

National Recreational Boating Safety Survey

Participation Survey Final Report



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NATIONAL RECREATIONAL BOATING SAFETY SURVEY
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“There are logical explanations for our tendency to go to the water’s edge for some of the most significant moments of our lives. Water offers you a compass, a craft, some sails, and a wind chart. In an age when we’re anchored by stress, technology, exile from the natural world, professional suffocation, personal anxiety, and hospital bills, and at a loss for true privacy, casting off is wonderful.”—Wallace Nichols

PREFACE

A Message from the Chief of the U.S. Coast Guard's Office of Auxiliary and Boating Safety

The creation of the National Recreational Boating Safety (RBS) Program in 1971 has had the desired effect: recreational boating has become significantly safer. While the number and variety of recreational boats has increased dramatically, the number of reported boating casualties has decreased by more than 50%. However, segments of the recreational boating community have yet to adopt safer boating behaviors. The RBS Program and our state agency and nonprofit boating safety partners are committed to continuing to reduce boating accidents by creating greater awareness of safe boating practices, safety equipment, and regulations, and by making boating education more accessible and effective. A primary goal of the RBS Program is to continue to influence behavioral change among boat operators and passengers.

To ensure safe boating behaviors by boat operators and passengers is a challenge, given limited resources, the changing preferences and characteristics of boaters, and the continual introduction of new recreational boats. Meeting this challenge requires that we collect and analyze recreational boating data and learn all we can about boating behaviors and the corresponding linkages to accident risks.

Acknowledging these complexities, the RBS Program and the National Boating Safety Advisory Council (NBSAC) identified improving and expanding recreational boating data collection as one of its 2017–21 Strategic Plan performance objectives. The purpose of the National Recreational Boating Safety Survey (NRBSS) is to produce scientific estimates of the number of characteristics of the recreational boaters, the number of different types of recreational boats that are owned and operated, the size of the boating population, and the amount of exposure in an effort to assist agencies and organizations meet nationwide best boating safety practices and standards.

The NRBSS findings are presented in two reports: the Participation Survey Final Report and the Exposure Survey Final Report. The latter report focuses on boat ownership and use, different estimates of exposure (e.g., person hours of boating), and risk ratios. This report delivers information about the number and profiles of persons that went out on the water in recreational boats and households with at least one member who boated in 2018.

The RBS Program is committed to using the NRBSS data and estimates to (1) identify and analyze boating participation trends; (2) better understand the characteristics of at-risk boating populations; (3) more effectually design and efficiently target boating safety education and outreach campaigns; and (4) more objectively and consistently assess the performance of education, regulations, and enforcement intended to reduce boating accidents. To maximize the utility of the NRBSS, the RBS Program is providing a data query system, and the findings are conveniently accessible to boating safety partners and stakeholders, boating facilities agencies, and the boating industry.

Boat safely,

Scott L. Johnson
Captain, U.S. Coast Guard
Chief, Office of Auxiliary and Boating Safety

CONTENTS

Acknowledgments.....	iii
Preface.....	iv
Section 1. Introduction.....	1
1.1 National Recreational Boating Safety (RBS) Program.....	3
1.2 The Need for More Consistent Scientific Recreational Boating Data.....	5
1.3 The Purpose and Application of the NRBSS.....	6
1.4 NRBSS Reports and Data.....	7
Section 2. NRBSS Participation Survey Methods.....	8
2.1 Questionnaire Development.....	8
2.2 Cognitive and Usability Testing.....	9
2.3 Sample Frame, Target Number of Completes, and Sample Implementation.....	9
2.4 Data Collection.....	10
2.5 Completion Results and Response Rates.....	11
2.6 Data Cleaning.....	12
2.7 Weighting.....	12
Section 3. Findings/Estimates.....	14
3.1 Number and Characteristics of Boating Participants and Boating Households.....	14
3.2 Socioeconomic Characteristics of Boaters.....	15
3.3 Reasons for not Boating.....	17
3.4 Boating Days.....	19
3.5 Boating Activities.....	19
3.6 Boat Ownership.....	23
3.7 Boat Operation and Boat Operators.....	24
3.7.1 Boating Days by Persons who Operated Boats.....	26
3.8 Boating Safety Education.....	26
Section 4. Summary and Conclusions.....	31
References.....	33
Appendixes	
A: Allocation of Targeted Completes, by State and Quarter.....	35

List of Tables

2-1.	Number of Addresses Sampled by Quarters	11
2-2.	Number of Completed Surveys by Cohort.....	11
2-3.	Participation Survey Sample Totals, Completes, and Mode Choice by Census Division.....	11
3-1.	Percentage and Number of U.S. Persons and Households that Went Boating in 2018 by Census Region	14
3-2.	Percentage and Number of Persons Who Went Boating in 2018 by Sex, Age, Household Composition, Race, Ethnicity, and Household Income.....	16
3-3.	Percentage of Persons Who Went Boating in 2018 by Race, Ethnicity, and Census Region.....	17
3-4.	Reasons Why Persons Did Not Go Boating in 2018—Percentage by Sex, Age, Race, and Ethnicity	18
3-5.	Reasons Why Persons Did Not Go Boating in 2018—Percentage by Census Region.....	18
3-6.	Mean and Median Number of Boating Days by Persons Who Went Boating in 2018 and All Persons by Census Region	19
3-7.	Percentage and Number of Persons Who Went Boating in 2018 and Participated in Different On-Boat Activities	20
3-8.	Number of Persons Who Went Boating in 2018 and Participated in Various On- Boat Activities—by Sex, Age, Household Composition, Race, Ethnicity, and Household Income	21
3-9.	Percentage and Number of Persons Who Went Boating in 2018 on Boats Having Different Ownership Status.....	23
3-10.	Mean and Median Number of Boating Days in 2018 by Boaters Residing in Households that Owned and Did Not Own Recreational Boats by Census Region	24
3-11.	Percentage and Number of Persons Who Operated a Recreational Boat that They Went out on During 2018 by Census Region, Sex, Age, Race, and Ethnicity	25
3-12.	Mean and Median Number of Boating Days in 2018 by Persons Who Went Boating and Did and Did Not Operate Boats by Census Region	26
3-13.	Percentage and Number of Persons Who Went Boating in 2018 that Had Taken a Boating Safety Course by Census Region	27
3-14.	Percentage and Number of Persons Who Went Boating in 2018 that Had Taken a Boating Safety Course by Sex, Age, Household Composition, Race, Ethnicity, and Household Income	28
3-15.	Mean and Median Number of Boating Days in 2018 by Persons that Had Taken a Boating Safety Course by Census Region	29
3-16.	Percentage and Number of Persons Who Operated a Recreational Boat in 2018 that Had Taken a Boating Safety Course by Census Region.....	30

SECTION 1. INTRODUCTION

People are sustained by and drawn to water for subsistence (e.g., drinking, agriculture), commerce, and recreation. Oceans, rivers, and lakes offer a sense of fascination. Science shows how being near, in, on, or under water can make you happier, healthier, more connected, and better at what you do (Nichols, 2019). Author Diana Goodwin (2018) writes that “Water gives us many different stimuli—visual, tactile, auditory, and even olfaction (smell),” and this is why autistic persons are naturally drawn to water.

For many persons who live or vacation near water, boating is not just a recreational pastime but a lifestyle, often handed down from generation to generation. Recreational boats are vessels that are operated on the water for pleasure and recreation, not for commercial purposes. The U.S. Coast Guard’s (USCG) Recreational Boating Safety (RBS) Program considers that recreational boats include but are not limited to: outboard, inboard and stern-drive power boats, jet boats, pontoons, houseboats, sailboats, row boats, canoes, kayaks, dragon boats, personal watercraft (e.g., jet skis), inflatable boats, kite boards, stand-up paddleboards, and wind surfers. Recreational boats are also boats rented to be operated by the renter for recreational purposes, but they do not include captained commercial charter or party boats, ferries, cruise ships, or toy boats. Recreational boats are powered by engines/motors or sail, or they are human powered (paddle, pedal).

Ownership of recreational boats and boating participation in states or localities is understandably highly related to both proximity to water and population size. About 7% (264,800 square miles) of the United States is covered by water (U.S. Geological Survey, 2020). Alaska has the largest total area of water of any state, which has 94,743 square miles of water, followed by Michigan with 40,175 square miles. Only 0.30 % of Arizona is covered by water. Most of the 327 million U.S. residents live within 15 miles of water. According to the National Oceanic and Atmospheric Administration (NOAA), U.S. counties directly on the shoreline constitute less than 10% of the total land area (not including Alaska), but those counties account for 39% of the total population. The population density of coastal shoreline counties is six times greater than the corresponding inland counties. From 1970 to 2010, the population of these counties increased by almost 40% and are projected to increase by an additional 10 million people, or 8%, by 2020 (NOAA, 2020).

The 2012 USCG National Recreational Boating Safety Survey (NRBSS) estimated that 27.3% or 32.3 million of the estimated 118.1 million U.S. households had at least one member who went out on the water in a recreational boat in 2012 (USCG, 2012). About 73.4 million persons went recreational boating at least once during that year, including 57.9 million adults and 15.6 million children. Women comprised just under half (45%, 33.3 million) of the almost 74 million U.S. boating participants.

Recreational boating has increased in popularity for several reasons. In addition to the USCG, numerous state agencies and organizations are active in a variety of safety, educational, and marketing programs designed to retain and recruit both boating participants and boat owners, with a significant emphasis on achieving a greater and more representative diversity (race, ethnicity, sex) of boaters. For example, a primary strategic goal of the National Association

of State Boating Law Administrators (NASBLA) is to reduce barriers to safe and enjoyable boating to increase public participation. The mission of the USCG Auxiliary is to promote and improve recreational boating safety in all 50 states, Puerto Rico, the U.S. Virgin Islands, American Samoa, District of Columbia, Northern Mariana Islands, and Guam. The purpose of the National Marine Manufacturers Association (NMMA) “Grow Boating” campaign is to increase boating participation by (1) generating awareness and interest in the boating lifestyle through the campaign, an integrated marketing strategy grounded in sound research and (2) enhancing the experience for current boaters. The Recreational Boating & Fishing Foundation (RBFF) is a nonprofit organization whose mission is to increase participation in recreational boating and angling, thereby protecting and restoring the nation’s aquatic natural resources. RBFF has developed a wide variety of programs and products that make it easy for people to get involved in recreational boating and fishing. BoatUS Foundation engages in and funds various activities designed to encourage safe, clean, and responsible boating. Finally, NOAA is partnering with the recreation industry to strengthen sustainable fishing and boating in federal waters. States also have efforts underway to increase boating, including Ohio’s investment to improve paddling access sites on the National Wild and Scenic Rivers System statewide.

