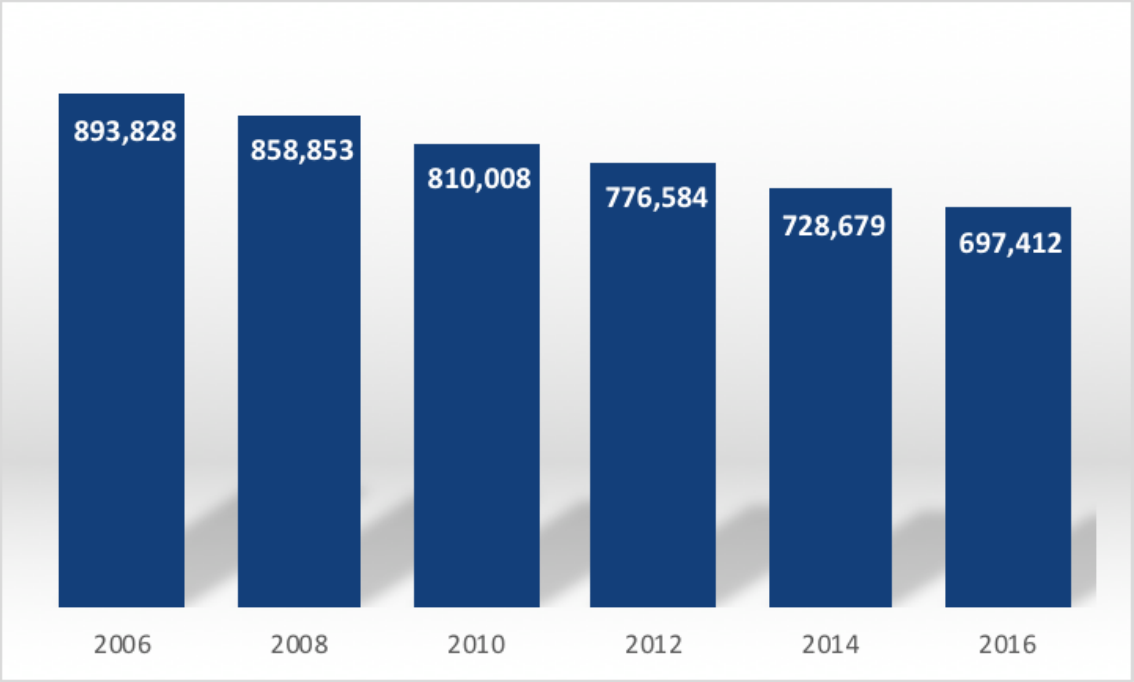



**Figure 14. Reported by NMMA: Number of Registered Motorized Recreational Boats in California**

Forecasts presented in the previous section suggest this decline will continue over the next four years across California. This trend is further supported by survey data from the facility survey which asked facility managers and owners to describe the boating trends for their facilities. Individuals who completed the facility survey also noted a decrease in motorized boats: "We have seen a decrease in recreational motorized boating;" "Motorized boating has declined as fishing has declined."

The previous *Boating FacilitiesNeeds Assessment* (2002) assumed that the boat ownership per capita would remain constant. This assumption has proved to be invalid based on the current analysis. While population has continued to grow in California, the number of registered boats since 2000 has steadily declined. The forecasts generated for the 2002 CBFNA study were consistently and significantly too high. For example, in comparing the forecasted value for number of boats for 2016 and the actual number for 2016, the forecasted value overestimated by at least 400,000 boats. In other words, the 2002 CBFNA forecast was over 160% of what actually occurred in 2016.[5]

For planning purposes, the steady decline implies that additional motorized boating growth will not be experienced over the next few years. In order to determine if this trend will change, it is recommended that data be obtained from the DMV and the USCG every even year.[6] It would be advisable to analyze the data in detail to determine future trends by focusing on the cohorts of boats leaving the registered list and those entering the list.

*[5] The CBFNA 2002 study forecasted a low value of 1.12 million boats for 2015, with an increase for 2016. According to data obtained from the State of California DMV and USCG there were just under 700,000 registered boats for 2016. The amount overstated is even larger when one considers the CBFNA models predicts an increasing trend (i.e., 2016 forecasts exceed the 2015 forecasts).*

*[6] Boat registrations with the DMV expire on December 31st of even-number years. Due to this two-year registration cycle, DMV data from even years should be analyzed; odd years should be excluded.*

# Non-Motorized Boating Trends with a Focus on California

A review of trends related to non-motorized boating was conducted for this analysis and was based on a number of sources. The best available, current information on boating participation comes from the Outdoor Industry Association's annual reports on outdoor recreation activities among Americans (Outdoor Industry Association, 2015, 2017, 2018). Articles from non-motorized boating industry publications and other outlets (e.g., Cordell, 2012) were also assembled, reviewed, and are summarized in this section. As well, a number of interviews were conducted with manufacturer/sales personnel, retail and rental shop owners, leaders of non-motorized boating interest groups, and agency river managers to infer changes in trends in non-motorized boating.

A recent report from the Washington State Parks & Recreation Commission (Rice, 2017) observed that efforts to obtain participation data for non-motorized boating are challenging because most state governments don't register these vessels (which is the case in California). The USCG National Recreational Boating Surveys (NRBS) conducted in 2011 and 2012 (USCG, 2012) made a number of estimates regarding counts of non-motorized watercraft in California. The NRBS estimated that there were 314,000 kayaks in California, 192,000 rowing or inflatable boats, 67,000 sailboats, and 57,000 canoes. Unfortunately, there were no surveys conducted after this initial two-year study, so estimating non-motorized watercraft ownership trends from this data is not possible, unless another such study was conducted.

## Previous Reporting: Non-Motorized Boating Trends for California in 2009

The previous study of non-motorized boating in California (State of California DBW, 2009) devoted a chapter to discussion of national and state boating trends, additionally using non-motorized boat owner survey data collected as part of that study effort. Using national-level data from the National Marine Manufacturers Association (NMMA) and a number of other sources, the authors of the document reviewed a number of archival reports and articles and used these data sources to inform their speculations on trends in the field, individually reporting on canoeing, kayaking, rafting, sailing, rowing, and sailboarding/ kiteboarding. Notably, stand up paddle boarding was not mentioned in the 2009 report, apparently because the sport's advent as a common form of non-motorized watercraft participation occurred after the report was published.
The 2009 study was able to rely on a number of published resources detailing boating participation, such as the National Recreational Boating Survey (mentioned above). Unfortunately for this analysis, this source of Americans' participation in boating ended publication in 2012 (USCG, 2012).

