National Recreational Boating Safety Survey

Exposure Survey Final Report

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RTI INTERNATIONAL

NATIONAL RECREATIONAL BOATING SAFETY SURVEY
EXPOSURE SURVEY FINAL REPORT

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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 Office of Auxiliary and Boating Safety

Since the creation of the National Recreational Boating Safety (RBS) Program in 1971, 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.

Achieving this will not be easy, given that resources are limited, the socioeconomic characteristics of boaters are changing, boating preferences appear to be changing, and new recreational boat products are continuously being introduced. Communication technologies and how persons want to access information and receive educational and outreach services create further challenges. The RBS Program has identified gaps in available recreational boating data and analyses, and there is a need to improve upon critical, existing collections in order to capture additional, consistent, accurate, and relevant information about operator 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. This report focuses on boat ownership and use, different estimates of exposure (e.g., person hours of boating), and risk ratios. The other report (Duffy et al., 2020b) 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 make use of the NRBSS data and estimates to support it and its partners 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 making a data query system, and the findings 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

List of Tables

SECTION 1.
INTRODUCTION

The 2018 National Recreational Boating Safety Survey (NRBSS) was conducted in support of the mission of the Recreation Boating Safety (RBS) Program, which is administered by the U.S. Coast Guard (USCG). The RBS Program's 2017–2021 Strategic Plan recommends (1) conducting the NRBSS at regular intervals to gather reliable data on recreational boating exposure and (2) collecting and monitoring data on the size and characteristics (e.g., demographics) of the exposed population.

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 decrease 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 Act giving the USCG authority to carry out the RBS Program was designed to *"improve boating safety and to foster greater development, use, and enjoyment of all the waters of the United States by encouraging and assisting participation by the several States, the boating industry, and the boating public in development of more comprehensive boating safety programs."* 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, law 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.

Recreational boating continues as a very popular outdoor recreational activity that produces significant economic impacts (e.g., employment, incomes), and it has become significantly safer over the last 50 years. The 2012 USCG NRBSS estimated that about 73.4 million persons went out in recreational boats in 2012. This includes 57.9 million adults and 15.6 million children (USCG, 2012). About 27.3%, or 32.3 million, of the estimated 118.1 million U.S. households had at least one member who boated in 2012. It was further estimated that in 2012, 22,217,000 registered and unregistered recreational boats were owned in the United States. About 55% of these boats were registered.[1] Approximately two thirds (66%) of these boats were operated on the water at least once that year. On average, boats were out on the water an average of about 11.3 days and 4.5 hours per day. It was estimated that 3.6 billion person hours were spent on board recreational boats taken out on the water.

There were 11.9 million registered boats in the United States in 2018 (USCG, 2018). The number of registered boats has declined approximately 4% over the last 10 years. Outboard motorboats remain the most popular type of recreational boats. However, even though the overall

[1] Recreational boats are generally categorized as "registered" (requiring a registration from state authorities), or "unregistered" (not requiring any registration).

number of registered boats declined as boats were retired or laid up, the National Marine Manufacturers Association estimates that "new" powerboat sales rose for the seventh consecutive year in 2018, up 4.4% to an 11-year high of 281,800 units. Associated retail value reached $11.8 billion in 2018, up 11.1% compared with 2017. Recreational marine expenditures totaled $41.8 billion in 2018, up 6.8% from 2017 (National Marine Manufacturers Association [NMMA] 2019).

The annual rate of boating fatalities in the United States has been declining at a rate of about 2% per year since 1970 when recreational boating deaths in the United States peaked at about 1,700 per year. This trend follows the enactment and enforcement of laws, regulations, standards, boater education, manufacturer safety regulations, and strengthened boating under the influence laws. In 2018, the USCG counted 4,145 accidents that involved 633 deaths, 2,511 injuries, and approximately $46 million of damage to property as a result of recreational boating accidents (USCG, 2018). Compared with 2017, the number of accidents decreased 3.4%, the number of deaths decreased 3.8%, and the number of injuries decreased 4.5%. The performance goal of the 2017–2022 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, which would be a 3.5% reduction compared with 2018.

The numbers and socioeconomic characteristics of recreational boaters continue to change as does the types of recreational boats being operated (e.g., canoes, kayaks, paddleboards). How much and where they are used, boat manufacturing and safety technologies, the activities that boaters participate in while out on the water, as well as modes of communication for informing and educating boaters all require new boating safety programs. Despite historic reductions in recreational boating fatality rates over the past 45 years, the USCG has identified countless different safety-related strategies (e.g., regulatory, education) that can be employed to further reduce boating accidents and fatalities. The USCG and its partners have limited resources to fund them. In 2018, $117.9M was the full budget available to the USCG-BSX compared with $128 million in 2009. This is a 19% decrease in purchasing power after adjusting for inflation using the Consumer Price Index data provided by the U.S. Bureau of Labor Statistics. In response, the USCG is vigorously pursuing different means to increase the efficiency and effectiveness of the resources it has available to reduce boating-related deaths and injuries from accidents while at the same time improving the quality of boating experiences.

1.1 Evidence-Based Program Management

The resources available to the RBS Program and its partners are limited and the 2017–2021 Strategic Plan emphasizes cost-effective allocation of resources. One of the RBS Program's Strategic Plan's performance initiatives is to improve on and expand recreational boating data collection by conducting the NRBSS (USCG, 2016). The Plan recommends different information enhancement strategies, including (1) improving the quality, consistency, relevance, accuracy, and timeliness of accident reports; (2) collecting reliable data (on the NRBSS) to estimate the size and characteristics of the exposed recreational boating population; and developing valid and accurate exposure estimates to be used with accident statistics to produce risk. The RBS Program recognizes that this will require a concerted effort to keep costs down and produce data that are viewed as valid, reliable, meaningful, and conveniently accessible to its partners and stakeholders.

The Strategic Plan also calls for developing an evidence-based model that can be implemented to increase the effectiveness of various regulations and programs expected to reduce boating accidents.[5] Evidence-based practices (EBPs) were first applied by health care professionals but is now used to evaluate alternative policies and programs and assess outcomes in many areas including transportation, education, and criminal justice. The RBS Program has determined that to achieve better outcomes its policy and programmatic decisions must be better informed by systematic evidence. It also intends to comply with the *Evidence-Based Policymaking Act of 2018,* which became Public Law 115-435 (U.S. Congress, 2018). It requires the head of each agency to develop a systematic plan within its strategic plan to identify and address policy questions relevant to its programs, policies, and regulations. The systematic plan must include a list of policy-relevant questions for which the agency intends to develop evidence to support policymaking; a list of data the agency intends to collect, use, or acquire to facilitate the use of such evidence in policymaking; and a list of methods and analytical approaches that the agency may use to develop evidence to support policymaking.

Important evidence in designing policies, regulations, and programs (e.g., education, outreach) aimed at reducing recreational boating accidents is determining whether the value of the associated risk reductions and related benefits exceeds the value of the resources that are employed/allocated. The RBS Program is 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 the FBSA and partners; and 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 their strategic initiatives; and (3) help convince existing and potential partners to support and join in various boating safety efforts.

1.2 Recreational Boating Exposure and Risk Ratios

Exposure rates and risk ratios will be critical information incorporated in the RBS Program's evidence-based model. The USCG provides funds to states and other organizations to enforce recreational boating regulations and to train recreational boaters in boating safety. The purpose of the funding programs is to reduce boating accident fatalities. One method for evaluating the effectiveness of the overall RBS Program and how states and other organizations implement programs is to estimate change in the risk of accidents and especially accidents involving fatalities and injuries. Information about the size and characteristics of the exposed population, exposure rates, and risk ratios can help identify boat types, boating activities, and participants at highest risk; guide policy and regulations; and assist in better targeting knowledge and skills education.

People are exposed to risk of unwanted events (e.g., boating accident) when they engage in any activity that might possibly result in an accident. Risky activities include driving or riding in a vehicle (auto, bus, off-road vehicle truck, or motorcycle) or other conveyance (recreational or commercial boats, trains, airplanes) or engaging in outdoor recreational activities (e.g., hunting. climbing, skiing). The USCG enacts regulations and offers education intended to reduce the number of accidents and, by doing so, reduces accidents (e.g., fatalities, injuries, and property damage), in effect reducing risk to persons out on the water in recreational boats. Risk reduction is one measure of the efficacy of these regulations and programs, and it can also be

used to assess the overall RBS Program's performance trends. Risk ratios will be used together with assessments of resulting benefits (e.g., statistical value of life and injuries) and associated costs to better inform the RBS Program on where to invest its limited resources.

Federal regulations require operators and owners of boats used for recreational purposes to file a boating accident report when a person dies or disappears from the vessel under circumstances that indicate death or injury or when a person is injured and requires medical treatment beyond first aid (CFR 33, CFR Part 173). During the last 54 years, the USCG has used annual boating deaths and injuries as a measure of recreational boating safety effectiveness. The numbers of deaths and casualties are also used as the numerator in a ratio with the number of registered boats as the denominator (e.g., 4 [deaths] per 93,000 [registered boats]). The concern relating to this statistic is that boating accidents reported to and by the USCG involve both registered and unregistered boats (e.g., canoes, kayaks). Also, the number of registered boats does not indicate time exposed to risk of accidents. Some boats are not put in the water in a given year, and the average number of hours boats operated vary by type of boat and states where they are stored (i.e., length of boating season).

The RBS Program and National Boating Safety Advisory Council accept that numbers of deaths and injuries alone are not a valid measure for assessing the effectiveness of boating safety programs because numbers of boating fatalities and accidents are affected by many factors, including the number of boats that are used on the water during a given year, the number of hours that they are operated, and even the number of persons who are aboard when boats are out on the water. Therefore, they are committed to developing and applying recreational boating risk ratios that are calculated using two different forms of data: (1) incidents such as the number of boating accidents involving fatalities or injuries are employed as the denominator and (2) time spent boating, often referred to as exposure time, serves as the numerator. The NRBSS collects these data.

Recreational boating exposure rates can be calculated and presented in the following ways: (1) boat day—any day that a boat is used out on the water regardless of the amount of time that day it is used; (2) boat hours—the number of hours a boat is used out on the water during a given period of time (e.g., a day, month, year); (3) person boat day—an estimate of the number of persons on a boat on the day that it is used out on the water; and (4) person boat hours—the total number of hours persons are aboard a boat in use out on the water. The "person boat hours" definition is most commonly used to mean "exposure" or "recreational boating exposure hours." These boating exposure estimates are similar in some ways to the Department of Transportation's Federal Highway Administration's estimate of vehicle miles traveled (VMT). VMT is the total number of miles driven by all vehicles within a given time period and geographic area, and it is used to set various policy and program objectives and as a measure of performance.

Recreational boating risk ratios are fractions with exposure rates (boat days/hours or person boat person days/hours) as the denominators and either the number of recreational boating accidents or fatalities as the numerators. The risk of boating-related casualties and deaths is a function of different factors, including the number of days and hours boats are operated and the number of persons aboard boats. If over a certain period of time the number of boating deaths or casualties decreases 5% (e.g., in a particular state) and during that same period the number of

boating exposure hours stays relatively stable (e.g., similar number of boats owned, boats used, and boating days), then the risk of deaths and casualties would be reduced. In this situation, it may be valid to attribute the decrease in deaths and casualties to greater effectiveness of boating safety efforts. Ratios are calculated to estimate the risk of accidents involving a fatality by employing the number of accidents as the denominator and the number of boat days or boat hours as the numerator. The risk of a boating fatality is calculated using person days or person hours as the numerator and the number of fatalities as the denominator. Risk ratios provide a more valid and consistent measure that can be used to compare rates of boating accidents and fatalities across states and different types of boats. For example, based on 2011 exposure-hour estimates, boating deaths in states per 100 million exposure hours ranged from 3 to 130. Two states had 12 reported boating deaths in 2011, but the risk of boating-related deaths was very dissimilar. For one state, the rate was 121 deaths per 100 million exposure hours, and for the other, it was 82 deaths per 100 million exposure hours (USCG, 2012).

1.3 NRBSS Survey

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 USCG employed a rigorous submission process. Initially, a Notice of Funding Opportunity (NOFO) titled Boating Safety Data Collection and Analysis invited potential applicants to submit a white paper that described methods of designing and implementing a modern approach (e.g., data collection methods and technologies, sampling design, analytic statistics) that can be consistently employed into the future to conduct the NRBSS. The white papers were reviewed by a panel of survey experts and USCG staff to assess their overall merit and their qualifications to conduct the NRBSS and fulfill the USCG requirements. Two of the white papers that were submitted were considered to be cost-effective and the methods described would collect the data and produce the analytics required by the USCG. Based on these evaluations, two organizations were invited (in another NOFO) to submit a formal NRBSS grant proposal. The grant proposals were built on the concepts and methods presented in the white papers as well as reviewed comments and suggestions. Both organizations submitted proposals that were then reviewed by the same panel of survey experts and USCG staff. The ratings of the proposals were based on estimated costs; the reliability of the survey estimates (especially the recreational boating exposure estimates); the ability to identify and analyze recreational boating safety-related trends; and, of course, the ability to produce and make available results in a timely fashion. Based on the reviews of these proposals, RTI was selected to receive a grant to conduct the NRBSS. They were then required to modify their proposed methods in response to any comments and concerns of the review panel.

The NRBSS comprises two different surveys: a Participation Survey and an Exposure Survey. The primary purpose of the NRBSS Participation Survey, conducted quarterly in 2018, was to quantify and describe persons who went out on the water in recreational boats during 2018.

The USCG expects to use information about the exposed recreational boating population. The description of boaters included among other things:

- the number and percentage of persons in the general population who go recreational boating defined as the "exposed population"; boating participants include boat owners, borrowers and renters, and guests aboard boats out on the water;

- socioeconomic profile of persons who go boating (e.g., age, race, marital/family status, income);

- the average and total annual number of days that persons of various socioeconomic segments (e.g., age) go recreational boating;

- activities (e.g., fishing, skiing) engaged in while on different types of boats;

- the number and characteristics (e.g., age, sex, experience, boating safety training) of persons who regularly operate boats of different types, meaning persons who are in charge or in control (e.g., steering, navigation, and propulsion) of a boat when the boat is out on the water; and

- the characteristics of persons who wear and do not wear life vests while out on boats.

The NRBSS Exposure Survey collected data on a monthly basis during 2018. The principle intent of this survey is to collect valid data necessary to produce different measures of recreational boating exposure hours reliably. Estimating exposure rates requires different data including (1) the number of different types of boats, both registered and unregistered, owned in different states and the District of Columbia; (2) the number of these boats that were 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 who were aboard when these boats were operated out on the water.

In addition to data needed to estimate exposure rates, the Exposure Survey also collected data to produce reliable estimates of

(1) the number and percentage of boat-owning households by boat types (i.e., the average number of boats owned per household);

(2) the number and percentage of boats by type and size used on specific water bodies; the USCG decided on the list of the water bodies;

(3) the number and percentage of boats by type and size used in states other than the state where they are registered or primarily kept/stored (e.g., unregistered boats), how much use (days and hours) in these other states, and the number of persons aboard when used in other states;

(4) the percentage and number of households that own only registered boats, only nonregistered and nondocumented boats, and both registered and nonregistered boats;

(5) the percentage, number, and characteristics of households owning various combinations of different types of boats (i.e., canoes, kayaks, sailboats, inboards,

sterndrives [I/O], outboards, personal watercraft [PWC], rowboats, rafts, and others);

(6) safety equipment aboard boats of different types in use out on the water;

(7) locations where different types of boats are stored/kept (i.e., in water at a marina, on a trailer at a permanent home) during the boating season; and

(8) the number and percentage of boats by type and size that are trailered or transported for the purposes of launching them.

1.4 NRBSS Reports and Data

The RBS Program is committed to making the findings and data conveniently accessible to the public. This report focuses on the results from the Exposure Survey. A different report *National Recreational Boating Safety Survey: Participation Survey Final Report* provides the findings from the Participation Survey. A separate Methodology Report comprehensively describes the survey methods and an evaluation of the survey's performance (i.e., response rates, completion rate, percentage of questions answered) consistent with Office of Management and Budget requirements. This report includes an evaluation of the quality of the data to guide future improvement efforts. The Participation and Exposure Survey reports are available at www.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. The DAQS is available at https://boatingsurvey.org/.

SECTION 2.
NRBSS EXPOSURE SURVEY METHODS

The NRBSS Exposure Survey methods are comprehensibly described in the NRBSS Methodology Report (Duffy et al., 2020a). The purpose of the Exposure Survey was to estimate recreational boating exposure by collecting information about the number and types of boats owned in all states and the District of Columbia, the amount of times these boats were taken out on the water, and the number and types of persons aboard. To accomplish this, response data were collected from registered boat-owning households (who may also own unregistered boats) and households that owned only unregistered boats.

The Exposure Survey was devised as a monthly survey because of the detailed data it asks respondents to recall for each of up to six boats owned by a household. The survey collected information about boat usage during 1-month reference periods throughout the 2018 calendar year, and sample households were selected for inclusion in a random month. A 1-month recall period lessened respondent burden and ensured better quality data, especially for households with multiple boats, which is common among boating households. Invitations were sent at the end of each reference month so that sample members would receive them at the beginning of the next month. For example, we sent invitations for the April cohort at the end of April and asked respondents to recall and report on boat ownership and activities for the month of April.

2.1 Questionnaire Development

The Exposure Survey was designed for self-administration either via the web or paper. Both mail and web versions were available in English and Spanish. The paper version of the survey was developed initially so that instructions, question wording, and response options were finalized before the web survey was programmed.

The first set of questions in the Exposure Survey asked about the number of recreational boats owned by the household in the reference month. These questions were essential for calculating the estimates of the number of different types of recreational boats owned by households in the United States and the District of Columbia. The aim was to have respondents accurately characterize all of the different types of recreational boats they owned and avoid double-counting boats. USCG-approved definitions of each type of boat and examples of boat types were provided. The boat types included open power boat (e.g., bass boat, ski boat), cabin power boat, pontoon boat, air boat, houseboat, PWCs (e.g., WaveRunner, Sea-Doo), auxiliary sail boat (sail boat with motor), sail boat (powered only by sails), canoe (including inflatable canoes), kayak (including inflatable kayaks), paddleboard, row(ed) boat (e.g., jon boat, shells, sculls, inflatables), and other types (e.g., kiteboard, dragon boat), but not inflatable tubes. To enhance the statistical reliability of various estimates, we merged some boat types for various analyses. Auxiliary and “sail-only” sailboats were combined into one sailboat category and houseboats and airboats were joined into the “other” type category. Additional consolidation of types was done to produce different estimates (e.g., boats trailered or transported for launching).

Another key definition was related to ownership and/or co-ownership of boats. The survey was designed to capture information about boats owned by one person in the household, co-owned by members within the selected household, and co-owned with others outside of the household. Co-ownerships includes informal relationships, syndicates, and boat clubs.

A core construct of the Exposure Survey was a large table designed to collect information about each recreational boat owned by the household. The questions in the boat profile section captured information about the operational status of each boat, the boat type, boat length, ownership status and arrangement (i.e., single-person owned vs. co-owned), and boat storage information. The table format allowed multiple questions to be grouped on a page to capture information on up to six boats. The table was structured so that the rows included the questions, and the columns represented each boat owned by the household. The format significantly reduced the overall page length needed to collect the details for each owned boat and aided respondents in keeping track of the boat about which they were reporting.

Information was collected about whether and on how many days boats were operated during the reference month and about the last outing on the last day that boats were taken out on the water in the reference month. Exposure data about the last outing included how many hours was the boat out on the water; in which state did the boat spend most/all hours out on the water; how many people are on the boat and how many are age 12 years or under; and for what purposes was the boat used during that last outing.

Information was also collected about the demographics (sex, age, ethnicity, race, relationship, and employment status) for up to five household members. Gross family income was also gathered.

The paper survey instrument was developed using TeleForm, a forms processing system used to collect data from paper and electronic documents. Before the paper surveys were printed for mailing, the programming and data collection team reviewed electronic and hardcopy proofs of the survey and tested data capture with the optical scanning system.

When the questions and response options for the paper survey were finalized the web survey was developed. The web survey was developed using Voxco Online software. It included the same questions and response options as the paper survey but was enhanced for the web by applying best practices and taking advantage of programming to optimize layout of the screens (e.g., fewer questions per screen than per page, more white space) and automated routing for follow-up questions or questions meant to be skipped based on previous responses. Prompts were added 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). It was programmed such that it was optimized for multiple screen sizes (e.g., mobile devices, laptops) and included colors and layout known to be best practice for enhancing response.

2.2 Cognitive and Usability Testing

Both the paper and the web versions of the survey were tested for usability and cognitive burden. RTI's in-house Questionnaire Appraisal System (QAS) was the initial testing step for the Exposure Survey. The QAS is designed to identify potentially problematic items for respondents and to assess the cognitive demands of questions based on best survey practices and helps eliminate potential sources of response error. Based on results of the QAS assessment and feedback from the USCG, the survey was revised to clarify question wording. Next, a cognitive interview protocol was administered with a volunteer sample. The intent of cognitive interviewing was to ensure that respondents understood all instructions and questions on the

Exposure Survey and that they were formulating their responses as we expected. The findings of the cognitive interviews led to visual layout changes, clarifications of definitions and instructions, and deletion of some questions.

Comprehensive testing of the web survey was performed first for basic functionality and then for specific scenarios, such as "no boats owned" or "multiple boats owned" and for various boat types and household compositions. All identified issues were resolved, and the accuracy of full data exports was also tested.

2.3 Sample Design and Sampling Frames

The Exposure Survey sample was a probability-based, unbiased, stratified, address-based sample (where an address is a proxy for a household). A one-stage design was employed in which addresses were sampled and an informed adult in the household was asked to provide information about boats owned by the household. The sample was selected to yield 30,000 completed surveys to provide enough precision for estimates by state and by boat type.

The allocation of the target number of completes by state and month is presented in the survey Methodology Report. The sample was allocated to each state in proportion to the total number of registered boats in each state. Within each state, the target number of completes was allocated equally across months except for Northern states where the number of boats operated during cold weather months (October–March) and the amount that they are operated is generally less than in warm weather months. In those states, the target number of completes in the cold weather months was half of what it would have been under equal allocation. The target number of completes in the warm weather months was increased to keep the annual total intact.

The Exposure Survey targeted the boat-owning households in two ways. The first was to rely on a commercial source (InfoLink) for a list of all registered boats in the country, by state, and by boat type. Of the 30,000 completes, 25,000 were allocated to this frame. Household addresses, as well as the number, types, and sizes of registered boats owned, were provided for each sampled registered boat-owning household.

Although some registered boat owners also own unregistered boats, the registry frame does not include households that own only unregistered boats. To survey the households that own only unregistered boats, we compiled a sample of addresses (where an address is a proxy for a household) from the address-based sampling (ABS) frame. Each household had to be screened for boat ownership; to increase the screening efficiency, we identified covariates of boat ownership and used those to model a propensity score for each household. Available household characteristics were linked to the likelihood that the household was a boat-owning household. The ABS frame was stratified using the propensity score, creating 20 strata with varying score size. We sampled disproportionately with the highest rates applied to the strata with the highest scores (i.e., the strata likeliest to contain boat owner households). Because this process led to unequal selection probabilities, appropriate adjustments were made when calculating the weights. The combined registry/ABS sample was released in 12 waves, one per month during 2018. Each wave was a random subsample of the original national sample.

2.4 Data Collection

The Exposure Survey included 130,115 addresses from the ABS frame plus a list sample of over 83,544 registered boat owners ("registry frame"). The data collection protocol for both surveys included up to seven sequential mailings over a 10-week period inviting sample members to participate in the survey or reminding them to do so. All mailings included the survey URL and encouragement to complete the survey online. At least two mailings also included a copy of the paper survey. After the final mailing, respondents had approximately 3 additional weeks to respond to the survey invitation. In total, completed surveys were accepted for 90 days after the initial mailing.

In addition to a $1 cash pre-incentive included in the second outreach mailing for each survey, $5 and $10 e-incentives (i.e., Visa gift codes redeemable online) were offered to respondents who completed a survey. To encourage respondents to complete the web survey, we offered $10 for completing the survey online and $5 for completing the TeleForm survey. In all, 25,119 post-incentives were distributed to NRBSS respondents.

2.4.1 Sampled Addresses, Response Rates, and Number of Completions

In total, 213,659 addresses across the 50 United States and the District of Columbia were sampled and invited to participate in the Exposure Survey. ***Table 2-1*** details the number of addresses contacted by month and sample type.

Table 2-1. Addresses Sampled by Cohort and Sample Type

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Registry	4,115	4,109	5,106	7,750	9,837	6,730	7,352	8,593	8,621	7,711	8,407	5,213	83,544
ABS	6,321	6,321	7,841	11,897	11,918	12,386	12,282	15,973	15,604	9,940	13,096	6,536	130,115
Total	10,436	10,430	12,947	19,647	21,755	19,116	19,634	24,566	24,225	17,651	21,503	11,749	213,659

A total of 44,422 households returned Exposure Surveys. This is 21.9% of the sample excluding undeliverables and ineligibles, which were 5.2 % of the total sample of 213,659 households. A respondent is a returned survey with enough completed survey items to be kept for weighting and estimation, in this case, sufficient completed items to definitively determine whether the household owned at least one boat or not.

The registered sample and the ABS sample as anticipated had very different response rates. The registry sample had double the response rate (32.4% vs. 15.1%) and double the boat ownership rate (91.7% vs. 43.3%). ***Table 2-2*** presents response rates for the registry frame, for the enhanced ABS frame, and for the combined sample for both frames.

Table 2-2. Exposure Survey Sample Dispositions and Unweighted Response Rates

Category	Sample		Undeliverables		Ineligibles		Respondents		Boat-Owning	
	Total	Rate, %	Total	Rate, %	Total	Rate, %	Total	Rate[1], %	Total	Rate[2], %
Registry Frame	83,544	100	3,773	4.5	55	0.06	25,825	32.4	23,681	91.7
ABS Frame	130,115	100	7,288	5.6	50	0.04	18,597	15.1	8,052	43.3
Total	213,659	100	11,061	5.2	105	0.05	44,422	21.9	31,733	71.4

1. Response rate excludes undeliverables and ineligibles from the denominator.

2. Boat-owning rate presented as the proportion of completed surveys that come from boat-owning households.

A total of 31,733 Exposure Surveys were received from boat-owning households. The majority**,** 23,681, came from the registry frame consisting of registered boat owners. The remaining 8,052 came from the ABS frame. In addition, 12,689 surveys from non-boat-owning households were returned. ***Table 2-3*** displays the number of responses received by month and boat-ownership status.

Table 2-3. Completed Surveys by Cohort, Sample Frame, and Boat-Owner Status

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Overall Sample	2,514	2,509	2,999	4,792	5,293	4,430	4,469	4,533	4,387	3,068	3,494	1,934	44,422
Non-boat Owner	657	690	919	1,454	1,711	1,301	1,288	1,230	1,084	743	1,041	571	12,689
Boat Owner	1,857	1,819	2,080	3,338	3,582	3,129	3,181	3,303	3,303	2,325	2,453	1,363	31,733
Registry Frame	1,497	1,516	1,708	2,714	3,458	2,391	2,474	2,550	2,556	1,965	1,900	1,096	25,825
Non-boat Owner	98	123	182	311	524	101	125	111	113	129	191	136	2,144
Boat Owner	1,399	1,393	1,526	2,403	2,934	2,290	2,349	2,439	2,443	1,836	1,709	960	23,681
ABS Frame	1,017	993	1,291	2,078	1,835	2,039	1,995	1,983	1,831	1,103	1,594	838	18,597
Non-boat Owner	559	567	737	1,143	1,187	1,200	1,163	1,119	971	614	850	435	10,545
Boat Owner	458	426	554	935	648	839	832	864	860	489	744	403	8,052

2.5 Data Review and Cleaning

For responses from the registry sampling frame, boat type and boat length obtained from the registry frame data were appended to the survey data for all boats associated with a given sample address. These data were used to fill in missing response data and to resolve inconsistencies. Legitimate skips were assigned special codes to distinguish them from truly missing responses.