Advances in recreational boat products and technologies and mandatory safety equipment required in boats are encouraging those new to boating by giving them a better sense of security and self-confidence on the water. Advances in boat technologies such as digital dashboards, joystick controls, and virtual anchors are making boating and boat ownership more approachable and attainable. In an effort to entice more entry-level boat owners, boat manufacturers are introducing a number of lower-cost products (e.g., affordable personal watercraft).

Shared ownership and innovative rental options are making boat ownership and use more affordable and convenient. Shared ownership arrangements are an increasingly popular option for both reducing the cost (e.g., purchase price, maintenance costs) and enhancing the convenience of boat ownership. Shared or fractional owners pay a portion of the boat’s purchase price and then divide up the maintenance and storage costs. In return, each owner (individual, family, company) is allowed a proportion of usage (often a few weeks throughout the year). An additional benefit is that many of the leading shared ownership companies/syndicates allow potential new shared owners to test boats before they commit to purchasing a share. Sharing a boat between multiple owners reduces the cost and still allows the shareholders multiple weeks of boating. In addition to fractional ownership companies, there is a significant growth in membership clubs that offer their members opportunities to use various types of boats during different times of the year. Fees are based on how long and when (e.g., time of the year) one wants to use a particular type of boat. Boat manufacturers and recreational boating associations actively support and encourage boat-sharing services.

Aggregate evidence indicates that participation in paddle sports and the ownership of paddle craft has grown significantly. Paddle sports include kayaking, canoeing, rafting and paddle boarding. The most recent data on paddling activity, which is found in the Outdoor Foundation’s 2015 Special Report on Paddlesports, estimated that almost 22 million Americans went paddling in 2014 (Outdoor Foundation, 2020). Growing participation in paddling, especially over the last 10 years, is due to a number of congregating factors including:

- persons of different ages, physical abilities and skill can participate in paddling;
- paddling provides opportunities to get close to nature;
- paddling offers participants opportunities for beneficial exercise;
- the cost of entry is relatively low (e.g., purchase prices, maintenance costs); and
- paddling has a comparatively low carbon footprint.

The increase in participation in paddling, which is confirmed by data collected in this survey, has come with concerns about operator skill, knowledge of boating regulations, and safe operation of these vessels. Because these boats are not required to be registered in many states and because they do not require the purchase of fuel to operate, they do not contribute to funds available for boating safety programs and boating access facilities.

Recreational boating is not only a popular recreational activity, but it also has significant economic impact on national, state, and local economies. In addition, it is a primary mode of access to recreational fishing opportunities. The Bureau of Economic Analysis (BEA) recently reported that U.S. outdoor recreation economy accounted for 2.2% (\$427.2 billion) of current-dollar gross domestic product (GDP) in 2017 (BEA, 2020). The BEA's Outdoor Recreation Satellite Account (ORSA) also shows that inflation-adjusted (real) GDP for the outdoor recreation economy grew by 3.9% in 2017, faster than the 2.4% growth of the overall U.S. economy. Boating/fishing was the largest conventional activity for the nation at \$20.9 billion in current-dollar value added. Boating was the leading outdoor recreation economic activity for 29 states and the District of Columbia in 2017.

The Sport Fish Restoration and Boating Trust Fund is a "Users Pay, Users Benefit Program." This means that boaters and fishermen pay into the Trust Fund through their taxes on the boats and equipment they buy, the fuel they use, and the import duties they pay. The users pay into the Trust Fund and the same users enjoy the benefits of the Trust Fund. These benefits include law enforcement, boat registration (numbering), casualty reporting, data analysis, boating safety education, boating access, and search and rescue. The revenues to the Trust Fund are approximately \$650M annually, and approximately \$120M annually supports the USCG and the 56 U.S. state and territory boating safety programs. The largest source of income into the Trust Fund is the motorboat fuel tax. The income from motorboat fuel tax is derived via a formula based on national recreational boat registration numbers.

1.1 National Recreational Boating Safety (RBS) Program

The 2018 National Recreational Boating Safety Survey (NRBSS) was conducted in support of the mission of the National Recreation Boating Safety (RBS) Program, which is administered by the USCG. The mission of the RBS Program, established by the Federal Boat Safety Act of 1971, is to ensure the public has a safe, secure, and enjoyable recreational boating experience by implementing programs designed to minimize the loss of life, personal injury, and property damage while cooperating with environmental and national security efforts. To lessen the number of boating casualties (deaths and injuries combined), the RBS Program continues to

work to develop a “safety culture” among boaters through outreach and education, regulation, and enforcement.

The RBS Program is a leader in improving the boating experience of the recreational maritime public by minimizing loss of life, personal injury, property damage, and environmental harm associated with this activity. The program accomplishes this through public education and awareness programs, enforcement of boating laws, regulation of boat design and construction, approval of boating safety equipment, and vessel safety checks for compliance with federal and state safety requirements.

To accomplish its mission, the RBS Program depends on collaborative efforts, talents, and resources of many different agencies and organizations. These include state governments working through the NASBLA and volunteers from various organizations (such as the USCG Auxiliary and the U.S. Power Squadrons). In the past, the RBS Program also has established cooperative relationships with organizations such as the National Safe Kids Campaign and Mothers Against Drunk Driving and with traditional boating organizations such as the National Boating Federation, National Safe Boating Council, National Water Safety Congress, U.S. Sailing, American Sailing Association, BoatUS, and the American Canoe Association.

The RBS Program’s State Grant Program was established in 1973 to “encourage greater State participation and uniformity in boating safety efforts, and particularly to permit the States to assume the greater share of boating safety education, assistance, and enforcement activities” (46 U.S.C. 131). Funds for the RBS Program are derived primarily from the fuel taxes boaters pay, which provides federal funding to assist the states with essential boating safety services for the public. The Nonprofit Grant Program provides funding to encourage greater participation of nonprofit organizations in recreational boating safety efforts. In order to apply for a grant, an organization must be eligible for funding.

Due to a number of factors, including enactment and enforcement of laws, regulations, standards, boater education, manufacturer safety regulations, and strengthened boating-under-the-influence laws, the annual rate of recreational boating fatalities in the United States has been declining at a rate of about 2% per year since 1970 when U.S. recreational boating deaths peaked at about 1,700 per year. In 2018, the USCG 2018 Recreational Boating Statistics listed 4,145 reported accidents that involved 633 deaths, 2,511 injuries, and approximately \$46 million damage to property as a result of recreational boating accidents (USCG, 2018). The fatality rate was 5.3 deaths per 100,000 registered recreational vessels, which represents a 3.6% decrease from 2017. Compared to 2017, the number of accidents decreased 3.4%, the number of deaths decreased 3.8%, and the number of injuries decreased 4.5%. Where the primary cause was known, alcohol use is the leading known contributing factor in fatal boating accidents, and it was listed as the leading factor in 19% of deaths. A relatively high percentage (20.2%) of all the recreational boating deaths involved persons in canoes and kayaks.

Although recreational boating fatality rates have been reduced significantly—especially over the past 29 years—the USCG and its boating safety partners have identified many safety-related strategies that, if enacted, can further reduce boating accidents and fatalities. The performance goal of the 2017–2021 Strategic Plan of the RBS Program is to reduce total casualties (deaths and injuries) to no more than 3,247 in 2020 and 3,188 or fewer by 2022

(USCG, 2016). A more strategic approach for allocating available funding by targeting and scientifically evaluating the actual vs expected results is essential because the purchasing power of the USCG RBS Program budget decreased by 19% from fiscal year 2009 to fiscal year 2018 after adjusting for inflation using the Consumer Price Index (CPI) data provided by the U.S. Bureau of Labor Statistics.

1.2 The Need to Continually Improve Recreational Boating Data

The RBS Program is continually seeking to improve the relevance, reliability, and acceptability of information about boaters (i.e., exposed population), boating behaviors and activities, the outcomes of programs implemented by RBS partners as well as their costs and benefits to: (1) assess the likely outcomes of regulatory and programmatic options and evaluate their actual vs intended after-effects; (2) verify whether and to what extent regulations, programs and resource allocations are achieving strategic initiatives; and (3) help convince existing and potential partners to support and participate in boating safety efforts.

The RBS Program's 2017–2021 Strategic Plan recommends: (1) collecting and monitoring data on the size and characteristics (e.g., demographics) of the exposed population, meaning persons that go out in the water on recreational boats and (2) conducting an NRBSS at regular intervals to gather reliable data on recreational boating exposure. The USCG has undertaken the NRBSS to develop a system of surveys (e.g., recreational boating participants and exposure estimates) and methods (e.g., survey instruments, sampling, weighting) to produce reliable and valid measures of the effectiveness of elements of the RBS Program, and to provide a framework so that states and organizations can collect data that allows valid comparisons with national data.

Regular and consistent collection and analyses of recreational boating data is also required by boating agencies and organizations to decide on future programs and to evaluate the effectiveness of efforts to recruit and retain boaters. When asked to comment about the NRBSS John Johnson, CEO of NASBLA, stated that, “NASBLA and the state and territory boating authorities it represents, require current, reliable, scientifically collected information (e.g., demographics) on a regular basis concerning boating participation and participants. This will allow us to recommend safety policy and develop and implement more effective and collaborative safety inventions, outreach programs and messaging targeted directly at different boating segments (e.g., new paddlers, young personal watercraft [PWC] operators). The data and resulting findings from the NRBSS including numbers of different types of boats, the number and characteristics of persons that go out on the water and/or operate recreational boats, where and with whom they go boating, their knowledge of safety practices will provide us significant insights on how to create more positive boating experiences with safer boating.”

According to Thom Dammrich, former president of the NMMA, “The recreational boating industry, and boating safety professionals, need reliable data on boating participation to make good business decisions and to evaluate the effectiveness of safety efforts. For this reason, it is extremely important that the USCG conduct its National Participation Survey on a regular and consistent basis, just as the Fish and Wildlife Service has done so consistently with its survey of participation in fishing, hunting and wildlife viewing. In the best possible scenario these two important participation studies would be conducted in the same year each time.

Recreational boating and fishing make up 10% of the outdoor recreation economy, an important economic driver in the U.S. which the BEA reports as 2.2% of GDP.”

“In our mission to increase participation in recreational boating and fishing, it is critical that we have access to data to make smart business decisions,” said RBFF President and CEO Frank Peterson. “In 2018, 50 percent of anglers went fishing from a boat, and fishing is the number one activity of boaters. A consistent, scientific study of recreational boating participation, such as the USCG National Participation Survey that provides the number and characteristics of boaters, will help RBFF develop and evaluate programs to secure the future of the sport.”