The 2009 study took a broad view of non-motorized boating participation and facility needs, and for the purpose of this report, the trends considered in that report are worth reviewing. For example, while recreational kayaking was observed to be increasingly rapidly in popularity, so was kite boarding, which has almost disappeared from the study of non-motorized boating specializations. And while rates of participation in canoeing are declining nationally, the activity still has the largest real numbers of any of the non-motorized boating types studied. Interestingly, the 2009 report speculated that recreational kayaking would be an entry-level activity that would lead to other types of boating involvement. While this has not been the case, the report was correct in noting that kayaking can be an inexpensive activity, requiring little up-front investment, something that current industry publications, interest group leaders, and agency river managers assert, as well.

As noted elsewhere in this report, the 2009 non-motorized boating study was conducted at a statewide level using a randomized phone survey methodology which resulted in 474 completed surveys. A comparison is made relating to results from the only survey question asked on the 2009 non-motorized boating survey and the non-motorized boating surveys conducted for this CBFNA: *How have your non-motorized boating activities changed over the previous 5 years?*

Table 66, below, shows a comparison. It should be noted that these results are simply suggestive in that they show responses from two independent samples of California boaters. While the 2009 study contained categorical variables, restricting participants in their responses, the current study allowed open-ended responses which were categorically analyzed by study researchers. Nonetheless, a comparison shows similar patterns, suggesting that paddlecraft use continues to stay the same or increase in participation as noted by study participants in California.

**Table 66. Change in Non-motorized Boating in Previous 5 Years, 2009 and Current Studies**

| Non-motorized Boater Survey Participants | Current Study | 2009 Study |
|---|---|---|
| Stayed Same | 43% | 52% |
| Increased | 43% | 42% |
| Decreased | 14% | 6% |

The authors of the 2009 report interviewed a number of commercial and industry boating representatives, and some of the trends these individuals cited continue in 2017 while others do not. These commercial survey respondents noted strong increases in non-motorized boating participation among beginners, especially in recreational kayaking. At that time, kayak fishing was identified as a rapidly growing segment of the paddle sports field, and this observation still holds true among boating industry and sales representatives. In 2009, industry survey participants cited strong increases in kiteboarding, but current researchers have not come across any evidence to support this trend continuing. Industry participants in the 2009 study noted decreases in rafting participation (which continues) but noted particular declines among youth-aged paddlers (not found in the present review of boating trends). And whereas whitewater kayakers were interested in "playboating" in places near river hydraulics, currently industry representatives assert that down-river kayaking is making a comeback. However, hydraulic play by stand up paddleboards is cited by one agency river manager as a reason for increased use of specific points on whitewater rivers.

## Participation Rates in Non-motorized Boating Focus on Outdoor Industry Association Reporting

Most references to trends in non-motorized boating use center on information from the Outdoor Industry Association's (OIA) annual reports on participation levels, as well as a Special Report on Paddlesports (OIA, 2017). In their Outdoor Recreation Participation Topline Report 2017 (OIA, 2017), the OIA reports on what they call "positive outdoor trends." The NMMA indicated that about 4% of boats owned in California are non-motorized (NMMA, 2016), and the OIA pointed to national statistics that indicate 7.4% of Americans participate in paddlesports (totaling 21.7million people), which increased by 3 million between 2010 and 2015. The OIA also indicated that paddlers in the US averaged 7 annual outings in 2014. The organization also cited significant growth potential among minorities, whom are currently underrepresented in the sport. According to the OIA, the most popular form of paddling is kayaking, while recreational kayaking remains steady in participation levels. They note that the majority of kayakers (62%) are female. Moreover, kayakers average 8.1 outings a year, according to their study.

Assertions from industry publications point to a horizon of strong growth in non-motorized boating participation (see Table 67, Table 68, and Figure 15, below). Data collected between 2006 and 2017 by the OIA (OIA, 2018) illustrate participation levels (all ages) for a range of non-motorized boating activities. Participation rates
in Table 67 have been sorted by the largest participation rate in the most recent year (2017) with recreational kayaking and canoeing having the highest numbers of participants.

**Table 67. Participation (All Ages) for Non-Motorized Boating 2006-2017, Ordered by Participation Rate**

| Boating Activity | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Recreational Kayaking | 4,134 | 5,070 | 6,240 | 6,212 | 6,465 | 8,229 | 8,144 | 8,716 | 8,855 | 9,499 | 10,017 | 10,533 |
| Canoeing | 9,154 | 9,797 | 9,935 | 10,058 | 10,553 | 9,787 | 9839 | 10,153 | 10,044 | 10,236 | 10,046 | 9,220 |
| Sailing | 3,390 | 3,786 | 4,226 | 4,342 | 3,869 | 3,725 | 3958 | 3,915 | 3,924 | 4,099 | 4,095 | 3,974 |
| Rafting | 3,609 | 4,340 | 4,651 | 4,318 | 4,460 | 3,821 | 3690 | 3,836 | 3,781 | 3,883 | 3,428 | 3,479 |
| SUP | n/a | n/a | n/a | n/a | 1,050 | 1,242 | 1,542 | 1,993 | 2,751 | 3,020 | 3,220 | 3,325 |
| Sea Kayaking | 1,136 | 1,485 | 1,780 | 1,771 | 2,144 | 2,029 | 2,446 | 2,694 | 2,912 | 3,079 | 3,124 | 2,995 |
| Kayak Fishing | n/a | n/a | n/a | n/a | 1,044 | 1,201 | 1,409 | 1,798 | 2,074 | 2,265 | 2,371 | 2,803 |
| WW Kayaking | 828 | 1,207 | 1,242 | 1,369 | 1,842 | 1,546 | 1,878 | 2,146 | 2,351 | 2,518 | 2,552 | 2,500 |
| Boardsailing/ Wind surfing | 938 | 1,118 | 1,307 | 1,128 | 1,617 | 1,151 | 1,593 | 1,324 | 1,562 | 1,766 | 1,737 | 1,573 |
| **TOTAL** | **23,189** | **26,803** | **29,381** | **29,198** | **33,044** | **32,731** | **34,499** | **36,575** | **38,254** | **40,365** | **40,590** | **40,402** |

*Source: Outdoor Industry Association (2018) p. 37*

*Participation numbers in this table are in the thousands (000)*

Total differences and percent changes from 2007-2017 (10-year period) and 2012-2017 (5-year period) are displayed in Table 68. The boating activities have been sorted for the last 5 years (2012-2017), from the largest percent increase (SUP) to the largest percent decrease (rafting and canoeing). The most marked increase in participation documented by the OIA is SUP, with a 116% increase in participation rates over the past 5 years (2012-2017). Overall, SUP participants in the OIA study averaged 5 outings per year in 2014 and were fairly evenly divided between genders. Motivations for stand up paddling include getting exercise and being with family and friends, staying fit and observing scenery, as well as getting close to nature.