Early in data collection period, it was discovered that some respondents to the mail survey provided information on their boat(s) but did not indicate that their household owned any boats. (After discovering the issue, the mail survey instrument was modified to reduce the likelihood that respondents might skip the boat ownership question.) During the data review and cleaning process, boat ownership was imputed for the small number of households that filled out a paper survey, provided information about their boats, and inadvertently skipped the ownership question.

In response to some paper survey questions, respondents provided ranges rather than a single numeric value (e.g., how many days the boat went out on the water in the prior month). In these situations, we used the midpoint of the provided range. Some respondents failed to provide a correct zip code or state abbreviation. If the respondent provided a value with too few or too many digits, we revised the zip code value based on reevaluating the scanned image of the paper survey and comparing it to the respondent's address (when the respondent said the boat is stored at their residence).

If the respondent originated from the registry sample, we kept the state that matched the state provided on the sample frame otherwise, if the respondent originated from the ABS sample, we kept the state recorded by the respondent for the first boat listed on the survey form. If a household from the registry sample reported only one boat but did not select the boat type from the options on the survey, the boat type was carried over from the registry frame.

To clean boat profile data, we developed a set of rules for identifying and correcting inconsistent or incorrect information. These rules were employed to recode missing and doubtful boat lengths and state of boat storage for some boat types (e.g., PWC indicated to be 21 feet or more were recoded into the 16–20 feet category). Out-of-range rules were applied to other variables such as how many days was the boat taken out on the water during the reference month, how many times the boat was trailered/transported, and how many hours was the boat taken out on the last outing during the reference month. Responses were examined to identify obvious outlier values for different variables. If the outlier appeared to be an error, we recoded it to the mean value, but if it appeared to be real, we top-coded it to the 90^{th} percentile. Person-level variables were also cleaned. The boat data from a boat-owning household were removed if boat type was missing and could not be imputed from the registry data.

2.6 Nonresponse Bias Checks

We used several strategies to identify and quantify response and nonresponse bias. For example, it was hypothesized that boat owners would be more likely to respond (nonresponse bias) and that respondents would overstate their boating activity (response bias). We compared survey estimates, including boat ownership rates, to the National Recreational Boating Survey conducted in 2011–12 and other boating and outdoor recreation surveys. Subject matter experts were contacted regarding particular differences observed relative to previously published boat ownership and participation rates. There was little evidence that the 2018 survey estimates were out of line with those from earlier studies. We also examined the trend in estimates as a function of when responses are received, the assumption being that more active boaters respond more quickly. We studied estimates of boating activity by the number of weeks that had elapsed after the initial mailing when the response was obtained. The goal was to determine if there were significant differences in reporting of late responders versus early responders. One aggregate measure, the average number of boating days, revealed no evident pattern suggesting response bias. We also looked at estimates by type of boat, and no clear pattern emerged pointing to nonresponse bias when the number of boat days was examined by type of boats. Finally, it was hypothesized that households that did not own boats would be less likely to respond to the survey. We calculated and compared boat ownership rates using the basic design weight and then the fully calibrated weight. The first simply accounted for selection probability, whereas the second also adjusted for variable nonresponse. If boat owners are more likely to respond, the

second estimate of boat ownership should be lower. In fact, adjusting for nonresponse resulted in higher boat ownership rates, suggesting that boat owners were less likely to respond.

2.6.1 Weighting

A four-step process was employed to develop two sets of analytic weights for producing Exposure Survey estimates. The first step in the process involved calculating address-level weights. One set of weights was designed to amplify address-level survey data to the target population. The second set of weights was designed to amplify the survey data regarding boat usage to all boats owned by households in the target population. The four steps are described below:

Step 1: Address-Level Base Weights

Addresses in the ABS frame were first partitioned into a mutually exclusive and exhaustive set of strata defined by the cross-classification of state and boat-ownership propensity. The *base weight* for an address was defined as the inverse of its selection probability and was meant to reflect the number of addresses in the larger population it represents. For example, if 5%, or 1 in 20 addresses, within a stratum are sampled, each sampled address was assigned a base weight of 1/0.05 = 20. Survey data captured for the address represented not only itself, but also 19 other similar addresses that were not sampled.

For the registry sampling frame's database, the primary sampling unit was a boat, not an address. We first stratified registered boats by state (based on the address of the boat owner, which does not always correspond to the state where the boat is registered) and then selected a monthly cohort sample of boats. Because the ABS frame and the InfoLink registry frame were proprietary, merging the two frames before sample selection was not possible. Instead, RTI provided the list of sampled ABS addresses to InfoLink, which flagged those that also appeared in its registry frame. The flagged sampled addresses were then dropped from the ABS sample. As a result, the sum of base weights for the remaining (unique) ABS addresses estimated the portion of the ABS frame that did not overlap with the registry frame.

Eight states (Colorado, Idaho, Louisiana, Minnesota, Montana, New Hampshire, Vermont, and West Virginia) would not allow InfoLink permission to provide RTI address- or boat-level data to administer the NRBSS. After a brief trial using a commercially supplied mailing list, a decision was made to sample exclusively from the ABS frame data collection in these states.

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 (Step 1) would be all that is needed to formulate unbiased survey estimates. Of course, that is impractical, so Step 2 of the weighting procedure accounted for nonresponse. It did so by transferring the base weights of nonresponding addresses to responding addresses within a set of mutually exclusive cells, or classes, formed by grouping together sampled addresses that shared approximately equivalent response probabilities.

Step 3: Calibrate Address-Level Weights

The address-level base weight nonresponse adjustment was subsequently calibrated to (1) harmonize the weighted sum of responding households to known target population distributions and (2) account for a modest amount of under coverage inherent in the sample design. Some degree of under coverage existed because multi-dwelling addresses from the ABS frame were excluded as were sample addresses in the bottom quintile of boat-ownership propensities.

Step 4: Create and Calibrate Boat-Level Weights

The final step in the weighting process was to convert the address-level weights into boat-level weights. This conversion required the dataset to be restructured from one where each record corresponded to an address to one where each record corresponded to a boat. For example, data for an address indicating ownership of four boats were transposed into four records. Using poststratification, we then calculated a boat-level weight to known totals. Weights for registered boats were developed to ensure they summed to the state-reported counts of different types of registered boat counts. Because complete and accurate counts of unregistered boat types are not available, we assumed that the poststratification weights for the registered boats could be applied to the unregistered boats within each state. Using this preliminary adjustment, we then checked against any available counts of unregistered and total boats to make final adjustments to the weights.

SECTION 3.
FINDINGS

3.1 Household Boat Ownership

It is estimated that about 11.9%, or approximately 14.5 million, of U.S. households owned or co-owned a recreational boat of some type in 2018 (***Table 3-1***). This included open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes). Ownership or co-ownership means at least one person in the household held the title, registration, or ownership rights to a recreational boat/vessel. As discussed later, a higher than expected percentage of these boats were either not in operating condition or in operating condition but not taken out on the water in 2018. This raises concerns about estimates of recreational boating activity that have applied the average number of days that boats are operated to all boats owned.

States with the greatest percentage of households that owned or co-owned boats were Maine (33.1%), Alaska (32.2%), New Hampshire (29.7%), and Minnesota (27.8%) (***Table 3-1***). Conversely, states having the lowest percentage of household that own boats were Hawaii (5.0%), Nevada (5.3%), New Mexico (6.0%), and New Jersey (6.1%).

Open powerboats continue to be owned by more households than any other types of boat. Almost 6 million households owned at least one open powerboat. Approximately 4.24 million households owned one or more kayaks, and about 2.14 million households were owners of canoes. Another 2.37 million households owned or jointly owned some type of boat that is rowed.

The Midwest Census Region had the highest percentage (14.9%) of boat-owning households (***Table 3-2***). The percentage (8.9%) of boat-owning households in the populations was lowest in the West Census Region. The Northeast Census Region contained the lowest percentage of households that owned open power boats (3.1%) but the highest percentage that owned kayaks (5.2%) and canoes (2.7%).

Table 3-1. Number and Percentage of U.S. Households that Owned or Co-owned Recreational Boats by Boat Type and by State of Residence, 2018[1,2,3,4]

State	Households Owning Any Boat[5]		Households Owning at Least One of the Following Boat Types																			
			Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boat Types[6]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Alabama	256	13.8	143	7.7	6	0.3	29	1.6	23	1.2	6	0.3	28	1.5	49	2.7	7	0.4	37	2.0	2	0.1
Alaska	82	32.2	24	9.4	16	6.2	3	1.1	2	0.9	1	0.5	14	5.3	32	12.6	3	1.1	17	6.8	4	1.7
Arizona	164	6.3	66	2.5	4	0.2	14	0.5	14	0.5	2	0.1	14	0.5	39	1.5	16	0.6	23	0.9	2	0.1
Arkansas	242	21.0	110	9.5	3	0.2	37	3.2	11	1.0	1	0.1	21	1.8	45	3.9	13	1.1	47	4.1	10	0.8
California	866	6.6	410	3.1	68	0.5	45	0.3	58	0.4	69	0.5	55	0.4	221	1.7	45	0.3	150	1.1	33	0.3
Colorado	243	11.2	55	2.5	11	0.5	3	0.1	10	0.4	6	0.3	65	3.0	78	3.6	55	2.5	35	1.6	34	1.6
Connecticut	169	12.2	45	3.3	16	1.2	3	0.2	6	0.5	14	1.0	31	2.3	82	5.9	7	0.5	24	1.7	7	0.5
Delaware	66	17.9	21	5.7	5	1.3	8	2.1	2	0.5	5	1.3	10	2.8	23	6.2	1	0.1	7	2.0	—	0.1
District of Columbia	293	1.0	122	0.4	24	0.1	12	0.0	9	0.0	49	0.2	64	0.2	153	0.5	20	0.1	24	0.1	5	0.0
Florida	1,082	13.9	508	6.5	93	1.2	62	0.8	51	0.6	47	0.6	125	1.6	295	3.8	50	0.6	100	1.3	27	0.3
Georgia	456	12.0	178	4.7	18	0.5	44	1.1	29	0.8	13	0.3	54	1.4	120	3.1	12	0.3	100	2.6	16	0.4
Hawaii	23	5.0	7	1.5	3	0.7	—	0.0	1	0.2	2	0.5	4	0.8	7	1.5	4	0.9	1	0.2	1	0.2
Idaho	129	20.1	48	7.4	4	0.5	6	1.0	2	0.3	4	0.6	23	3.6	32	4.9	12	1.9	29	4.5	9	1.4
Illinois	378	7.8	163	3.3	20	0.4	48	1.0	40	0.8	22	0.4	44	0.9	107	2.2	21	0.4	79	1.6	13	0.3
Indiana	335	12.9	123	4.7	12	0.4	48	1.9	17	0.7	8	0.3	44	1.7	68	2.6	6	0.2	92	3.5	40	1.5
Iowa	205	16.2	93	7.4	6	0.4	19	1.5	9	0.7	2	0.2	41	3.2	64	5.0	6	0.5	24	1.9	4	0.3
Kansas	116	10.3	56	4.9	3	0.3	11	0.9	9	0.8	3	0.3	12	1.1	26	2.3	2	0.2	18	1.5	5	0.4
Kentucky	205	11.8	95	5.5	6	0.3	37	2.1	7	0.4	2	0.1	21	1.2	45	2.6	2	0.1	47	2.7	7	0.4
Louisiana	297	17.1	210	12.1	9	0.5	18	1.0	11	0.7	5	0.3	31	1.8	40	2.3	4	0.2	34	2.0	11	0.6
Maine	189	33.1	57	10.0	8	1.3	9	1.7	6	1.1	13	2.3	66	11.5	87	15.3	8	1.4	31	5.4	5	0.9
Maryland	265	12.0	76	3.4	26	1.2	9	0.4	7	0.3	13	0.6	52	2.3	109	4.9	19	0.8	34	1.6	6	0.3
Massachusetts	280	10.7	98	3.7	31	1.2	8	0.3	7	0.3	36	1.4	61	2.3	120	4.6	15	0.6	34	1.3	1	0.1
Michigan	871	22.0	309	7.8	59	1.5	173	4.4	79	2.0	47	1.2	154	3.9	255	6.4	48	1.2	180	4.5	14	0.4

(continued)

Table 3-1. Number and Percentage of U.S. Households that Owned or Co-owned Recreational Boats by Boat Type and by State of Residence, 2018 [1,2,3,4] (continued)

State	Households Owning Any Boat[5]		Households Owning at Least One of the Following Boat Types																			
			Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddle-boards		Rowed Boats		Other Boat Types[6]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Minnesota	610	27.8	364	16.6	23	1.1	130	5.9	37	1.7	16	0.7	138	6.3	105	4.8	30	1.4	67	3.1	13	0.6
Mississippi	141	12.7	83	7.4	5	0.5	11	1.0	9	0.8	1	0.1	9	0.8	21	1.9	3	0.3	29	2.6	4	0.4
Missouri	352	14.4	152	6.2	18	0.7	46	1.9	31	1.3	11	0.4	35	1.5	74	3.0	12	0.5	80	3.3	13	0.5
Montana	92	21.3	36	8.3	2	0.4	5	1.1	3	0.6	2	0.4	16	3.7	28	6.4	6	1.5	20	4.6	6	1.4
Nebraska	163	21.3	49	6.4	2	0.2	8	1.0	10	1.3	2	0.3	17	2.2	75	9.8	1	0.1	20	2.6	4	0.6
Nevada	59	5.3	23	2.0	4	0.4	3	0.2	6	0.5	2	0.1	5	0.5	18	1.6	4	0.3	10	0.9	2	0.2
New Hampshire	158	29.7	32	6.0	8	1.5	11	2.1	4	0.8	13	2.5	48	9.0	79	14.8	13	2.5	24	4.5	2	0.4
New Jersey	200	6.1	65	2.0	27	0.8	7	0.2	16	0.5	18	0.6	25	0.8	73	2.2	7	0.2	31	1.0	4	0.1
New Mexico	47	6.0	18	2.3	2	0.2	5	0.7	3	0.4	2	0.2	9	1.1	12	1.5	—	0.0	5	0.7	2	0.3
New York	615	8.3	181	2.5	84	1.1	41	0.6	50	0.7	56	0.8	146	2.0	242	3.3	25	0.3	70	0.9	15	0.2
North Carolina	484	12.1	196	4.9	16	0.4	44	1.1	27	0.7	18	0.4	72	1.8	173	4.3	15	0.4	42	1.0	12	0.3
North Dakota	65	20.4	46	14.4	1	0.2	11	3.3	5	1.7	2	0.7	3	0.9	11	3.3	1	0.3	3	0.8	—	0.1
Ohio	371	7.9	127	2.7	35	0.8	49	1.1	21	0.5	11	0.2	58	1.2	124	2.6	4	0.1	49	1.1	12	0.3
Oklahoma	209	14.1	104	7.0	9	0.6	39	2.6	23	1.6	4	0.3	21	1.4	35	2.4	5	0.3	31	2.1	8	0.6
Oregon	278	17.0	98	6.0	12	0.8	6	0.4	5	0.3	9	0.6	38	2.3	102	6.2	11	0.6	71	4.3	12	0.8
Pennsylvania	854	16.8	166	3.3	25	0.5	52	1.0	25	0.5	18	0.4	188	3.7	388	7.6	43	0.8	170	3.4	16	0.3
Rhode Island	56	13.7	14	3.5	6	1.5	1	0.2	1	0.3	6	1.5	4	0.9	34	8.4	7	1.7	7	1.8	2	0.4
South Carolina	336	17.4	165	8.6	12	0.6	56	2.9	17	0.9	7	0.4	32	1.7	83	4.3	11	0.6	55	2.9	13	0.7
South Dakota	60	17.4	34	10.0	—	0.1	7	2.1	3	0.9	1	0.3	3	0.9	17	5.0	1	0.2	9	2.5	1	0.4
Tennessee	280	10.8	127	4.9	7	0.3	48	1.8	18	0.7	3	0.1	38	1.5	65	2.5	9	0.4	29	1.1	13	0.5
Texas	656	6.7	347	3.5	18	0.2	52	0.5	61	0.6	37	0.4	34	0.4	101	1.0	39	0.4	102	1.0	19	0.2
Utah	95	9.5	45	4.5	6	0.6	3	0.3	5	0.5	2	0.2	4	0.4	37	3.7	11	1.1	9	0.9	2	0.2
Vermont	49	18.8	13	4.8	5	1.8	2	0.7	1	0.4	6	2.4	12	4.8	22	8.2	2	0.6	11	4.1	—	0.1
Virginia	378	11.9	125	3.9	29	0.9	30	0.9	30	0.9	17	0.5	58	1.8	130	4.1	11	0.3	67	2.1	4	0.1
Washington	309	10.7	147	5.1	40	1.4	7	0.2	18	0.6	24	0.8	31	1.1	99	3.4	22	0.8	70	2.4	11	0.4
West Virginia	120	16.3	23	3.1	1	0.1	15	2.0	7	1.0	5	0.6	25	3.4	57	7.7	4	0.5	29	4.0	—	0.0

(continued)

Table 3-1. Number and Percentage of U.S. Households that Owned or Co-owned Recreational Boats by Boat Type and by State of Residence, 2018 [1,2,3,4] (continued)

State	Households Owning Any Boat[5]		Households Owning at Least One of the Following Boat Types																			
	Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddle-boards		Rowed Boats		Other Boat Types[6]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Wisconsin	492	20.7	274	11.5	24	1.0	117	4.9	28	1.2	21	0.9	85	3.6	85	3.6	9	0.4	109	4.6	14	0.6
Wyoming	35	15.3	16	6.9	1	0.6	2	1.1	2	0.8	2	0.7	7	3.0	6	2.8	1	0.4	7	2.9	1	0.4
Total U.S.	14,486	11.9	5,963	4.9	846	0.7	1,441	1.2	869	0.7	635	0.5	2,136	1.8	4,240	3.5	661	0.5	2,370	1.3	457	0.4

"—" Sample size too small.

1. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.)
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. Own or co-own means at least one person in the household holds the title, registration, or ownership rights to a recreational boat/vessel.
4. Ratio adjustment was used to account for nonresponse and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
5. The numbers and percentage value of households owning particular boat types do not sum to the number and percentage value of households owning any boat because a household can own more than one type of boat.
6. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.

Table 3-2. Number and Percentage of U.S. Households that Owned or Co-owned Recreational Boats by Boat Type and by Census Region of Residence, 2018[1,2,3]

Census Region	Households Owning Any Boats[4]		Households Owning at Least One of the Following Boat Types:																			
			Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boat Types[5]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Northeast	2,568	12.0	671	3.1	210	1.0	135	0.6	117	0.5	180	0.8	582	2.7	1,126	5.2	127	0.6	401	1.9	54	0.2
Midwest	4,018	14.9	1,789	6.6	201	0.7	666	2.5	289	1.1	146	0.5	635	2.4	1,010	3.8	141	0.5	729	2.0	133	0.5
South	5,477	12.0	2,511	5.5	261	0.6	537	1.2	334	0.7	184	0.4	634	1.4	1,393	3.0	203	0.4	792	1.1	151	0.3
West	2,423	8.9	992	3.6	174	0.6	103	0.4	129	0.5	125	0.5	285	1.0	711	2.6	190	0.7	448	1.1	119	0.4
Total U.S.	14,486	11.9	5,963	4.9	846	0.7	1,441	1.2	869	0.7	635	0.5	2,136	1.8	4,240	3.5	661	0.5	2,370	1.3	457	0.4

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. Own or co-own means at least one person in the household holds the title, registration, or ownership rights to a recreational boat/vessel.
3. Ns are in units of 1,000.
4. The numbers and percentage value of households owning particular boat types do not sum to the number and percentage value of households owning any boat because a household can own more than one type of boat.
5. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.

3.2 Number of Registered and Unregistered Boats Owned and Where Stored During Boating Season

Knowing how many boats of different types are owned and in what state they are kept and operated is essential information for producing state exposure (e.g., boat days, person days of boating) estimates. The NRBSS Exposure Survey collected detailed information about how many and what types of boats were owned by households in 2018. This information included boats that were required and not required to be registered by the state where they were kept and operated. Respondents were asked to indicate the state where the boat was kept most of the time in a reference month. Additional information was collected about the state in which the boats were operated the last day during that month.

There were 11.82 million boats registered in the 50 states and the District of Columbia in 2018 (***Table 3-3***), including about 7.76 million open power boats, 1.38 million PWCs, and 989,000 pontoon boats. States with the largest number of registered boats were Florida (925,000), Minnesota (819,000), and Michigan (795,000). Hawaii (12,000), Wyoming (27,000), and Vermont (29,000) had the least number of registered boats. ***Table 3-4*** provides the number and percentage of registered boats by boat type and by census region of registration.

The South (4.69 million) and Midwest (4.07 million) Census Regions have almost three-quarters (74%) of all registered boats (***Table 3-4***). The Northeast Census region has only about 12% (1.40 million) of all registered boats.

Table 3-3. Number and Percentage of Registered Boats by Boat Type and by State of Registration, 2018[1,2,3,4]

State	All Registered Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boats	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Alabama	245	100.0	190	77.6	4	1.6	15	6.1	34	14.1	1	0.5	*	*	*	*	*	*	*	*	—	0.1
Alaska	49	100.0	26	53.2	16	32.4	5	9.6	2	3.6	—	0.8	*	*	*	*	*	*	*	*	—	0.4
Arizona	123	100.0	82	66.9	3	2.1	11	8.9	25	20.6	1	0.9	*	*	*	*	*	*	*	*	1	0.6
Arkansas	172	100.0	131	76.2	2	1.4	22	13.1	10	5.6	1	0.5	*	*	*	*	*	*	*	*	5	3.1
California	670	100.0	396	59.2	63	9.4	23	3.4	150	22.3	31	4.6	*	*	*	*	*	*	*	*	8	1.1
Colorado	84	100.0	53	63.4	10	11.6	5	6.3	13	14.9	3	3.7	*	*	*	*	*	*	*	*	—	0.2
Connecticut	91	100.0	53	58.4	19	21.3	3	3.6	10	10.7	4	4.6	*	*	*	*	*	*	1	1.3	—	0.0
Delaware	55	100.0	30	55.2	10	18.0	5	9.0	8	13.7	2	4.2	*	*	*	*	*	*	*	*	*	*
District of Columbia	243	100.0	51	21.0	61	25.1	—	1.7	—	1.6	32	13.3	8	3.4	48	19.6	13	5.5	3	1.2	19	7.7
Florida	925	100.0	619	67.0	105	11.3	52	5.6	110	11.9	23	2.5	*	*	*	*	*	*	*	*	16	1.8
Georgia	331	100.0	259	78.4	9	2.6	13	3.8	47	14.3	2	0.5	*	*	*	*	*	*	*	*	1	0.4
Hawaii	12	100.0	7	52.6	3	24.5	—	1.3	1	10.9	1	9.9	*	*	*	*	*	*	*	*	—	0.8
Idaho	87	100.0	70	80.7	3	3.7	2	2.7	10	11.6	1	1.0	—	0.2	*	*	*	*	*	*	—	0.2
Illinois	246	100.0	169	68.8	15	6.2	29	11.9	26	10.6	5	1.9	*	*	*	*	*	*	*	*	1	0.5
Indiana	211	100.0	140	66.5	11	5.3	35	16.8	21	9.9	2	1.0	*	*	*	*	*	*	*	*	1	0.5
Iowa	231	100.0	155	66.8	9	3.8	17	7.1	18	7.8	7	2.8	10	4.4	5	2.0	2	1.0	9	4.2	—	0.1
Kansas	83	100.0	69	83.4	1	0.9	1	1.0	12	14.4	—	0.2	*	*	*	*	*	*	*	*	—	0.1
Kentucky	166	100.0	109	65.6	6	3.4	29	17.4	15	9.1	1	0.6	*	*	*	*	*	*	*	*	7	4.0
Louisiana	304	100.0	256	84.3	9	2.8	21	6.9	15	4.8	1	0.4	*	*	*	*	*	*	*	*	2	0.7
Maine	112	100.0	87	77.8	5	4.7	9	8.1	8	6.8	3	2.6	*	*	*	*	*	*	*	*	—	0.1
Maryland	170	100.0	102	60.0	31	18.5	6	3.7	18	10.5	11	6.2	*	*	*	*	*	*	2	1.0	—	0.0
Massachusetts	132	100.0	105	79.6	11	8.5	1	1.0	9	7.1	5	3.5	*	*	—	0.2	*	*	*	*	—	0.0
Michigan	795	100.0	435	54.7	75	9.4	136	17.1	104	13.1	25	3.1	1	0.2	—	0.0	*	*	19	2.4	1	0.1
Minnesota	819	100.0	434	53.0	7	0.9	96	11.7	53	6.4	11	1.3	141	17.3	49	5.9	13	1.6	8	1.0	7	0.9
Mississippi	127	100.0	110	86.3	2	1.9	7	5.2	7	5.8	1	0.7	*	*	*	*	*	*	*	*	—	0.2
Missouri	290	100.0	183	63.2	20	7.0	40	13.7	44	15.1	2	0.8	*	*	*	*	*	*	*	*	—	0.1

(continued)

Table 3-3. Number and Percentage of Registered Boats by Boat Type and by State of Registration, 2018[1,2,3,4] (continued)

State	All Registered Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boats	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Montana	63	100.0	48	75.4	2	2.9	5	7.5	8	12.5	1	1.4	*	*	*	*	*	*	*	*	—	0.3
Nebraska	89	100.0	62	69.8	2	2.4	9	9.6	14	15.7	—	0.5	*	*	*	*	*	*	1	1.1	1	0.9
Nevada	41	100.0	29	71.9	1	3.1	—	0.5	9	22.5	—	1.1	*	*	*	*	*	*	*	*	—	0.9
New Hampshire	95	100.0	58	61.2	9	9.4	12	12.1	12	12.5	5	4.7	*	*	*	*	*	*	*	*	—	0.1
New Jersey	150	100.0	76	50.9	29	19.4	5	3.5	28	18.8	6	3.8	*	*	*	*	*	*	2	1.1	4	2.5
New Mexico	33	100.0	18	56.8	1	4.6	5	15.2	6	19.8	1	2.9	*	*	*	*	*	*	*	*	—	0.7
New York	444	100.0	236	53.1	94	21.2	34	7.6	63	14.2	13	2.8	*	*	*	*	*	*	3	0.7	1	0.3
North Carolina	359	100.0	245	68.1	19	5.2	41	11.5	48	13.3	6	1.6	*	*	*	*	*	*	*	*	1	0.3
North Dakota	63	100.0	44	70.8	1	0.8	8	13.4	9	13.7	—	0.0	1	1.3	*	*	*	*	*	*	—	0.0
Ohio	573	100.0	192	33.5	32	5.6	31	5.4	42	7.3	8	1.5	64	11.2	194	33.8	—	0.0	9	1.6	1	0.1
Oklahoma	198	100.0	125	63.0	9	4.6	27	13.5	32	16.2	3	1.5	*	*	*	*	*	*	*	*	2	1.2
Oregon	168	100.0	140	83.2	9	5.2	2	0.9	14	8.1	4	2.4	*	*	*	*	*	*	*	*	—	0.1
Pennsylvania	307	100.0	193	62.8	19	6.0	23	7.6	28	9.2	4	1.4	*	*	*	*	*	*	40	12.9	—	0.1
Rhode Island	39	100.0	19	48.8	13	33.0	1	2.8	2	5.9	3	8.7	*	*	*	*	*	*	—	0.8	—	0.0
South Carolina	551	100.0	380	69.0	22	4.1	78	14.1	55	10.0	5	0.9	*	*	*	*	*	*	*	*	11	2.0
South Dakota	59	100.0	41	68.8	—	0.4	6	10.7	7	11.8	1	0.9	2	2.8	1	1.5	—	0.0	1	1.7	1	1.3
Tennessee	239	100.0	195	81.4	5	2.1	8	3.5	27	11.3	2	0.6	*	*	*	*	*	*	*	*	3	1.1
Texas	563	100.0	461	81.7	14	2.4	7	1.3	80	14.2	1	0.2	*	*	*	*	*	*	*	*	1	0.2
Utah	64	100.0	44	68.1	6	8.8	2	3.6	11	17.3	1	1.8	*	*	*	*	*	*	*	*	—	0.5
Vermont	29	100.0	19	66.9	4	14.7	3	8.7	2	6.5	1	3.2	*	*	*	*	*	*	*	*	*	*
Virginia	226	100.0	173	76.3	10	4.5	7	3.0	32	14.1	4	1.9	*	*	*	*	*	*	*	*	—	0.1
Washington	245	100.0	171	69.6	30	12.3	2	0.7	29	12.0	13	5.3	*	*	*	*	*	*	*	*	—	0.2
West Virginia	51	100.0	38	73.4	2	3.7	7	14.0	4	8.6	—	0.2	*	*	*	*	*	*	*	*	*	*
Wisconsin	616	100.0	460	74.7	13	2.2	81	13.2	44	7.4	10	1.7	5	0.8	*	*	*	*	—	0.0	1	0.1

(continued)

Table 3-3. Number and Percentage of Registered Boats by Boat Type and by State of Registration, 2018[1,2,3,4] (continued)

State	All Registered Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boats	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Wyoming	27	100.0	20	74.1	2	6.0	2	6.2	4	13.5	—	0.1	*	*	*	*	*	*	*	*	—	0.0
Total U.S.	11,824	100.0	7,758	65.6	798	6.8	989	8.4	1,380	11.7	236	2.0	224	1.9	248	2.1	15	0.1	95	0.8	80	0.7

"—" Sample size too small.