1.3 The Purpose and Application of the NRBSS

The 2018 NRBSS was conducted with a grant awarded by the USCG Boating Safety Division (CG-BSX-2) to RTI International. The authorizing authority for the NRBSS is Fixing America’s Surface Transportation Act. (Public Law 114-9). The NRBSS comprises two different surveys, a Participation Survey, which is the subject of this report, and an Exposure Survey, which is described in the *National Recreational Boating Safety Survey: Exposure Survey Final Report*.

The primary purpose of the Participation Survey is to estimate the number of persons who went out on the water in a recreational boat at least one time during 2018—and the demographic characteristics of recreational boaters. In order to estimate and describe the exposed population, the survey collected information quarterly during 2018 on:


- (1) The number and percentage of persons in the general population that go recreational boating (i.e., boating participants). Boating participants include boat owners, borrowers and renters, and guests aboard boats out on the water.
- (2) Socioeconomic characteristics of persons that go boating (e.g., age, race, marital/family status, income).
- (3) The average and total annual number of days that persons of various socioeconomic segments (e.g., age) go recreational boating.
- (4) Activities (e.g., fishing, skiing) engaged in while using recreational boats.
- (5) The number and characteristics (e.g., age, sex, experience, boating safety training) of persons that operate boats, meaning persons that are in charge or in control (e.g., steering, propulsion) of a boat when the boat is out on the water.

The most important objective of the NRBSS Exposure Survey is to collect data needed to estimate different measures of exposure for different types of boats in all states and the District of Columbia. The NRBSS Exposure Survey collected data on a monthly basis during 2018. The principal intent of this survey is to collect valid data necessary to produce reliable measures of recreational boating exposure hours. Estimating exposure rates requires different data, including:

- (1) the number of different types of boats, both registered and unregistered, owned in the 50 states and DC,
- (2) the number of these boats that are operated out on the water (e.g., during 2018),
- (3) the number of days and the number of hours that these different types of boats were operated, and

- (4) the number of persons that are aboard when these boats are operated out on the water.

1.4 NRBSS Reports and Data

The RBS Program is committed to making the findings conveniently accessible to the public, including this report on the results from the Participation Survey and the separate report (mentioned earlier) on the findings from the Exposure Survey. RTI also prepared a comprehensive methodology report that describes the survey methods as well as an evaluation of the survey's performance (i.e., response rates, completion rate, percentage of questions answered). The methodology report includes the standard formulas used to compute both weighted and unweighted response rates. The report on the Exposure Survey is available through the USCG's boating safety website: <https://uscgboating.org/> .

Exposure Survey and Participation Survey data sets, along with a data dictionary (syntax) that describes all variable names and value labels, will be made available to organizations with the requisite skills to analyze complicated data sets upon request to the USCG. In addition, an NRBSS Web-based Data Access and Query System (DAQS) is offered that enables users to generate tables and charts from the survey data using predefined queries and filters.

SECTION 2.

NRBSS PARTICIPATION SURVEY METHODS

The Participation Survey instrument focused on collecting data about individual household members' recreational boating participation. The Participation Survey was offered via the web and paper and was fielded on a quarterly basis; respondents were asked about their boating participation in the prior quarter and since the beginning of the year to date. Both the web and the paper versions of the survey were available in English and Spanish.

2.1 Questionnaire Development

The Participation Survey instrument (see **Appendix A**) provided definitions and pictures of the types of recreational boats most commonly in use. The questions were designed to illuminate whether the respondent and members of their household had participated in recreational boating for the 3-month (quarterly) reference period. A table format was used to collect household member information including sex, age, relationship to respondent, race, ethnicity, and employment status for up to five household members. Household income was also collected.

After collecting information about the household members, respondents were asked to indicate whether each person participated in recreational boating during the reference period. Follow-up questions asked about the type(s) of boat(s) the respondent or household members used, the number of days any member spent on the water in a recreational boat, the types of activities in which they engaged, the number and types of boats owned by each member of the household, and the registration status of the boat(s). If a person in the household did not go boating in 2018, a question asked about the reason for not boating. The survey also asked about safety, including whether each household member that participated in recreational boating had taken a boating safety course.

The paper Participation Survey instrument was developed using TeleForm, a forms processing system used to collect data from paper and electronic documents. The electronic and hardcopy proofs of the survey were reviewed and tested to ensure accurate data capture by the optical scanning system. Programmers performed data export after scanning to conduct quality control checks on the data. Testers documented results in an electronic log before sharing findings with the project team and programmer. The survey was retested until all errors were resolved. Once the data capture supervisor confirmed positive final testing results, the surveys were printed for mailing.

The web survey was developed using Voxco Online software. Voxco software allows programming to preclude out-of-range responses entered by respondents and to automatically flag responses that are potentially wrong. Prompts were added to the web survey to call the respondent's attention to answers that seemed illogical or erroneous (e.g., an age entered that would make a respondent ineligible to complete the survey). The web survey was optimized for multiple screen sizes (e.g., mobile devices, laptops) and included colors and layout known to be best practice for enhancing response (e.g., a single or a small number of questions were included per screen and different colors were used to distinguish response options from questions).

2.2 Cognitive and Usability Testing

A Questionnaire Appraisal System (QAS) was used for initial testing of the Participation Survey questions. The QAS is designed to identify potentially problematic items for respondents and to assess the cognitive demands of questions based on best survey practices; it also helps eliminate potential sources of response error. Aspects of the questionnaire that were assessed included item and response wording, item formatting, visual layout, instrument flow, question order, and instructions.

Based on results of the QAS assessment, the survey was revised to clarify question wording. A cognitive interview protocol, including instructions and scripts, was developed to test the survey with a volunteer sample. The intent of cognitive interviewing was to make certain that respondents understood all instructions and questions on the Participation Survey and that they were formulating their responses as expected. A total of 12 cognitive interviewing participants tested the Participation Survey: some respondents tested the web version of the survey and some tested the paper version. Recruitment for cognitive interviewing aimed to garner a diverse group of participants with respect to age, sex, and educational level. As a result of the testing, some questions, definitions, instructions, and the introductory information on the Participation Survey were redesigned.

Comprehensive testing was conducted of the web survey, first for basic functionality and then for specific scenarios. Bugs in the program, such as improper routing through the survey, out-of-range responses allowed, and screen layout issues were identified and resolved. Testers maintained a log of all identified issues and worked with the Voxco programmer to resolve issues and document changes. Full data exports were conducted to check the formatting of variables and to ensure that the data were captured according to the specifications.

2.3 Sample Frame, Target Number of Completes, and Sample Implementation

The goal of the Participation Survey sample was to provide a basis for implementing a survey about recreational boat participation to all households in the 50 states and DC. A probability-based sample of addresses (where an address is a proxy for a household) from the address-based sampling (ABS) frame was utilized. The ABS frame was formed using monthly updates of the United States Postal Service Computerized Delivery Sequence file obtained from one of two nationally qualified vendors. The sample was an unbiased, stratified, one-stage design in which addresses were selected and an informed adult in the household was asked to provide information about boating participation for all members of the household. A target of 5,000 completed surveys was established to provide enough precision for national annual estimates of recreational boating participation. For an estimate in the range of 50%, a sample of size 5,000 with a design effect of 2.0 would result in a 95% confidence interval with margin of error of +/- 2%.¹

The sample was allocated to each state in proportion to the total number of households in each state. Within each state the target was allocated equally across quarters except for Northern

¹ Note that this error rate would only apply to the overall sample of 5,000. An estimate for a smaller subgroup of the sample would have a higher margin of error.

states where boating might be less frequent during cold weather months (October–March). In those states, the target number of completes in the cold weather quarters was half of what it would have been under equal allocation. The target sample size in the warm weather quarters (April–September) was increased to keep the annual total intact. The allocation of the targeted number of completes by state and quarter is presented in **Appendix B**.

A total of 43,590 household addresses were sampled, stratified by state. The sample was allocated to the states in proportion to the total number of households in the state in order to get representative response from across the country because the Participation Survey was designed to produce estimates for the country as a whole. Upon reviewing the final data, it was determined that estimates could reasonably be produced for the Census regions to provide additional regional context. The national sample was released in four waves, one each quarter during 2018, timed such that the sample was released at the end of the reference quarter. The sample release was distributed through the year to ensure that participation reporting was spread throughout the year without imposing a long recall period on the respondent and introducing the potential for recall bias in the data.

2.4 Data Collection

The data collection design was mixed mode, using a “push-to-web” approach that allowed responses via mail but offered higher incentives for responding on the web. Because the sampled unit was an address, all contact attempts were made via mail.

The Participation Survey used quarterly sample replicate releases to reduce measurement error associated with recall bias as compared to an annual survey. The survey was designed to collect information about sample members’ participation in recreational boating in the prior quarter; therefore, initial survey invitations were sent at the end of each reference quarter so that sample members would receive them at the beginning of the next quarter. For example, invitations for the quarter 1 sample were sent at the end of March, and asked respondents to recall and report on recreational boating activities for the months of January through March.

Sample members were first sent a pressure-sealed postcard inviting them to participate in the survey via the web. One week after the initial mailing they received a second mailing including a cover letter, \$1 pre-incentive, a paper survey, and a prepaid, pre-addressed business reply envelope. In addition to the \$1 cash pre-incentive included in the second mailing, a \$10 incentive was promised for completing the survey online and a \$5 incentive was promised for completing the paper TeleForm survey via mail (the higher incentive for web completion was intended to encourage respondents to complete the web survey).

Remaining mailings alternated between a pressure-sealed postcard reminder and a paper survey packet. Up to seven sequential mailings were sent over a 10-week period inviting sample members to participate in the survey or reminding them to do so. Each mailing included a toll-free number and a project email address that sample members were encouraged to use to contact project staff if they had any questions about or problems with the survey.

2.5 Completion Results and Response Rates

The final total sample for the Participation Survey was 43,590 addresses from the ABS frame across the 50 United States and DC. *Table 2-1* and *Table 2-2* show the number of surveys that were mailed each quarter and the response rates per quarter. *Table 2-3* reports the number of completed surveys received throughout data collection and the response rates by Census Division and survey mode.