**Table 68. Participation (All Ages) for Non-Motorized Boating 2007-2017, Ordered by 5-Year Percent Change**

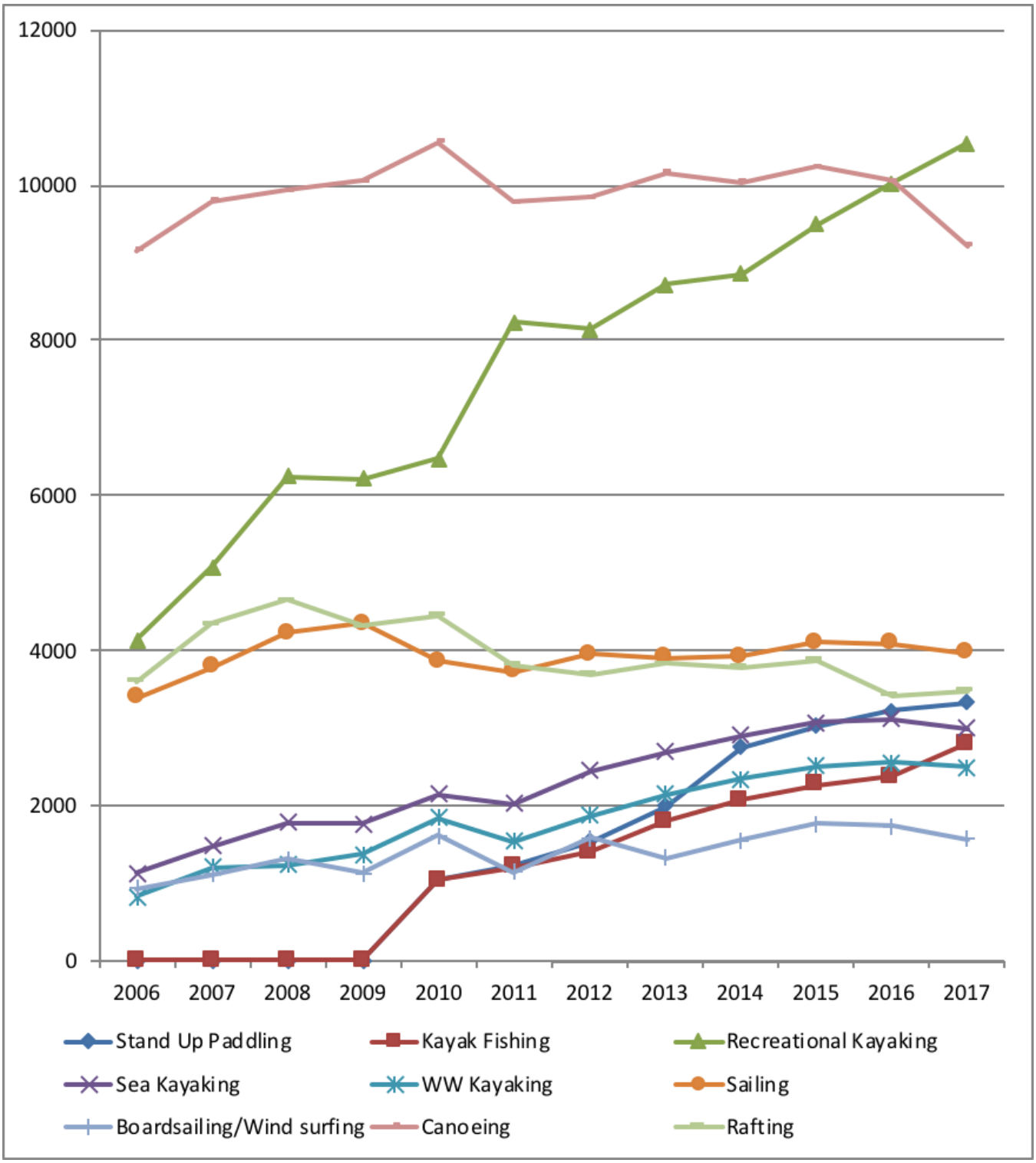
| Boating Activity | 10-year Difference 2007-2017 | 10-year % Change 2007-2017 | 5-year Difference 2012-2017 | 5-year % Change 2012-2017 |
|---|---|---|---|---|
| SUP | n/a | n/a | 1,783 | 116% |
| Kayak Fishing | n/a | n/a | 1,394 | 99% |
| WW Kayaking | 1,293 | 107% | 622 | 33% |
| Recreational Kayaking | 5,463 | 108% | 2,389 | 29% |
| Sea Kayaking | 1,510 | 102% | 549 | 22% |
| Sailing | 188 | 5% | 16 | 0% |
| Boardsailing/ Wind surfing | 455 | 41% | (20) | -1% |
| Rafting | (861) | -20% | (211) | -6% |
| Canoeing | (577) | -6% | (619) | -6% |
| **TOTAL** | **13,599** | **51%** | **5,903** | **17%** |

*Source: Outdoor Industry Association (2018) p. 35*

*Participation numbers in this table are in the thousands (000)*

Participation rates in non-motorized boating have been graphically depicted in Figure 15, below. This illustration shows the strength of increases, particularly among those who are involved in recreational kayaking. This figure also depicts the total number of participation rates where canoeing and recreational kayaking are the most common of non-motorized boating activities.

**Figure 15. Non-Motorized Watercraft Participation (All Ages) 2006-2017**




*Source: Outdoor Industry Association (2018) p. 37*

While Tables 67 and 68 focus on non-motorized watercraft activities for all Americans, the next four tables provide information about youth subgroups of 18-24 years and 6-17 years. For the young adults (18-24), participation rates in Table 69 have been sorted by the largest participation rate in the most recent year (2017) with recreational kayaking and canoeing having the highest numbers of participants.