* These registration numbers are reported by the states to the USCG. If there are no boats of various types shown, it means either these types of boats were not required to be registered in 2018 or no boats of these types were registered.

1. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.)
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. States differ in the types and sizes of boats that are required to be registered.
4. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

Table 3-4. Number and Percentage of Registered Boats by Boat Type and by Census Region of Registration, 2018[1,2,3,4,5]

Census Region	All Registered Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boat Types[4]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Northeast	1,399	100.0	847	60.5	204	14.6	91	6.5	162	11.6	43	3.1	0	0.0	0	0.0	0	0.0	46	3.3	6	0.4
Midwest	4,074	100.0	2,384	58.5	187	4.6	490	12.0	394	9.7	71	1.7	224	5.5	248	6.1	15	0.4	47	1.2	14	0.3
South	4,686	100.0	3,424	73.0	259	5.5	345	7.4	542	11.6	64	1.4	0	0.0	0	0.0	0	0.0	2	0.0	50	1.1
West	1,665	100.0	1,103	66.3	148	8.9	63	3.8	282	16.9	58	3.5	0	0.0	0	0.0	0	0.0	0	0.0	11	0.6
Total U.S.	11,824	100.0	7,758	65.6	798	6.8	989	8.4	1,380	11.7	236	2.0	224	1.9	248	2.1	15	0.1	95	0.8	81	0.7

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. States differ in the types and sizes of boats that are required to be registered.
3. Ns are in units of 1,000.
4. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.
5. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

Estimating the number of boats not required to be registered by states was needed because no scientifically derived or authenticated counts of these boats were available. States differ significantly in terms of the types and sizes of boats that are required to be registered to be legally operated in their waters. For example, many states do not require human-powered craft to be registered. In addition to providing information on the type and size of boats owned by households, respondents were asked whether boats were registered by a state. The responses were verified and, if necessary, amended by comparing the type and size of boats to state registration requirements for those boats.

In 2018, there were 1.58 million more boats owned that were not required to be registered by a state than registered boats. Almost 13.40 million boats were owned in 2018 in the United States that were not required to be registered by the state where they were kept and operated (***Table 3-5***), including about 7.31 million kayaks, 2.20 million canoes, and 2.45 million boats that are rowed. States with the largest number of boats not required to be registered were Michigan (934,000), New York (884,000), and Florida (789,000).

Table 3-5. Number and Percentage of Unregistered Boats by Boat Type and by State of Storage, 2018[1,2,3,4,5]

State	All Unregistered Boats		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Alabama	174	100.0	—	—	29	16.6	97	55.6	8	4.4	39	22.5
Alaska	82	100.0	—	0.5	13	16.1	46	56.0	3	3.6	15	18.8
Arizona	136	100.0	1	0.6	14	10.1	76	55.8	21	15.1	24	17.6
Arkansas	169	100.0	—	—	25	14.8	74	43.5	14	8.0	49	29.0
California	607	100.0	11	1.9	51	8.5	336	55.4	46	7.6	149	24.5
Colorado	423	100.0	—	—	95	22.5	167	39.4	83	19.7	45	10.7
Connecticut	249	100.0	11	4.5	36	14.6	159	63.8	8	3.0	26	10.5
Delaware	81	100.0	7	8.6	12	14.2	48	58.5	6	7.7	8	10.4
District of Columbia	*	*	*	*	*	*	*	*	*	*	*	*
Florida	789	100.0	15	1.9	120	15.2	462	58.5	71	9.1	106	13.4
Georgia	452	100.0	10	2.3	69	15.2	215	47.6	24	5.4	117	25.9
Hawaii	24	100.0	—	2.1	5	21.6	10	42.0	7	28.1	1	2.6
Idaho	162	100.0	—	—	27	16.9	75	46.1	22	13.3	32	19.6
Illinois	320	100.0	—	—	39	12.1	181	56.6	11	3.6	77	24.2
Indiana	312	100.0	—	—	44	14.2	127	40.8	6	1.9	98	31.5
Iowa	109	100.0	—	—	16	14.5	93	85.5	—	—	—	—
Kansas	89	100.0	—	—	18	20.8	41	46.4	4	4.2	21	23.2
Kentucky	161	100.0	1	0.7	23	14.2	75	46.8	3	2.1	56	34.6
Louisiana	142	100.0	1	0.7	31	22.1	62	43.3	4	3.0	37	26.1
Maine	324	100.0	13	3.9	86	26.4	174	53.5	10	3.1	37	11.4
Maryland	321	100.0	13	4.0	65	20.2	184	57.3	17	5.2	37	11.6
Massachusetts	309	100.0	18	5.9	53	17.2	189	61.2	14	4.6	32	10.2
Michigan	934	100.0	—	—	186	20.0	491	52.6	58	6.2	183	19.6
Minnesota	205	100.0	1	0.4	19	9.5	102	49.8	24	11.9	34	16.4

(continued)

Table 3-5. Number and Percentage of Unregistered Boats by Boat Type and by State of Storage, 2018[1,2,3,4,5] (continued)

State	All Unregistered Boats		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Mississippi	90	100.0	—	—	8	9.0	35	39.1	5	6.1	33	37.2
Missouri	271	100.0	7	2.4	37	13.5	119	43.8	12	4.4	85	31.4
Montana	141	100.0	—	—	24	17.3	73	51.8	11	7.5	26	18.7
Nebraska	477	100.0	2	0.5	21	4.3	427	89.5	1	0.1	22	4.6
Nevada	52	100.0	1	1.7	5	10.3	29	54.9	6	10.8	11	20.6
New Hampshire	310	100.0	10	3.1	75	24.4	177	57.1	16	5.2	30	9.7
New Jersey	184	100.0	4	2.1	26	13.9	100	54.4	10	5.6	40	21.8
New Mexico	38	100.0	—	0.8	9	23.6	18	48.6	—	1.0	7	19.8
New York	884	100.0	55	6.3	197	22.3	499	56.5	31	3.5	82	9.3
North Carolina	440	100.0	7	1.5	70	15.8	288	65.6	19	4.3	48	10.9
North Dakota	21	100.0	—	0.9	3	14.7	14	66.3	1	4.4	3	12.9
Ohio	*	*	*	*	*	*	*	*	*	*	*	*
Oklahoma	132	100.0	—	—	22	16.3	63	47.6	6	4.3	36	27.2
Oregon	409	100.0	2	0.5	54	13.2	219	53.6	13	3.2	103	25.2
Pennsylvania	535	100.0	3	0.6	97	18.1	324	60.6	20	3.7	85	15.8
Rhode Island	76	100.0	1	1.5	4	4.7	57	74.1	11	14.3	3	3.9
South Carolina	544	100.0	16	3.0	81	14.8	280	51.4	25	4.6	118	21.7
South Dakota	30	100.0	—	0.4	—	1.2	23	75.8	1	2.2	6	19.8
Tennessee	237	100.0	—	—	51	21.5	128	54.0	15	6.2	32	13.7
Texas	359	100.0	14	4.0	40	11.0	139	38.6	41	11.5	104	28.9
Utah	105	100.0	—	—	7	6.4	71	67.9	18	17.0	9	8.6
Vermont	89	100.0	6	6.8	16	17.7	50	55.9	2	2.4	15	16.7
Virginia	370	100.0	9	2.5	72	19.4	212	57.4	12	3.3	61	16.6
Washington	316	100.0	—	—	28	8.7	177	55.9	25	7.8	80	25.3
West Virginia	213	100.0	4	2.1	44	20.6	122	57.2	8	3.7	35	16.4
Wisconsin	476	100.0	10	2.1	125	26.3	171	35.9	19	3.9	140	29.3
Wyoming	28	100.0	1	3.2	7	25.2	11	39.3	1	4.1	7	25.5
Total U.S.	13,399	100.0	256	1.9	2,198	16.4	7,308	54.5	792	5.9	2,445	18.2

"—" Sample size too small.

* In the District of Columbia and OH, all boats are required to be registered.

1. Ns are in units of 1,000.
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. States differ in the types and sizes of boats that are required to be registered.
4. This table includes only boat types for which registration is not required.
5. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

About a third of all recreational boats not required to be registered were stored/kept in states in the South Census Region (***Table 3-6***). Two-thirds of the boats owned in states in the Northeast Census region were not required to be registered.

Table 3-6. Number and Percentage of Unregistered Boats by Boat Type and by Census Region of Storage, 2018[1,2,3,4]

Census Region	All Unregistered Boats		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boat Types[5]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Northeast	2,959	100.0	121	4.1	589	19.9	1,728	58.4	122	4.1	349	11.8	50	1.7
Midwest	3,244	100.0	20	0.6	509	15.7	1,790	55.2	136	4.2	669	20.6	120	3.7
South	4,674	100.0	98	2.1	760	16.3	2,482	53.1	279	6.0	918	19.6	137	2.9
West	2,523	100.0	17	0.7	341	13.5	1,308	51.8	255	10.1	509	20.2	93	3.7
Total U.S.	13,399	100.0	256	1.9	2,198	16.4	7,308	54.5	792	5.9	2,445	18.2	400	3.0

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. States differ in the types and sizes of boats that are required to be registered.
3. Ns are in units of 1,000.
4. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
5. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.

It was important for the purpose of estimating state exposure rates to determine where boats are kept if the state is different than from where the owner(s) resides. Some boats are not kept or used in the state of the owner(s) permanent residence. It is estimated that about 94.4% of all boats were stored/kept most of the time in the state of the owner's residence (Appendix Table A-1 and A-2). That means approximately 1.44 million boats nationwide were not stored/kept most of the time in the state of the owners' permanent residence.

Table 3-7 reports the different types of the 25.22 million boats owned in 2018 either in the state of registration or state of storage for boats not required to be registered. There were almost 7.76 million open power boats, 7.56 million kayaks, 2.54 million boats that are rowed, and 2.42 million canoes. There were about 13.33 million human-powered boats, including kayaks, rowed boats, canoes, and paddle boards. Michigan (1.73 million) had the largest number of boats followed by Florida (1.71 million) and New York (1.33 million).

Table 3-8 reports the number of different types of boats registered or stored in states making up the four U.S. Census Regions.

Table 3-7. Number and Percentage of Recreational Boats Owned by U.S. Households by Boat Type and by State of Registration or Storage, 2018[1,2,3]

State	All Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddle-boards		Rowed Boats		Other Boat Types[4]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Alabama	419	100.0	190	45.3	4	0.9	15	3.6	34	8.2	1	0.3	29	6.9	97	23.1	8	1.8	39	9.4	2	0.4
Alaska	131	100.0	26	19.9	16	12.1	5	3.6	2	1.3	1	0.7	13	10.1	46	35.1	3	2.3	15	11.8	4	3.2
Arizona	260	100.0	82	31.7	3	1.0	11	4.2	25	9.8	2	0.7	14	5.3	76	29.3	21	7.9	24	9.2	2	0.7
Arkansas	342	100.0	131	38.4	2	0.7	22	6.6	10	2.8	1	0.3	25	7.3	74	21.6	14	4.0	49	14.4	13	3.9
California	1,277	100.0	396	31.0	63	4.9	23	1.8	150	11.7	42	3.3	51	4.0	336	26.3	46	3.6	149	11.7	20	1.6
Colorado	507	100.0	53	10.5	10	1.9	5	1.0	13	2.5	3	0.6	95	18.8	167	32.9	83	16.4	45	8.9	33	6.5
Connecticut	339	100.0	53	15.6	19	5.7	3	1.0	10	2.9	15	4.5	36	10.7	159	46.8	8	2.2	27	8.0	9	2.6
Delaware	136	100.0	30	22.3	10	7.3	5	3.6	8	5.5	9	6.8	12	8.5	48	34.9	6	4.6	8	6.2	—	0.4
District of Columbia	243	100.0	51	21.0	61	25.1	4	1.7	4	1.6	32	13.3	8	3.4	48	19.6	13	5.5	3	1.2	19	7.7
Florida	1,714	100.0	619	36.1	105	6.1	52	3.0	110	6.4	38	2.2	120	7.0	462	26.9	71	4.2	106	6.2	31	1.8
Georgia	783	100.0	259	33.1	9	1.1	13	1.6	47	6.0	12	1.5	69	8.8	215	27.5	24	3.1	117	15.0	18	2.2
Hawaii	36	100.0	7	17.8	3	8.3	—	0.5	1	3.7	2	4.7	5	14.3	10	27.7	7	18.6	1	1.7	1	2.7
Idaho	249	100.0	70	28.1	3	1.3	2	1.0	10	4.0	1	0.3	28	11.1	75	30.0	22	8.7	32	12.8	7	2.7
Illinois	566	100.0	169	29.9	15	2.7	29	5.2	26	4.6	5	0.8	39	6.8	181	32.1	11	2.0	77	13.7	13	2.2
Indiana	523	100.0	140	26.9	11	2.2	35	6.8	21	4.0	2	0.4	44	8.4	127	24.3	6	1.1	98	18.8	37	7.2
Iowa	340	100.0	155	45.4	9	2.6	17	4.9	18	5.3	7	1.9	26	7.6	98	28.7	2	0.7	10	2.8	—	0.1
Kansas	172	100.0	69	40.2	1	0.4	1	0.5	12	6.9	—	0.1	18	10.8	41	24.0	4	2.2	21	12.0	5	2.9
Kentucky	327	100.0	109	33.3	6	1.7	29	8.8	15	4.6	2	0.6	23	7.0	75	23.0	3	1.0	56	17.0	9	2.8
Louisiana	446	100.0	256	57.5	9	1.9	21	4.7	15	3.3	2	0.5	31	7.1	62	13.8	4	1.0	37	8.3	9	2.0
Maine	436	100.0	87	19.9	5	1.2	9	2.1	8	1.7	15	3.5	86	19.6	174	39.8	10	2.3	37	8.5	5	1.3
Maryland	491	100.0	102	20.8	31	6.4	6	1.3	18	3.6	23	4.7	65	13.2	184	37.4	17	3.4	39	7.9	5	1.1
Massachusetts	442	100.0	105	23.9	11	2.6	1	0.3	9	2.1	23	5.2	53	12.1	189	42.9	14	3.2	32	7.1	3	0.6
Michigan	1,729	100.0	435	25.1	75	4.3	136	7.9	104	6.0	25	1.4	188	10.8	492	28.4	58	3.4	202	11.7	15	0.9
Minnesota	1,025	100.0	434	42.4	7	0.7	96	9.4	53	5.2	11	1.1	161	15.7	151	14.7	37	3.6	42	4.1	32	3.1
Mississippi	217	100.0	110	50.6	2	1.1	7	3.1	7	3.4	1	0.4	8	3.7	35	16.2	5	2.5	33	15.4	8	3.7
Missouri	561	100.0	183	32.7	20	3.6	40	7.1	44	7.8	9	1.6	37	6.5	119	21.2	12	2.1	85	15.2	12	2.2
Montana	204	100.0	48	23.3	2	0.9	5	2.3	8	3.9	1	0.5	24	12.0	73	35.8	11	5.2	26	12.9	7	3.3
Nebraska	566	100.0	62	10.9	2	0.4	9	1.5	14	2.5	3	0.5	21	3.6	427	75.5	1	0.1	23	4.1	5	0.9

(continued)

Table 3-7. Number and Percent of Recreational Boats Owned by U.S. Households by Boat Type and by State of Registration or Storage, 2018[1,2,3] (continued)

State	All Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddle-boards		Rowed Boats		Other Boat Types[4]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Nevada	93	100.0	29	31.6	1	1.4	—	0.2	9	9.9	1	1.4	5	5.8	29	30.7	6	6.0	11	11.5	1	1.4
New Hampshire	405	100.0	58	14.4	9	2.2	12	2.8	12	3.0	14	3.5	75	18.6	177	43.7	16	3.9	30	7.4	2	0.5
New Jersey	334	100.0	76	22.9	29	8.7	5	1.6	28	8.4	10	2.9	26	7.7	100	29.9	10	3.1	42	12.5	8	2.4
New Mexico	70	100.0	18	26.2	1	2.1	5	7.0	6	9.1	1	1.8	9	12.7	18	26.2	—	0.5	7	10.6	3	3.7
New York	1,328	100.0	236	17.8	94	7.1	34	2.6	63	4.8	68	5.1	197	14.8	499	37.6	31	2.3	85	6.4	20	1.5
North Carolina	799	100.0	245	30.6	19	2.3	41	5.2	48	6.0	12	1.5	70	8.7	288	36.1	19	2.4	48	6.0	9	1.1
North Dakota	84	100.0	44	52.9	1	0.6	8	10.0	9	10.2	—	0.2	4	4.7	14	16.7	1	1.1	3	3.3	—	0.2
Ohio	573	100.0	192	33.5	32	5.6	31	5.4	42	7.3	8	1.5	64	11.2	194	33.8	—	—	9	1.6	1	0.1
Oklahoma	330	100.0	125	37.8	9	2.7	27	8.1	32	9.7	3	0.9	22	6.5	63	19.0	6	1.7	36	10.9	8	2.6
Oregon	577	100.0	140	24.2	9	1.5	2	0.3	14	2.4	6	1.0	54	9.4	219	38.0	13	2.3	103	17.8	18	3.1
Pennsylvania	842	100.0	193	22.9	19	2.2	23	2.8	28	3.3	7	0.9	97	11.5	324	38.5	20	2.3	124	14.8	7	0.8
Rhode Island	116	100.0	19	16.6	13	11.2	1	1.0	2	2.0	5	3.9	4	3.1	57	48.9	11	9.5	3	2.8	1	1.0
South Carolina	1,096	100.0	380	34.7	22	2.0	78	7.1	55	5.0	22	2.0	81	7.4	280	25.5	25	2.3	118	10.8	35	3.2
South Dakota	89	100.0	41	45.6	—	0.3	6	7.1	7	7.8	1	0.7	2	2.3	24	26.6	1	0.8	7	7.8	1	1.1
Tennessee	476	100.0	195	40.9	5	1.0	8	1.7	27	5.7	2	0.3	51	10.7	128	26.9	15	3.1	32	6.8	14	2.9
Texas	922	100.0	460	49.9	14	1.5	7	0.8	80	8.7	15	1.7	40	4.3	139	15.1	41	4.5	104	11.3	22	2.4
Utah	169	100.0	44	25.9	6	3.3	2	1.4	11	6.6	1	0.7	7	4.0	71	42.1	18	10.5	9	5.3	—	0.3
Vermont	118	100.0	19	16.3	4	3.6	3	2.1	2	1.6	7	5.9	16	13.4	50	42.2	2	1.8	15	12.6	—	0.3
Virginia	595	100.0	172	28.9	10	1.7	7	1.2	32	5.3	14	2.3	72	12.0	212	35.6	12	2.0	61	10.3	3	0.6
Washington	560	100.0	170	30.4	30	5.4	2	0.3	29	5.2	13	2.3	28	4.9	177	31.5	25	4.4	80	14.3	8	1.4
West Virginia	264	100.0	38	14.2	2	0.7	7	2.7	4	1.7	4	1.7	44	16.6	122	46.1	8	3.0	35	13.2	—	0.1
Wisconsin	1,089	100.0	461	42.1	13	1.2	81	7.4	44	4.1	21	1.9	127	11.9	167	15.7	18	1.7	141	12.8	15	1.2
Wyoming	54	100.0	20	36.4	2	3.0	2	3.1	4	6.6	1	1.7	7	12.8	11	20.0	1	2.1	7	13.0	1	1.4
Total U.S.	25,223	100.0	7,756	30.8	798	3.2	989	3.9	1,380	5.5	492	2.0	2,423	9.6	7,556	30.0	807	3.2	2,540	10.1	482	1.9

"—" Sample size too small.

1. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.)

2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).

3. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

4. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.

Table 3-8. Number and Percentage of Recreational Boats Owned by U.S. Households by Boat Type and by Census Region of Registration or Storage, 2018[1,2,3]

Census Region	All Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boat Types[4]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Northeast	4,358	100.0	847	19.4	204	4.7	92	2.1	162	3.7	164	3.8	589	13.5	1,727	39.7	121	2.8	395	9.1	57	1.3
Midwest	7,318	100.0	2,383	32.6	187	2.6	489	6.7	394	5.4	91	1.2	733	10.0	2,038	27.8	152	2.1	716	9.8	135	1.8
South	9,359	100.0	3,422	36.6	259	2.8	345	3.7	542	5.8	162	1.7	760	8.1	2,483	26.5	279	3.0	920	9.8	187	2.0
West	4,188	100.0	1,104	26.4	148	3.5	63	1.5	282	6.7	75	1.8	341	8.1	1,308	31.2	255	6.1	509	12.2	103	2.5
Total U.S.	25,223	100.0	7,756	30.8	798	3.2	989	3.9	1,380	5.5	492	2.0	2,423	9.6	7,556	30.0	807	3.2	2,540	10.1	482	1.9

1. Ns are in units of 1,000.
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. Ratio adjustment was used to account for nonresponse and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
4. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.

3.3 Boat-Owning Household Socioeconomic Characteristics

The characteristics of the households that owned boats and different types of boats are reported in ***Table 3-9***. The socioeconomic characteristics of persons, both boat owners and non-owners, who went recreational boating in 2018 are reported in the 2018 NRBSS Participation Survey final report (Duffy et al., 2020b).

Boat-owning households were predominately all-White households. All Black/African American households represented less than 1% of boat-owning households. Other and mixed-race households constituted 16.3% of all boat-owning households. All Hispanic households represented 4.6% of boat-owning households nationwide.

Households with two or more adults without children (50.4%) and with children (30.4%) constituted 80.8% of boat-owning households. Single-adult-no-children households represented 16.4% of all boat-owning households.

The NRBSS Participation Survey findings showed that the greatest percentage of boating participants do not, as is sometimes assumed, have high household incomes. Although, as would be expected, boat-owning households have higher incomes on average, than boating participants in general; almost a quarter (23.1%) of boat-owning households in 2018 had household incomes of less than $50,000, and 41.8% earned less than $75,000. Households with household incomes between $75,000 and $149,999 represented the greatest percentage (37.5%) of boat-owning households.

3.4 Number of Boats Owned by All Households and Boat-Owning Households

Boat-owning households across the country owned an average of 1.8 boats (***Table 3-10***). Half of all U.S. boat-owning households owned one boat. Two or more boats were owned by half of boat-owning households in Maine, Massachusetts, New Hampshire, New York, and West Virginia. Households that owned boats in the Northeast Census Region owned an average of 2.0 boats compared with 1.6 boats in the South Census Region (***Table 3-11***).

Table 3-9. Number and Percentage of U.S. Households that Owned Recreational Boats by Demographics and Boat Type[1,2,3]

Demographics	Households Owning Any Boat[4]		Households Owning at Least One of the Following Boat Types																			
			Open Power Boat		Cabin Power Boat		Pontoon Boat		PWC		Sailboat		Canoe		Kayak		Paddleboard		Rowed Boat		Any Other Boat5	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Race																						
White (all persons)	12,013	82.9	5,051	84.7	719	85.0	1,239	86.0	743	85.5	539	84.9	1,781	83.4	3,523	83.1	551	83.4	1,972	83.2	384	84.0
Black/AA (all persons)	111	0.8	50	0.8	8	0.9	4	0.3	7	0.8	7	1.1	3	0.1	17	0.4	1	0.2	21	0.9	1	0.2
Other	2,362	16.3	862	14.5	119	14.1	198	13.7	119	13.7	89	14.0	352	16.5	700	16.5	109	16.5	377	15.9	72	15.8
Ethnicity																						
Hispanic/Latino (all persons)	220	1.5	93	1.6	21	2.5	15	1.0	19	2.2	4	0.6	14	0.7	31	0.7	15	2.3	32	1.4	13	2.8
Hispanic/Latino (some persons)	445	3.1	162	2.7	29	3.4	25	1.7	29	3.3	18	2.8	53	2.5	170	4.0	18	2.7	69	2.9	6	1.3
Other	13,821	95.4	5,708	95.7	796	94.1	1,401	97.2	821	94.5	613	96.5	2,069	96.9	4,039	95.3	628	95.0	2,269	95.7	438	95.8
Household Composition																						
Single adult, no children	2,373	16.4	829	13.9	120	14.2	157	10.9	105	12.1	111	17.5	330	15.4	725	17.1	89	13.5	426	18.0	89	19.5
Single adult, one or more children	408	2.8	149	2.5	14	1.7	32	2.2	21	2.4	11	1.7	53	2.5	152	3.6	30	4.5	58	2.4	19	4.2
Two or more adults, no children	7,297	50.4	3,149	52.8	490	57.9	906	62.9	420	48.3	366	57.6	1,112	52.1	1,902	44.9	226	34.2	1,263	53.3	208	45.5
Two or more adults, one or more children	4,408	30.4	1,836	30.8	222	26.2	346	24.0	323	37.2	147	23.1	641	30.0	1,461	34.5	316	47.8	623	26.3	141	30.9
Household Income																						
Less than $25,000	1,020	7.0	365	6.1	26	3.1	48	3.3	28	3.2	30	4.7	157	7.4	186	4.4	45	6.8	289	12.2	41	9.0
$25,000 to $49,999	2,335	16.1	944	15.8	87	10.3	207	14.4	82	9.4	61	9.6	355	16.6	575	13.6	57	8.6	502	21.2	60	13.1
$50,000 to $74,999	2,715	18.7	1,138	19.1	115	13.6	268	18.6	103	11.9	100	15.7	410	19.2	798	18.8	120	18.2	422	17.8	63	13.8
$75,000 to $149,999	5,426	37.5	2,179	36.5	321	37.9	572	39.7	318	36.6	235	37.0	870	40.7	1,724	40.7	220	33.3	837	35.3	198	43.3
$150,000 and over	2,990	20.6	1,337	22.4	297	35.1	346	24.0	338	38.9	209	32.9	344	16.1	957	22.6	219	33.1	320	13.5	95	20.8

1. Own or co-own means at least one person in the household holds the title, registration, or ownership rights to a recreational boat/vessel.
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
4. The numbers and percentage value of households owning particular boat types do not sum to the number and percentage value of households owning any boat because a household can own more than one type of boat.
5. The category "Any Other Boat" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.