Table 2-1. Number of Addresses Sampled by Quarter

Quarter 1 Jan–Mar 2018	Quarter 2 Apr–Jun 2018	Quarter 3 Jul–Sep 2018	Quarter 4 Oct–Dec 2018	Total
5,056	11,874	13,399	13,261	43,590

Table 2-2. Number of Completed Surveys by Quarter

Quarter 1 Jan–Mar 2018	Quarter 2 Apr–Jun 2018	Quarter 3 Jul–Sep 2018	Quarter 4 Oct–Dec 2018	Total
863	1,744	1,661	1,583	5,851

Table 2-3. Participation Survey Sample Totals, Completes, and Mode Choice by Census Division

Census Division	Sample		Undeliverables		Ineligibles		Respondents		Mode Choice	
	Total	Rate, %	Total	Rate, %	Total	Rate, %	Total	Rate ¹ , %	Web, %	Paper, %
1. New England	2,294	100	210	9.2	1	0.04	330	15.8	62.7	37.3
2. Mid-Atlantic	6,666	100	588	8.8	3	0.04	803	13.2	64.3	35.7
3. East North Central	5,299	100	536	10.1	1	0.02	797	16.7	60.2	39.8
4. West North Central	2,443	100	263	10.8	0	0.00	418	19.2	61.0	39.0
5. South Atlantic	8,785	100	900	10.2	5	0.06	1,135	14.4	65.5	34.5
6. East South Central	2,221	100	253	11.4	0	0.00	343	17.4	60.9	39.1
7. West South Central	5,751	100	664	11.5	3	0.05	631	12.4	63.1	36.9
8. Mountain	2,889	100	325	11.2	2	0.07	450	17.6	63.6	36.4
9. Pacific	7,242	100	528	7.3	4	0.05	944	14.1	64.8	35.2
Total	43,590	100	4,267	9.8	19	0.04	5,851	14.9	63.3	36.7

1. Response rate excludes undeliverables and ineligibles from the denominator.
2. The number of completes results are presented by Census Division although the analysis is completed for the Census Regions because divisions provide more granularity than regions).

A total of 5,851 households completed the NRBSS Participation Survey, exceeding the target of 5,000 completes. The overall response rate was 14.9%. A response was defined as a returned survey with enough completed items to be kept for weighting and estimation. Any sample address for which a completed survey was not received was considered a nonrespondent. Ineligible addresses are those with a responding person who was not 18 years of age or older.

The highest response rate was in the West North Central Census Division and the lowest in the Mid-Atlantic. Nearly two-thirds of Participation Survey respondents did the survey on the web; the remaining third completed the paper survey.

2.6 Data Cleaning

With data collected in two modes—online and on paper—the data first needed to be aligned prior to any data cleaning. If a respondent completed the survey both online and on paper, only the first completed survey received was kept (e.g., if a respondent completed a paper survey and, later, he/she also completed a web survey, the paper survey was kept).

Data cleaning for the Participation data required checking distributions of individual variables to assess whether improbable responses existed that needed to be top-coded and checks across variables for the sampled household—up to six boats that could be owned by the household, and up to five persons who could have been profiled in the survey. Some obvious out-of-range values were recoded. If a respondent reported an out-of-range value, such as a number of boating days that exceeded the number of days in the reference quarter, those values were top-coded, that is, replaced with the maximum possible value.

2.7 Weighting

While the Participation Survey necessitated a set of address-level weights for household-level estimates, a set of individual-level weights was also calculated. A four-step sequence was implemented to develop two sets of analytic weights for producing Participation Survey estimates. The first set of weights was designed to amplify address-level survey data to the target population of households. The second set of weights was designed to amplify individual-level survey data to the target population of individual persons in households.

The four-step process included:

Step 1: Base (Design) Weight

The sample of addresses for the Participation Survey was drawn from the ABS frame as part of a single-stage design where state served as the lone stratification factor. The samples were allocated so that the targeted number of completed surveys would be proportional to the number of unique addresses within a state. In anticipation of seasonal boating trends in the Northern states, the sample size was decreased in the winter and increased in the warm weather months to enable data collection efficiencies while maintaining the goal of reaching an annual targeted number of survey completes. For Southern states, the sample distribution was more or less equivalent across data collection quarters.

The *base weight* for an address is the inverse of its selection probability and is meant to reflect the number of addresses in the larger population it represents. The sum of base weights for a state equals the number of addresses in that state.

Step 2: Adjust Address-Level Base Weights for Nonresponse

If all addresses sampled were eligible and a 100% response rate was achieved, the base weights would be all that is needed to formulate unbiased survey estimates. Of course, that is

impractical in applied survey research. Step 2 of the weighting procedure inflated responding addresses to compensate for nonresponding addresses.

Step 3: Calibrate Address-Level Weights

Calibrations were performed so that the sum of weights for responding households matched a set of known target population totals and certain key figures estimated from the Exposure Survey. Known target population totals were derived from the 2018 1-year U.S. Census Bureau's American Community Survey (ACS) microdata. These included the number of people in the United States by age group, sex, and race/ethnicity categorizations. Key figures estimated from the NRBSS Exposure Survey were used in Step 3, namely boat-ownership status (counts of households with one or more registered boat, only unregistered boats, and those that do not own boats) and the total count of registered and unregistered boats by U.S. Census Division.

The weighted sum of individuals was calibrated by sex and race/ethnicity to match the corresponding totals published from the 2018 ACS at the national level, and the weighted sum of registered/unregistered boats was attuned to match the totals by U.S. Census Division as estimated from the NRBSS Exposure Survey.

Step 4: Create and Calibrate Individual-Level Weights

The address-level weights were converted into individual-level weights by restructuring the survey data set from one where each record corresponded to an address to one where each record corresponded to an individual. For example, data for an address indicating residence of three adults were transposed into three distinct records. Individuals within households were first assigned the address-level weight produced in Step 3. The Generalized Exponential Model (GEM) approach was then used to calibrate weights by the following dimensions: (1) counts of individuals by age categories; (2) counts of individuals by sex; (3) counts of individuals by race/ethnicity; and (4) expected counts of individuals who boated during the previous 3 months.

SECTION 3. FINDINGS/ESTIMATES

A principal objective of the NRBSS Participation Survey is to produce reliable estimates of the number of recreational boaters. A recreational boater is defined as someone who went out on the water aboard a recreational boat at least once in 2018. This does not include persons who went aboard recreational boats but did not go out on the water on those boats. Recreational boats include: open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, personal watercraft (e.g., Wave Runners, Sea-Doos), sailboats (powered only by sails or auxiliary sailboats, i.e., sailboats with a motor), canoes (including inflatable canoes), kayaks (including inflatable kayaks), paddleboards, rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).

3.1 Number and Characteristics of Boating Participants and Boating Households

In 2018, an estimated 84.54 million recreational boaters of different ages, races, and ethnicities in the United States (*Table 3-1*) participated in boating, or 26.5% of the U.S. population. Almost a quarter (23.3%) of, or 28.37 million, U.S. households had at least one person who went recreational boating.

The Southern Census Region had the greatest number (30.8 million) of recreational boaters. About 36% of 2018 U.S. recreational boaters lived in the South Census Region. The Midwest Census Region has the highest percentage (32.3%) of recreational boaters among its population, and the West Region had the lowest percentage (21.4%). About a quarter (27%) of households in the Midwest Region had at least one person who boated in 2018.

Table 3-1. Percentage and Number of U.S. Persons and Households^{1,2} that Went Boating³ in 2018 by Census Region

Census Region	Percentage of Persons		Number of Persons (000) ^{4,5}			Percentage of Households		Number of Households (000) ⁴		
	Boaters	Non-boaters	Boaters	Non-boaters	Total	Boating	Non-boating	Boating	Non-boating	Total
Northeast	28.8	71.2	16,009	39,530	55,539	21.8	78.2	4,669	16,759	21,428
Midwest	32.3	67.7	21,662	45,450	67,112	27.1	72.9	7,289	19,621	26,910
South	25.4	74.6	30,808	90,624	121,432	23.0	77.0	10,539	35,307	45,846
West	21.4	78.6	16,065	58,928	74,993	21.5	78.5	5,874	21,462	27,336
Total U.S.	26.5	73.5	84,544	234,532	319,076	23.3	76.7	28,371	93,149	121,520

1. Household with at least one person who went boating in 2018 is counted as a boating household.
2. The total count of occupied households in the U.S. (121,520,185) and the total population living in those households (319,075,830) are taken from the 2018 American Community Survey 1-year data set.
3. Number of persons that went out on the water in a recreational boat in 2018. Recreational boats include boats that are rented—such as canoes—or boats that are privately owned by the person or someone else, but do not include boats that are used to make money, such as captained charter or party boats, tour boats, ferries, or cruise ships.
4. All Ns are in units of 1,000.
5. Adjustment to N for item nonresponse can result in minor discrepancies within and across tables.

3.2 Socioeconomic Characteristics of Boaters

The socioeconomic characteristics of boaters are indispensable information for designing, targeting, and evaluating the effectiveness of boating safety-related communications. The socioeconomic characteristics of 2018 recreational boaters, including sex, age, household composition, race and household income, are shown in **Table 3-2**. The data indicate that boaters are more diverse in age, sex, and ethnicity than has been previously assumed and reported. This variety may be due to a number of factors, including the increasing diversity of the U.S. population, higher incomes across some minority populations, and efforts on the part of agencies and organizations to recruit more diverse boaters.

A greater percentage (29%) of males in the U.S. population boated, but a quarter (24.1%) of females also boated in 2018 (**Table 3-2**). An estimated 46.5% of all boaters (39.28 million) were females. The age distribution of boaters shows that a relatively low percentage (18.2%) of persons 65 and older went boating in 2018. Boaters 45 and older comprise almost half (46.9%) of boaters. Persons aged 18–44 represent 29.0% (32.03 million) of 2018 recreational boaters. Boaters age 17 and younger were estimated to constitute just over a quarter (26.4%, 19.31 million) of all recreational boaters.

Boating is considered, and is frequently promoted, as a family recreational activity, and the results support this assessment. About 47.70 million (56.4%) of 2018 recreational boaters lived in households with one or more children. About 30% of boaters lived in households with two or more adults and one or more children in 2018. About a quarter (26.2%) of boaters lived in households with one adult and at least one child. However, about 36.84 million boaters resided in households with no children. The 13.47 million boaters residing in single-adult-no-children households are 15.9% of all boaters.

The data suggest that boaters may be more racially and ethnically diverse than was previously believed, likely in some measure due to the significant effort aimed at recruiting more Hispanics or Latinos and Blacks/African Americans into boating. Almost 30% of Whites in the United States went boating at least once in 2018 compared with 17.4% of Blacks/African Americans and 21.5% of people who identified as other races. Almost 6.49 million Blacks/African Americans boated in 2018. Overall, about 21.6% of recreational boaters in 2018 were non-Whites. An estimated 22.7% (12.65 million) of Hispanics or Latinos went boating in 2018 (**Table 3-3**). About 15% of all boaters were Hispanics or Latinos.