**Table 69. Young Adult Participation (Ages 18-24) for Non-Motorized Boating 2007-2017, Ordered by Participation Rate**

| Boating Activity | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Recreational Kayaking | 795 | 889 | 790 | 988 | 1,392 | 1,181 | 1,671 | 1,634 | 1,781 | 1,814 | 1,710 |
| Canoeing | 1,521 | 1,295 | 1,154 | 1,474 | 1,357 | 1,279 | 1,620 | 1,738 | 1,903 | 1,524 | 1,322 |
| SUP | n/a | n/a | n/a | 171 | 281 | 259 | 349 | 356 | 504 | 551 | 537 |
| Rafting | 789 | 775 | 668 | 674 | 618 | 494 | 717 | 636 | 635 | 529 | 519 |
| Boardsailing/ Wind surfing | 269 | 341 | 228 | 385 | 284 | 250 | 218 | 552 | 716 | 460 | 497 |
| Sea Kayaking | 241 | 345 | 221 | 227 | 413 | 323 | 462 | 548 | 662 | 586 | 488 |
| WW Kayaking | 223 | 259 | 217 | 342 | 357 | 316 | 528 | 540 | 640 | 482 | 463 |
| Sailing | 455 | 595 | 416 | 337 | 498 | 388 | 464 | 424 | 427 | 384 | 296 |
| Kayak Fishing | n/a | n/a | n/a | 204 | 205 | 165 | 296 | 226 | 284 | 233 | 248 |
| **TOTAL** | **4,293** | **4,499** | **3,694** | **4,802** | **5,405** | **4,655** | **6,325** | **6,654** | **7,552** | **6,563** | **6,080** |

*Source: Outdoor Industry Association (2018) p. 36*

*Participation numbers in this table are in the thousands (000)*

For the young adults (18-24), total differences and percent changes from 2007-2017 (10-year period) and 2012-2017 (5-year period) are displayed in Table 70. The boating activities have been sorted for the last 5 years (2012-2017), from the largest percent increase (SUP and boardsailing/wind surfing) to the largest percent decrease (sailing).

**Table 70. Young Adult Participation (Ages 18-24) for Non-Motorized Boating 2007-2017, Ordered by 5-Year Percent Change**

| Boating Activity | 10-year Difference 2007-2017 | 10-year % Change 2007-2017 | 5-year Difference 2012-2017 | 5-year % Change 2012-2017 |
|---|---|---|---|---|
| SUP | n/a | n/a | 278 | 107% |
| Boardsailing/ Wind surfing | 228 | 85% | 247 | 99% |
| Sea Kayaking | 247 | 102% | 165 | 51% |
| Kayak Fishing | n/a | n/a | 83 | 50% |
| WW Kayaking | 240 | 108% | 147 | 47% |
| Recreational Kayaking | 915 | 115% | 529 | 45% |
| Rafting | (270) | -34% | 25 | 5% |
| Canoeing | (199) | -13% | 43 | 3% |
| Sailing | (159) | -35% | (92) | -24% |
| **TOTAL** | **1787** | **42%** | **1,425** | **31%** |

*Source: Outdoor Industry Association (2018) p. 36*

*Participation numbers in this table are in the thousands (000)*

For the youth (6-17), participation rates in Table 71 have been sorted by the largest participation rate in the most recent year (2017) with recreational kayaking and canoeing having the highest numbers of participants.

**Table 71. Youth Participation (Ages 6-17) for Non-Motorized Boating 2007-2017, Ordered by Participation Rate**

| Boating Activity | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Canoeing | 2,564 | 2,497 | 2,416 | 2,811 | 2,435 | 2,735 | 2,543 | 2,523 | 2,454 | 2,249 | 2,029 |
| Recreational Kayaking | 1,056 | 1,227 | 1,199 | 1,152 | 1,388 | 1,743 | 1,628 | 1,771 | 2,083 | 1,988 | 1,864 |
| Rafting | 993 | 869 | 1,064 | 966 | 750 | 793 | 859 | 989 | 1,086 | 869 | 819 |
| WW Kayaking | 197 | 165 | 312 | 256 | 151 | 432 | 422 | 628 | 819 | 661 | 772 |
| Sailing | 526 | 603 | 664 | 580 | 382 | 562 | 663 | 736 | 909 | 811 | 742 |
| Sea Kayaking | 241 | 178 | 164 | 358 | 228 | 333 | 388 | 536 | 890 | 743 | 718 |
| Boardsailing/ Wind surfing | 228 | 236 | 200 | 221 | 109 | 215 | 322 | 495 | 790 | 673 | 650 |
| SUP | n/a | n/a | n/a | 242 | 186 | 290 | 550 | 570 | 823 | 621 | 622 |
| Kayak Fishing | n/a | n/a | n/a | 96 | 181 | 220 | 295 | 234 | 295 | 280 | 270 |
| **TOTAL** | **5,805** | **5,775** | **6,019** | **6,682** | **5,810** | **7323** | **7,670** | **8,482** | **10,149** | **8,895** | **8,486** |

*Source: Outdoor Industry Association (2018) p. 35*

*Participation numbers in this table are in the thousands (000)*

For the youth (6-17), total differences and percent changes from 2007-2017 (10-year period) and 2012-2017 (5-year period) are displayed in Table 72. The boating activities have been sorted for the last 5 years (2012-2017), from the largest percent increase (boardsailing/wind surfing, sea kayaking, and SUP) to the largest percent decrease (canoeing).

**Table 72. Youth Participation (Ages 6-17) for Non-Motorized Boating 2007-2017, Ordered by 5-Year Percent Change**

| Boating Activity | 10-year Difference 2007-2017 | 10-year % Change 2007-2017 | 5-year Difference 2012-2017 | 5-year % Change 2012-2017 |
|---|---|---|---|---|
| Boardsailing/ Wind surfing | 422 | 185% | 435 | 202% |
| Sea Kayaking | 477 | 198% | 385 | 116% |
| SUP | n/a | n/a | 332 | 114% |
| WW Kayaking | 575 | 292% | 340 | 79% |
| Sailing | 216 | 41% | 180 | 32% |
| Kayak Fishing | n/a | n/a | 50 | 23% |
| Recreational Kayaking | 808 | 77% | 121 | 7% |
| Rafting | (174) | -18% | 26 | 3% |
| Canoeing | (535) | -21% | (706) | -26% |
| **TOTAL** | **2681** | **46%** | **1,163** | **16%** |

*Source: Outdoor Industry Association (2018) p. 35*

*Participation numbers in this table are in the thousands (000)*

## Other Sources of Non-motorized Boating Trends: Industry and Agency Publications

Other industry publications reported on trends relating more toward the equipment and retail outlook. One article *Paddle Boarding's Biggest Trends in 2017* (SUPConnect.com, 2018) reported on a number of brands launching lines of SUP designs built specifically for women. Other equipment trends predicted technological add-ons like foils, which require highly specific conditions (e.g. large waves or for downwinding or surf). Non-equipment trends reported by SUPConnect included the recognition of safety education as an important sport component by industry leaders, particularly because of the entry-level nature of SUP participation and an attendant increase in accidents and fatalities related to the sport (SUPConnect.com, 2018), (Littman, 2017). As well, an increased focus on sustainability and environmentally friendly SUP construction materials is also cited as one of the industry trends to watch.