Table 3-10. Number of Recreational Boats Owned per U.S. Household and per Boat-Owning Household by State of Residence, 2018[1,2,3,4]

State	Number of Boats Owned by		
	All U.S. Households	Boat-Owning Households	
	Mean	Mean	Median
Alabama	0.2	1.6	1.0
Alaska	0.6	1.8	1.0
Arizona	0.1	1.5	1.0
Arkansas	0.3	1.5	1.0
California	0.1	1.8	1.0
Colorado	0.3	2.1	1.0
Connecticut	0.3	2.0	1.0
Delaware	0.3	1.7	1.0
District of Columbia	*	*	*
Florida	0.2	1.6	1.0
Georgia	0.2	1.6	1.0
Hawaii	0.1	1.8	1.0
Idaho	0.4	1.8	1.0
Illinois	0.2	2.0	1.0
Indiana	0.2	1.7	1.0
Iowa	0.3	1.7	1.0
Kansas	0.2	1.5	1.0
Kentucky	0.2	1.6	1.0
Louisiana	0.3	1.6	1.0
Maine	0.9	2.4	2.0
Maryland	0.2	1.9	1.0
Massachusetts	0.2	2.0	2.0
Michigan	0.5	2.0	1.0
Minnesota	0.6	2.0	1.0
Mississippi	0.2	1.6	1.0
Missouri	0.2	1.6	1.0
Montana	0.4	1.9	1.0
Nebraska	0.6	2.9	1.0
Nevada	0.1	1.6	1.0
New Hampshire	0.6	2.1	2.0
New Jersey	0.1	1.7	1.0
New Mexico	0.1	1.5	1.0
New York	0.2	2.0	2.0
North Carolina	0.2	1.6	1.0
North Dakota	0.3	1.5	1.0
Ohio	0.2	1.9	1.0
Oklahoma	0.3	1.7	1.0
Oregon	0.3	1.8	1.0

(continued)

Table 3-10. Number of Recreational Boats Owned per U.S. Household and per Boat-Owning Household by State of Residence, 2018[1,2,3,4] (continued)

State	Number of Boats Owned by		
	All U.S. Households	Boat-Owning Households	
	Mean	Mean	Median
Pennsylvania	0.3	1.8	1.0
Rhode Island	0.3	2.0	1.0
South Carolina	0.3	1.7	1.0
South Dakota	0.3	1.5	1.0
Tennessee	0.2	1.6	1.0
Texas	0.1	1.5	1.0
Utah	0.2	1.9	1.0
Vermont	0.4	2.1	1.0
Virginia	0.2	1.8	1.0
Washington	0.2	2.1	1.0
West Virginia	0.3	2.0	2.0
Wisconsin	0.4	1.8	1.0
Wyoming	0.2	1.5	1.0
Total U.S.	0.2	1.8	1.0

* The sample size for the District of Columbia is too small to support estimates.

1. A boat-owning household is one in which someone residing in the household owned at least one recreational boat in 2018.
2. Own or co-own means at least one person in the household holds the title, registration, or ownership rights to a recreational boat/vessel.
3. Not all boats owned by households are registered or stored in the state where the owner resides.
4. This includes all types of recreational boats.

Table 3-11. Number of Recreational Boats Owned per U.S. Household and per Boat-Owning Household by Census Region of Residence, 2018[1,2,3,4]

Census Region	Number of Boats Owned by		
	All U.S. Households	Boat-Owning Households	
	Mean	Mean	Median
Northeast	0.2	2.0	1.0
Midwest	0.3	1.9	1.0
South	0.2	1.6	1.0
West	0.2	1.8	1.0
Total U.S.	0.2	1.8	1.0

1. A boat-owning household is one in which someone residing in the household owned at least one recreational boat in 2018.
2. Own or co-own means at least one person in the household holds the title, registration, or ownership rights to a recreational boat/vessel.
3. Not all boats owned by households are registered or stored in the region where the owner resides.
4. This includes all types of recreational boats.

3.5 Ownership of Boats that Are and Are Not Required to be Registered

Table 3-12 reports the percentages of households in the United States and in different states that owned (1) only boats that were required to be registered by states, (2) only boats not required to be registered, and (3) both registered and unregistered boats. The percentages for different states depend on the mix of boat types and sizes that are owned and that state's registration requirements. Most states require that boats with motors or engines be registered in the state where the owner lives or the boat is kept. Some states require that all boats that are operated on their waters be registered, including human-powered craft. Many states also require that boats over a certain length be registered even if they do not have a motor or engine. That length differs from state to state.

About half (47.4%) of boat-owning households in the United States owned only boats that were required to be registered. About 42% of households owned only boats that were not required to be registered by a state, and almost 11% owned both registered and unregistered boats.

The percentage of households that owned only boats that were registered is highest in Ohio (97.7%), North Dakota (78.3%), and Minnesota (75.3%) and lowest in New Hampshire (20.7%), West Virginia (22.6%), and Maine (23.3%). States with the higher percentage of households that owned only nonregistered boat include Pennsylvania (70.8%), Colorado (70.5%), West Virginia (69.0%), New Hampshire (65.8%), and Vermont (60.9%).

Table 3-12. Households that Own Only Registered Boats[1], Only Unregistered Boats, or Own Both Registered and Unregistered Boats by State of Residence, 2018[2]

State	All Boat-Owning Households		Households Owning					
			Only Registered Boats		Only Unregistered Boats		Both Registered and Unregistered Boats	
	N (000)[3]	%	N (000)	%	N (000)	%	N (000)	%
Alabama	256	100.0	151	58.9	80	31.4	25	9.7
Alaska	81	100.0	29	35.9	40	49.0	12	15.0
Arizona	164	100.0	84	51.0	73	44.5	7	4.4
Arkansas	242	100.0	120	49.6	100	41.2	22	9.2
California	865	100.0	449	51.9	312	36.0	104	12.0
Colorado	244	100.0	64	26.2	172	70.5	8	3.3
Connecticut	168	100.0	47	28.1	97	57.5	24	14.4
Delaware	66	100.0	27	41.1	33	49.5	6	9.4
District of Columbia	293	100.0	120	40.8	75	25.7	98	33.4
Florida	1,081	100.0	565	52.2	414	38.3	102	9.5
Georgia	455	100.0	193	42.5	219	48.0	43	9.5
Hawaii	22	100.0	10	46.2	11	48.5	1	5.4
Idaho	129	100.0	44	34.2	70	54.0	15	11.8
Illinois	378	100.0	171	45.2	147	39.0	60	15.8
Indiana	335	100.0	131	39.2	167	49.8	37	11.0
Iowa	205	100.0	133	64.7	52	25.4	20	9.9
Kansas	117	100.0	63	53.9	46	39.6	8	6.5
Kentucky	205	100.0	112	54.4	73	35.6	20	10.0

(continued)

Table 3-12. Households that Own Only Registered Boats[1], Only Unregistered Boats, or Own Both Registered and Unregistered Boats by State of Residence, 2018[2] (continued)

State	All Boat-Owning Households		Households Owning					
			Only Registered Boats		Only Unregistered Boats		Both Registered and Unregistered Boats	
	N (000)[3]	%	N (000)	%	N (000)	%	N (000)	%
Louisiana	297	100.0	200	67.3	68	22.8	29	9.9
Maine	189	100.0	44	23.3	114	60.2	31	16.5
Maryland	265	100.0	83	31.2	157	59.3	25	9.5
Massachusetts	280	100.0	94	33.7	144	51.4	42	14.9
Michigan	871	100.0	354	40.6	357	41.1	160	18.3
Minnesota	610	100.0	459	75.3	76	12.5	75	12.3
Mississippi	141	100.0	83	58.9	46	32.6	12	8.5
Missouri	352	100.0	163	46.2	152	43.4	37	10.4
Montana	91	100.0	33	35.9	48	52.7	10	11.4
Nebraska	163	100.0	57	35.0	98	60.1	8	4.8
Nevada	60	100.0	28	46.1	25	42.9	7	11.0
New Hampshire	158	100.0	33	20.7	104	65.8	21	13.5
New Jersey	200	100.0	84	41.8	88	44.1	28	14.1
New Mexico	48	100.0	23	49.2	22	45.4	3	5.4
New York	614	100.0	233	37.9	310	50.4	71	11.6
North Carolina	484	100.0	218	45.1	224	46.3	42	8.6
North Dakota	65	100.0	51	78.3	10	14.9	4	6.9
Ohio	371	100.0	362	97.7	5	1.4	4	1.0
Oklahoma	209	100.0	130	62.2	61	29.1	18	8.7
Oregon	278	100.0	88	31.4	157	56.5	33	12.0
Pennsylvania	854	100.0	200	23.4	604	70.8	50	5.8
Rhode Island	56	100.0	16	27.9	31	55.9	9	16.2
South Carolina	336	100.0	177	52.6	117	34.7	42	12.8
South Dakota	60	100.0	39	64.3	15	25.5	6	10.2
Tennessee	280	100.0	151	53.8	106	37.8	23	8.4
Texas	656	100.0	403	61.4	211	32.1	42	6.5
Utah	95	100.0	50	52.8	38	39.8	7	7.4
Vermont	49	100.0	12	24.1	30	60.9	7	14.9
Virginia	378	100.0	137	36.2	201	53.1	40	10.7
Washington	309	100.0	142	46.0	109	35.1	58	18.8
West Virginia	120	100.0	27	22.6	83	69.0	10	8.4
Wisconsin	492	100.0	279	56.8	119	24.2	94	19.0
Wyoming	35	100.0	17	48.7	14	38.9	4	12.4
Total U.S.	14,486	100.0	6,864	47.4	6,051	41.8	1,571	10.9

1. Registered boats: Most states require that boats with motors or engines be registered in the state where the owner lives or the boat is used, no matter how long the boat is. Many states also require boats over a certain length to be registered even if they do not have a motor or engine. The size can be different in each state. Some boats can be registered by a state and documented with the USCG.
2. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
3. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.)

The Northeast Census Region had the lowest percentage (29.7%) of boat-owning households that owned only boats that were required to be registered (***Table 3-13***) in large part because of the high proportion of human-powered boats owned in states comprising the Region. In comparison, 56.3% of boat-owning households in the Midwest Census Regions and 50.7% in the South Census Region owned only boats that must be registered.

Table 3-13. Households that Own Only Registered Boats[1], Only Unregistered Boats, or Own Both Registered and Unregistered Boats by Census Region of Residence, 2018

Census Region	All Boat-Owning Households		Households Owning					
			Only Registered Boats		Only Unregistered Boats		Both Registered and Unregistered Boats	
	N (000)[2]	%	N (000)	%	N (000)	%	N (000)	%
Northeast	2,568	100.0	763	29.7	1,522	59.2	283	11.1
Midwest	4,018	100.0	2,261	56.3	1,246	31.0	511	12.7
South	5,477	100.0	2,778	50.7	2,193	40.0	506	9.2
West	2,423	100.0	1,062	43.8	1,090	45.0	271	11.2
Total U.S.	14,486	100.0	6,864	47.4	6,051	41.8	1,571	10.9

1. Registered boats: Most states require that boats with motors or engines be registered in the state where the owner lives or the boat is used, no matter how long the boat is. Many states also require boats over a certain length to be registered even if they do not have a motor or engine. The size can be different in each state. Some boats can be registered by a state and documented with the USCG.

2. Ns are in units of 1,000.

3.6 Exclusive and Joint/Shared Ownership of Boats

Evidence suggests that joint/shared ownership is an increasingly popular way to secure access to boats. This trend has implications for the delivery of boat operator safety education. ***Table 3-14*** presents the number and percentage of different types of boats that are (1) owned exclusively by someone residing in the household or (2) owned jointly with people who do not live in the household. Joint/shared ownership can include informal joint ownership by individuals that reside inside and outside the household (e.g., family, friends), as well as boat shares through clubs and syndicates.

The vast majority (94.5%), or 23.83 million, of boats in the country were owned exclusively by someone residing in the household. Nearly 1.4 million boats were in some manner of joint/shared ownership. As would be expected, a high percentage (43%) of boats that were joint/shared owned were either open or cabin powerboats. However, it is interesting to note the large number of canoes (128,000), kayaks (265,000), and rowed boats (154,000) that were joint/shared owned. Over a third of the boats that were joint/shared owned were in the South Census Region (***Table 3-15***).

Table 3-14. Number and Percentage of Boats Owned by Persons in the Household or Co-owned with Person Outside the Household by Type of Boat, 2018[1,2]

Boat Type	Boats in the Household			
	Owned by Persons in HH		Joint/Shared Ownership[3] with Persons Outside HH	
	N (000)	%	N (000)	%
All Boats	23,827	94.5	1,396	5.5
Open Power Boats	7,221	93.1	535	6.9
Cabin Power Boats	733	91.9	65	8.1
Pontoon Boats	908	91.8	81	8.2
PWCs	1,303	94.4	77	5.6
Sailboats	461	93.7	31	6.3
Canoes	2,295	94.7	128	5.3
Kayaks	7,291	96.5	265	3.5
Paddleboards	768	95.2	39	4.8
Rowed Boats	2,386	93.9	154	6.1
Other Boat Types	461	95.7	21	4.3

1. Ns are in units of 1,000.
2. Ratio adjustment was used to account for nonresponse and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
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.

Table 3-15. Number and Percentage of Boats Owned by Persons in the Household or Co-owned with Person Outside the Household by Census Region of Residence, 2018[1,2,3]

Census Region	Boats in the Household			
	Owned by Persons in HH		Joint/Shared Ownership[2] with Persons Outside HH	
	N (000)	%	N (000)	%
Northeast	4,147	95.2	211	4.8
Midwest	6,876	94.0	442	6.0
South	8,852	94.6	507	5.4
West	3,952	94.4	236	5.6
Total U.S.	23,827	94.5	1,396	5.5

1. Ns are in units of 1,000.
2. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
3. Joint ownership can include informal joint ownership by individuals who reside inside and outside the household, as well as boat club shares through clubs and syndicates.

3.7 Trailering and Transporting Boats to Be Launched

For a number of reasons, there is considerable interest on the part of agencies that provide boating facilities, as well as agencies and organizations involved with preventing the spread of aquatic invasive species, in estimates of the number and types of boats that are trailered and launched in the United States. First, considerable investment goes to the construction, maintenance, and operation of boat launch facilities around the country. Historically, many of these facilities have been designed to launch powerboats. However, there is increasing pressure to develop or re-purpose more sites to exclusively launch human-powered boats. In addition, many parts of the country are experiencing significant problems associated with aquatic invasive species, which are aquatic organisms that become established in lakes and streams beyond their natural and historic range. Furthermore, such "infestations" can result in damage to lake and stream ecosystems and a reduction in recreational and property values. Boats, trailers, waders, and other fishing and boating equipment are one way that aquatic invasive species are spread from waterbody to waterbody. This is requiring states to implement educational programming, enact and enforce regulations related to cleaning and disinfecting boats, and build boat-cleaning facilities at boat launch/access facilities, all of which require funding.

About 6 million boats that were operated in 2018 were either trailered or transported (i.e., on car top, in a truck) at least once for the purpose of launching them on the water (***Table 3-16***). This is almost two-thirds (65.3%) of the boats that were operated during 2018. About 3.32 million power boats including open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, and PMC were trailered at least once and launched. Nearly 2.66 million human-powered boats, including canoes, kayaks, paddle boards, and rowed boats, were transported to be launched. Many of these boats are not registered and because they do not purchase fuel, they generally do not contribute financially to support the development or maintenance of launch/access facilities.

The percentage and number of boats trailered or transported to be launched in different states and regions of the country depends on a number of factors, including the number of boats that are operated, mix of different types of boats that are owned, and where they are stored (e.g., in the water or on land, at marinas, waterfront homes). By far, Florida had the largest number of boats operated in 2018 that were trailered (334,000) or transported (212,000) at least once, followed by Michigan (296,000), Texas (282,000), and Georgia (278,000). A number of states had significantly more boats transported on car tops and in trucks to be launched than were trailered, including New Hampshire, Pennsylvania, Colorado, and Montana.

The South Census Region had the highest number (1.62 million) of boats that were trailered for the purpose of launching them (***Table 3-17***). Over three-quarters (76.3%) of the boats that are usually transported and were operated in 2018 were transported to be launched at least one time in the West Census regions. The West (72.8%) and South (68.8%) Census Regions had the highest percentage of boats that were operated in 2018 that were trailered or transported to be launched.

Table 3-16. Number and Percentage of Operated Boats that Were Trailered/Transported at Least Once for the Purpose of Being Launched by State of Registration or Storage, 2018[1,2,3]

State	Operated Boats					
	Trailered/Transported		Trailered		Transported	
	N (000)	%	N (000)	%	N (000)	%
Alabama	131	73.7	92	71.7	39	78.6
Alaska	30	68.5	19	77.2	11	57.4
Arizona	70	83.0	44	77.0	26	95.4
Arkansas	97	75.3	58	73.9	39	77.6
California	262	63.3	157	59.4	105	70.3
Colorado	123	80.6	38	77.2	85	82.2
Connecticut	62	66.8	22	50.7	40	80.8
Delaware	35	76.9	18	67.8	17	90.1
District of Columbia	32	39.3	14	22.7	18	92.3
Florida	546	60.4	334	56.8	212	67.1
Georgia	278	79.2	112	71.8	166	85.1
Hawaii	11	65.0	5	69.8	6	61.0
Idaho	50	76.3	23	73.3	27	78.9
Illinois	167	71.7	79	65.5	88	78.3
Indiana	122	57.6	65	58.2	57	57.0
Iowa	77	69.3	56	67.2	21	75.7
Kansas	55	82.0	35	83.8	20	79.2
Kentucky	110	78.0	67	83.9	43	70.3
Louisiana	160	71.5	128	73.4	32	64.6
Maine	45	40.5	22	47.9	23	35.1
Maryland	95	52.7	49	55.2	46	50.4
Massachusetts	87	63.0	30	50.8	57	72.3
Michigan	296	49.3	168	53.4	128	44.8
Minnesota	239	57.5	175	62.5	64	47.2
Mississippi	70	74.5	52	77.3	18	67.4
Missouri	125	55.7	82	57.4	43	52.7
Montana	48	87.0	15	78.1	33	91.9
Nebraska	110	86.9	27	64.2	83	98.0
Nevada	24	80.4	12	80.2	12	80.7
New Hampshire	76	59.9	22	48.9	54	65.9
New Jersey	57	47.1	25	39.1	32	56.1
New Mexico	18	84.7	11	83.9	7	86.1
New York	254	58.7	95	45.5	159	70.9
North Carolina	202	66.1	105	60.6	97	73.4
North Dakota	21	74.2	17	74.4	4	73.4
Ohio	124	61.6	70	57.8	54	67.4
Oklahoma	82	71.8	58	70.8	24	74.3
Oregon	141	77.6	64	86.2	77	71.6
Pennsylvania	182	68.7	56	61.4	126	72.5
Rhode Island	18	51.4	10	51.2	8	51.6
South Carolina	265	68.1	190	68.8	75	66.2
South Dakota	23	72.4	16	81.5	7	57.0
Tennessee	131	75.7	85	75.5	46	76.2
Texas	282	70.3	202	67.9	80	77.1

(continued)

Table 3-16. Number and Percentage of Operated Boats that Were Trailered/Transported at Least Once for the Purpose of Being Launched by State of Registration or Storage, 2018[1,2,3] (continued)

State	Operated Boats					
	Trailered/Transported		Trailered		Transported	
	N (000)	%	N (000)	%	N (000)	%
Utah	34	78.2	19	82.5	15	73.3
Vermont	22	57.0	6	41.5	16	65.6
Virginia	109	63.3	56	59.5	53	67.8
Washington	133	69.5	67	64.4	66	75.6
West Virginia	86	93.1	17	87.1	69	94.7
Wisconsin	175	53.5	135	59.2	40	40.1
Wyoming	15	83.9	9	81.3	6	88.1
Total U.S.	5,975	65.3	3,319	63.1	2,656	68.2

1. Trailered boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (e.g., WaveRunners, Sea-Doos), sailboats (powered only by sails or auxiliary sailboats, i.e., sailboats with a motor), and other boats.
2. Transported boats include canoes (including inflatable canoes), kayaks (including inflatable kayaks), paddleboards, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.)

Table 3-17. Number and Percentage of Operated Boats that Were Trailered/Transported at Least Once for the Purpose of Being Launched by Census Region of Registration or Storage, 2018[1,2,3]

Census Region	Operated Boats					
	Trailered/Transported		Trailered		Transported	
	N (000)	%	N (000)	%	N (000)	%
Northeast	802	59.0	288	48.7	514	66.8
Midwest	1,534	59.5	926	60.5	608	58.0
South	2,681	68.8	1,623	66.4	1,058	72.8
West	958	72.8	482	69.6	476	76.3
Total U.S.	5,975	65.3	3,319	63.1	2,656	68.2

1. Trailered boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (e.g., WaveRunners, Sea-Doos), sailboats (powered only by sails or auxiliary sailboats, i.e., sailboats with a motor), and other boats.
2. Transported boats include canoes (including inflatable canoes), kayaks (including inflatable kayaks), paddleboards, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. Ns are in units of 1,000.

Boats were trailered/transported for the purpose of launching them 167.3 million times in 2018. On average, the nearly 5.98 million boats that were operated and trailered/transported at least once in 2018 were trailered/transported an average of 28 times (***Table 3-18***), and half were trailered/transported 12 or fewer times. It is estimated that boats were trailered for launching 99.57 million times. Canoes, kayaks, paddleboards, and rowed boats were transported and launched an estimated 63.74 million times in 2018.

Table 3-18. Number of Times Operated Boats Were Trailered/Transported at Least Once for the Purpose of Being Launched by State of Registration or Storage, 2018[1,2]

State	Number of Times Operated Boats Were					
	Trailered/Transported		Trailered		Transported	
	Median	Mean	Median	Mean	Median	Mean
Alabama	24	36	24	38	24	33
Alaska	12	37	24	48	12	22
Arizona	12	26	24	29	12	20
Arkansas	24	33	24	35	24	31
California	12	28	12	29	12	26
Colorado	24	29	24	29	24	29
Connecticut	12	27	6	24	22	29
Delaware	12	30	24	34	12	25
District of Columbia	*	15	*	5	46	46
Florida	12	26	12	26	12	25
Georgia	24	29	24	32	24	27
Hawaii	12	27	12	28	12	26
Idaho	35	38	24	34	48	42
Illinois	12	29	24	35	12	23
Indiana	12	27	12	27	12	27
Iowa	12	32	12	32	24	30
Kansas	24	44	32	53	24	30
Kentucky	24	33	24	39	24	25
Louisiana	24	35	24	37	24	27
Maine	*	15	*	19	*	13
Maryland	12	20	12	25	12	16
Massachusetts	12	23	12	21	24	25
Michigan	*	20	12	24	*	15
Minnesota	12	25	12	31	*	12
Mississippi	24	36	24	37	24	34
Missouri	12	24	12	32	12	12
Montana	24	26	12	23	24	28
Nebraska	12	19	12	32	12	13
Nevada	24	30	24	43	12	16
New Hampshire	12	16	*	12	12	19
New Jersey	*	23	*	22	12	23
New Mexico	24	41	36	46	24	32
New York	12	23	*	20	24	26
North Carolina	12	28	12	28	24	28
North Dakota	24	32	24	36	24	18
Ohio	12	26	12	25	24	27
Oklahoma	24	40	24	44	24	28
Oregon	24	36	36	41	24	32
Pennsylvania	24	29	12	28	24	30
Rhode Island	9	18	12	18	5	18
South Carolina	24	32	24	33	24	31
South Dakota	24	37	36	51	24	14
Tennessee	24	36	24	43	12	23
Texas	24	32	24	32	24	29
Utah	24	25	24	30	12	20

(continued)

Table 3-18. Number of Times Operated Boats Were Trailered/Transported at Least Once for the Purpose of Being Launched by State of Registration or Storage, 2018[1,2] (continued)

State	Number of Times Operated Boats Were					
	Trailered/Transported		Trailered		Transported	
	Median	Mean	Median	Mean	Median	Mean
Vermont	12	19	*	19	12	18
Virginia	12	27	12	27	24	26
Washington	12	28	12	29	24	26
West Virginia	24	28	48	53	19	21
Wisconsin	12	24	12	29	*	13
Wyoming	24	34	24	44	12	20
Total U.S.	12	28	12	30	12	24

* Median could not be calculated because of a highly skewed distribution.

1. Trailered boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (e.g., WaveRunners, Sea-Doos), sailboats (powered only by sails or auxiliary sailboats, i.e., sailboats with a motor), and other boats.
2. Transported boats include canoes (including inflatable canoes), kayaks (including inflatable kayaks), paddleboards, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).

Boats that were trailered/transported at least once in the West Census and South Census Regions were trailered/transported an average of 30 times compared with 23 times for boats in the Northeast Census Regions (***Table 3-19***).

Table 3-19. Number of Times Operated Boats Were Trailered/Transported at Least Once for the Purpose of Being Launched by Census Region of Registration or Storage, 2018[1,2]

Census Region	Number of Times Operated Boats Were					
	Trailered/Transported		Trailered		Transported	
	Median	Mean	Median	Mean	Median	Mean
Northeast	12	23	*	21	24	25
Midwest	12	25	12	30	12	18
South	24	30	24	32	24	26
West	24	30	24	32	24	28
Total U.S.	12	28	12	30	12	24

* Median could not be calculated because of a highly skewed distribution.

1. Trailered boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (e.g., WaveRunners, Sea-Doos), sailboats (powered only by sails or auxiliary sailboats, i.e., sailboats with a motor), and other boats.
2. Transported boats include canoes (including inflatable canoes), kayaks (including inflatable kayaks), paddleboards, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).

3.8 Locations Where Boats Are Stored

Boats can be stored in the water or on land at various locations, including at the owner's permanent or second/vacation home, marinas, and storage facilities. The number and types of boats stored at various locations have implications for planning boating facilities (e.g., boating access sites), law enforcement, and positioning of search and rescue capabilities.

Where different types of boats that were operated at least once in 2018 were stored during the boating season is reported in ***Table 3-20***. This does not include boats that were owned but were not operated out on the water at least once in 2018, including boats not in operating condition. About three-quarters of boats were stored on land (either at the owner's permanent [64.7 %] or second home [10.9%]. Although the majority of these boats were trailered or transported to be launched, it is important to note that some of these residences are located adjacent to lakes, rivers, and oceans, meaning that the boats may not need to be trailered or transported to be launched. Twelve and half percent (12.5%) of all boats were stored in the water at permanent or other residences (e.g., second/vacation homes). About 647,000 of the boats that were operated at least once in 2018 were stored at marinas, yacht/boat clubs, and boat yards.

As would be expected, there are significant differences in the percentages of different types of boats stored in various locations. Almost half (47.2%) of cabin power boats were kept at marinas or boat yards or yacht clubs, and 20.3% were kept in the water at primary or other residences. The vast majority of canoes (93.1%), kayaks (93.0%) paddleboards (89.7%), and rowed boats (84.4%) were stored on land at primary or secondary residences. Of pontoon boats, 40.5% were stored in the water at residences. Almost three-quarters (72.1%) of open power boats were stored on land at primary or secondary residences.