Table 3-2. Percentage and Number of Persons Who Went Boating in 2018 by Sex, Age, Household Composition, Race, Ethnicity, and Household Income

Demographic	Percent		Number (000) ^{1,2}		Total
	Boaters ³	Non-boaters	Boaters	Non-boaters	
Sex					
Male	29.0	71.0	45,257	110,801	156,058
Female	24.1	75.9	39,287	123,730	163,018
Age					
17 and under	26.4	73.6	19,309	53,832	73,142
18–44	29.0	71.0	32,034	78,428	110,461
45–64	28.7	71.3	23,356	58,023	81,379
65 and over	18.2	81.8	9,845	44,248	54,093
Household composition					
Single adult, no children	19.3	80.7	13,472	56,329	69,801
Single adult, one or more children	26.2	73.8	9,408	26,502	35,910
Two or more adults, no children	27.4	72.6	23,368	61,918	85,286
Two or more adults, one or more children	29.9	70.1	38,296	89,783	128,079
Race					
White	29.2	70.8	66,257	160,653	226,910
Black/African American	17.4	82.6	6,491	30,811	37,302
Other	21.5	78.5	11,796	43,069	54,865
Ethnicity					
Hispanic or Latino	22.7	77.3	12,653	43,086	55,738
Non-Hispanic or Non-Latino	27.3	72.7	71,891	191,447	263,338
Household income ⁴					
Less than \$25,000	18.4	81.6	11,224	49,775	60,999
\$25,000 to \$49,999	22.5	77.5	16,697	57,512	74,208
\$50,000 to \$74,999	27.1	72.9	16,258	43,733	59,991
\$75,000 to \$149,999	30.2	69.8	27,918	64,526	92,445
\$150,000 and over	39.6	60.4	12,447	18,985	31,433
Total U.S.	26.5	73.5	84,544	234,532	319,076

1. All Ns are in units of 1,000.

2. Adjustment to N for item nonresponse can result in minor discrepancies within and across tables.

3. Boaters—persons that went out on the water in a recreational boat in 2018.

4. The survey did not ask about the incomes of each person residing in households. Only household income was collected and is reported.

Table 3-3. Percentage of Persons Who Went Boating in 2018 by Race, Ethnicity, and Census Region

Demographic	Northeast	Midwest	South	West	Total U.S.
Race					
White	30.2	35.3	27.8	24.1	29.2
Black/African American	18.5	14.9	18.8	11.1	17.4
Other	29.9	24.1	21.3	17.7	21.5
Ethnicity					
Hispanic or Latino	26.8	25.0	25.3	17.9	22.7
Non-Hispanic or Non-Latino	29.1	32.8	25.4	22.7	27.3

3.3 Reasons for Not Boating

An estimated 234.5 million persons did not go boating in 2018 for the various reasons provided in **Table 3-4**. About a third (31.7%) indicated no interest in recreational boating, 28.2 % said they did not know anyone who owned a recreational boat, 22.2% cited time constraints, and 13.2% indicated that they did not live close to waters on which they could boat. A relatively small percentage of non-boaters cited supposed or known fuel (3.4%) and boat maintenance or storage (7.4%) costs as a reason for not boating.

As reported above, a low percentage of persons 65 or older boated in 2018. A high proportion of older persons indicated “no interest” (48.8%) and health reasons (13.7%) as causes for not boating. Relatively, more persons 18–44 years old cited not knowing anyone who owned boats (33.4%) and time constrains (28.6%) as grounds for not boating.

A higher percentage of Blacks/African Americans than Whites mentioned “no interest” (34.0%) and not knowing anyone who owned a boat (31.7%) as bases for not boating. “Never having boated” was cited as the reason a higher percentage of Hispanics or Latinos (24.1%) did not boat compared with non-Hispanics or non-Latinos (9.2%). Fewer Hispanics or Latinos (27.0%) than non-Hispanics (32.7%) indicated “lack of interest” as a reason for not boating, suggesting that some who did not boat in 2018 may be receptive to boating.

There were no significant differences in reasons for not boating across the four Census Regions (**Table 3-5**). A higher percentage of persons residing in the West Census Region cited “never boated in their lifetimes” (15.7%) as a reason for not boating. Although they made up a small percentage, persons in this region were also more likely to cite fuel and boat maintenance and/or storage costs as a reason for not boating.

Table 3-4. Reasons Why Persons Did Not Go Boating in 2018—Percentage by Sex, Age, Race, and Ethnicity¹

Reason	Sex		Age				Race			Ethnicity		Total U.S.
	Male	Female	17 and Under	18-44	45-64	65 and Over	White	Black/African American	Other	Hispanic or Latino	Non-Hispanic or Non-Latino	
No interest	30.2	33.0	20.8	26.0	33.1	48.8	30.4	34.0	34.8	27.0	32.7	31.7
Never boated in lifetime	11.7	12.0	22.9	12.0	7.4	8.6	7.5	22.8	20.8	24.1	9.2	11.9
Don't know anyone who owns a boat	27.4	28.9	24.8	33.4	26.5	24.3	27.2	31.7	29.4	29.3	28.0	28.2
Afraid of the water	3.4	6.3	4.6	5.4	4.2	5.4	3.3	9.9	7.4	8.8	4.1	4.9
Don't live near the water	12.8	13.5	11.1	14.5	13.3	12.3	13.1	10.8	15.2	14.4	12.9	13.2
Time constraints	24.3	20.4	16.6	28.6	26.5	9.8	25.0	10.6	20.2	20.4	22.6	22.2
Cost of fuel	4.2	2.7	1.9	5.0	3.3	1.9	3.6	0.6	4.9	4.7	3.2	3.4
Cost of boat maintenance and/or storage	8.2	6.7	5.2	10.2	7.1	4.6	7.5	1.3	11.3	10.2	6.8	7.4
Health reasons	4.6	5.4	1.1	2.0	4.8	13.7	5.9	3.9	2.5	1.9	5.7	5.0
Other reasons	20.6	20.3	25.9	20.9	20.2	15.4	22.8	10.7	18.1	18.9	20.7	20.4

1. Column percent values sum to more than 100% because persons could have provided more than one reason for not boating.

Table 3-5. Reasons Why Persons Did Not Go Boating in 2018—Percentage by Census Region¹

Reason	Northeast	Midwest	South	West	Total U.S.
No interest	30.1	29.8	32.4	33.1	31.7
Never boated in lifetime	10.2	7.5	12.2	15.7	11.9
Don't know anyone who owns a boat	26.1	25.4	30.1	28.8	28.2
Afraid of the water	4.5	4.4	5.7	4.5	4.9
Don't live near the water	8.2	14.9	14.4	13.2	13.2
Time constraints	21.4	21.9	22.9	22.0	22.2
Cost of fuel	2.7	2.8	3.6	4.1	3.4
Cost of boat maintenance and/or storage	4.2	7.9	7.5	8.9	7.4
Health reasons	4.4	5.6	4.9	5.2	5.0
Other reasons	24.3	27.0	16.4	18.9	20.4

1. Column percent values sum to more than 100% because persons could have provided more than one reason for not boating.

3.4 Boating Days

A boating day is any day that a person spent some time out on the water on a recreational boat. Persons who went recreational boating in 2018 averaged 17.5 days out on the water in recreational boats (*Table 3-6*). This number includes persons residing in both households that owned and did not own boats. Boaters in the Midwest Census Region averaged a higher number of days (21), and boaters residing in the West Census Region boated fewer days (13.2) on average. The average number of days of boating across all persons in the United States, including those who did not go boating, is 4.6 days.

The NRBSS Exposure Report, available on the USCG boating safety website, provides detailed estimates of the number of: (1) boat days, (2) boat hours, (3) persons days, and (4) person hours of boating for the country and all states and the District of Columbia.

Table 3-6. Mean and Median Number of Boating Days by Persons Who Went Boating in 2018 and All Persons by Census Region

Census Region	Boaters ¹		All Persons ²	
	Mean	Median	Mean	Median
Northeast	16.2	8.0	4.7	0.0
Midwest	21.0	12.0	6.8	0.0
South	17.9	11.3	4.5	0.0
West	13.2	8.0	2.8	0.0
Total United States	17.5	8.0	4.6	0.0

1. Boaters—persons that went out on the water in a recreational boat at least once in 2018.

2. All persons—all persons residing in U.S. households regardless of their going (or not going) out on the water in a recreational boat in 2018.

3.5 Boating Activities

The percentage of boaters that engaged in any of the 14 listed recreational activities while out on recreational boats is reported in *Table 3-7*. A high percentage of persons engaged in multiple boating activities while on their outings. The largest percentage of boaters in 2018 (43.4%) reported they cruised in various types of power boats (as also reported in past recreational boating studies). This finding, also reported in the NRBSS Exposure Report, is in part due to the larger number of various types of power boats owned by the U.S. population, and the relatively large number of persons that went on the water in these boats (Duffy et al., 2020). The high percentage of boaters who engaged in paddling (39.2%) is consistent with the increased numbers of canoes, kayaks, and paddleboards owned in the United States. An estimated 33.14 million persons engaged in paddling in canoes, kayaks, paddleboards, and inflatables in 2018. The NRBSS Exposure Survey Report estimates that U.S. households owned 2.4 million canoes, 7.56 million kayaks, and about 807,000 paddleboards (Duffy et al., 2020). Socializing with friends (31.5%) and sightseeing and nature observation (30.4%) continued to be among the most popular pastimes while recreational boating.

Table 3-7. Percentage and Number of Persons Who Went Boating in 2018 and Participated in Different On-Boat Activities

Activity	Percent ^{1,2}	Number (000) ^{3,4}
Fishing or crabbing	29.9	25,278
Cruising	43.4	36,692
Sailing	4.4	3,719
Paddling	39.2	33,141
Rowing	4.4	3,721
Jet skiing	8.7	7,355
Water skiing—wakeboarding	7.0	5,918
Hunting from the boat	1.0	845
Racing	0.3	254
Scuba diving or snorkeling off boat	4.0	3,381
Sightseeing or observing nature	30.4	25,701
Socializing with friends	31.5	26,631
Sunbathing	14.8	12,512
Whitewater rafting	1.8	1,523
Other activities	10.2	8,623

1. This is the percent of persons who went boating at least one time in 2018 and participated at least once in various on-boat activities.
2. Percent values sum to more than 100% because persons could participate in more than one activity while boating.
3. All Ns are in units of 1,000.
4. Adjustment to N for item nonresponse can result in minor discrepancies within and across tables.