Another observation in the industry literature asserted that the SUP sport has moved through typical new technology adoption cycles with wealthy 35-55 year-olds dominating early purchases of SUPs that were high-end, expensive specialty productions (Littman, 2017) and into a more down-market population. With increased participation, downward pressure on lower-priced SUPs became more common in the industry, and now it is expected that SUP participation will level off, so focus is on new ways people will use paddleboards (e.g. rowing options, whitewater play, and even hammock add-ons).

Recent research reporting from the State of Oregon (Lindberg, 2015) indicated that boaters tended to be younger, with slightly higher income in contrast to all Oregonians (Rice, 2017) who engage in outdoor recreation. Statewide, the 2011 Oregon State Comprehensive Outdoor Recreation Plan (SCORP) study estimated 2.9M whitewater and 4M flatwater user 'occasions.' Additionally, 2011 survey data from Oregon's SCORP reported on boater expenditures, estimating 4.4 million annual boater user days for the state, which generated $114 million in expenditure across Oregon. Non-motorized boating expenditures contributed to 1,084 jobs, $54 million in value added, and $34 million in labor income. With the addition of out-of-state visitors, these estimated amounts increased to 1,258 jobs, $63 million in value added, and $39 million in labor income (Lindberg, 2015).

## Other Sources of Non-motorized Boating Trends: River Managers

Regional managers of a number of California's premier whitewater river runs were interviewed for their perspectives on non-motorized boating trends and facility needs. One of the greatest issues for these individuals was river access. One manager in particular cited the high degree of facility development and support for whitewater river access in Montana, Idaho, and Washington in contrast to the lack of this type of waterway access support here in California. The types of facilities cited by this manager included boat ramps accessible by vehicles with catarafts, as well as wooden slide features for large rafts common in the Pacific Northwest. He asserted that a large portion of the boating population is aging and moving to less intensive whitewater boating such as use of catarafts or boats that have wheeled contrivances attached for rolling from transporting vehicles to the water's edge, so the lack of supportive access facilities can become a barrier to participation. He noted that the designs of many of the newer fishing paddlecraft need more facility development than the former, lighter-weight sit-upon kayaks. River managers were also in agreement with agency publications, asserting that there is much growth in the beginner and intermediate non-motorized boating market because of low-cost paddlecraft increasingly available at larger "big box" retail stores (see Figures 16 and 17, below).

**Figure 16. Paddle-craft in large scale discount store**


**Figure 17. Paddle-craft in large scale discount store**


## Other Sources of Non-motorized Boating Trends: Leaders in Boating Sales and Interest Groups

Study researchers reached out to a number of individuals representing the established leadership among non-motorized boating sales and boating interest groups. Open-ended phone interviews were utilized with them to discuss their perspectives on current issues and trends related to non-motorized boating.

One regional sales director noted that, while sea kayaks and touring boats used to be "the bread and butter of the boating market," the emphasis in the last few years has been on sit-upon kayaks for fishing. This emphasis has paid off in sales, which have been very strong for the past few years. Support for this assertion can be found in the OIA data for kayaks, which have shown strong gains in participation.

Another trend in the non-motorized boating market was toward lower-cost, roto-molded paddlecraft (around the $300 range, see Figures 15 and 16, above). This lower cost market has encouraged many more boaters to get into boating based on extensive availability from discount stores such as Walmart and Costco. One sales staff member cited this as the number one reason that "we're at an all-time high of non-motorized boaters participating in the activity." However, he did note that with this increase has come an attendant jump in accidents and deaths associated with un-skilled boaters.

Another upcoming trend noted in another sales interview involved the growth in the market for pedal-driven boats, which are being made more efficient and light-weight than their boxy predecessors. When asked if small electric motors will impact non-motorized boating, those interviewed expressed doubt that this is something that will impact the non-motorized boating anytime soon. One sales director asserted that large battery size of electric motors is currently a limiting factor.

Similar to observations by at least one river manager, a director of a national-level boating advocacy organization suggested that, after years of *play boating*, longer, river running boats with higher performance are making a comeback. Downriver paddling is gaining in popularity compared to the *play spot* trend of the last couple of decades.

Favorable recreation access is important to river boaters, typically through trails and parking facilities. One interest group director asserted that this is important for resource and transportation planners to take into account when rebuilding infrastructure such as highways, roads, and bridges, because these locales are often important access points for river boaters. Comments by affiliated boater group leaders in group interviews also noted the importance of including boating access in transportation planning efforts.

When asked if Millennial-aged paddlers (typically born between 1981 and 1996) approach boating in a different fashion than their predecessors, the director of an affiliated boating group speculated that Millennials are both cynical and saturated by media, which can often drive their decisions and styles of boating. Another change for younger, higher skilled and resourced boaters is that a number of *kayaking academies* now exist, modelled on ski academies in which academic credit is offered alongside active programs for training expert boaters also occurs in the same context as high school. He asserted that this might affect demand and access to whitewater resources as a whole new class of highly skilled, advance, and fairly young boaters move into the boating community.

# Recommendations: Future Boating Facilities Needs Assessments & Studies

At the conclusion of this multi-year study and report preparation process, study researchers have a number of recommendations to make for future CBFNA efforts.

## Recommendation #1: Formalize Facility Database Updating

Keep the California boating facility database updated by assigning a staff person to be responsible for its upkeep. As well, this staff member could be responsible for collecting data annually from facilities, including launch data. This person could also work with USACE (who often issues permits for new shoreline facilities) to create the most comprehensive facility database as possible.