Table 3-20. Locations Where Operated Boats Were Stored in the U.S. by Boat Type, 2018[1]

	All Boats		Boats Stored at …													
			Permanent Residence				Another Residence				Marina, Boat Yard, Yacht and Boat Clubs,[3] Dry Stack		Non-waterfront Storage Facility		Other Location	
			In Water		On Land		In Water		On Land[2]							
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
All Boats	9,151	100.0	746	8.1	5,914	64.7	400	4.4	1,000	10.9	647	7.1	287	3.1	156	1.7
Open Power Boats	3,567	100.0	351	9.8	2,150	60.3	171	4.8	422	11.8	265	7.4	157	4.4	51	1.4
Cabin Power Boats	389	100.0	56	14.3	81	20.8	23	6.0	22	5.7	183	47.2	17	4.3	7	1.7
Pontoon Boats	483	100.0	117	24.2	144	29.9	85	17.6	51	10.6	49	10.2	29	5.9	8	1.6
PWCs	511	100.0	84	16.5	249	48.6	59	11.5	60	11.8	25	4.9	23	4.6	10	2.0
Sailboats	142	100.0	10	6.9	47	32.9	10	7.2	14	9.8	56	39.5	1	0.8	4	2.8
Canoes	622	100.0	13	2.0	496	79.8	15	2.4	83	13.3	5	0.9	7	1.1	3	0.4
Kayaks	2,293	100.0	46	2.0	1,919	83.7	20	0.9	214	9.3	25	1.1	27	1.2	43	1.9
Paddleboards	290	100.0	16	5.4	232	80.0	2	0.7	28	9.7	1	0.5	1	0.2	10	3.5
Rowed Boats	722	100.0	39	5.4	526	72.9	10	1.4	83	11.5	23	3.1	24	3.3	17	2.4
Other Boat Types[4]	131	100.0	15	11.8	69	52.6	5	4.1	23	17.4	13	10.2	2	1.5	3	2.5

1. Ratio adjustment was used to account for nonresponse and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and/or within the table.
2. Other residences include second homes and property owned by persons not residing in the household.
3. Boat clubs include more formal yacht clubs and also smaller and less formal organizations that provide storage and events.
4. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.

3.9 Percentage of Boats in Operating Condition

Approximately 93% of the boats that were owned in the United States were operational in 2018, meaning that a boat was in a condition that allowed it to be operated out on the water either by human, wind, or mechanical power (***Table 3-21***). About 1.8 million boats of different types were not in a condition that allowed them to be taken out on the water. About 94.1% of pontoons, 90.6% of open power boats, and 88.3% of cabin motorboats were in operating condition in 2018. About 81% of sailboats were in operating condition, which is the lowest across all boat types.

Of the 23.45 million boats that were in operating condition, over a third (37.0%) were owned by households in the South Census Region. Only about 16% of the boats in operating condition were in the West Census Region.

3.10 Recreational Boating Exposure Estimates

As previously noted, a primary purpose of the NRBSS is to produce valid and reliable estimates of boating exposure for all boats—motorized boats and human-powered boats—for the country as a whole and for all states, including (1) number of person boat days, (2) number of person boat hours, (3) number of person boat days, and (4) number of person boat hours. Producing these estimates requires estimates of the (1) number of boats that were operated at least once in 2018, (2) number of days that they were operated, (3) number of different times they were taken out on the water (i.e., outings) on the days that they were operated, (4) average number of persons aboard, and (5) hours per average outing.

3.11 Percentage and Number of Boats Operated in 2018

It was determined that the sample size and response rate were not adequate to produce reliable exposure estimates for all of the 13 different boat types surveyed for all states. Therefore, it was decided, with USCG agreement, to aggregate 13 boat types into three categories: all boats, motorized boats, and human-powered boats and produce exposure estimates and risk ratios only for these categories. The “Motorized Boats” category includes open power boats, cabin power boats, pontoon boats, and PWCs; the “Human-Powered Boats” category includes kayaks, canoes, paddleboards, and rowed boats. The “All Boats” category includes motorized boats, human-powered craft and sailboats, and other types of boats.

Just over a third (36.3%), 9.15 million, of recreational boats were taken out on the water at least once during 2018 (***Table 3-22***). That means that about 16 million boats, including the 1.8 million boats that were not in operating condition, were not taken out on the water in 2018. Almost half (45.3%) of motorized boats were operated out on the water at least once compared with just 29.5% of human-powered craft. As might be projected, a higher percentage of boats in southern states such as Florida (51.9%), Louisiana (49.3%), and Hawaii (47.1%) were taken out on the water at least once in 2018. States with the lowest percentages of boats that were operated out on the water at least once are Nebraska (21.7%), Utah (25.2%), Idaho (25.4%), and Maine (25.7%). For many states, fewer than a quarter of the human-powered boats that were owned were taken out on the water in 2018, including Nebraska (17.3%), Utah (18.5%), and Arizona (19.6%). About 61% of motorized boats in Florida, 59% in Hawaii, and 55% in Louisiana were operated out on the water at least once in 2018.

Table 3-21. Number and Percentage of Boats that Were Operational by Boat Type and by Region of Registration or Storage, 2018[1,2,3,4]

Census Region	All Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boat Types[5]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Northeast	4,079	93.7	744	87.9	183	90.5	84	91.2	144	88.7	127	77.3	585	99.3	1,688	97.7	122	100.0	351	88.7	51	89.5
Midwest	6,860	93.8	2,201	92.4	159	84.8	459	93.8	338	85.8	80	88.1	716	97.7	2,016	98.9	152	99.8	637	88.9	102	75.6
South	8,675	92.8	3,116	91.1	228	88.0	326	94.6	498	91.8	121	74.7	721	94.8	2,423	97.6	267	96.1	828	90.1	147	78.6
West	3,840	91.8	969	87.7	135	90.3	61	96.9	245	87.1	69	92.0	329	96.5	1,250	95.6	232	91.0	457	89.9	93	90.3
Total U.S.	23,454	93.1	7,030	90.6	705	88.3	930	94.1	1,225	88.8	397	80.7	2,351	97.0	7,377	97.6	773	95.8	2,273	89.5	393	81.7

1. Ns are in units of 1,000.
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. Operational means that the boat was in a condition that allowed it to be operated out on the water either by human, wind, or mechanical power.
4. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
5. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.

Table 3-22. Number and Percentage of Boats that Were Taken Out on the Water at Least Once by Aggregated Boat Type and by State of Registration or Storage, 2018[1,2,3,4]

State	Boats					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Alabama	179	42.8	127	52.1	51	29.7
Alaska	43	32.8	21	43.2	19	24.1
Arizona	82	31.5	54	44.4	26	19.6
Arkansas	128	37.5	75	45.2	50	31.2
California	430	33.6	239	37.8	169	28.9
Colorado	156	30.8	43	52.6	109	27.9
Connecticut	94	27.7	36	42.3	51	22.2
Delaware	44	32.5	25	47.4	18	24.0
District of Columbia	81	33.1	41	34.2	19	26.7
Florida	890	51.9	543	61.3	314	41.4
Georgia	349	44.6	151	46.1	194	45.7
Hawaii	17	47.1	7	59.1	9	41.4
Idaho	63	25.4	30	34.5	33	21.3
Illinois	239	42.3	113	47.0	119	38.7
Indiana	205	39.1	96	46.0	96	34.8
Iowa	110	32.2	81	40.7	27	19.8
Kansas	68	39.5	39	47.2	26	31.3
Kentucky	136	41.6	75	47.4	59	37.6
Louisiana	220	49.3	165	54.9	49	36.3
Maine	112	25.7	43	39.8	65	21.3
Maryland	183	37.3	78	49.4	96	31.4
Massachusetts	139	31.5	50	39.5	81	28.1
Michigan	607	35.1	310	41.3	285	30.4
Minnesota	413	40.3	271	45.8	134	34.2
Mississippi	93	43.1	65	51.8	26	32.2
Missouri	227	40.5	143	49.6	83	32.8
Montana	55	27.2	17	27.8	36	26.6
Nebraska	123	21.7	40	46.3	82	17.3
Nevada	30	32.2	15	36.3	15	29.8
New Hampshire	127	31.3	41	45.1	82	27.4
New Jersey	120	35.9	58	42.0	57	32.0
New Mexico	22	30.8	13	42.2	8	23.1
New York	434	32.7	189	44.2	225	27.7
North Carolina	304	38.1	171	48.4	128	30.1
North Dakota	30	36.2	22	35.4	8	37.3
Ohio	202	35.3	121	40.8	79	29.6
Oklahoma	113	34.2	76	39.3	33	26.4

(continued)

Table 3-22. Number and Percentage of Boats that Were Taken Out on the Water at Least Once by Aggregated Boat Type and by State of Registration or Storage, 2018[1,2,3,4] (continued)

State	Boats					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Oregon	180	31.2	64	39.2	107	27.5
Pennsylvania	262	31.1	82	31.4	172	30.4
Rhode Island	34	29.5	17	47.3	15	20.1
South Carolina	408	37.2	262	48.9	129	25.5
South Dakota	32	35.6	20	36.9	12	35.0
Tennessee	170	35.7	109	46.2	59	26.1
Texas	399	43.3	288	51.5	103	31.7
Utah	43	25.2	23	35.9	19	18.5
Vermont	38	31.9	11	41.2	24	29.3
Virginia	171	28.7	91	41.3	76	21.2
Washington	188	33.6	97	41.8	86	27.7
West Virginia	91	34.6	18	34.5	72	34.6
Wisconsin	332	30.4	218	36.4	106	23.1
Wyoming	17	31.8	10	39.1	7	25.6
Total U.S.	9,151	36.3	4,950	45.3	3,927	29.5

1. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.)
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
4. The % columns present the percentage of boats in each state that were operated.

The South Census Region had the highest percentage of all boats (41.4%), motorized boats (50.7%), and human-powered boats (32.8%) that were taken out on the water at least once in 2018 (***Table 3-23***). The West (31.7%) and Northeast (31.2%) Census Regions had the lowest percentage of boats that were operated in 2018.

Table 3-23. Number and Percentage of Boats that Were Taken Out on the Water at Least Once by Aggregated Boat Type and by Census Region of Registration or Storage, 2018[1,2, 3]

	Boats					
	All		Motorized		Human-Powered	
Census Region	N (000)	%	N (000)	%	N (000)	%
Northeast	1,360	31.2	529	40.5	772	27.2
Midwest	2,586	35.3	1,472	42.6	1,056	29.0
South	3,879	41.4	2,318	50.7	1,457	32.8
West	1,326	31.7	631	39.5	643	26.6
Total U.S.	9,151	36.3	4,950	45.3	3,927	29.5

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
3. Ns are in units of 1,000.
4. The % columns present the percentage of boats in each region that were operated.

3.12 Average and Total Number of Days That Boats Were Operated in 2018

The 9.15 million boats that were taken out on the water in the United States in 2018 were operated an average of 54 days (***Table 3-24***). Half of these boats were operated 48 or fewer days. A day is any part of a day on which the boat was taken out on the water under power, including motor/engines, wind/sail, or human power.

The motorized boats that were taken out at least once averaged 64 days compared with 40 days for human-powered boats. Half of all human-powered boats were taken out 36 or fewer days. States where boats were operated more days, on average, include North Dakota (71), Maine (63), Alaska (62), and Minnesota (62). Boats in Nebraska (30) and West Virginia (33) were operated the fewest number of days.

Table 3-24. Number of Days that Operated Boats Went Out on the Water by Aggregated Boat Type and State of Registration or Storage in 2018[1,2]

	Number of Days Operated Boats Out on the Water					
	All		Motorized		Human-Powered	
State	Median	Mean	Median	Mean	Median	Mean
Alabama	48	57	48	63	36	43
Alaska	48	62	72	78	36	44
Arizona	36	50	36	59	48	39
Arkansas	36	51	36	57	36	42
California	36	51	36	59	24	35

(continued)

Table 3-24. Number of Days that Operated Boats Went Out on the Water by Aggregated Boat Type and State of Registration or Storage in 2018[1,2] (continued)

State	Number of Days Operated Boats Out on the Water					
	All		Motorized		Human-Powered	
	Median	Mean	Median	Mean	Median	Mean
Colorado	36	45	48	57	36	40
Connecticut	36	53	60	72	36	39
Delaware	36	44	36	57	12	29
District of Columbia	60	62	60	75	60	61
Florida	48	52	48	57	36	41
Georgia	36	46	36	57	36	38
Hawaii	24	39	24	48	36	41
Idaho	48	61	48	70	48	52
Illinois	36	50	48	67	24	35
Indiana	48	58	54	70	52	49
Iowa	36	56	60	66	24	36
Kansas	48	59	48	68	48	50
Kentucky	36	46	48	56	24	32
Louisiana	48	56	48	61	36	43
Maine	48	63	72	77	48	52
Maryland	48	55	48	66	48	41
Massachusetts	36	50	48	70	36	38
Michigan	48	55	60	69	36	41
Minnesota	48	62	72	74	36	39
Mississippi	36	53	36	57	48	46
Missouri	36	56	48	66	24	39
Montana	24	41	36	51	24	36
Nebraska	12	30	48	64	12	15
Nevada	36	58	60	69	12	24
New Hampshire	36	52	72	83	24	36
New Jersey	48	59	48	69	48	51
New Mexico	36	53	48	67	36	34
New York	48	58	48	70	48	49
North Carolina	36	51	36	59	36	40
North Dakota	72	71	60	70	96	81
Ohio	48	60	60	75	36	40
Oklahoma	48	63	60	72	36	42
Oregon	36	52	36	61	48	48
Pennsylvania	48	49	60	67	36	43
Rhode Island	48	60	72	79	24	41
South Carolina	36	54	48	59	36	44
South Dakota	36	55	48	66	24	34
Tennessee	36	53	48	61	32	37

(continued)

Table 3-24. Number of Days that Operated Boats Went Out on the Water by Aggregated Boat Type and State of Registration or Storage in 2018[1,2] (continued)

State	Number of Days Operated Boats Out on the Water					
	All		Motorized		Human-Powered	
	Median	Mean	Median	Mean	Median	Mean
Texas	48	55	48	59	36	42
Utah	36	53	43	60	24	44
Vermont	48	52	72	74	48	44
Virginia	36	53	48	66	24	38
Washington	48	54	48	65	48	40
West Virginia	24	33	48	63	24	25
Wisconsin	48	55	48	63	24	37
Wyoming	36	47	48	61	24	28
Total U.S.	48	54	48	64	36	40

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

Contrary to what has sometimes been assumed, boats in southern states are not, in general, operated more days, on average, than boats in northern states. In fact, motorized boats in the Midwest (56 days) and Northeast (55 days) Census Regions were operated more days, on average, than in the South (52 days) and West (52 days) Census Regions (***Table 3-25***).

Table 3-25. Number of Days that Operated Boats[1,2] Went Out on the Water by Aggregated Boat Type and by Census Region of Registration or Storage in 2018

Census Region	Number of Days Operated Boats Out on the Water					
	All		Motorized		Human-Powered	
	Median	Mean	Median	Mean	Median	Mean
Northeast	48	55	60	71	36	45
Midwest	48	56	60	69	24	38
South	36	52	48	60	36	40
West	36	52	48	62	36	41
Total U.S.	48	54	48	64	36	40

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).

2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

Table 3-26 presents the mean number of days that all boats owned, including the 16 million boats that were not taken out in 2018, were used out on the water. The average across all owned boats is 19 days—29 days for motorized boats and 12 days for human-powered boats. When all boats owned are considered, boats in the South Census Region were operated, on average, more days (22 days) than the other regions (***Table 3-27***).

Table 3-26. Mean Number of Days that All Boats Owned Went Out on the Water by Aggregated Boat Type and State of Registration or Storage in 2018[1,2,3,4]

State	Mean Number of Days All Boats Out on the Water		
	All	Motorized	Human-Powered
Alabama	24	33	12
Alaska	21	34	11
Arizona	18	26	11
Arkansas	19	26	13
California	17	22	10
Colorado	14	30	11
Connecticut	14	32	8
Delaware	13	24	7
District of Columbia	32	22	35
Florida	27	36	17
Georgia	20	25	17
Hawaii	22	28	17
Idaho	17	28	12
Illinois	20	29	14
Indiana	22	31	17
Iowa	18	26	9
Kansas	22	29	17
Kentucky	19	26	12
Louisiana	27	33	16
Maine	17	32	12
Maryland	21	34	13
Massachusetts	16	28	11
Michigan	20	29	13
Minnesota	26	35	13
Mississippi	23	30	14
Missouri	24	34	13
Montana	11	15	10
Nebraska	6	27	3
Nevada	15	26	4
New Hampshire	16	38	9
New Jersey	21	30	16
New Mexico	18	29	10

State	Mean Number of Days All Boats Out on the Water		
	All	Motorized	Human-Powered
New York	19	31	14
North Carolina	19	29	12

(continued)

Table 3-26. Mean Number of Days that All Boats Owned Went Out on the Water by Aggregated Boat Type and State of Registration or Storage in 2018[1,2,3,4] (continued)

State	Mean Number of Days All Boats Out on the Water		
	All	Motorized	Human-Powered
North Dakota	23	24	20
Ohio	21	29	12
Oklahoma	22	29	11
Oregon	16	23	13
Pennsylvania	15	18	13
Rhode Island	14	37	6
South Carolina	20	28	11
South Dakota	21	26	12
Tennessee	19	29	10
Texas	23	30	13
Utah	14	24	9
Vermont	17	31	13
Virginia	15	25	8
Washington	18	27	11
West Virginia	11	19	8
Wisconsin	17	23	9
Wyoming	17	26	9
Total U.S.	19	29	12

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
3. "All boats" means all owned recreational boats whether operated out on the water in 2018 or not.
4. The median value is equal to 0 for almost all cells.

Table 3-27. Mean Number of Days that All Owned Boats Went Out on the Water by Aggregated Boat Type and by Census Region of Registration or Storage in 2018[1,2,3,4]

Census Region	Number of Days All Boats Out on the Water		
	All	Motorized	Human-Powered
Northeast	17	29	12
Midwest	20	29	11
South	22	30	13
West	16	24	11
Total U.S.	19	29	12

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
3. "All boats" includes all owned recreational boats whether operated out on the water in 2018 or not.
4. The median value is equal to 0 for almost all cells.

Boats that were operated in 2018 were taken out on the water a total of 471.8 million days in 2018 (***Table 3-28***). The number of boat days in a state depends on the number of boats that are owned, the number of boats that are operated, and how many days, on average, they are taken out on the water. It is estimated that motorized boats were operated 305.8 million days. Human-powered boats including canoes, kayaks, paddleboards, and boats that are rowed were taken out on the water approximately 151.7 million days. Florida (47 million days), Michigan (32.6 million days), and Minnesota (25.4 Million days) represent almost a quarter (22.3%) of all boat days. States with the lowest number of boat days are Hawaii (906,000 days), Wyoming (980,000 days), Nevada (1.26 million days), and New Mexico (1.35 million days).

Table 3-28. Number of Recreational Boat Days by Aggregated Boat Type by State of Operation, 2018[1,2,3]

State	Number of Recreational Boat Days N (000)		
	All	Motorized	Human-Powered
Alabama	9,762	7,798	1,923
Alaska	2,707	1,564	877
Arizona	5,179	3,467	1,668
Arkansas	6,584	4,373	2,063
California	19,622	13,379	4,758
Colorado	6,173	2,207	3,725
Connecticut	4,463	2,366	1,758
Delaware	1,530	876	530
District of Columbia	220	30	178

(continued)

Table 3-28. Number of Recreational Boat Days by Aggregated Boat Type by State of Operation, 2018[1,2,3] (continued)

State	Number of Recreational Boat Days N (000)		
	All	Motorized	Human-Powered
Florida	47,000	32,112	12,963
Georgia	14,820	7,657	6,934
Hawaii	906	305	374
Idaho	4,199	2,324	1,841
Illinois	10,299	6,194	3,648
Indiana	11,326	6,007	4,746
Iowa	5,906	4,614	1,211
Kansas	3,543	2,208	1,289
Kentucky	6,493	4,457	1,884
Louisiana	12,037	9,660	2,118
Maine	7,117	3,468	3,415
Maryland	10,379	5,562	3,842
Massachusetts	7,010	3,679	3,016
Michigan	32,635	20,771	11,350
Minnesota	25,412	19,867	5,180
Mississippi	4,899	3,656	1,148
Missouri	12,635	9,539	3,036
Montana	2,169	897	1,219
Nebraska	3,454	2,174	1,227
Nevada	1,264	1,093	139
New Hampshire	5,777	2,997	2,527
New Jersey	7,054	4,242	2,660
New Mexico	1,350	954	377
New York	25,141	13,161	11,144
North Carolina	14,851	9,397	5,032
North Dakota	1,843	1,488	342
Ohio	10,933	7,817	2,941
Oklahoma	6,986	5,505	1,284
Oregon	8,724	3,653	5,008
Pennsylvania	11,365	4,416	6,794
Rhode Island	2,232	1,359	734
South Carolina	20,538	14,811	4,911
South Dakota	1,753	1,370	379
Tennessee	9,072	6,771	2,178
Texas	20,601	16,251	4,032
Utah	2,355	1,411	901
Vermont	1,965	867	1,042
Virginia	8,378	5,441	2,750
Washington	9,804	6,233	3,223

(continued)

Table 3-28. Number of Recreational Boat Days by Aggregated Boat Type by State of Operation, 2018[1,2,3] (continued)

State	Number of Recreational Boat Days N (000)		
	All	Motorized	Human-Powered
West Virginia	2,742	891	1,648
Wisconsin	17,580	13,729	3,478
Wyoming	980	734	242
Total U.S.	471,770	305,800	151,688

1. Number of boat days was derived from the question: "On how many calendar days did the boat go out on the water in the *reference month*?". The answers were summed over all boats in the household and then over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month.
2. Ns are in units of 1,000.
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

About 42% of all boat days that occurred in 2018 took place in the South Census Region (***Table 3-29***). Almost 71% of boat days took place in the South and Midwest Census Regions.

Table 3-29. Number of Recreational Boat Days by Aggregated Boat Type by Census Region of Operation, 2018[1,2,3]

Census Region	Number of Recreational Boat Days N (000)		
	All	Motorized	Human-Powered
Northeast	72,124	36,555	33,090
Midwest	137,318	95,777	38,827
South	196,894	135,248	55,418
West	65,434	38,220	24,353
Total U.S.	471,770	305,800	151,688

1. The number of boat days was derived from the question: "On how many calendar days did the boat go out on the water in the *reference month*?" The answers were summed over all boats in the household and then over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month.
2. Ns are in units of 1,000.
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

3.13 Average and Total Number Boat Outings

Outings, not a boating day, is the foundation for estimating exposure rates. An outing is defined as an occasion when a boat is launched or when it leaves its dock, mooring, buoy, or slip, with one or more people aboard and is operated (using a motor, engine, sail, paddle, or oar) out on the water and later returns to the launch site, dock, mooring, or slip, and the people leave/exit the boat. Half of boats are taken out on more than one outing on the days that they are operated. These outings can include a different number of hours out on the water, a different number and

makeup of persons aboard, and dissimilar boating activities. The survey collected data on the very last outing on the last day during the reference month that boats were taken out on the water. These data included the number of hours the outing lasted, number of persons aboard, and boating activities (e.g., fishing, skiing).

On average, boats were taken out for 1.5 outings a day (***Table 3-30***). Fifty percent were taken out on just one outing per day. Motorized boats were taken out, on average, 1.6 outings compared with 1.4 for human-powered boats. There is significant consistency across states and Census Regions (***Table 3-31***).

Table 3-30. Number of Times (Outings) that Boats Were Taken Out on the Water on the Last Day They Were Operated in the Target Month by Aggregated Boat Type and State of Operation, 2018[1,2,3,4,5]

State	Number of Outings Boats Out on the Water					
	All		Motorized		Human-Powered	
	Median	Mean	Median	Mean	Median	Mean
Alabama	1.0	1.6	1.0	1.6	1.0	1.8
Alaska	1.0	1.6	1.0	1.5	1.0	1.7
Arizona	1.0	1.6	1.0	1.8	1.0	1.3
Arkansas	1.0	1.4	1.0	1.5	1.0	1.3
California	1.0	1.5	1.0	1.6	1.0	1.3
Colorado	1.0	1.5	1.0	1.8	1.0	1.4
Connecticut	1.0	1.5	1.0	1.5	1.0	1.5
Delaware	1.0	1.3	1.0	1.4	1.0	1.1
District of Columbia	1.0	1.0	1.0	1.0	1.0	1.0
Florida	1.0	1.5	1.0	1.5	1.0	1.4
Georgia	1.0	1.5	1.0	1.6	1.0	1.5
Hawaii	1.0	1.2	1.0	1.4	1.0	1.2
Idaho	1.0	2.0	1.0	1.6	1.0	2.3
Illinois	1.0	1.4	1.0	1.6	1.0	1.1
Indiana	1.0	1.3	1.0	1.5	1.0	1.2
Iowa	1.0	1.7	1.0	1.7	1.0	1.8
Kansas	1.0	1.6	1.0	1.6	1.0	1.5
Kentucky	1.0	1.5	1.0	1.6	1.0	1.3
Louisiana	1.0	1.5	1.0	1.5	1.0	1.4
Maine	1.0	1.7	1.0	1.7	1.0	1.6
Maryland	1.0	1.5	1.0	1.6	1.0	1.5
Massachusetts	1.0	1.4	1.0	1.4	1.0	1.4
Michigan	1.0	1.4	1.0	1.6	1.0	1.2
Minnesota	1.0	1.5	1.0	1.6	1.0	1.5
Mississippi	1.0	1.5	1.0	1.5	1.0	1.2
Missouri	1.0	1.6	1.0	1.7	1.0	1.5
Montana	1.0	1.9	1.0	1.8	1.0	1.9

(continued)

Table 3-30. Number of Times (Outings) that Boats Were Taken Out on the Water on the Last Day They Were Operated in the Target Month by Aggregated Boat Type and State of Operation, 2018[1,2,3,4,5] (continued)

State	Number of Outings Boats Out on the Water					
	All		Motorized		Human-Powered	
	Median	Mean	Median	Mean	Median	Mean
Nebraska	1.0	1.4	1.0	1.9	1.0	1.1
Nevada	1.0	1.8	1.0	2.0	1.0	1.3
New Hampshire	1.0	1.6	1.0	1.8	1.0	1.5
New Jersey	1.0	1.4	1.0	1.3	1.0	1.4
New Mexico	2.0	1.9	1.0	1.8	2.0	1.9
New York	1.0	1.6	1.0	1.5	1.0	1.6
North Carolina	1.0	1.5	1.0	1.5	1.0	1.4
North Dakota	1.0	1.4	1.0	1.5	1.0	1.1
Ohio	1.0	1.6	1.0	1.8	1.0	1.3
Oklahoma	1.0	1.9	2.0	2.0	1.0	1.5
Oregon	1.0	1.9	1.0	1.5	1.0	2.0
Pennsylvania	1.0	1.6	1.0	1.6	1.0	1.6
Rhode Island	1.0	1.4	1.0	1.5	1.0	1.4
South Carolina	1.0	1.5	1.0	1.5	1.0	1.3
South Dakota	1.0	1.8	1.0	1.9	1.0	1.5
Tennessee	1.0	1.6	1.0	1.7	1.0	1.4
Texas	1.0	1.7	1.0	1.7	1.0	1.6
Utah	1.0	1.9	1.0	1.7	1.0	2.1
Vermont	1.0	1.4	1.0	1.6	1.0	1.3
Virginia	1.0	1.5	1.0	1.6	1.0	1.4
Washington	1.0	1.5	1.0	1.5	1.0	1.5
West Virginia	1.0	1.2	1.0	1.7	1.0	1.2
Wisconsin	1.0	1.5	1.0	1.5	1.0	1.5
Wyoming	1.0	1.9	2.0	2.2	1.0	1.4
Total U.S.	1.0	1.5	1.0	1.6	1.0	1.4

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
3. Respondents were asked how many times the boat was taken out (outing) on the water on the last day of the (target) month it was operated.
4. An outing is when a boat is launched or when it leaves its dock, mooring, buoy, or slip, with one or more people aboard and is operated (using a motor, engine, sail, paddle, or oar) out on the water and later returns to the launch site, dock, mooring, or slip, and the people leave/exit the boat.
5. Some boats were operated in states other than where they were registered or stored most of the time.