An estimated 29.9% of boaters (about 25.28 million persons), both children (those under 16 years of age) and adults, went fishing and/or crabbing at least one time while out on recreational boats (**Table 3-8**). In 2016, an estimated 15.1 million persons aged 16 or older went fishing from boats (2016 National Survey of Fishing, Hunting and Wildlife-Associated Recreation).

Table 3-8 reports the distribution of the estimated number of persons that engaged in various onboard recreational activities by sex, age, race, household composition, race, ethnicity, and household income. The table shows some significant differences in percentage and numbers of males and females who went boating in 2018 and participated in the 14 listed onboard boating activities. More male boaters than females (67% vs 33%) participated in fishing or crabbing and hunting when aboard boats. Females were relatively more likely to participate in sunbathing (62%), and slightly more likely to be cruising (50.7%), socializing with friends (50.9%), and scuba diving or snorkeling from boats (50.6%). About 17.31 million of the 39.29 million females who went boating in 2018 engaged in either paddling or rowing at least once.

The results also reveal more similarities than differences in the relative percentage of boaters that participated in various activities across race and ethnicities. Socializing with friends and family (28.3%), fishing (24.4%) and cruising (22.4%) were boating activities most popular among Black/ African American boaters. Activities most popular among Hispanics or Latinos boaters included cruising (40.4%) and sightseeing (33.5%). Persons residing in households with different composition reflected some interesting differences in activities in which they participated. For example, as would be expected, a high percentage of persons in single adult

Table 3-8. Number of Persons Who Went Boating in 2018 and Participated in Various On-Boat Activities—by Sex, Age, Household Composition, Race, Ethnicity, and Household Income

Demographic	Fishing or Crabbing	Cruising	Sailing	Paddling	Rowing	Jet Skiing	Water Skiing/ Wake-Boarding	Hunting from the Boat	Racing	Scuba diving or Snorkeling Off Boat	Sight-Seeing or Observing Nature	Socializing With Friends	Sun-Bathing	White-Water Rafting	Other Activities	Any Activity
	Number (000) ^{1,2}															
Sex																
Male	16,937	18,089	1,974	17,318	2,333	4,150	3,001	740	135	1,670	13,061	13,065	4,749	826	4,502	45,257
Female	8,357	18,596	1,745	15,921	1,390	3,206	2,917	107	119	1,711	12,637	13,561	7,754	697	4,121	39,287
Age																
17 and under	4,068	8,465	379	7,072	888	1,822	1,747	163	138	773	5,408	6,065	2,755	554	2,646	19,309
18–44	8,453	13,640	1,547	14,612	1,487	3,421	2,704	291	22	1,657	9,577	9,713	5,575	746	3,635	32,034
45–64	8,765	10,390	947	8,922	967	1,799	1,404	272	70	746	7,746	7,855	3,533	217	2,034	23,356
65 and over	3,363	4,216	693	2,399	394	373	206	107	50	215	2,797	2,976	623	82	547	9,845
Household composition																
Single adult, no children	3,407	4,805	512	5,820	457	689	791	96	54	518	4,583	3,929	1,980	415	1,609	13,472
Single adult, one or more children	2,613	4,588	638	2,476	307	1,683	781	32	128	251	2,636	3,604	2,086	80	1,365	9,408
Two or more adults, no children	7,433	9,921	937	9,269	701	1,641	737	138	48	419	7,117	7,377	3,159	313	1,583	23,368
Two or more adults, one or more children	11,624	17,061	1,625	15,608	2,162	3,255	3,485	547	41	2,118	11,506	11,701	5,350	753	4,127	38,296
Race																
White	20,537	30,786	2,881	27,927	2,169	5,682	5,298	731	220	2,160	20,678	22,263	10,892	1,142	7,046	66,258
Black/African American	1,581	1,456	541	804	481	801	261	28	30	480	1,551	1,838	174	162	252	6,491
Other	3,157	4,461	284	4,446	1,084	861	348	85	2	744	3,479	2,496	1,456	218	1,339	11,796

(continued)

Table 3-8. Number of Persons Who Went Boating in 2018 and Participated in Various On-boat Activities—by Sex, Age, Household Composition, Race, Ethnicity, and Household Income (continued)

Demographic	Fishing or Crabbing	Cruising	Sailing	Paddling	Rowing	Jet Skiing	Water Skiing/ Wake-Boarding	Hunting from the Boat	Racing	Scuba diving or Snorkeling Off Boat	Sight-Seeing or Observing Nature	Socializing With Friends	Sun-Bathing	White-Water Rafting	Other Activities	Any Activity
	Number (000) ^{1,2}															
Ethnicity																
Hispanic or Latino	2,986	5,117	640	3,978	949	1,546	895	39	139	846	4,237	3,273	1,915	0	1,478	12,653
Non-Hispanic or Non-Latino	22,252	31,556	3,083	29,114	2,792	5,831	5,023	802	120	2,552	21,483	23,322	10,599	1,512	7,154	71,891
Household income																
Less than \$25,000	3,808	3,961	548	2,960	1,057	1,868	669	49	43	496	4,038	3,778	2,310	37	1,735	11,224
\$25,000 to \$49,999	5,325	6,525	274	4,331	975	1,316	622	147	2	357	5,358	4,618	1,783	266	2,467	16,697
\$50,000 to \$74,999	5,191	6,110	990	7,049	470	724	1,051	91	155	530	5,347	4,415	2,080	349	605	16,258
\$75,000 to \$149,999	8,196	12,093	925	12,516	779	2,137	1,831	280	26	1,435	8,047	8,900	4,746	622	2,634	27,918
\$150,000 and over	3,164	7,000	935	5,339	612	1,392	1,410	219	31	507	3,329	4,594	1,682	204	1,385	12,447
Total U.S.	25,278	36,692	3,719	33,141	3,721	7,355	5,918	845	254	3,381	25,701	26,631	12,512	1,523	8,623	84,544

1. All Ns are in units of 1,000.

2. Adjustment to N for item nonresponse can result in minor discrepancies within and across tables.

households with no children, generally younger persons, engaged in paddling and sightseeing or observing nature. A high percentage of boaters residing in households with two or more adults and one or more children engaged in paddling as one of their boating activities.

3.6 Boat Ownership

Increased industry data suggest that the shared economy is influencing whether and how persons secure access to boats, including boat rentals, group/flotilla chartering, cooperatives, and shared ownership. Numerous liveries and resorts throughout the country rent canoes, kayaks, and paddleboards. This includes a growing number of community sailing and paddling clubs that rent boats. An increasing number of marinas are now offering short- and longer-term rental of pontoon boats. Numerous third-party websites enable boat owners to list their boats for rental and potential customers to rent them online for different amounts of time. The whole transaction, from search, selection, pick-up and drop-off locations, to payment can in some instances be handled conveniently online. The number of boat-sharing clubs is also growing. Industry reports indicate that bareboat charters (charter boats without a captain and crew), and especially shared charters, are up significantly since 2012.

Respondents were asked about the ownership status of the boat(s) in which they (the respondents), or members of their households, went out on the water. The results reported in **Table 3-9** indicate the increased use of rented and shared boat ownership including boat clubs. Of the persons that went boating in 2018, 42.9 % went out aboard boats owned by someone residing in their households. An additional 11.5 % went boating on boats over which they had joint/shared ownership with persons not residing in their households, including both formal and informal shared ownership arrangements. Approximately 41% of boaters went out at least once aboard some form of rented boats, including rented canoes, kayaks, paddleboards, PWCs and pontoon boats. About 11% reported going out aboard boats they chartered without a captain. It should be noted that even though specific definitions of different types of ownership were provided, there is likely some degree of misidentification among rental, charters, and shared ownership.

Table 3-9. Percentage and Number¹ of Persons Who Went Boating in 2018 on Boats Having Different Ownership Status

Ownership Status	Percent	Number of Boaters (000) ^{2,3,4,5}
Owned by somebody in the household	42.9	36,300
Joint/shared ownership with people who don't live in this household ³	11.5	9,716
Chartered (bare boat with no hired captain)	10.5	8,861
Rented ⁴	41.0	34,699

1. Percent values sum to more than 100% because persons could go boating on more than one boat. Likewise, the total number of boaters across ownership statuses (89,576) is greater than the national count of boaters (84,544) because persons can go boating on boats of various ownership status.
2. All Ns are in units of 1,000.
3. Joint ownership can include informal joint ownership by individuals that reside inside and outside the household, as well as boat club shares through clubs and syndicates.
4. Rented boats could include boats borrowed from another person (family and/or friends) who owns a boat. Some persons could also have considered boat clubs as being rentals rather than shared ownership.
5. Adjustment to N for item nonresponse can result in minor discrepancies within and across tables.

It is widely assumed that persons residing in households that own recreational boats engage in more days of boating than persons in non-boat-owning households, and the data confirm this notion (*Table 3-10*). On average, persons in boat-owning households averaged almost 26 days of boating compared with 13 days for residents of households that did not own boats. Persons living in boat-owning households in the Midwest Census Region boated more days (30) than persons in boat-owning households in the other three Census Regions. Persons residing in non-boat-owning households in the Midwest did more boating (14.9 days) on average than persons residing in the other Regions, probably because persons in this Region likely know someone who owns a boat, therefore affording them greater opportunity to go boating. Boaters residing in boat-owning households (19 days) and also in non-boat-owning households (10 days) in the West Census Region boated appreciably fewer days on average than any of the other three regions.

Table 3-10. Mean and Median Number of Boating Days in 2018 by Boaters Residing in Households that Owned and Did Not Own Recreational Boats by Census Region

Census Region	Boaters in Households that Owned or Co-owned ¹ One or More Boats		Boaters in Households that Did Not Own or Co-own a Boat		All Boaters ²	
	Mean	Median	Mean	Median	Mean	Median
Northeast	24.3	12.0	13.5	8.0	16.2	8.0
Midwest	30.0	20.0	14.9	12.0	21.0	12.0
South	26.2	16.0	13.2	8.0	17.9	11.3
West	19.0	12.0	10.0	4.0	13.2	8.0
Total U.S.	25.8	16.0	13.0	8.0	17.5	8.0

1. Boat owned or co-owned by a household means that at least one person in the household holds the title, registration, and/or ownership rights to a recreational boat/vessel.