While every effort was made to create a comprehensive database, not all facilities were captured by researchers involved in this effort, because not all facility managers (even those affiliated with government agencies) responded to researcher requests for participation. As discussed in *Volume II: Methods*, study researchers suggest that the DBW continue to update the facilities database on a regular basis through assigned staff responsibility. Researchers suggest that the division consider providing a mechanism for facilities to enter information on their own to keep the database up-to-date, such as a portal on DBW's website, in addition to determining a meaningful incentive for facilities to want to be included in its database. Researchers also suggest that DBW integrates other data from different sources into this database, such as those identified in *Volume II: Methods*.

As discussed in *Volume II: Methods*, the research team met with a range of individuals from both the USACE (in the Sacramento office) and sent multiple FOIA requests to USACE in efforts to obtain their boating facility permit data over a 15-month period. The USACE responded that the request would be too time consuming to complete for all facilities throughout California. It is suggested that the DBW further pursues this avenue and establishes a partnership with the USACE to ensure that all current and new facilities are included in the DBW database.

## Recommendation #2: Extend Boating Facilities Needs Assessment Timelines and Stagger Data Collection Efforts

Researchers recommend an extended timeline for the next boating facilities needs assessment with staggered data collection efforts over a series of years. Such a timeline could resemble this list:

2019-2021: Populations Underserved by Boating and Waterway Access in California
2022-2024: Motorized Boating Facility and Boaters: Data Collection and Analyses
2025-2027: Non-motorized Boaters: Data Collection and Analyses
2028-2029: Meta-analyses of all data collection efforts for next CBFNA

Working in tandem with each other, DBW should be involved in the research process throughout in the form of a working group, which would prove particularly useful in a time of staff overturn and changes in boating patterns, ownership, and technology. Data should be obtained every even year from DMV and USCG and records could be updated for future forecasting.

## Recommendation #3: Update Facility Cost-Benefit Model

One of the criteria in making grant-related decisions is the cost-benefit ratio. Cost-benefit analyses are used by economists to determine whether projects are justified. Because the flow of cost and projects occur over time, projects are considered justifiable if the present value of the benefits exceed the present value of the costs.

DBW requested the researchers to review the current cost-benefit model used in making these decisions and to provide some recommendations on how to improve the existing model. Recommendations focus on four main themes: (1) treat the model as a dynamic document, (2) revisit *who* DBW perceives as benefitting from the grants, (3) reevaluate the underlying basic assumptions of the model and assess the accuracy of the data currently being used in the model, and (4) create a plan to obtain current data to be used in the model.

### *Dynamic Document*

The first recommendation is to treat the cost-benefit model as a dynamic document (rather than a static one) that is updated on an ongoing basis. In reviewing the model, data collected from 2000 is the basis for much of the analyses. It is suggested that the model incorporate the most current data available.

### *Who Benefits*

The second recommendation is to revisit and confirm who DBW perceives as those who benefit from grants to ensure that the most appropriate type of analysis is being conducted (i.e., does DBW want to determine the cost-benefit from the perspective of the boating community only or the economy/community at large (i.e., taxpayers)). Note that a similar discussion should occur around costs (i.e., costs to whom—boating community only?).

Since there is more than one way to evaluate projects involving boating recreation—with the major difference being the metric used to measure the benefits, it is necessary to define the 'audience' with respect to the benefits. The current model being used by the DBW uses the recreational user value (Unit Day Value) to quantify the benefits. This is appropriate from the perspective of the boating community as the beneficiaries. An alternative approach is to utilize an economic impact analysis where the benefits include impact on the local economy in the form of direct effect, indirect effect (supply chain) and induced effects. This approach factors in the multiplier effect of the projects into the economy. Economic impact analysis is helpful when the audience is expanded to the society in general and can help justify additional resources being allocated to boating projects. It is recommended that DBW consider conducting economic impact analyses for larger projects. A good resource to further learn about cost-benefit analyses is: http://www.cbabuilder.co.uk/Home.html.

### *Reevaluate Underlying Basic Assumptions and Data Accuracy*

Assuming that the DBW's main audience is solely the boating community, the remaining two recommendations focus on the current model where the UDV is used to quantify the benefits for users of the waterway:
**Benefits = UDV * User #**. Earlier in this volume, UDVs were generated for different waterway types within each region. Since there are differences in the UDV's generated, DBW should use the UDV that best reflects the attributes (region and waterway type) of the project being evaluated. Four hundred and eight waterways have been classified as discussed earlier in the "Unit Day Value" section.

The next suggestion for DBW is to reevaluate how the number of users are being calculated. The current model uses the following calculation: ***User # = Boat Launch # * Boating conversion factor (estimated # of people in boat) where Boat Launch is based upon boating forecasts of registered boats from 2002 CBFNA***. The underlying assumption that number of boat launches is a direct function of forecasts of registered boaters should be discussed. In addition, since the boat

forecasts from the 2002 CBFNA are overestimated by at least 160% (as discussed previous section of this volume), the current calculations of ***User #*** are unreliable. This points to the need of using the most current data available and to treat the model as a dynamic document that should be updated on an ongoing basis. Future studies should also aim to update boating conversion factors (i.e., estimated number of people in boat) for different types of motorized and non-motorized watercrafts.

The way costs are being determined should also be reevaluated. For example, it is unclear why maintenance is included, what the cost escalation factor is escalating (launch fees?), and the reasoning behind using the discount rate of 4.5%.

### *Create a Plan*

The final recommendation is for DBW to create a plan on how to keep the model updated. While some suggestions are provided here, DBW is encouraged to create a plan that is feasible for them.

- Incorporate non-motorized boat users in model.
- Use actual launch data when available.
- Set up a process to acquire launch data on an annual basis from facilities and determine other ways to acquire launch data on waterways where facilities don't exist.
- When launch data does not exist, use actual numbers of registered boat numbers from DMV and USCG (not forecasted values from 2002) from the most recent ***even*** year for motorized boats.
- Update conversion factors (i.e., # of people in boats) every 5 years, differentiate between motorized and non-motorized boats.
- Revise Consumer Price Index (CPI) bi-annually by going to Bureau of Labor Statistics website.

## Recommendation #4: Establish Research Agenda for Future Boating and Boater-Related Social Science

While the social research efforts associated with this study were large in scale, focusing on statewide populations, more localized studies of recreational boaters and boating would yield valuable additional information for planners and managers of California's waterways.