Table 3-31. Number of Times (Outings) that Boats Were Taken Out on the Water on the Last Day They Were Operated in the Target Month by Aggregated Boat Type and Census Region of Operation, 2018[1,2,3,4,5]

Census Region	Number of Outings Boats Out on the Water					
	All		Motorized		Human-Powered	
	Median	Mean	Median	Mean	Median	Mean
Northeast	1.0	1.5	1.0	1.5	1.0	1.5
Midwest	1.0	1.5	1.0	1.6	1.0	1.3
South	1.0	1.5	1.0	1.6	1.0	1.4
West	1.0	1.6	1.0	1.6	1.0	1.6
Total U.S.	1.0	1.5	1.0	1.6	1.0	1.4

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
3. Respondents were asked the number of different times the boat was taken out (outing) on the water on the last day of the (target) month it was operated.
4. An outing is when a boat is launched or when it leaves its dock, mooring, buoy, or slip, with one or more people aboard and is operated (using a motor, engine, sail, paddle, or oar) out on the water and later returns to the launch site, dock, mooring, or slip, and the people leave/exit the boat.
5. Some boats were operated in states other than where they were registered or stored most of the time.

The estimated numbers of outings by motorized, human-powered, and all boats are reported in ***Table 3-32***. Boats were taken out on the water on 795 million outings. Motorized boats comprised two-thirds (530 million) of all outings. About 41% of outings occurred on boats in the South Census Region compared with about 15% in the West Census Region (***Table 3-33***).

Table 3-32. Number and Percentage of Boat Outings by Aggregated Boat Type by State of Operation, 2018[1,2,3]

State	Boat Outings by Boat Type					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Alabama	16,809	100.0	13,278	79.0	3,471	20.7
Alaska	4,766	100.0	2,791	58.6	1,692	35.5
Arizona	9,369	100.0	7,078	75.5	2,229	23.8
Arkansas	10,151	100.0	7,102	70.0	2,758	27.2
California	31,304	100.0	22,556	72.1	6,419	20.5
Colorado	10,121	100.0	4,214	41.6	5,651	55.8
Connecticut	7,242	100.0	3,591	49.6	3,179	43.9
Delaware	2,228	100.0	1,417	63.6	665	29.8

(continued)

Table 3-32. Number and Percentage of Boat Outings by Aggregated Boat Type by State of Operation, 2018[1,2,3] (continued)

State	Boat Outings by Boat Type					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
District of Columbia	234	100.0	31	13.2	191	81.8
Florida	75,878	100.0	51,719	68.2	21,189	27.9
Georgia	26,334	100.0	13,410	50.9	12,330	46.8
Hawaii	1,186	100.0	458	38.6	458	38.6
Idaho	9,193	100.0	4,098	44.6	5,010	54.5
Illinois	16,254	100.0	10,791	66.4	4,126	25.4
Indiana	15,724	100.0	9,831	62.5	5,320	33.8
Iowa	11,396	100.0	8,429	74.0	2,855	25.1
Kansas	5,779	100.0	3,381	58.5	2,314	40.0
Kentucky	11,358	100.0	8,224	72.4	2,808	24.7
Louisiana	19,310	100.0	15,611	80.8	3,282	17.0
Maine	13,408	100.0	6,468	48.2	6,549	48.8
Maryland	16,269	100.0	8,771	53.9	6,036	37.1
Massachusetts	10,587	100.0	5,303	50.1	4,833	45.6
Michigan	51,320	100.0	35,422	69.0	14,949	29.1
Minnesota	42,470	100.0	34,050	80.2	7,929	18.7
Mississippi	7,839	100.0	6,143	78.4	1,438	18.3
Missouri	22,475	100.0	17,307	77.0	5,089	22.6
Montana	4,543	100.0	1,691	37.2	2,774	61.1
Nebraska	6,432	100.0	4,656	72.4	1,665	25.9
Nevada	2,377	100.0	2,166	91.1	180	7.6
New Hampshire	10,705	100.0	6,379	59.6	4,073	38.0
New Jersey	10,642	100.0	6,374	59.9	4,077	38.3
New Mexico	2,744	100.0	1,955	71.3	763	27.8
New York	42,468	100.0	22,929	54.0	18,582	43.8
North Carolina	24,163	100.0	15,652	64.8	7,725	32.0
North Dakota	2,902	100.0	2,524	87.0	364	12.5
Ohio	20,500	100.0	16,315	79.6	3,857	18.8
Oklahoma	14,833	100.0	12,524	84.4	2,017	13.6
Oregon	18,316	100.0	6,352	34.7	11,856	64.7
Pennsylvania	19,869	100.0	7,474	37.6	12,117	61.0
Rhode Island	3,326	100.0	2,002	60.2	1,161	34.9
South Carolina	32,982	100.0	24,600	74.6	6,985	21.2
South Dakota	3,848	100.0	3,232	84.0	611	15.9
Tennessee	16,519	100.0	12,591	76.2	3,721	22.5
Texas	36,679	100.0	29,360	80.0	6,669	18.2
Utah	4,763	100.0	2,689	56.5	1,972	41.4
Vermont	2,893	100.0	1,423	49.2	1,403	48.5

(continued)

Table 3-32. Number and Percentage of Boat Outings by Aggregated Boat Type by State of Operation, 2018[1,2,3] (continued)

State	Boat Outings by Boat Type					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Virginia	13,617	100.0	9,468	69.5	3,889	28.6
Washington	16,155	100.0	10,132	62.7	5,448	33.7
West Virginia	3,657	100.0	1,502	41.1	1,950	53.3
Wisconsin	29,331	100.0	22,986	78.4	5,629	19.2
Wyoming	1,940	100.0	1,535	79.1	393	20.3
Total U.S.	795,206	100.0	529,987	66.6	242,653	30.5

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
3. Ns are in units of 1,000.

Table 3-33. Number and Percentage of Boat Outings by Aggregated Boat Type by Census Region of Operation, 2018[1,2,3]

Census Region	Boat Outings by Boat Type					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Northeast	121,139	100.0	61,942	51.1	55,974	46.2
Midwest	228,431	100.0	168,926	74.0	54,708	23.9
South	328,859	100.0	231,404	70.4	87,126	26.5
West	116,776	100.0	67,715	58.0	44,845	38.4
Total U.S.	795,206	100.0	529,987	66.6	242,653	30.5

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
3. Ns are in units of 1,000.

3.14 Number of Hours per Outing

Outings, meaning different occasions that boats were operated out on the water, lasted an average of 3.8 hours (***Table 3-34***). This is the time that a boat remained out on the water away from a dock, mooring, or launch site. Half of all outings lasted 4 or fewer hours. Motorized boats were out on the water more time per outing, an average of 4.4 hours, compared with 3.2 hours for human-powered boats. On average, outings in southern states were somewhat longer, 4.1 hours, in large part because of the higher proportion of motorized boat outings (***Table 3-35***). Half of all outings in the Northeast and Midwest Census Regions were 3 or fewer hours.

Table 3-34. Hours per Boat on Last Outing in the Target Month for Operated Boats—Median and Mean by Aggregated Boat Type by State of Operation, 2018[1,2,3,4]

State	Hours per Boat on Last Outing					
	All		Motorized		Human-Powered	
	Median	Mean	Median	Mean	Median	Mean
Alabama	4.0	4.1	4.0	4.6	2.0	2.9
Alaska	3.0	3.8	5.0	5.0	2.0	2.6
Arizona	4.0	4.8	5.0	5.5	3.0	3.8
Arkansas	4.0	4.0	4.0	4.5	3.0	3.3
California	4.0	4.3	5.0	5.0	2.6	3.0
Colorado	3.0	3.3	3.0	4.0	3.0	3.0
Connecticut	3.0	3.4	4.0	3.9	3.0	3.1
Delaware	4.0	3.7	5.0	4.7	2.0	2.9
District of Columbia	1.0	1.4	3.0	3.1	1.0	1.0
Florida	4.0	4.3	5.0	4.9	3.0	3.4
Georgia	3.0	3.8	4.0	4.3	3.0	3.5
Hawaii	3.0	3.5	5.0	5.5	3.0	2.8
Idaho	4.0	4.1	4.0	4.2	4.0	4.0
Illinois	4.0	4.2	4.0	4.5	4.0	4.0
Indiana	4.0	3.9	4.0	3.8	4.0	4.4
Iowa	4.0	4.2	4.0	4.1	4.0	4.3
Kansas	4.0	4.1	6.0	5.2	2.0	3.0
Kentucky	4.0	4.2	5.0	4.8	4.0	3.4
Louisiana	4.0	4.2	4.0	4.7	2.0	2.8
Maine	3.0	3.0	3.0	3.3	3.0	2.6
Maryland	3.0	3.7	4.0	4.5	3.0	2.8
Massachusetts	3.0	3.2	4.0	3.8	2.0	2.9
Michigan	3.0	3.3	3.0	3.5	3.0	3.0
Minnesota	3.0	3.3	3.0	3.6	2.0	2.7
Mississippi	4.0	4.0	4.0	4.4	2.0	3.1
Missouri	4.0	3.8	4.0	4.0	3.5	3.4
Montana	3.0	3.4	2.2	3.0	3.0	3.6
Nebraska	1.0	2.3	4.0	4.2	1.0	1.4
Nevada	4.0	4.2	4.0	4.7	2.0	2.7

(continued)

Table 3-34. Hours per Boat on Last Outing in the Target Month for Operated Boats—Median and Mean by Aggregated Boat Type by State of Operation, 2018[1,2,3,4] (continued)

State	Hours per Boat on Last Outing					
	All		Motorized		Human-Powered	
	Median	Mean	Median	Mean	Median	Mean
New Hampshire	2.0	2.7	3.0	3.4	2.0	2.3
New Jersey	3.0	3.7	5.0	4.5	2.0	2.7
New Mexico	4.0	4.3	5.0	5.0	4.0	3.6
New York	3.0	3.5	4.0	4.0	2.0	3.1
North Carolina	3.0	3.7	4.0	4.2	2.1	2.9
North Dakota	3.0	3.7	4.0	4.0	2.0	2.6
Ohio	3.0	3.5	3.0	3.7	3.0	3.3
Oklahoma	4.0	4.4	4.0	4.6	4.0	4.0
Oregon	4.0	3.9	4.0	4.5	3.0	3.6
Pennsylvania	3.3	3.6	4.0	4.3	3.0	3.4
Rhode Island	3.0	3.8	5.0	5.0	2.0	2.6
South Carolina	4.0	4.2	4.0	4.6	3.0	3.3
South Dakota	3.0	3.8	5.0	4.9	1.0	1.7
Tennessee	4.0	4.5	5.0	5.1	3.0	3.6
Texas	4.0	4.2	5.0	4.7	2.0	2.9
Utah	4.0	4.2	4.0	4.8	3.0	3.6
Vermont	3.0	3.0	4.0	3.6	2.0	2.7
Virginia	4.0	3.9	4.0	4.6	2.0	2.9
Washington	3.9	4.0	4.0	4.5	3.0	3.2
West Virginia	4.0	4.3	5.0	5.2	4.0	4.0
Wisconsin	3.0	3.4	4.0	3.8	2.0	2.6
Wyoming	4.0	4.1	5.0	4.8	2.0	3.1
Total U.S.	4.0	3.8	4.0	4.4	3.0	3.2

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category “Motorized Boats” includes open power boats, cabin power boats, pontoon boats, and PWCs; ”Human-Powered Boats” includes kayaks, canoes, paddleboards, and rowed boats. “All Boats” includes “Motorized Boats,” “Human-Powered Boats,” and all other boat types.
3. Respondents were asked how many hours the boat was out on the water during the very last outing in the target month.
4. An outing is when a boat is launched or when it leaves its dock, mooring, buoy, or slip, with one or more people aboard and is operated (using a motor, engine, sail, paddle, or oar) out on the water and later returns to the launch site, dock, mooring, or slip, and the people leave/exit the boat.

Table 3-35. Hours per Boat on Last Outing in the Target Month for Operated Boats—Median and Mean by Aggregated Boat Type by Census Region of Operation, 2018[1,2,3]

Census Region	Hours per Boat on Last Outing					
	All		Motorized		Human-Powered	
	Median	Mean	Median	Mean	Median	Mean
Northeast	3.0	3.4	4.0	4.0	2.0	3.0
Midwest	3.0	3.5	4.0	3.9	3.0	3.1
South	4.0	4.1	4.0	4.7	3.0	3.3
West	4.0	4.0	4.0	4.7	3.0	3.3
Total U.S.	4.0	3.8	4.0	4.4	3.0	3.2

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
3. Respondents were asked how many hours the boat was out on the water during the very last outing in the target month.
4. An outing is when a boat is launched or when it leaves its dock, mooring, buoy, or slip, with one or more people aboard and is operated (using a motor, engine, sail, paddle, or oar) out on the water and later returns to the launch site, dock, mooring, or slip, and the people leave/exit the boat.

3.15 Number of Boat Hours

It is estimated that boats were operated out on the water a total of almost 3.42 billion hours (***Table 3-36***). Motorized boats were operated an estimated 2.49 billion hours. Human-powered craft were on the water for nearly 825.2 million hours. Florida hosted almost twice the boat hours (369.42 million hours) as the next closest state (Michigan: 190.76 million hours). Almost 45% of all boat hours took place in the South Census Region (1.52 billion hours) compared with the Northeast Census Region where almost 14% (469 million hours) of all boat hours were spent (***Table 3-37***).

Table 3-36. Number of Recreational Boat Hours by Aggregated Boat Type and by State of Operation, 2018[1,2,3]

State	Recreational Boat Hours N (000)		
	All	Motorized	Human-Powered
Alabama	75,614	63,106	12,198
Alaska	22,188	16,755	4,277
Arizona	57,658	46,776	10,408
Arkansas	42,089	32,459	8,598
California	144,015	112,653	18,595
Colorado	37,656	20,712	16,161
Connecticut	25,005	14,487	9,131
Delaware	10,595	7,968	2,042
District of Columbia	374	105	228
Florida	369,417	276,361	80,440
Georgia	108,146	68,110	38,298
Hawaii	5,189	2,607	1,507
Idaho	39,828	15,637	23,405
Illinois	72,807	50,565	16,901
Indiana	63,491	36,341	26,124
Iowa	54,788	41,049	13,435
Kansas	26,774	18,877	7,742
Kentucky	57,535	45,726	10,063
Louisiana	89,125	77,729	10,265
Maine	40,909	21,579	17,578
Maryland	71,666	44,307	20,015
Massachusetts	41,007	22,847	15,985
Michigan	190,755	139,949	48,061
Minnesota	167,958	142,832	23,608
Mississippi	34,375	27,629	5,330
Missouri	91,446	73,000	18,300
Montana	12,807	4,584	7,979
Nebraska	23,955	19,295	3,856
Nevada	10,575	9,829	532
New Hampshire	37,218	26,883	9,950
New Jersey	43,988	29,516	13,136
New Mexico	12,625	9,657	2,851
New York	178,207	111,459	62,965
North Carolina	98,583	70,537	22,105
North Dakota	11,417	10,567	825
Ohio	77,805	63,047	13,537
Oklahoma	70,865	60,896	8,736
Oregon	76,453	30,651	45,202
Pennsylvania	78,493	34,439	43,242

(continued)

Table 3-36. Number of Recreational Boat Hours by Aggregated Boat Type and by State of Operation, 2018[1,2,3] (continued)

State	Recreational Boat Hours, N (000)		
	All	Motorized	Human-Powered
Rhode Island	14,354	9,782	3,534
South Carolina	160,570	129,226	24,184
South Dakota	20,097	19,223	839
Tennessee	86,579	68,183	17,515
Texas	167,210	146,675	18,744
Utah	19,245	13,268	5,677
Vermont	9,568	5,276	4,042
Virginia	62,853	47,025	14,516
Washington	71,187	49,839	17,209
West Virginia	18,130	7,946	7,743
Wisconsin	104,163	85,486	16,429
Wyoming	9,044	7,882	1,135
Total U.S.	3,416,403	2,491,341	825,178

1. The Number of boat hours was derived by multiplying the number of days the boat went out on the water in a reference month by the number of boat outings on its last boating day of that month by the number of hours the boat was out on the water on that last outing. The answers were multiplied for each boat, and the products were added over all boats in the household and finally over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month. Adjustments were carried out separately within each table, resulting in minor differences between tables.
2. Ns are in units of 1,000.
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

Table 3-37. Recreational Boat Hours by Aggregated Boat Type and by Census Region of Operation, 2018[1,2,3]

Census Region	Recreational Boat Hours, N (000)		
	All	Motorized	Human-Powered
Northeast	468,748	276,269	179,562
Midwest	905,455	700,231	189,657
South	1,523,728	1,173,988	301,020
West	518,472	340,852	154,939
Total U.S.	3,416,403	2,491,341	825,178

1. The number of boat hours was derived by multiplying the number of days the boat went out on the water in a reference month by the number of boat outings on its last boating day of that month by the number of hours the boat was out on the water on that last outing. The answers were multiplied for each boat, and the products were added over all boats in the household and finally over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month.
2. Ns are in units of 1,000.
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

3.16 Persons Aboard Boats per Outing

Knowing the number of persons who go out on the water aboard recreational boats is necessary for estimating person days and person hours of boating (i.e., person boat days and person boat hours). ***Tables 3-38*** through ***3-43*** present the average number of persons aboard all boats, motorized boats, and human-powered boats for all states and the four Census Regions, along with the average number of persons over age 12 years and also children age 12 years and under. Knowing the age distribution of persons aboard recreational boats is important for developing age-specific policies, regulations, and educational programs.

On average, boats that went out on the water in 2018 had 2.3 persons aboard. As would be expected, on average, motorized boats generally had 3 persons aboard compared with 1.5 on human-powered boats. Many boat outings had no children aboard, and outings with children under 12 years or younger averaged just 0.3 children aboard recreational boats.

Table 3-38. Mean Number and Percentage of Persons Aboard Boats Taken Out on the Water by Aggregated Boat Type and State of Operation, 2018[1,2,3,4]

State	Persons Aboard Boats on the Water					
	All		Motorized		Human-Powered	
	Median	%	Median	%	Median	%
Alabama	2.5	100.0	2.8	82.2	1.6	17.2
Alaska	2.3	100.0	2.9	59.1	1.5	30.0
Arizona	2.7	100.0	3.5	74.7	1.5	23.7
Arkansas	2.3	100.0	2.8	70.9	1.6	26.6
California	2.7	100.0	3.3	72.9	1.6	21.4
Colorado	2.3	100.0	3.5	43.4	1.8	53.3
Connecticut	2.0	100.0	2.8	55.3	1.4	36.7
Delaware	1.9	100.0	2.6	58.4	1.4	36.9
District of Columbia	1.3	100.0	3.1	27.3	1.0	64.5
Florida	2.4	100.0	3.0	76.3	1.4	20.2
Georgia	2.1	100.0	2.8	57.0	1.5	41.7
Hawaii	1.7	100.0	2.7	42.8	1.4	32.3
Idaho	2.7	100.0	3.4	60.1	2.1	39.2
Illinois	2.1	100.0	2.9	61.6	1.5	34.9
Indiana	2.6	100.0	3.6	60.8	1.8	33.6
Iowa	2.6	100.0	3.2	83.6	1.2	15.3
Kansas	2.6	100.0	3.2	66.5	1.8	29.9
Kentucky	2.3	100.0	3.0	73.2	1.4	24.5
Louisiana	2.4	100.0	2.6	82.6	1.6	15.2
Maine	2.2	100.0	3.0	55.0	1.5	41.3
Maryland	2.1	100.0	2.8	60.2	1.5	35.0
Massachusetts	2.0	100.0	2.9	53.1	1.5	41.2
Michigan	2.3	100.0	3.2	70.5	1.4	27.6
Minnesota	2.5	100.0	2.9	77.6	1.6	20.7

(continued)

Table 3-38. Mean Number and Percentage of Persons Aboard Boats Taken Out on the Water by Aggregated Boat Type and State of Operation, 2018[1,2,3,4] (continued)

State	Persons Aboard Boats on the Water					
	All		Motorized		Human-Powered	
	Median	%	Median	%	Median	%
Mississippi	2.3	100.0	2.6	81.6	1.4	16.3
Missouri	2.5	100.0	3.1	81.7	1.2	17.6
Montana	2.5	100.0	3.6	47.3	1.9	49.4
Nebraska	1.8	100.0	3.4	54.8	1.2	44.1
Nevada	2.6	100.0	3.0	82.3	1.5	15.6
New Hampshire	1.8	100.0	3.0	53.1	1.3	44.2
New Jersey	2.2	100.0	2.9	68.9	1.4	28.0
New Mexico	2.6	100.0	3.3	70.5	1.7	28.9
New York	2.1	100.0	2.9	61.0	1.3	34.1
North Carolina	2.3	100.0	2.9	69.8	1.5	28.2
North Dakota	2.7	100.0	3.0	92.3	1.1	7.0
Ohio	2.5	100.0	3.3	76.8	1.3	21.8
Oklahoma	2.8	100.0	3.4	83.9	1.4	13.5
Oregon	2.0	100.0	2.7	47.7	1.6	51.0
Pennsylvania	2.0	100.0	3.1	43.1	1.5	51.3
Rhode Island	2.2	100.0	2.8	58.7	1.6	33.9
South Carolina	2.5	100.0	3.0	79.1	1.5	17.0
South Dakota	2.6	100.0	3.4	85.4	1.1	14.4
Tennessee	2.3	100.0	2.8	78.3	1.4	20.2
Texas	2.7	100.0	3.1	84.5	1.5	14.0
Utah	3.1	100.0	4.4	73.2	1.8	25.7
Vermont	1.9	100.0	3.0	50.4	1.3	44.3
Virginia	2.2	100.0	3.0	70.6	1.4	27.8
Washington	2.2	100.0	2.9	70.5	1.3	25.8
West Virginia	1.8	100.0	3.4	31.9	1.4	61.2
Wisconsin	2.5	100.0	2.9	80.0	1.5	18.1
Wyoming	2.8	100.0	3.6	74.2	1.7	25.5
Total U.S.	2.3	100.0	3.0	70.3	1.5	26.7

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).

2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

3. Number of persons aboard boats includes persons who may have been aboard more than one type of boat.

4. The % column gives the percentage of boats in each state that belong to the all, motorized, and human-powered boats categories.

Table 3-39. Mean Number and Percentage of Persons Aboard Boats Taken Out on the Water by Aggregated Boat Type and by Census Region of Operation, 2018[1,2,3,4]

Census Region	Persons Aboard Boats on the Water					
	All		Motorized		Human-Powered	
	Median	%	Median	%	Median	%
Northeast	2.0	100.0	2.9	55.9	1.4	39.1
Midwest	2.4	100.0	3.1	73.4	1.4	24.5
South	2.4	100.0	2.9	74.6	1.5	22.7
West	2.4	100.0	3.2	64.5	1.6	31.5
Total U.S.	2.3	100.0	3.0	70.3	1.5	26.7

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
3. Number of persons aboard boats includes persons who may have been aboard more than one type of boat.
4. The % column gives the percentage of boats in each region that belong to the all, motorized, and human-powered boats categories.

Table 3-40. Mean Number and Percentage of Persons 12 Years Old or Younger Aboard on an Outing by Aggregated Boat Type and by State of Operation, 2018[1,2]

State	Persons 12 or Younger Aboard Boats on the Water					
	All		Motorized		Human-Powered	
	Median	%	Median	%	Median	%
Alabama	0.4	100.0	0.4	72.7	0.4	27.3
Alaska	0.4	100.0	0.6	80.5	0.1	18.1
Arizona	0.5	100.0	0.7	86.4	0.1	13.0
Arkansas	0.4	100.0	0.5	82.3	0.1	14.2
California	0.3	100.0	0.4	79.2	0.2	17.1
Colorado	0.3	100.0	0.5	58.9	0.1	40.1
Connecticut	0.2	100.0	0.4	68.8	0.1	26.5
Delaware	0.2	100.0	0.3	76.5	0.1	19.6
District of Columbia	0.0	---	0.3	97.6	---	---
Florida	0.3	100.0	0.4	83.5	0.1	13.5
Georgia	0.3	100.0	0.5	57.7	0.2	41.4
Hawaii	0.1	100.0	0.3	64.6	0.1	18.9
Idaho	0.8	100.0	0.8	52.3	0.7	47.7
Illinois	0.2	100.0	0.4	73.6	0.1	25.3
Indiana	0.4	100.0	0.6	62.8	0.3	31.5
Iowa	0.6	100.0	0.8	91.6	0.1	8.2
Kansas	0.4	100.0	0.6	73.9	0.2	18.5
Kentucky	0.4	100.0	0.5	86.3	0.1	9.5
Louisiana	0.4	100.0	0.4	80.5	0.3	16.9

(continued)

Table 3-40. Mean Number and Percentage of Persons 12 Years Old or Younger Aboard on an Outing by Aggregated Boat Type and by State of Operation, 2018[1,2] (continued)

State	Persons 12 or Younger Aboard Boats on the Water					
	All		Motorized		Human-Powered	
	Median	%	Median	%	Median	%
Maine	0.4	100.0	0.7	70.8	0.2	26.5
Maryland	0.2	100.0	0.3	63.9	0.1	23.0
Massachusetts	0.3	100.0	0.4	55.1	0.2	36.9
Michigan	0.4	100.0	0.6	80.3	0.1	16.9
Minnesota	0.4	100.0	0.6	88.1	0.2	11.9
Mississippi	0.3	100.0	0.4	91.9	0.1	7.0
Missouri	0.3	100.0	0.5	89.0	0.1	10.6
Montana	0.4	100.0	0.7	55.5	0.3	42.0
Nebraska	0.2	100.0	0.7	95.3	---	---
Nevada	0.4	100.0	0.4	67.8	0.5	31.4
New Hampshire	0.2	100.0	0.3	47.5	0.2	47.3
New Jersey	0.3	100.0	0.4	69.2	0.2	30.5
New Mexico	0.4	100.0	0.6	87.7	0.1	11.0
New York	0.3	100.0	0.5	72.0	0.1	23.4
North Carolina	0.4	100.0	0.4	61.9	0.3	37.0
North Dakota	0.5	100.0	0.6	99.6	---	---
Ohio	0.4	100.0	0.6	82.9	0.2	17.0
Oklahoma	0.5	100.0	0.6	92.0	0.1	6.2
Oregon	0.2	100.0	0.3	61.4	0.1	38.6
Pennsylvania	0.3	100.0	0.6	50.8	0.2	36.2
Rhode Island	0.2	100.0	0.2	48.4	0.2	49.0
South Carolina	0.4	100.0	0.6	93.5	0.1	5.5
South Dakota	0.6	100.0	0.9	98.4	---	---
Tennessee	0.4	100.0	0.5	90.1	0.1	8.4
Texas	0.3	100.0	0.4	93.0	0.1	6.9
Utah	0.6	100.0	0.8	74.3	0.3	24.7
Vermont	0.2	100.0	0.5	81.0	0.1	17.4
Virginia	0.2	100.0	0.4	86.2	0.1	13.4
Washington	0.3	100.0	0.5	84.4	0.1	14.5
West Virginia	0.2	100.0	0.7	52.6	0.1	38.2
Wisconsin	0.4	100.0	0.5	86.2	0.2	12.2
Wyoming	0.6	100.0	0.9	86.7	0.2	13.3
Total U.S.	0.3	100.0	0.5	78.3	0.2	19.3

"---" Sample size too small.

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

Table 3-41. Mean Number and Percentage of Persons 12 Years Old or Younger Aboard on an Outing by Aggregated Boat Type and by Census Region of Operation, 2018[1,2]

Census Region	Persons 12 or Younger Aboard Boats on the Water					
	All		Motorized		Human-Powered	
	Median	%	Median	%	Median	%
Northeast	0.3	100.0	0.5	63.5	0.2	30.6
Midwest	0.4	100.0	0.5	83.2	0.1	15.1
South	0.3	100.0	0.4	80.9	0.1	17.0
West	0.4	100.0	0.5	73.5	0.2	24.8
Total U.S.	0.3	100.0	0.5	78.3	0.2	19.3

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).