2. Mean and median number of boating days by all persons who went boating at least one time in 2018.

3.7 Boat Operation and Boat Operators

The number and characteristics of persons that operate boats is of special interest to federal and state agencies and nonprofit and industry organizations that promote and offer boating safety instruction. Operating a boat means steering, maneuvering, paddling, or rowing a boat while it is out on the water. *Table 3-11* reports on the number and percent of persons who operated a boat that they went out on in 2018.

An estimated 55.3% of boaters, 46.72 million persons, operated at least one boat that they were aboard. A higher percentage of male boaters (63.2%) than females (46.2%) operated boats they went out on. As would be expected, a lower percentage (33.6%, 6.48 million) of boaters 17 years old or younger operated a boat compared with 64.3% (15.01 million) of boaters aged 45–64. An estimated 12% (5.59 million) of boat operators are persons 65 or older.

Table 3-11. Percentage and Number of Persons Who Operated¹ a Recreational Boat² that They Went Out on During 2018 by Census Region, Sex, Age, Race, and Ethnicity

Census Region/ Demographic	Percent		Number (000) ^{3,4}		
	Piloted/ Operated a Boat	Did Not Pilot/ Operate a Boat	Piloted/ Operated a Boat	Did Not Pilot/ Operate a Boat	All Boaters
Census Region					
Northeast	58.0	42.0	9,284	6,725	16,009
Midwest	60.3	39.7	13,072	8,590	21,662
South	52.8	47.2	16,269	14,539	30,808
West	50.4	49.6	8,093	7,972	16,065
Demographic					
Sex					
Male	63.2	36.8	28,583	16,674	45,257
Female	46.2	53.8	18,135	21,152	39,287
Age					
17 and under	33.6	66.4	6,478	12,831	19,309
18–44	61.3	38.7	19,642	12,392	32,034
45–64	64.3	35.7	15,008	8,348	23,356
65 and over	56.8	43.2	5,590	4,255	9,845
Race					
White	59.1	40.9	39,132	27,125	66,257
Black/African American	40.3	59.7	2,613	3,878	6,491
Other	42.2	57.8	4,973	6,823	11,796
Ethnicity					
Hispanic or Latino	36.2	63.8	4,581	8,072	12,653
Non-Hispanic or Non-Latino	58.6	41.4	42,137	29,753	71,891
Total U.S.	55.3	44.7	46,718	37,826	84,544

1. Respondents were asked whether different members of their households operated (piloted, rowed, paddled, etc.) any of the recreational boats they went out in/on. Operated means that the person steered, maneuvered, paddled, or rowed a boat while it was out on the water.
2. Recreational boats include: open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, personal watercraft (e.g., WaveRunners, Sea-Doos), sailboats (powered only by sails or auxiliary sailboats, i.e., sailboats with a motor), canoes (including inflatable canoes), kayaks (including inflatable kayaks), paddleboards, rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. All Ns are in units of 1,000.
4. Adjustment to N for item nonresponse can result in minor discrepancies within and across tables.

A higher percentage (59.1%) of White boaters operated boats that they went out on in 2018. This figure represents 83.8% of all persons who operated boats and is likely because more go out on boats owned by their households. It is estimated that just 16.2% (7.59 million) of boat operators are non-Whites.

Over a third of Hispanic or Latino boaters operated boats that they went out on during 2018. Again, this is due in part to the lower percentage that own the boats they were aboard.

3.7.1 Boating Days by Persons who Operated Boats

It was also hypothesized that persons who operate boats do more days of boating than non-operators. **Table 3-12** reports the number of days that persons that did and did not pilot/operate any of the boats that they went aboard on during 2018. As was expected, persons who operated boats had significantly more days of boating (20.9 days) on average than those who did not operate any boats (13.0 days). To some extent, this is because operators are more likely to own boats they go out on, and owners do more days of boating than non-owners. Also, boat owners and operators are likely to have a longer history of boating.

Boat operators in the Midwest Region did significantly more days of boating (25 days) on average than operators in the other regions. Half did 16 or more days of boating. This number is in contrast with boat operators in the West Regions who averaged about 14 days of boating; half of them boated no more than 8 days.

Table 3-12. Mean and Median Number of Boating Days in 2018 by Persons Who Went Boating and Did and Did Not Operate Boats by Census Region^{1,2}

Census Region	Piloted/Operated Boat		Did Not Pilot/Operate Boat		All Boaters	
	Mean	Median	Mean	Median	Mean	Median
Northeast	19.7	12.0	11.5	8.0	16.2	8.0
Midwest	25.0	16.0	16.1	8.0	21.0	12.0
South	21.9	12.0	12.5	8.0	17.9	11.3
West	14.4	8.0	11.5	8.0	13.2	8.0
Total U.S.	20.9	12.0	13.0	8.0	17.5	8.0

1. This table only includes persons who boated at least one day in 2018.

2. A person was operating a boat when he/she piloted, rowed, paddled, or otherwise controlled the boat he/she went out in/on.

3.8 Boating Safety Education

There has been a concerted effort on the part of the USCG and the safe boating partners to encourage persons who go out in/on recreational boats, especially those who operate boats, to complete boating safety education. Approximately 63 million of the 84.5 million persons who went boating in 2018 have never received boating safety education (**Table 3-13**). About a quarter of the persons that went out on the water in/on recreational boats in 2018 had taken a boater safety class. Approximately 5.8% of all boaters had taken the boating safety course within the previous 2 years, or, 22.7% of boaters who had ever taken a boating course.

Interestingly, a lower percentage (20.7%) of boaters in the Midwest and West (21%) Census Regions have taken boating safety education compared with about 30% of Southern Region boaters (**Table 3-13**). About 42.7% (9.20 million) of all 2018 boaters that have completed boating safety education resided in the Southern Region.

Table 3-13. Percentage and Number of Persons Who Went Boating in 2018 that Had Taken a Boating Safety Course¹ by Census Region

Census Region	Percent			Number (000) ^{2,3}			
	Took Boating Safety Course in Last 2 Years	Took Boating Safety Course More than 2 Years Ago	Did Not Take a Boating Safety Course	Took Boating Safety Course in Last 2 Years	Took Boating Safety Course More than 2 Years Ago	Did Not Take a Boating Safety Course	All Boaters
Northeast	5.9	22.1	72.0	945	3,533	11,531	16,009
Midwest	2.7	18.0	79.4	576	3,892	17,194	21,662
South	8.7	21.2	70.1	2,669	6,529	21,610	30,808
West	4.4	16.6	79.0	706	2,671	12,688	16,065
Total U.S.	5.8	19.7	74.5	4,896	16,625	63,023	84,544

1. Respondents were asked whether they and other members of their household had ever taken a boating safety course. There are many types of boating safety instructions offered by various organizations covering different topics delivered in classrooms, online and on-water.
2. All Ns are in units of 1,000.
3. Adjustment to N for item nonresponse can result in minor discrepancies within and across tables.

A higher percentage of male boaters (30.8%) have taken boating safety courses than female boaters (19.2%), most likely because a higher percentage of males operated boats (*Table 3-14*). As would be expected, within an age group, a greater percentage of older boaters, given that they have been boating more years on average, have taken a boating safety courses than younger boaters—more than a third (36.4%) of boaters aged 65 or older and almost a third (32.8%) of boaters aged 45–64. However, of all boaters that have taken any boating safety course, about 42% were aged 18–44. There is not a significant difference between the percentage of Black/African American and White boaters that have taken boating safety classes. However, a significantly higher percentage of Black/African American boaters (10.8%) have more recently completed a safety course. Hispanic or Latino boaters were less likely (15.1%) to have taken boating safety education compared with non-Hispanic or non-Latino boaters (27.3%). Household income does not appear to be a significant factor in influencing the propensity to take boating safety classes.

Table 3-14. Percentage and Number of Persons Who Went Boating in 2018 that Had Taken a Boating Safety Course¹ by Sex, Age, Household Composition, Race, Ethnicity, and Household Income

Demographic	Percent			Number (000) ^{2,3}			
	Took Boating Safety Course in Last 2 Years	Took Boating Safety Course More than 2 Years Ago	Did Not Take a Boating Safety Course	Took Boating Safety Course in Last 2 Years	Took Boating Safety Course More than 2 Years Ago	Did Not Take a Boating Safety Course	All Boaters
Sex							
Male	6.7	24.1	69.1	3,042	10,920	31,294	45,257
Female	4.7	14.5	80.8	1,854	5,705	31,729	39,287
Age							
17 and under	3.8	2.4	93.8	735	468	18,106	19,309
18–44	6.6	21.7	71.7	2,124	6,944	22,966	32,034
45–64	6.6	26.2	67.2	1,542	6,118	15,696	23,356
65 and over	5.0	31.4	63.5	495	3,095	6,255	9,845
Household composition							
Single adult, no children	5.7	28.7	65.6	771	3,864	8,838	13,472
Single adult, one or more children	8.9	10.4	80.7	839	976	7,593	9,408
Two or more adults, no children	5.4	24.9	69.7	1,263	5,809	16,296	23,368
Two or more adults, one or more children	5.3	15.6	79.1	2,023	5,976	30,297	38,296
Race							
White	5.5	21.1	73.3	3,650	14,010	48,597	66,257
Black/African American	10.8	15.3	73.9	702	995	4,794	6,491
Other	4.6	13.7	81.7	543	1,620	9,633	11,796
Ethnicity							
Hispanic or Latino	6.7	8.4	84.8	952	1,065	10,736	12,653
Non-Hispanic or Non-Latino	5.6	21.6	72.7	4,044	15,560	52,287	71,891
Household income							
Less than \$25,000	8.8	19.8	71.3	989	2,227	8,008	11,224
\$25,000 to \$49,999	6.7	16.3	77.0	1,119	2,715	12,863	16,697
\$50,000 to \$74,999	2.9	18.1	78.9	478	2,947	12,833	16,258
\$75,000 to \$149,999	5.1	21.3	73.6	1,415	5,946	20,557	27,918
\$150,000 and over	7.2	22.4	70.4	895	2,790	8,762	12,447
Total U.S.	5.8	19.6	74.6	4,896	16,625	63,023	84,544

1. Respondents were asked whether they and other members of their household had ever taken a boating safety course. There are many types of boating safety instructions offered by various organizations covering different topics delivered in classrooms, online and on-water.
2. All Ns are in units of 1,000.
3. Adjustment to N for item nonresponse can result in minor discrepancies within and across tables.

Table 3-15 reveals that, on average, persons who have taken a boating safety course did more days of boating in 2018 than those that did not have boating safety education. On average, boaters who took boating courses during the previous 2 years did 22.5 days of boating and boaters that took classes more than 2 years ago did 21.9 days. This is significantly more days than boaters without any exposure to boating safety education (15.9 days).