Ground-level efforts studying current boaters and watercraft use are recommended in the future as a way of gaining more specific information on California's boating populations for DBW to stay connected to the state's public. By identifying subsets of waterway and boating types in California (e.g. by utilizing the categories of waterways identified in this study), DBW managers and planners could identify a subset of California waterways where more specific data could be collected to inform decisions relating to future facilities, program needs, and to study economic impact. Two types of studies, on-site boater surveys and boating use and capacity analyses are recommended. These were commonly utilized in the FERC hydroelectric project relicensing efforts of the 1990s and early 2000s (California Department of Water Resources, 2006) and provide a number of examples of highly localized studies that yield specific information on boaters and the waterways they visit.

### *Public Contact Boating Surveys*

In-person questionnaire interviews on-site at boating-related facilities such as marinas, boat ramps, and beach waterfront areas can be conducted to yield representative samples of watercraft users to discern a variety of management-related topics. Issues related to activity types, experiences of conflict, and attitudes toward resource management could be explored among boaters on-site. These on-site studies could be used to generate and/or update boating conversion factors (i.e., estimated number of people in boat) for different types of motorized and non-motorized watercrafts.

### *Waterway Utilization and Recreation Capacity Studies*

Studies relating to the amount of boating and boater use of specific facilities, such as boat ramp parking lots, marinas, and beach parking areas can determine whether existing facilities are adequate, at, or beyond capacity. Surveys of lake and reservoir utilization by boaters can focus on measures of boaters at one time (BAOT) as an indicator of density. Such studies can be used to understand the quality of the recreation experience or even to make attempts to determine if levels of utilization increase accidents on waterways (Bosley, 2005). Most importantly, these studies would help provide the desparately-needed launch data that is needed to adequately assess economic contributions of boating on various waterways.

### *Defining Future Boating Populations: Identifying Under-represented Communities*

Other social research efforts identified by researchers involved in the current CBFNA effort include those related to the value of understanding not only current boating populations, but those underserved by current boating education and access in California. Numerous outreach efforts through the aquatic centers funded by DBW have met with a number of successes at connecting with populations of in the state who are often not well-connected to boating education, such as youth (between the ages of 13-17) and inner-city communities.

The proposed research, “to better define future recreational boaters and their boating needs” could focus on underserved populations, as well as youth. Similar to DPR's “Ensuring Equitable to California’s State Parks: Literature Review” (2014), both accessibility and socio-economic factors are considered in defining those as underserved, which should also include people with disabilities. A starting point for this research would include an extensive review of this topic in the literature (e.g., Scott, 2013; Sevilla, 2012; Stanis, 2009).

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# Appendices

## Appendix. All Recreational Waterways by Region

### Northern California

- Albion River
- Antelope Lake
- Baum Lake
- Benbow Lake
- Big Lagoon
- Big Sage Reservoir
- Black Butte Lake
- Blue Lake
- Blue Lakes (Upper & Lower)
- Bucks Lake
- Butt Valley Reservoir
- Castle Lake
- Clear Creek
- Clear Lake
- Copco Reservoir
- Crater Lake
- Crescent City Harbor
- Dead Lake
- Dodge Reservoir
- Dorris Reservoir
- Duncan Reservoir
- Eagle Lake
- Eel River
- Elk River
- Eureka Slough
- Fall River Lake
- Feather River-North Fork
- Fee Reservoir
- Fish Lake
- Frenchman Lake
- Freshwater Lagoon
- Freshwater Slough
- Gold Lake
- Hookton Slough
- Horr Pond
- Horseshoe Lake
- Humboldt Bay
- Indian Valley Reservoir
- Iron Gate Reservoir
- Janes Reservoir
- Juanita Lake
- Klamath River-Del Norte, Humboldt
- Klamath River-Siskiyou
- Lake Almanor
- Lake Britton
- Lake Davis
- Lake McCloud
- Lake Mendocino
- Lake Pillsbury
- Lake Shastina
- Lake Siskiyou
- Lakes Earl & Talawa
- Lewiston Lake
- Little Grass Valley Reservoir
- Little River
- Lower Biscar Reservoir
- McCumber (Macumber) Reservoir
- Mad River
- Mad River Slough
- Manzanita Lake
- Medicine Lake
- Mountain Meadows Reservoir
- North Battle Creek Reservoir
- Noyo River
- Pacific Ocean
- Pacific Ocean-Shelter Cove
- Packer Lake
- Pit River
- Reservoir C
- Reservoir F
- Russian Gulch
- Ruth Lake
- Ryan Slough
- Salmon Lake
- Salmon River
- Sardine Lake
- Shasta Lake
- Smith River
- Stampede Reservoir
- Stone Lagoon
- Stony Gorge Reservoir
- Stuart Fork River
- Trinidad Harbor
- Trinity Lake
- Trinity River
- Tule Lake
- Webber Lake
- West Valley Reservoir
- Whiskeytown Lake
- Yuba River

### Sierra

- American River-Middle Fork
- American River-North Fork
- American River-South Fork
- Bear River
- Bear River Reservoir
- Beardsley Reservoir
- Big Bear Lake
- Big Trees Creek
- Boca Reservoir
- Bridgeport Reservoir
- Bullards Bar Reservoir
- Camp Far West Lake (Reservoir)
- Caples Lake
- Cherry Lake
- Convict Lake
- Cosumnes River
- Courtright Reservoir
- Crowley Lake
- Don Pedro Lake
- Donner Lake
- East Fork Carson River
- East Fork Walker River
- Echo Lake
- Englebright Lake
- Fallen Leaf Lake