2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

Table 3-42. Mean Number and Percentage of Persons Over 12 Years Old Aboard on an Outing by Aggregated Boat Type and by State of Operation, 2018[1,2]

State	Persons Older than 12 Aboard Boats on the Water					
	All		Motorized		Human-Powered	
	Median	%	Median	%	Median	%
Alabama	2.1	100.0	2.4	84.0	1.2	15.2
Alaska	2.0	100.0	2.3	55.1	1.4	32.2
Arizona	2.2	100.0	2.8	72.2	1.4	25.9
Arkansas	2.0	100.0	2.3	68.7	1.5	29.0
California	2.3	100.0	2.8	72.0	1.4	22.0
Colorado	2.0	100.0	3.0	41.5	1.6	54.9
Connecticut	1.7	100.0	2.4	53.5	1.2	38.0
Delaware	1.8	100.0	2.3	56.7	1.3	38.6
District of Columbia	1.3	100.0	2.8	25.4	1.0	66.2
Florida	2.1	100.0	2.6	75.3	1.3	21.1
Georgia	1.7	100.0	2.3	56.9	1.3	41.7
Hawaii	1.6	100.0	2.4	41.0	1.3	33.4
Idaho	1.9	100.0	2.5	63.2	1.4	35.8
Illinois	1.9	100.0	2.5	60.2	1.3	36.1
Indiana	2.2	100.0	3.0	60.5	1.5	34.0
Iowa	2.0	100.0	2.5	81.4	1.1	17.3
Kansas	2.2	100.0	2.6	65.1	1.6	32.0
Kentucky	2.0	100.0	2.4	70.9	1.3	27.2

(continued)

Table 3-42. Mean Number and Percentage of Persons Over 12 Years Old Aboard on an Outing by Aggregated Boat Type and by State of Operation, 2018[1,2] (continued)

State	Persons Older than 12 Aboard Boats on the Water					
	All		Motorized		Human-Powered	
	Median	%	Median	%	Median	%
Louisiana	2.0	100.0	2.2	83.0	1.3	14.9
Maine	1.7	100.0	2.3	51.4	1.4	44.8
Maryland	1.9	100.0	2.5	59.9	1.4	36.1
Massachusetts	1.7	100.0	2.4	52.8	1.3	41.8
Michigan	2.0	100.0	2.6	68.7	1.2	29.6
Minnesota	2.0	100.0	2.3	75.4	1.4	22.6
Mississippi	2.0	100.0	2.3	80.1	1.3	17.7
Missouri	2.1	100.0	2.7	80.6	1.1	18.7
Montana	2.1	100.0	2.9	45.7	1.6	50.8
Nebraska	1.6	100.0	2.7	49.1	1.1	49.8
Nevada	2.2	100.0	2.6	84.9	1.0	12.7
New Hampshire	1.6	100.0	2.6	53.9	1.1	43.8
New Jersey	1.9	100.0	2.5	68.9	1.2	27.6
New Mexico	2.2	100.0	2.7	67.4	1.6	32.0
New York	1.8	100.0	2.4	59.3	1.2	35.7
North Carolina	1.9	100.0	2.5	71.2	1.2	26.6
North Dakota	2.2	100.0	2.4	90.8	1.1	8.4
Ohio	2.1	100.0	2.7	75.6	1.2	22.7
Oklahoma	2.3	100.0	2.8	82.2	1.3	15.0
Oregon	1.8	100.0	2.3	46.2	1.5	52.3
Pennsylvania	1.7	100.0	2.5	41.7	1.4	54.1
Rhode Island	2.0	100.0	2.6	59.7	1.4	32.5
South Carolina	2.1	100.0	2.5	76.5	1.4	19.2
South Dakota	2.0	100.0	2.5	81.5	1.0	18.3
Tennessee	2.0	100.0	2.3	76.2	1.3	22.3
Texas	2.4	100.0	2.7	83.3	1.4	15.0
Utah	2.5	100.0	3.5	72.9	1.4	26.0
Vermont	1.7	100.0	2.5	46.7	1.3	47.5
Virginia	2.0	100.0	2.6	68.7	1.3	29.6
Washington	1.8	100.0	2.4	68.0	1.2	27.9
West Virginia	1.6	100.0	2.7	29.0	1.3	64.5
Wisconsin	2.1	100.0	2.4	78.8	1.4	19.1
Wyoming	2.2	100.0	2.6	70.6	1.5	29.0
Total U.S.	2.0	100.0	2.5	69.0	1.3	27.9

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).

2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

Table 3-43. Mean Number and Percentage of Persons Over 12 Years Old Aboard on an Outing by Aggregated Boat Type and by Census Region of Operation, 2018[1,2]

Census Region	Persons Older than 12 Aboard Boats on the Water					
	All		Motorized		Human-Powered	
	Median	%	Median	%	Median	%
Northeast	1.8	100.0	2.5	54.7	1.3	40.5
Midwest	2.0	100.0	2.6	71.6	1.3	26.2
South	2.0	100.0	2.5	73.6	1.3	23.7
West	2.1	100.0	2.7	63.0	1.4	32.7
Total U.S.	2.0	100.0	2.5	69.0	1.3	27.9

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).

2. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

3.17 Person Boat Days and Hours

The number of person boat days and person boat hours is used as denominators in risk ratios where the numerator is the number of fatalities and injuries that occur in recreational boating accidents. Persons were out on the water in recreational boats approximately 1.24 billion days (***Table 3-44***). Over three-quarters of the person days were spent on motorized boats. Persons spent almost 228.5 million days on or in human-powered boats. Ten percent of person boat days took place in the state of Florida. About 41% of all person boat days took place in states comprising the South Census Region (***Table 3-45***).

Table 3-44. Person Boat Days by Aggregated Boat Types of Boats and by State of Operation, 2018[1,2,3]

State	Person Boat Days, N (000)		
	All	Motorized	Human-Powered
Alabama	25,705	22,584	3,029
Alaska	7,590	5,373	1,250
Arizona	14,454	12,206	2,085
Arkansas	16,739	12,951	3,377
California	58,328	46,355	7,349
Colorado	15,185	8,226	6,408
Connecticut	10,588	7,331	2,472
Delaware	3,545	2,471	684
District of Columbia	302	98	179
Florida	124,147	100,847	18,633
Georgia	34,698	23,191	10,976
Hawaii	1,772	840	536

(continued)

Table 3-44. Person Boat Days by Aggregated Boat Types of Boats and by State of Operation, 2018[1,2,3] (continued)

State	Person Boat Days, N (000)		
	All	Motorized	Human-Powered
Idaho	11,692	7,684	3,908
Illinois	25,093	18,430	5,612
Indiana	34,102	24,150	8,643
Iowa	16,861	15,182	1,496
Kansas	10,209	7,575	2,505
Kentucky	17,154	13,578	2,863
Louisiana	28,697	25,072	3,149
Maine	17,339	11,068	5,627
Maryland	24,894	17,202	5,977
Massachusetts	16,665	11,129	4,856
Michigan	88,059	70,804	15,791
Minnesota	71,229	61,950	8,338
Mississippi	11,711	10,035	1,494
Missouri	37,501	33,324	3,975
Montana	6,026	3,502	2,343
Nebraska	9,678	7,887	1,640
Nevada	3,273	2,920	210
New Hampshire	14,437	10,931	3,208
New Jersey	17,749	13,558	3,914
New Mexico	3,865	3,159	650
New York	57,109	40,243	14,892
North Carolina	37,105	28,826	7,276
North Dakota	4,756	4,362	373
Ohio	33,244	29,029	3,782
Oklahoma	22,632	20,436	1,773
Oregon	18,256	9,726	8,371
Pennsylvania	26,132	14,373	11,183
Rhode Island	5,966	4,202	1,280
South Carolina	54,686	45,324	7,753
South Dakota	5,473	5,048	402
Tennessee	24,419	21,077	2,951
Texas	58,491	51,666	6,213
Utah	8,677	6,956	1,646
Vermont	4,221	2,664	1,421
Virginia	20,914	16,687	3,909
Washington	23,254	18,300	4,040
West Virginia	6,627	3,061	2,348
Wisconsin	47,454	41,353	5,271
Wyoming	2,871	2,458	409
Total U.S.	1,241,575	977,403	228,475

1. Person boat days were derived by multiplying the number of days the boat went out on the water in a reference month by the number of persons (of any age) aboard on the last boat outing of that month. The answers were multiplied for each boat, and the products were added over all boats in the household and finally over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month.
2. Ns are in units of 1,000.
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

Table 3-45. Person Boat Days by Aggregated Boat Type and by Census Region of Operation, 2018[1,2,3]

Census Region	Person Boat Days, N (000)		
	All	Motorized	Human-Powered
Northeast	170,207	115,500	48,854
Midwest	383,659	319,093	57,830
South	512,466	415,104	82,585
West	175,243	127,705	39,205
Total U.S.	1,241,575	977,403	228,475

1. Person boat days was derived by multiplying the number of days the boat went out on the water in a reference month by the number of persons (of any age) aboard on the last boat outing of that month. The answers were multiplied for each boat, and the products were added over all boats in the household and finally over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month.
2. Ns are in units of 1,000.
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

A total of 10.2 billion person hours of boating took place in 2018 (***Table 3-46***). Person hours aboard motorized boats represented 84.1% (8.6 billion) of all person boat hours. Over 1.3 billion hours were spent boating on human-powered boats. Five states—Florida, Michigan, Texas, South Carolina, and New York—represented about 31% of all person boat hours that year. The state of Florida represented about 10.7% (1.089 billion hours) of all person hours nationwide, followed by Michigan (603.7 million) and Texas (522.3 million). The distribution of person hours across motorized and human-powered boats is significantly different across states in large part because of the number of different types of boats that are owned and operated and the number of days boats are taken out on the water in different states. States such as Idaho (48.3%), Oregon (45.1%), and Montana (44.3%) had a relatively high percentage of human-powered person boat hours. Florida produced almost twice the number of person hours of motorized boating (926 million hours) than the next nearest state.

The South Census Region produced about 45% of person hours of boating (***Table 3-47***). The South Census Region also had the highest proportion of person hours on motorized boats. The Northeast Census Region generated only about 13% of all person boat hours but about 21% of all human-powered boat hours.

Table 3-46. Number and Percentage of Person Boat Hours by Aggregated Boat Type and by State of Operation, 2018[1,2,3,4,5]

State	Person Boat Hours					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Alabama	219,610	100.0	196,449	89.5	22,344	10.2
Alaska	86,757	100.0	75,931	87.5	6,764	7.8
Arizona	196,437	100.0	181,557	92.4	12,175	6.2
Arkansas	122,521	100.0	105,666	86.2	13,310	10.9
California	452,004	100.0	378,995	83.8	32,459	7.2
Colorado	123,219	100.0	92,046	74.7	29,012	23.5
Connecticut	62,541	100.0	43,674	69.8	13,747	22.0
Delaware	31,894	100.0	27,283	85.5	2,923	9.2
District of Columbia	735	100.0	401	54.5	232	31.5
Florida	1,089,456	100.0	926,054	85.0	132,035	12.1
Georgia	286,280	100.0	220,208	76.9	62,121	21.7
Hawaii	12,808	100.0	7,575	59.1	2,085	16.3
Idaho	122,980	100.0	61,214	49.8	59,398	48.3
Illinois	201,728	100.0	161,462	80.0	28,742	14.2
Indiana	200,553	100.0	148,869	74.2	49,496	24.7
Iowa	144,030	100.0	128,390	89.1	15,007	10.4
Kansas	82,032	100.0	66,272	80.8	15,252	18.6
Kentucky	168,502	100.0	141,507	84.0	15,617	9.3
Louisiana	218,358	100.0	201,275	92.2	14,900	6.8
Maine	107,330	100.0	71,730	66.8	30,806	28.7
Maryland	196,113	100.0	140,939	71.9	42,509	21.7
Massachusetts	110,191	100.0	73,724	66.9	31,240	28.4
Michigan	603,740	100.0	517,856	85.8	77,300	12.8
Minnesota	469,987	100.0	423,648	90.1	42,005	8.9
Mississippi	88,719	100.0	78,846	88.9	7,386	8.3
Missouri	314,262	100.0	288,197	91.7	25,604	8.1
Montana	34,674	100.0	18,475	53.3	15,348	44.3
Nebraska	84,947	100.0	73,975	87.1	8,199	9.7
Nevada	27,453	100.0	25,706	93.6	845	3.1
New Hampshire	156,912	100.0	142,611	90.9	13,714	8.7
New Jersey	122,203	100.0	94,635	77.4	25,071	20.5
New Mexico	38,682	100.0	33,393	86.3	4,967	12.8
New York	480,683	100.0	385,733	80.2	85,820	17.9
North Carolina	301,498	100.0	251,602	83.5	32,652	10.8
North Dakota	37,233	100.0	36,126	97.0	1,075	2.9
Ohio	291,967	100.0	271,329	92.9	17,513	6.0
Oklahoma	271,860	100.0	254,946	93.8	13,215	4.9
Oregon	153,430	100.0	82,712	53.9	69,163	45.1

(continued)

Table 3-46. Number and Percentage of Person Boat Hours by Aggregated Boat Type and by State of Operation, 2018[1,2,3,4,5] (continued)

State	Person Boat Hours					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Pennsylvania	196,466	100.0	126,497	64.4	66,229	33.7
Rhode Island	41,639	100.0	33,646	80.8	5,464	13.1
South Carolina	497,800	100.0	443,407	89.1	42,136	8.5
South Dakota	78,344	100.0	77,247	98.6	898	1.1
Tennessee	294,487	100.0	265,588	90.2	25,657	8.7
Texas	522,254	100.0	489,416	93.7	29,677	5.7
Utah	82,856	100.0	71,707	86.5	10,610	12.8
Vermont	22,487	100.0	15,614	69.4	6,304	28.0
Virginia	179,096	100.0	152,619	85.2	24,299	13.6
Washington	188,480	100.0	152,823	81.1	23,256	12.3
West Virginia	51,727	100.0	25,709	49.7	11,399	22.0
Wisconsin	297,783	100.0	265,511	89.2	27,673	9.3
Wyoming	32,139	100.0	30,295	94.3	1,812	5.6
Total U.S.	10,199,888	100.0	8,581,092	84.1	1,347,469	13.2

1. Person exposure hours is the amount of time in hours people spent on 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, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
4. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.).
5. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

Table 3-47. Number and Percentage of Person Boat Hours by Aggregated Boat Type and by Census Region of Operation, 2018[1,2,3,4,5]

Census Region	Person Boat Hours					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Northeast	1,300,453	100.0	987,865	76.0	278,395	21.4
Midwest	2,806,607	100.0	2,458,883	87.6	308,764	11.0
South	4,540,909	100.0	3,921,917	86.4	492,414	10.8
West	1,551,919	100.0	1,212,428	78.1	267,895	17.3
Total U.S.	10,199,888	100.0	8,581,092	84.1	1,347,469	13.2

1. Person exposure hours is the amount of time in hours people spent on 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, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
4. Ns are in units of 1,000.
5. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

Children age 12 years or younger who went out on boats represent about 17.2% of all person boat hours (***Tables 3-48*** and ***3-49***). About 1.55 billion of the 1.75 billion hours that children spent boating were on motorized boats. They represent about 13% of the persons aboard boats on an average outing.

Table 3-48. Number and Percentage of Person Boat Hours for Persons Aged 12 and Under by Aggregated Boat Type and State of Operation, 2018[1,2,3,4,5]

State	Person Boat Hours Age 12 and Under					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Alabama	36,379	100.0	30,196	83.0	6,176	17.0
Alaska	23,378	100.0	22,575	96.6	726	3.1
Arizona	49,225	100.0	48,149	97.8	514	1.0
Arkansas	28,490	100.0	26,760	93.9	1,132	4.0
California	53,970	100.0	48,737	90.3	3,424	6.3
Colorado	8,885	100.0	6,820	76.8	2,017	22.7
Connecticut	10,885	100.0	7,095	65.2	2,073	19.0
Delaware	5,282	100.0	5,034	95.3	71	1.3
District of Columbia	25	100.0	24	95.6	--	--
Florida	156,228	100.0	136,651	87.5	17,102	10.9

(continued)

Table 3-48. Number and Percentage of Person Boat Hours for Persons Aged 12 and Under by Aggregated Boat Type and State of Operation, 2018[1,2,3,4,5] (continued)

State	Person Boat Hours Age 12 and Under					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Georgia	58,873	100.0	49,359	83.8	9,277	15.8
Hawaii	1,236	100.0	781	63.2	87	7.0
Idaho	42,589	100.0	13,638	32.0	28,951	68.0
Illinois	22,877	100.0	20,348	88.9	2,383	10.4
Indiana	36,073	100.0	29,956	83.0	5,868	16.3
Iowa	25,656	100.0	24,712	96.3	899	3.5
Kansas	14,769	100.0	12,855	87.0	1,804	12.2
Kentucky	26,343	100.0	23,603	89.6	1,139	4.3
Louisiana	39,867	100.0	37,722	94.6	1,679	4.2
Maine	19,539	100.0	12,484	63.9	5,970	30.6
Maryland	15,231	100.0	9,563	62.8	1,975	13.0
Massachusetts	16,163	100.0	10,087	62.4	5,660	35.0
Michigan	106,446	100.0	95,249	89.5	9,437	8.9
Minnesota	87,929	100.0	85,441	97.2	2,465	2.8
Mississippi	12,698	100.0	12,260	96.5	213	1.7
Missouri	62,645	100.0	61,435	98.1	1,180	1.9
Montana	5,102	100.0	3,240	63.5	1,645	32.2
Nebraska	14,731	100.0	14,115	95.8	172	1.2
Nevada	2,812	100.0	2,641	93.9	99	3.5
New Hampshire	16,238	100.0	13,206	81.3	2,937	18.1
New Jersey	26,366	100.0	18,470	70.1	7,886	29.9
New Mexico	7,204	100.0	6,824	94.7	320	4.4
New York	96,017	100.0	88,142	91.8	6,892	7.2
North Carolina	49,013	100.0	37,813	77.1	6,180	12.6
North Dakota	7,367	100.0	7,363	99.9	4	0.1
Ohio	62,316	100.0	61,159	98.1	1,147	1.8
Oklahoma	70,130	100.0	68,288	97.4	777	1.1
Oregon	12,902	100.0	8,878	68.8	4,010	31.1
Pennsylvania	23,258	100.0	16,737	72.0	6,002	25.8
Rhode Island	3,911	100.0	3,019	77.2	840	21.5
South Carolina	76,759	100.0	72,003	93.8	4,730	6.2
South Dakota	31,901	100.0	31,814	99.7	21	0.1
Tennessee	68,584	100.0	67,227	98.0	685	1.0
Texas	77,203	100.0	75,984	98.4	1,043	1.4
Utah	15,096	100.0	13,392	88.7	1,567	10.4
Vermont	3,347	100.0	2,927	87.5	399	11.9
Virginia	24,186	100.0	22,839	94.4	1,306	5.4

(continued)

Table 3-48. Number and Percentage of Person Boat Hours for Persons Aged 12 and Under by Aggregated Boat Type and State of Operation, 2018[1,2,3,4,5] (continued)

State	Person Boat Hours Age 12 and Under					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Washington	24,607	100.0	21,892	89.0	2,439	9.9
West Virginia	7,968	100.0	4,724	59.3	803	10.1
Wisconsin	53,605	100.0	50,604	94.4	2,496	4.7
Wyoming	8,097	100.0	7,860	97.1	238	2.9
Total U.S.	1,750,404	100.0	1,552,694	88.7	166,861	9.5

"—" Sample size too small.

1. Person exposure hours is the amount of time in hours people spent on 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, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
4. Ns are in units of 1,000.
5. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

Table 3-49. Number and Percentage of Person Boat Hours for Persons Aged 12 and Under by Aggregated Boat Type and Census Region of Operation, 2018[1,2,3,4,5]

Census Region	Person Boat Hours Age 12 and Under					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Northeast	215,724	100.0	172,166	79.8	38,660	17.9
Midwest	526,316	100.0	495,050	94.1	27,876	5.3
South	753,261	100.0	680,050	90.3	54,288	7.2
West	255,103	100.0	205,427	80.5	46,036	18.0
Total U.S.	1,750,404	100.0	1,552,694	88.7	166,861	9.5

1. Person exposure hours is the amount of time in hours people spent on 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, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
4. Ns are in units of 1,000.
5. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

3.18 Boats Equipped with Emergency Position Indicating Radio Beacons

Emergency Position Indicating Radio Beacons (EPIRBs) transmit a coded message on a distress frequency via satellite to Earth-based stations that notify the nearest rescue center to help rescuers locate a vessel in the event of an emergency. EPIRBs are registered to a vessel with information about the vessel. The transmitter is either a float-free device that automatically activates when separated from the vessel, or it is a device that requires manual activation by the boater. Some manual devices may also be water activated. EPRIBs should only be activated in case of an actual emergency on the water. The USCG does not currently require recreational boats to carry EPIRBs; however, it strongly recommends from a search and rescue perspective that boats be equipped with Category I EPIRBs that are attached to boats.

Table 3-50 reports the number and percentage of boats operated more than 3 nautical miles from shore in 2018 that were equipped with EPIRBs in coastal and Great Lakes states. About 647,000 boats in coastal and Great Lakes states were operated at least once over 3 miles from shore in 2018. About a third (33.7%, 220,000) of all boats and 32.8% of motorized boats that operated over 3 nautical miles from shore were equipped with EPIRBs. The highest percentage of boats that went out 3 miles from shore and were equipped with EPIRBs were in Illinois (66.0%), Hawaii (65.4%), and Connecticut (56.8%). Coastal and Great Lakes states with the lowest percentage of boats that were operated over 3 nautical miles from shore and were equipped with EPIRBs were Wisconsin (5.1%), Indiana (8.0%), and Maine (15.2%).

Table 3-50. Number and Percentage of Boats in Coastal and Great Lakes States Operated More than 3 Nautical Miles from Shore at Least Once in the Last 12 Months that Were Equipped with an EPIRB, by Aggregated Boat Type by State of Operation, 2018[1, 2,3, 4, 5, 6,7]

State	All Boats that Went Over 3 Nautical Miles from Shore		All Boats that Went Over 3 Nautical Miles from Shore and Were Equipped with EPIRB		All Motorized Boats that Went Over 3 Nautical Miles from Shore		All Motorized Boats that Went Over 3 Nautical Miles from Shore and Were Equipped with EPIRB	
	N (00)	%	N (00)	%	N (00)	%	N (00)	%
Alabama	137	8.0	33	23.9	136	11.0	33	23.9
Alaska	62	14.3	30	49.2	60	30.5	30	50.5
California	445	11.7	168	37.9	383	17.1	146	38.2
Connecticut	92	10.8	52	56.8	87	26.4	50	58.2
Delaware	33	9.4	14	43.5	28	18.6	12	43.0
District of Columbia	--	--	--	--	--	--	--	--
Florida	2,131	23.7	878	41.2	2,078	37.6	846	40.7
Georgia	75	2.4	13	17.0	75	5.8	12	16.0
Hawaii	38	16.5	25	65.4	35	56.7	24	66.8
Illinois	47	2.3	31	66.0	40	4.4	26	65.6
Indiana	74	3.8	6	8.0	74	8.6	6	8.0
Louisiana	209	9.8	38	18.0	207	13.1	37	17.6
Maine	39	3.4	6	15.2	27	6.1	2	9.2

(continued)

Table 3-50. Number and Percentage of Boats in Coastal and Great Lakes States Operated More than 3 Nautical Miles from Shore at Least Once in the Last 12 Months that Were Equipped with an EPIRB, by Aggregated Boat Type by State of Operation, 2018[1, 2,3, 4, 5, 6,7] (continued)

State	All Boats that Went Over 3 Nautical Miles from				All Motorized Boats that Went Over 3 Nautical Miles from			
	Shore		Shore and Were Equipped with EPIRB		Shore		Shore and Were Equipped with EPIRB	
	N (00)	%	N (00)	%	N (00)	%	N (00)	%
Maryland	104	5.5	21	20.0	96	11.4	16	16.7
Massachusetts	147	10.6	42	28.4	135	26.1	37	27.7
Michigan	543	9.3	103	18.9	527	17.8	99	18.7
Minnesota	94	2.3	40	42.2	94	3.5	40	42.5
Mississippi	135	14.9	23	17.1	135	21.1	23	17.1
New Hampshire	9.2	0.8	--	--	6.9	1.9	--	--
New Jersey	218	18.3	103	47.4	215	35.0	103	47.9
New York	282	6.5	82	29.2	271	14.6	82	30.3
North Carolina	271	9.4	148	54.4	259	16.5	136	52.5
Ohio	232	13.0	43	18.5	215	21.0	39	18.1
Oregon	35	2.1	10	28.9	34	5.8	10	29.1
Pennsylvania	35	1.5	6	18.0	35	5.4	6	18.0
Rhode Island	58	15.5	22	38.6	49	28.8	18	36.1
South Carolina	300	8.0	122	40.8	228	9.2	61	26.7
Texas	211	5.6	71	33.8	210	7.7	71	33.7
Virginia	68	4.4	13	18.7	66	8.2	11	17.0
Washington	129	7.2	51	39.4	117	12.4	45	38.4
Wisconsin	224	7.1	11	5.1	216	10.0	11	5.0
Total Great Lakes and Coastal States	6,474	7.6	2,205	33.7	6,139	13.3	2,032	32.8

-- No reported cases.

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. Number of "All Boats" consists of boats that operated more than 3 nautical miles from shore either in the ocean, Gulf of Mexico, or Great Lakes at least once in the last 12 months.
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs.
4. Data reported on recreational boats equipped with their own EPIRB that were operated more than 3 nautical miles from shore from the states with direct access to the ocean, Gulf of Mexico, or Great Lakes.
5. An EPIRB alerts search and rescue services in the event of an emergency by transmitting a coded message on a distress frequency via satellite and Earth stations to the nearest rescue center.
6. Ns are in units of 100.
7. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

3.19 Boats that Had Personal Location Beacon Aboard

Personal Location Beacons (PLBs) are smaller version of EPIRBs that can be used on land or aboard boats. They must be activated manually. Unlike a Category 1 EPIRB, they are registered to a person rather than to a boat. A person aboard a boat can activate a PLB, which then transmits a distress signal that is received by a global system of satellites. The satellite system relays a distress call to a network of response agencies, which ultimately is received by a local search and rescue organization along with the GPS coordinates of the boater's location.

There is significant disparity across states in terms of the percentage of boats that had PLBs aboard in 2018 (***Table 3-51***). Of the boats in coastal and Great Lakes states that were operated over 3 nautical miles from shore, 20.6% had a PLB aboard. States with the highest percentage of PLBs aboard included North Carolina (53.9%), Hawaii (39.3%), and Illinois (37.9%). Conversely, a significantly lower percentage of boats operated more than 3 nautical miles from shore had PLBs aboard in Georgia (4.1%), Wisconsin (4.1%), and Michigan (5.7%).