Table 3-15. Mean and Median Number of Boating Days in 2018 by Persons that Had Taken a Boating Safety Course¹ by Census Region

Census Region	Took Boating Safety Course in Last 2 Years		Took Boating Safety Course More than 2 Years Ago		Did Not Take a Boating Safety Course		All Boaters	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Northeast	24.0	24.0	21.6	12.0	13.0	8.0	16.2	8.0
Midwest	40.0	38.1	29.1	20.0	18.9	12.0	21.0	12.0
South	18.4	12.0	20.0	12.0	17.1	8.0	17.9	11.3
West	21.5	16.0	15.7	8.0	12.1	8.0	13.2	8.0
Total U.S.	22.5	16.0	21.9	12.0	15.9	8.0	17.5	8.0

1. Respondents were asked whether they and other members of their household had ever taken a boating safety course. Many types of boating safety instructions are offered by various organizations covering different topics delivered in classrooms, online and on-water.

As reported above, an estimated 46.7 million boaters operated at least one boat of some type that they went out on during 2018. USCG statistics state that, “of the accidents where the level of operator education was known, 81% of boating deaths occurred on boats where the boat operator had never received boating education instruction.” According to Rob Rowe, leader of FWC’s Boating and Waterways Section, “Education is the key. If boat operators have taken a boating safety education course, it’s much more likely they and their passengers will have a safe and enjoyable experience on the water.”

Laws and regulations requiring that operators obtain a boat license or certification differ significantly across states. Only one state (Alabama) requires an actual boat license. A number of states require no boating safety courses for boat operators. Other states, like New Jersey, require all boat and PWC operators to pass a boater safety course and to carry a boater education card. A number of states compel persons under a certain age to pass a state-approved boating safety class. In Michigan, any motorized boat operator born after June 30, 1996 is required by law to pass a boater safety course and to carry a boater education card. Boater safety education is also required for all PWC operators born after December 31, 1978. Rhode Island law requires anyone born on or after January 1, 1986, operating a motorized vessel over 10hp, to pass a boater safety course and to carry a boater education card.

Table 3-16 shows that a relatively low percentage of persons that operated various types of boats in 2018 had completed some type of boating safety course. About two-thirds (65.6%) of the persons that operated a boat in 2018 had not taken a boating safety course. In other words, about 30.6 million persons who operated a recreational boat in 2018 had not completed a boating safety course of any type. Only 9% of boat operators had taken a boating safety course during the last 2 years. Another quarter had taken a boating course, but not within the last 2 years.

Table 3-16. Percentage and Number of Persons Who Operated a Recreational Boat in 2018 that Had Taken a Boating Safety Course¹ by Census Region²

Census Region	Percent			Number (000) ^{3,4}			
	Took Boating Safety Course in Last 2 Years	Took Boating Safety Course More Than 2 Years Ago	Did Not Take a Boating Safety Course	Took Boating Safety Course in Last 2 Years	Took Boating Safety Course More Than 2 Years Ago	Did Not Take a Boating Safety Course	All Boat Operators
Northeast	9.0	26.7	64.3	833	2,461	5,931	9,225
Midwest	4.0	23.8	72.2	517	3,095	9,381	12,993
South	14.6	27.2	58.2	2,354	4,396	9,403	16,153
West	6.7	22.1	71.2	560	1,846	5,941	8,347
Total U.S.	9.0	25.2	65.6	4,264	11,798	30,656	46,718

1. Respondents were asked whether they and other members of their household had ever taken a boating safety course. Many types of boating safety instructions are offered by various organizations covering different topics delivered in classrooms, online and on-water.
2. A person was operating a boat when he/she piloted, rowed, paddled, or otherwise controlled the boat he/she went out in/on.
3. All Ns are in units of 1,000.
4. Adjustment to N for item nonresponse can result in minor discrepancies within and across tables.

SECTION 4. SUMMARY AND CONCLUSIONS

The purpose of the NRBSS Participation Survey was to estimate the number of, and bring to light the characteristics of, 2018 recreational boaters as defined by the USCG as persons that go out on the water in a recreational boat at least one time during 2018. To achieve a representative response, a total of 43,590 household addresses were sampled from address-based sampling (ABS) frame and distributed to the states and Washington, DC in proportion to the total number of households. Surveys were distributed at the end of each quarter to a quarterly sample replicate, and information was collected concerning participation in recreational boating during the prior quarter. A target of 5,000 completed surveys was established to provide enough precision for national annual estimates of recreational boating participation. A total of 5,851 households returned completed surveys, which is a 14.9% overall response rate.

The NRBSS Participation Survey results show that boating remains a very popular outdoor recreational activity. Although the number of boaters seems to have increased since 2012, the national participation rate is not as great as some sources and reports have suggested. The USCG's 2011/12 National Recreational Boating Safety Survey (USCG, 2012), although it employed somewhat different methods (e.g., sample, survey instrument) than the NRBSS, provides a source for comparison. It estimated that in 2012, 23.5% (74.53 million) of the U.S. population boated. The NRBSS estimates that 26.5% (84.54 million) of the population boated in 2018. Between 2010 and 2018, the U.S. population increased 3.3% and median household income, 13.8%. Also, the NRBSS Exposure Survey (Duffy et al., 2020) estimates that there are now 23.78 million boats owned by households in the U.S. compared with 22.22 million boats estimated by the 2011 National Recreational Boating Survey.


The results support focused efforts to recruit boaters that reflect changing composition of the U.S. population. The findings indicate that boaters in 2018 were more racially and ethnically diverse than previously assumed, but they are still not representative of the racial or ethnic distribution of the country. The U.S. Census reported that 76.6% of the U.S. population was White, and 13.4% were Black persons. An estimated 7.7% of 2018 boaters were Black/African American persons and, overall, 21.6% were non-Whites. The U.S. Census also estimated that 18.3% of the 2018 population were Hispanics or Latino defined as persons of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race. Based on the survey results, it is estimated that 15% of 2018 boaters were Hispanic or Latino. The data also suggest that there is potential to recruit more Hispanic or Latino boaters.

When it comes to consideration of funding for boating facilities, including launch sites granting permits for marinas, and dredging recreational boating waterways, those who are in opposition often argue that recreational boaters are wealthy and should pay more or all the cost for these facilities. The data do not support this argument. Many persons that boated in 2018 had household income below the national median. The U.S. Census estimated that the median household income in 2018 was \$61,937. Thirty-three percent of boaters in 2018 had household incomes of less than \$50,000 and over half (52.3%) had less than \$75,000 in household income.

The findings of the NRBSS Participation Survey and the Exposure Survey support industry and anecdotal information suggesting that the shared economy is affecting how persons


access the use of boats. The shared economy involves individuals renting or borrowing goods rather than buying and owning them. It enables temporary access to goods or services, often involving an online purchase process (e.g., search, reservation, payment). Sharing has long been common as alternative lodging to hotels (e.g., Airbnb, VRBO) and now it is also a way of securing access to boats without the responsibility or costs to purchase them or pay the costs of storing and maintaining them. Although a large percentage (42.9%) of persons that boated in 2018 went out on boats owned by their households, the data point toward increased use of rentals, shared ownership boats, and bareboat charters. This trend has significant implications for targeting efforts and designing regulations aimed at encouraging that boat operators receive boating safety education.

The findings strongly support continuing efforts on the part of the RBS community, including industry partners, aimed at encouraging boaters, and especially those who operate boats, to be educated about boating safety rules and practices. They also underpin appeals for more states to require boat operators either to be licensed or to receive boating safety certificates. Just over half (55.3%) of the 84.54 million persons that went out in recreational boats nationwide operated at least one of the boats they were aboard one or more times. However, only about a third (34.2%) of the estimated 46.72 million boat operators reported ever having taken a safety course. Just 9% had taken a course within the last 2 years. It is important to note that it is not known who offered the courses that were taken, how many boat operators actually completed the courses, whether the courses required skills/knowledge examinations, and if so, whether or not the operators passed the examination.

This report provides an overview of the NRBSS Participation Survey results. The survey produced very comprehensive data concerning recreational boaters, and the USCG plans to produce a number of special topic reports and make them available on www.uscgboating.org .

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**APPENDIX B:
ALLOCATION OF TARGETED COMPLETES, BY STATE AND QUARTER**

Table B-1. Allocation of Targeted Completes, by State and Quarter

State	Q1	Q2	Q3	Q4	Total
Alabama	19	20	19	20	78
Alaska	4	9	9	3	25
Arizona	25	25	25	25	100
Arkansas	12	12	12	12	48
California	132	133	132	132	529
Colorado	10	32	31	11	84
Connecticut	8	21	21	7	57
Delaware	3	10	9	3	25
District of Columbia	3	9	10	3	25
Florida	75	76	75	76	302
Georgia	37	38	37	37	149
Hawaii	6	6	7	6	25
Idaho	3	9	9	3	24
Illinois	25	76	75	26	202
Indiana	14	39	39	13	105
Iowa	7	19	20	6	52
Kansas	6	18	18	5	47
Kentucky	9	27	27	9	72
Louisiana	18	18	18	18	72
Maine	4	9	9	3	25
Maryland	11	34	34	12	91
Massachusetts	13	41	40	13	107
Michigan	20	60	61	20	161
Minnesota	11	33	33	12	89
Mississippi	12	12	11	11	46
Missouri	12	38	38	12	100
Montana	3	9	10	3	25
Nebraska	3	12	12	4	31
Nevada	10	11	10	11	42
New Hampshire	3	10	9	3	25
New Jersey	16	51	51	17	135
New Mexico	8	8	8	8	32
New York	38	114	113	39	304
North Carolina	39	39	39	40	157
North Dakota	4	9	9	3	25
Ohio	24	72	72	24	192
Oklahoma	15	16	15	15	61
Oregon	8	24	24	8	64

(continued)

Table B-1. Allocation of Targeted Completes, by State and Quarter (continued)

State	Q1	Q2	Q3	Q4	Total
Pennsylvania	26	78	79	26	209
Rhode Island	3	9	9	4	25
South Carolina	19	19	19	18	75
South Dakota	3	9	9	4	25
Tennessee	26	26	26	26	104
Texas	94	94	94	93	375
Utah	4	14	14	5	37
Vermont	4	9	9	3	25
Virginia	32	32	32	32	128
Washington	14	42	42	13	111
West Virginia	3	12	12	4	31
Wisconsin	13	36	36	12	97
Wyoming	3	10	9	3	25
Total	914	1,589	1,581	916	5,000