Florence Lake
French Meadows Reservoir
Fuller Lake
Grant Lake
Gull Lake
Hell Hole Reservoir
Highland Lakes
Horseshoe Lake
Hume Lake
Huntington Lake
Ice House Reservoir
Indian Creek Reservoir
Jackson Meadows Reservoir
Jenkinson Lake
June Lake
Kerckhoff Reservoir
Kern River
Kidd Lake
Kings River
Klondike Lake
Lake Alpine
Lake Amador
Lake Arrowhead
Lake Camanche
Lake Clementine
Lake Eleanor
Lake George
Lake Mamie
Lake Mary
Lake Pardee
Lake Sabrina
Lake Spaulding
Lake Tahoe
Lake Thomas A. Edison
Lake Tulloch
Lake Valley Reservoir
Lake Wildwood
Loon Lake
Lundy Lake
Lyons Reservoir
Mammoth Pool Reservoir
McKays Point Reservoir
Merced River
Mokelumne River
Mono Lake
Morning Star Lake
New Hogan Lake
New Melones Lake (Reservoir)
New Spicer Meadow Reservoir
Owens River
Pine Mountain Lake
Pinecrest Lake
Prosser Reservoir
Rock Creek Lake
Rollins Lake
Saddlebag Lake
Salt Spring Reservoir
Schaads Reservoir
Scotts Flat Reservoir
Shaver Lake
Silver Lake (Amador)
Silver Lake (Mono)
Stanislaus River
Stanislaus River-North Fork
Stumpy Meadows Reservoir
Sugar Pine Reservoir
Sunflower Lake
Topaz Lake
Truckee River
Tuolumne River
Twin Lakes, Upper & Lower Twins
Union Valley Reservoir
Upper and Lower Blue Lakes
Utica Reservoir
Virginia Lakes
Wishon Reservoir
Wrights Lake

## Central Valley

American River
Avocado Lake
Bass Lake
Berenda Reservoir
Brite Valley Lake
Butte Creek
Cache Creek
Collins Lake
East Park Reservoir
Eastman Lake
Feather River
Folsom Lake
Fresno Slough
Hensley Lake
Kaweah Reservoir
Lake Buena Vista (Lake Webb)
Lake Evans
Lake Isabella
Lake McClure
Lake McSwain
Lake Ming
Lake Natoma
Lake Oroville
Lake Woollomes
Lake Yosemite
Lodi Lake
Los Banos Creek Reservoir
Merced River
Millerton Lake
Modesto Reservoir
Oak Grove Lake
O'Neill Forebay
Paradise Lake
Pine Flat Lake
Rancho Seco Lake
Redinger Lake
Sacramento River
Sacramento-San Joaquin Delta
San Joaquin River
San Luis Reservoir
Sly Creek Reservoir
Success Lake
Thermalito Afterbay
Thermalito Diversion Pool
Thermalito Forebay
Tuolumne River
Turlock Lake
Washington Lake
Woodward Reservoir

## San Francisco Bay Area

Aliviso Slough/Guadelupe River
Anderson Lake
Berkeley Aquatic Lagoon
Bethany Reservoir
Bodega Bay
Bolinas Lagoon
Briones Reservoir
Calero Reservoir
Carquinez Strait
Chesbro Reservoir
Clifton Court Forebay
Contra Loma Reservoir
Corte Madera Creek
Coyote Lake
Del Valle Reservoir
Drakes Estero
Foster City Lagoon
Lafayette Reservoir
Lagoon Valley Lake
Lake Berryessa
Lake Chabot
Lake Cunningham
Lake Elizabeth
Lake Hennessey
Lake Merced
Lake Merritt
Lake Ralphine
Lake Solano/Putah Creek
Lake Sonoma
Lexington Reservoir
Mare Island Strait
Napa River
Pacific Ocean
Pacific Ocean-Half Moon Bay
Petaluma River
Pillar Point Harbor
Quarry Lakes
Redwood Creek
Richardson Bay
Rush Creek
Russian River
San Francisco Bay-Alameda Bay
San Francisco Bay-Coyote Point
San Francisco Bay-East Bay
San Francisco Bay-Horseshoe Cove
San Francisco Bay-Islais Creek
San Francisco Bay-North Bay
San Francisco Bay-Oakland Estuary
San Francisco Bay-Oyster Point
San Francisco Bay-Redwood City Channel
San Francisco Bay-San Leandro Bay
SF Bay-San Mateo Marina Lagoon
San Francisco Bay-San Rafael Canal
San Francisco Bay-Smith Slough
San Francisco Bay-South Bay
San Francisco Bay-West Bay
San Pablo Bay
San Pablo Reservoir
San Rafael Creek
Santa Fe Channel
Shadow Cliffs Lake
Spring Lake
Steven's Creek Reservoir
Suisun Bay
Tomales Bay
Uvas Reservoir
Vasona Lake

## Central Coast

Cachuma Lake
Carmel River
Elkhorn Slough
Laguna Lake
Lake El Estero
Lake Nacimiento
Lake San Antonio
Loch Lomond Reservoir
Lopez Lake
Monterey Bay
Moro Cojo Slough
Morro Bay
Pacific Ocean
Pinto Lake
Port San Luis Harbor
Santa Barbara Channel
Santa Cruz Harbor
Santa Margarita Lake
Woods Lagoon
Zaca Lake

## Los Angeles

Alamitos Bay
Avalon Harbor
Castaic Lagoon
Castaic Lake
Channel Islands Harbor
Elizabeth Lake
King Harbor
Lake Casitas
Lake Piru
Legg Lake
Little Rock Reservoir
Long Beach Harbor
Los Angeles Harbor
Marina Del Rey
Pacific Ocean-Catalina Island
Pacific Ocean
Port of Long Beach
Port of Los Angeles
Puddingstone Lake
Pyramid Lake
Queensway Bay
Redondo Beach Harbor
San Pedro Bay
Santa Fe Dam Reservoir
Two Harbors
Ventura Harbor
Ventura River

## Southern California

Agua Hedionda Lagoon
Canyon Lake
Carlsbad Lagoon
Colorado River
Dana Point Harbor
Diamond Valley Lake
Diaz Lake

| | | |
|---|---|---|
| El Capitan Lake | Lake Perris | Salton Sea |
| Ferguson Lake | Lake Poway | San Diego Bay |
| Hodges Lake Reservoir | Lake Skinner | San Diego River |
| Huntington Harbor | Lake Wohlford | San Vicente Reservoir |
| La Jolla Shores | Lido Peninsula | Santee Lakes |
| Lake Barrett | Lower Otay Lake | Senator Wash |
| Lake Cahuilla | Millpond | Shelter Island Yacht Basin |
| Lake Cuyamaca | Mission Bay | Silverwood Lake |
| Lake Dixon | Murray Reservoir | South Lake |
| Lake Elsinore | Newport Harbor | Sunbeam Lake |
| Lake Havasu | North Lake | Sutherland Reservoir |
| Lake Hemet | Oceanside Harbor (Marina Del Mar) | Upper Newport Bay |
| Lake Henshaw | Pacific Ocean | Upper Otay Lake |
| Lake Jennings | Palo Verde Lagoon | Weist Lake |
| Lake Miramar | Prado Reservoir | |
| Lake Morena | Ramer Lake | |