Table 3-51. Number and Percentage of Boats in Coastal and Great Lakes States Operated More than 3 Nautical Miles from Shore at Least Once in the Last 12 Months that Had a PLB on Board by Aggregated Boat Type and by State of Operation, 2018[1,2,3,4,5,6,7]

State	All Boats that Went Over 3 Nautical Miles from				All Motorized Boats that Went Over 3 Nautical Miles from			
	Shore		Shore and Were Equipped with PLB		Shore		Shore and Were Equipped with PLB	
	N (00)	%	N (00)	%	N (00)	%	N (00)	%
Alabama	137	8.0	17	12.4	136	11.0	17	12.4
Alaska	62	14.3	22	35.7	60	30.5	21	35.7
California	445	11.7	100	22.4	383	17.1	92	24.0
Connecticut	92	10.8	13	14.5	87	26.4	12	13.3
Delaware	33	9.4	10	30.3	28	18.6	10	35.0
District of Columbia	--	--	--	--	--	--	--	--
Florida	2,131	23.7	475	22.3	2,078	37.6	457	22.0
Georgia	75	2.4	3	4.1	75	5.8	3	4.2
Hawaii	38	16.5	15	39.3	35	56.7	14	41.1
Illinois	47	2.3	18	37.9	40	4.4	14	35.7
Indiana	74	3.8	6	8.0	74	8.6	6	8.0
Louisiana	209	9.8	65	31.1	207	13.1	65	31.3
Maine	39	3.4	2	5.8	27	6.1	1	3.6
Maryland	104	5.5	15	14.5	96	11.4	13	13.6
Massachusetts	147	10.6	47	32.1	135	26.1	45	33.1
Michigan	543	9.3	31	5.7	527	17.8	29	5.5
Minnesota	94	2.3	6	6.1	94	3.5	6	6.1
Mississippi	135	14.9	12	8.8	135	21.1	12	8.8
New Hampshire	9.2	0.8	--	--	6.9	1.9	--	--

(continued)

Table 3-51. Number and Percentage of Boats in Coastal and Great Lakes States Operated More than 3 Nautical Miles from Shore at Least Once in the Last 12 Months that Had a PLB on Board by Aggregated Boat Type and by State of Operation, 2018[1,2,3,4,5,6,7] (continued)

State	All Boats that Went Over 3 Nautical Miles from				All Motorized Boats that Went Over 3 Nautical Miles from			
	Shore		Shore and Were Equipped with PLB		Shore		Shore and Were Equipped with PLB	
	N (00)	%	N (00)	%	N (00)	%	N (00)	%
New Jersey	218	18.3	31	14.3	215	35.0	31	14.5
New York	282	6.5	55	19.5	271	14.6	55	20.4
North Carolina	271	9.4	146	53.9	259	16.5	140	53.8
Ohio	232	13.0	37	15.9	215	21.0	28	13.0
Oregon	35	2.1	6	17.8	34	5.8	6	17.9
Pennsylvania	35	1.5	6	18.0	35	5.4	6	18.0
Rhode Island	58	15.5	8	13.3	49	28.8	4	7.2
South Carolina	300	8.0	91	30.5	228	9.2	40	17.6
Texas	211	5.6	55	25.9	210	7.7	54	25.8
Virginia	68	4.4	8	12.4	66	8.2	8	12.8
Washington	129	7.2	18	14.1	117	12.4	17	14.8
Wisconsin	224	7.1	9	4.1	216	10.0	8	3.9
Total Great Lakes and Coastal States	6,474	7.6	1,329	20.6	6,139	13.3	1,216	19.9

"—" Sample size too small.

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. Number of "All Boats" consists of boats that operated more than 3 nautical miles from shore either in the ocean, Gulf of Mexico, or Great Lakes at least once in the last 12 months.
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs.
4. PLBs can be used anywhere in the world and are designed to be carried on persons. Some, such as the FastFind, are not much larger than the size of a mobile phone.
5. Data reported on recreational boats that were operated more than 3 nautical miles from shore from the states with direct access to the ocean, Gulf of Mexico, or Great Lakes.
6. Ns are in units of 100.
7. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

3.20 Motorized Boats Equipped with Cut-Off Switches

Most powerboats and PWCs come equipped by the manufacturer with an emergency engine cut-off switch (ECOS). This safety device works by attaching a lanyard between the operator and the switch. It can shut off the engine if the operator falls off the PWC or out of the powerboat or is otherwise thrown from the proper operating position. Wireless electronic ECOS systems are also available that perform the same function. The USCG considers ECOS to be important because when operators of powerboats are ejected or fall overboard (e.g., boats hit a large wake, collides with another vessel or object in the water), the boat will typically continue to operate, until it runs out of fuel, runs aground, or collides with another boat/object. Also, it is often difficult for any persons ejected from the vessel or already in the water to swim out of the vessel's path, which may lead to one or more persons being struck by the vessel, a propeller, or a lower unit of the outboard or sterndrive. In 2018, the Coast Guard Authorization Act included a provision requiring that boat manufacturers, dealers, and distributors ensure that boats of 26 feet or less overall and whose engines are capable of more than 115 pounds of thrust be outfitted with an ECOS.

In 2018, 83.2% of the motorized boats that were operated at least once were equipped with an ECOS (***Tables 3-52*** and ***3-53***). A higher percentage (88.7%) of motorized boats in the South Census Region than other regions of the country were equipped with an ECOS.

Table 3-52. Number and Percentage of Motorized Boats with Motors/Engines Operated that Were Equipped with an ECOS/Engine Kill Cord by Aggregated Boat Type and by State of Operation, 2018[1,2,3,4,5]

State	Motorized Boats	
	N (000)	%
Alabama	121	95.8
Alaska	16	76.5
Arizona	43	80.2
Arkansas	66	88.6
California	166	69.7
Colorado	29	67.8
Connecticut	29	79.4
Delaware	23	91.1
District of Columbia	--	--
Florida	479	88.2
Georgia	133	88.3
Hawaii	5	84.2
Idaho	24	81.1
Illinois	98	86.6
Indiana	78	81.5
Iowa	61	75.3
Kansas	29	75.2
Kentucky	67	88.5
Louisiana	149	90.0
Maine	37	85.4

(continued)

Table 3-52. Number and Percentage of Motorized Boats with Motors/Engines Operated that Were Equipped with an ECOS/Engine Kill Cord by Aggregated Boat Type and by State of Operation, 2018[1,2,3,4,5] (continued)

State	Motorized Boats	
	N (000)	%
Maryland	56	71.4
Massachusetts	41	80.5
Michigan	240	77.5
Minnesota	211	77.9
Mississippi	58	89.0
Missouri	125	87.7
Montana	14	81.6
Nebraska	30	75.9
Nevada	10	70.4
New Hampshire	37	89.1
New Jersey	49	83.6
New Mexico	10	78.8
New York	151	80.0
North Carolina	154	90.5
North Dakota	17	77.7
Ohio	83	68.3
Oklahoma	64	83.6
Oregon	46	71.3
Pennsylvania	72	87.6
Rhode Island	12	73.5
South Carolina	237	90.5
South Dakota	17	86.2
Tennessee	96	88.1
Texas	266	92.3
Utah	19	83.0
Vermont	10	85.4
Virginia	76	82.9
Washington	73	75.3
West Virginia	15	87.1
Wisconsin	168	77.0
Wyoming	8	73.3
Total U.S.	4,119	83.2

"—" Sample size too small.

1. A kill cord is pulled from the dash, cutting the engine and preventing further injury from the spinning propeller if the person (i.e., helmsperson) is somehow thrown (e.g., due to a wave, collision) out of their seat.
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs.
4. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.)
5. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

Table 3-53. Number and Percentage of Motorized Boats with Motors/Engines Operated that Were Equipped with an ECOS/Engine Kill Cord by Aggregated Boat Type and by Census Region of Operation, 2018[1,2,3,4,5]

Census Region	Motorized Boats	
	N (000)	%
Northeast	437	82.5
Midwest	1,158	78.6
South	2,058	88.7
West	466	73.7
Total U.S.	4,119	83.2

1. A kill cord is pulled from the dash, cutting the engine and preventing further injury from the spinning propeller if the person (i.e., helmsperson) is somehow thrown (e.g., due to a wave, collision) out of their seat.
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs.
4. Ns are in units of 1,000.
5. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

3.21 Boats Equipped with VHF-DSC Radios

The USCG considers a VHF-Digital Selective Calling (DSC) radio to be a very important on-board safety device. These radios enable clear communication from vessel to vessel and from ship to shore. When there is a safety emergency, it can be the only line from sea to shore or nearby vessels. VHFs includes DSC that can send a digital distress message that contains the vessel's GPS position to the USCG or other DSC-equipped craft. Some VHF radios offer National Oceanic and Atmospheric Administration weather alert monitoring. If a VHF-DSC radio meets JIS7 standards, it can be fully submersed for 30 minutes in 3 feet of water and still function properly after it is taken out. When combined with the Coast Guard's Rescue 21 initiative, the time it will take the Coast Guard to find a person in case of an emergency is significantly reduced. When properly registered with a Maritime Mobile Service Identity (MMSI) number, the radio can communicate key information to the USCG, including the name and description of the boat, its exact location, and the person to contact in case of emergency. The system is automatic, meaning once initiated it will continue to transmit information even if a boater is unable to operate the radio.

Of the boats that were operated in 2018, 13.9% had VHF-DSC radios (***Table 3-54***). A much higher percentage (22.8%) of motorized boats had such a radio than human-powered boats (1.4%). States with the highest percentage of motorized boats equipped with VHF-DSC radios were Hawaii (76.9%), Maryland (55.3%), New Jersey (55.2%), and Rhode Island (52.1%). A higher percentage (33.4%) of motorized boats that operated in the Northeast Census Region had VHF-DSC radios aboard when operated (***Table 3-55***).

Table 3-54. Number and Percentage of Boats Operated that Were Equipped with VHF-DSC Radio by Aggregated Boat Type and by State of Operation, 2018[1,2,3,4,5,6]

State	Boats					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Alabama	22	12.1	20	16.1	1	1.5
Alaska	11	26.6	11	51.2	1	4.0
Arizona	7	8.1	6	11.9	--	--
Arkansas	5	3.6	3	3.9	--	--
California	83	19.3	63	26.5	2	1.2
Colorado	8	4.9	7	16.3	--	--
Connecticut	20	20.8	17	46.6	1	2.1
Delaware	8	16.2	8	33.7	--	--
District of Columbia	20	5.6	19	47.8	--	--
Florida	307	34.5	274	50.5	18	5.7
Georgia	25	7.1	24	15.9	--	--
Hawaii	10	56.3	5	76.9	1	14.4
Idaho	4	5.8	4	12.1	--	--
Illinois	12	5.2	9	8.4	3	2.1
Indiana	13	5.8	10	10.5	3	2.8
Iowa	6	4.7	6	6.9	--	--
Kansas	1	2.0	1	3.3	--	--
Kentucky	5	3.9	4	5.9	--	--
Louisiana	31	14.0	30	18.4	--	--
Maine	14	12.4	8	17.8	4	6.4
Maryland	51	28.0	43	55.3	--	--
Massachusetts	31	22.4	25	49.9	4	5.4
Michigan	63	10.4	58	18.8	4	1.3
Minnesota	17	4.2	17	6.3	--	--
Mississippi	10	11.1	10	14.9	--	--
Missouri	15	6.8	15	10.4	--	--
Montana	1	2.3	1	3.8	--	--
Nebraska	4	2.8	4	9.8	--	--
Nevada	7	24.6	4	29.4	--	--
New Hampshire	4	3.4	4	9.0	--	--
New Jersey	36	30.1	32	55.2	--	--
New Mexico	1	4.3	1	7.6	--	--
New York	63	14.6	58	30.6	1	0.5
North Carolina	56	18.4	53	31.0	2	1.4
North Dakota	2	5.3	1	6.4	--	--
Ohio	35	17.3	34	28.4	--	--
Oklahoma	11	9.7	9	11.7	--	--
Oregon	14	7.7	11	16.9	2	1.5

(continued)

Table 3-54. Number and Percentage of Boats Operated that Were Equipped with VHF-DSC Radio by Aggregated Boat Type and by State of Operation, 2018[1,2,3,4,5,6] (continued)

State	Boats					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Pennsylvania	19	7.2	19	22.5	1	0.3
Rhode Island	9	27.2	9	52.1	--	--
South Carolina	68	16.8	55	21.1	--	--
South Dakota	4	13.7	4	21.7	--	--
Tennessee	8	4.7	7	6.1	1	0.9
Texas	32	8.0	32	11.0	--	--
Utah	8	17.6	8	34.9	--	--
Vermont	4	10.3	3	23.1	--	--
Virginia	28	16.5	27	29.1	1	1.1
Washington	35	18.7	28	29.3	2	2.0
West Virginia	2	2.0	2	11.3	--	--
Wisconsin	24	7.2	19	8.9	3	2.5
Wyoming	1	4.8	1	8.4	--	--
Total U.S.	1,272	13.9	1,129	22.8	55	1.4

"—" Sample size too small.

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. Number of "All Boats": These are all boats with a motor operated and equipped with a VHF-DSC radio.
3. VHF-DSC radios have a distinctive red flap over one of the switches, labeled DISTRESS.
4. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
5. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.).
6. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

Table 3-55. Number and Percentage of Boats Operated that Were Equipped with VHF-DSC Radio by Aggregated Boat Type and by Census Region of Operation, 2018[1,2,3,4,5,6]

Census Region	Boats					
	All		Motorized		Human-Powered	
	N (000)	%	N (000)	%	N (000)	%
Northeast	207	15.2	177	33.4	12	1.6
Midwest	194	7.5	180	12.2	12	1.1
South	683	17.6	617	26.6	23	1.6
West	188	14.2	148	23.4	8	1.2
Total U.S.	1,272	13.9	1,129	22.8	55	1.4

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. Number of "All Boats": These are all boats with a motor operated and equipped with a VHF-DSC radio.
3. VHF-DSC radios have a distinctive red flap over one of the switches, labeled DISTRESS.
4. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.
5. Ns are in units of 1,000.
6. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.

3.22 Recreational Boating Risk Ratios

A risk ratio is defined as the risk of an event happening. The risk ratio is the probability of an outcome (e.g., death, injury) in an exposed group. In the case of recreational boating, the exposed population is the persons that go out on the water on recreational boats. Depending on the risk being estimated, safety-related risk ratios can employ different numerators and denominators. For example, the National Highway Traffic Safety Administration estimates the risk of fatalities in vehicle accidents using 100 million vehicle miles traveled (VMT) as the denominator. They reported that in 2018 there were 36,560 fatalities compared with 37,473 fatalities in 2017—a decrease of 2.4%. The fatality rate per 100 million VMT decreased 3.4. Overall, 2018's VMT increased by 0.3 percent from 2017's VMT—from 3,212 billion to 3,223 billion (National Highway Transportation Safety Administration, 2019). Recreational boating risk ratios use numbers of boat days and boat hours (i.e., expressed as 100 million for both days and hours) to estimate the risk of a boating accident that results in a fatality and person days and hours as denominators to determine the risk of a recreational boating fatality because multiple persons can die in the same accident.

As defined and discussed previously, recreational boating risk ratios were estimated using reported number of accidents involving injuries and deaths and the number of fatalities and injuries as numerators. Federal law requires the operator or owner of a recreational vessel to file a boating accident report with the state reporting authority if the recreational vessel is involved in

an accident that results in a death of a person, injury of a person that requires medical treatment beyond first aid, disappearance of a person from the vessel under circumstances that indicate death or injury, damage to vessel(s) and other property that totals $2,000 or more (lower amounts in some states and territories), or a boat being destroyed. The 50 states, five U.S. territories, and the District of Columbia submit accident reports to the USCG every time an accident occurs. The USCG compiles the statistics to produce an annual report of boating accident statistics.

The USCG assigns significant confidence to the data regarding fatalities, including the number of accidents involving fatalities and the number of fatalities. Despite best efforts on the part of the USCG and state boating accident reporting authorities and boating safety partners to achieve comprehensive and accurate documentation of all boating accidents required to be reported, the USCG is less confident in the correctness of the nonfatal accident reporting. Nonfatal accidents, including nonfatal injuries, are likely underreported because boaters are unaware of reporting requirements or are unwilling to report.

Table 3-56 shows numbers of reported fatalities, injuries, and casualties for all recreational boats and for motorized and human-powered boats for every state in the country that serve as the risk ratio numerators. It also reports the number of boating accidents that involved fatalities, injuries, or casualties. In 2018, the USCG counted 2,420 accidents that involved 630 deaths and/or 2,489 injuries in 50 states and the District of Columbia. When examining a state accident rate, it is important to note that these accidents may include deaths and injuries from vessels that were registered or, in the case of unregistered boats, stored by/in another state. Although an effort was made to assign exposure to the states where boats were used and not necessarily where they were registered or stored, it is likely that imported exposure days and hours might still be underestimated for states that experience heavy use by boats from other states. This undervalues the denominator for those states and therefore shows a higher risk ratio.

Table 3-57 assembles the different exposure estimates, reported earlier, that were employed as the denominator in the different risk ratios, including the number of boat days, boat hours, person boat days, and person boat hours.

Table 3-56. Number of Boating Fatalities, Injuries, Casualties, and Accidents by Aggregated Boat Type by State, 2018[1,2,3]

State	All Boats						Accidents Involving					
							Motorized Boats			Human-Powered Boats		
	Fatalities	Accidents Involving Fatalities	Injuries	Accidents Involving Injuries	Casualties	Accidents Involving Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
Alabama	17	14	34	22	51	36	13	21	34	0	0	0
Alaska	22	17	7	3	29	20	13	1	14	4	2	6
Arizona	11	6	74	52	85	58	3	49	52	2	2	4
Arkansas	7	7	34	27	41	34	5	25	30	2	2	4
California	34	33	207	166	241	199	20	130	150	10	12	22
Colorado	6	6	16	15	22	21	2	15	17	4	0	4
Connecticut	5	4	25	20	30	24	3	17	20	1	3	4
Delaware	2	2	13	10	15	12	1	7	8	1	1	2
District of Columbia	0	0	1	1	1	1	0	1	1	0	0	0
Florida	57	55	297	215	354	270	46	198	244	8	4	12
Georgia	11	9	77	63	88	72	4	62	66	3	0	3
Hawaii	1	1	5	3	6	4	1	2	3	0	1	1
Idaho	10	9	25	23	35	32	5	21	26	4	2	6
Illinois	17	16	37	27	54	43	10	27	37	5	0	5
Indiana	8	8	31	24	39	32	3	21	24	3	3	6
Iowa	8	8	19	16	27	24	4	15	19	4	1	5
Kansas	2	2	13	10	15	12	1	10	11	1	0	1
Kentucky	13	13	21	18	34	31	9	18	27	4	0	4
Louisiana	19	17	77	54	96	71	16	54	70	0	0	0
Maine	4	4	17	16	21	20	4	9	13	0	3	3
Maryland	16	13	85	72	101	85	9	61	70	2	6	8
Massachusetts	10	10	45	29	55	39	5	24	29	3	4	7
Michigan	22	21	80	55	102	76	11	44	55	10	10	20
Minnesota	14	13	56	38	70	51	9	36	45	3	1	4
Mississippi	11	9	21	16	32	25	8	15	23	1	0	1
Missouri	14	12	99	70	113	82	9	69	78	3	0	3
Montana	13	9	9	8	22	17	2	5	7	7	3	10
Nebraska	4	4	17	12	21	16	3	11	14	0	0	0
Nevada	5	5	41	33	46	38	3	32	35	1	1	2

(continued)

Table 3-56. Number of Boating Fatalities, Injuries, Casualties, and Accidents by Aggregated Boat Type by State, 2018[1,2,3] (continued)

State	All Boats						Accidents Involving					
							Motorized Boats			Human-Powered Boats		
	Fatalities	Accidents Involving Fatalities	Injuries	Accidents Involving Injuries	Casualties	Accidents Involving Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
New Hampshire	5	4	16	12	21	16	3	12	15	1	0	1
New Jersey	5	5	65	42	70	47	4	37	41	1	1	2
New Mexico	2	2	14	10	16	12	2	10	12	0	0	0
New York	20	17	93	67	113	84	11	57	68	6	7	13
North Carolina	30	27	108	81	138	108	17	71	88	8	9	17
North Dakota	2	2	4	2	6	4	1	1	2	1	1	2
Ohio	17	15	55	45	72	60	11	32	43	3	11	14
Oklahoma	7	5	25	18	32	23	2	17	19	3	1	4
Oregon	17	16	46	28	63	44	6	18	24	9	9	18
Pennsylvania	14	13	35	29	49	42	7	18	25	6	11	17
Rhode Island	1	1	13	7	14	8	0	7	7	1	0	1
South Carolina	16	15	80	64	96	79	15	62	77	0	0	0
South Dakota	1	1	7	5	8	6	1	4	5	0	1	1
Tennessee	22	22	74	46	96	68	13	44	57	7	1	8
Texas	38	35	123	97	161	132	22	93	115	7	4	11
Utah	9	8	57	42	66	50	4	40	44	3	0	3
Vermont	3	3	3	1	6	4	2	1	3	1	0	1
Virginia	11	9	46	35	57	44	4	31	35	4	4	8
Washington	21	19	47	38	68	57	10	32	42	8	4	12
West Virginia	4	3	7	6	11	9	2	3	5	0	3	3
Wisconsin	21	15	78	55	99	70	11	49	60	3	3	6
Wyoming	1	1	10	7	11	8	1	7	8	0	0	0
Total U.S.	630	565	2,489	1,855	3,119	2,420	371	1,646	2,017	158	131	289

1. The category “Accidents Involving Casualties” includes accidents with no fatalities. “Casualties” includes both fatalities and injuries.
2. Source of boating accident data: 2018 Recreational Boating Statistics, USCG, 19 August 2019.
3. The category “Motorized Boats” includes open power boats, cabin power boats, pontoon boats, and PWCs; “Human-Powered Boats” includes kayaks, canoes, paddleboards, and rowed boats. “All Boats” includes “Motorized Boats,” “Human-Powered Boats,” and all other boat types.

Table 3-57. Number of Boat Days, Boat Hours, Person Boat Days, and Person Boat Hours by State of Operation, 2018[1]

State	N (000)			
	Boat		Person Boat	
	Days[2]	Hours[3]	Days[4]	Hours[5]
Alabama	9,762	75,614	25,705	219,610
Alaska	2,707	22,188	7,590	86,757
Arizona	5,179	57,658	14,454	196,437
Arkansas	6,584	42,089	16,739	122,521
California	19,622	144,015	58,328	452,004
Colorado	6,173	37,656	15,185	123,219
Connecticut	4,463	25,005	10,588	62,541
Delaware	1,530	10,595	3,545	31,894
District of Columbia	220	374	302	735
Florida	47,000	369,417	124,147	1,089,456
Georgia	14,820	108,146	34,698	286,280
Hawaii	906	5,189	1,772	12,808
Idaho	4,199	39,828	11,692	122,980
Illinois	10,299	72,807	25,093	201,728
Indiana	11,326	63,491	34,102	200,553
Iowa	5,906	54,788	16,861	144,030
Kansas	3,543	26,774	10,209	82,032
Kentucky	6,493	57,535	17,154	168,502
Louisiana	12,037	89,125	28,697	218,358
Maine	7,117	40,909	17,339	107,330
Maryland	10,379	71,666	24,894	196,113
Massachusetts	7,010	41,007	16,665	110,191
Michigan	32,635	190,755	88,059	603,740
Minnesota	25,412	167,958	71,229	469,987
Mississippi	4,899	34,375	11,711	88,719
Missouri	12,635	91,446	37,501	314,262
Montana	2,169	12,807	6,026	34,674
Nebraska	3,454	23,955	9,678	84,947
Nevada	1,264	10,575	3,273	27,453
New Hampshire	5,777	37,218	14,437	156,912
New Jersey	7,054	43,988	17,749	122,203
New Mexico	1,350	12,625	3,865	38,682
New York	25,141	178,207	57,109	480,683
North Carolina	14,851	98,583	37,105	301,498
North Dakota	1,843	11,417	4,756	37,233
Ohio	10,933	77,805	33,244	291,967
Oklahoma	6,986	70,865	22,632	271,860

(continued)

Table 3-57. Number of Boat Days, Boat Hours, Person Boat Days, and Person Boat Hours by State of Operation, 2018[1] (continued)

State	N (000)			
	Boat		Person Boat	
	Days[2]	Hours[3]	Days[4]	Hours[5]
Oregon	8,724	76,453	18,256	153,430
Pennsylvania	11,365	78,493	26,132	196,466
Rhode Island	2,232	14,354	5,966	41,639
South Carolina	20,538	160,570	54,686	497,800
South Dakota	1,753	20,097	5,473	78,344
Tennessee	9,072	86,579	24,419	294,487
Texas	20,601	167,210	58,491	522,254
Utah	2,355	19,245	8,677	82,856
Vermont	1,965	9,568	4,221	22,487
Virginia	8,378	62,853	20,914	179,096
Washington	9,804	71,187	23,254	188,480
West Virginia	2,742	18,130	6,627	51,727
Wisconsin	17,580	104,163	47,454	297,783
Wyoming	980	9,044	2,871	32,139
Total U.S.	471,770	3,416,403	1,241,575	10,199,888

1. Ns are in units of 1,000.

2. The number of boat days was derived from the question: "On how many calendar days did the boat go out on the water in the reference month?" The numbers were summed over all boats in the household and then over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month. Adjustments were carried out separately within each table, resulting in minor differences between tables.

3. The number of boat hours was derived by multiplying the number of days the boat went out on the water in a reference month by the number of boat outings on its last boating day of that month by the number of hours the boat was out in water on that last outing. The answers were multiplied for each boat, and the products were added over all boats in the household and finally over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month. Adjustments were carried out separately within each table, resulting in minor differences between tables.

4. The number of person boat days was derived by multiplying the number of days the boat went out on the water in a reference month by the number of persons (of any age) aboard on the last boat outing of that month. The answers were multiplied for each boat, and the products were added over all boats in the household and finally over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month. Adjustments were carried out separately within each table resulting in minor differences between tables.

5. The number of person boat hours was derived by multiplying the number of days the boat went out on the water in a reference month by the number of boat outings on its last boating day of that month by the number of hours the boat was out on the water on that last outing and by the number of persons (of any age) aboard on that outing. The answers were multiplied for each boat, and the products were added over all boats in the household and finally over all households. The final weighted sum was multiplied by 12 to account for the fact that each respondent reported for 1 month. Adjustments were carried out separately within each table resulting in minor differences between tables.

3.23 Recreational Boating Accidents Resulting in Fatalities per 100 Million Boat Days and per 100 Million Boat Hours

Tables 3-58 and ***3-59*** provide estimated risk ratios for the number of accidents that involved fatalities, injuries, and casualties (i.e., deaths and injuries combined) for all boats and, independently, for motorized and human-powered boats. The denominators are 100 millions of boat days and 100 millions of boat hours. Boating accidents involving a fatality for all boats in the United States occurred at a rate of 120 per 100 million boat days in 2018. This means that the risk of a boating accident resulting in a fatality is 120 for every 100 million boat days or .0000012%. The risk of fatal accidents ranged from 45 per 100 million boat days to 628 per 100 million boat days. The rate of accidents involving a fatality averaged 121 per 100 million motorized boat days and 104 per 100 million human-powered boat days. The risk of an accident involving reported injuries was 393 per 100 million days of boating for all boats operated in 2018 in the United States, 538 accidents resulting in injuries per 100 million boat days (538 per 100 million) for motorized boats, and 86 per 100 million boat days for human-powered boats. Accidents involving a casualty occurred at a rate of 513 per 100 million boat days for all boats, 660 per 100 million boat days for motorized boats, and 191 per 100 million boat days for human-powered bats. The higher number of reported injuries and casualties for motorized boats, along with the larger average number of persons aboard these boats, is because some types of reportable injuries are specifically related to motors/engines, including fire or explosions that occur while underway and while anchored, moored, or docked if the fire resulted from the vessel or vessel equipment; water-skiing or other mishap involving a towable device; a person struck by a vessel, propeller, propulsion unit, or steering machinery; and carbon monoxide exposure.

States where the risk of accidents involving fatalities in 2018 was highest were Alaska with 628 per 100 million boat days and 77 per 100 million boat hours, Montana with 415 per 100 million days and 70 per 100 million boat hours, and Nevada with 396 per 100 million boat days and 47 per 100 million boat hours.

The lowest risk of being involved in a boating accident that results in a fatality in 2018 was in Rhode Island: 45 per 100 million boat days and 7 per 100 million boat hours; Minnesota: 51 per 100 million boat days and 8 per 100 million boat hours; and Maine: 56 per100 million days and 10 per million boat hours.

The risk of a fatal accident on a motorized boat differed among the states, with higher risk of fatal accidents involving motorized boats present in Alaska, Hawaii, and Utah. The highest risk of being involved in a fatal accident on a nonmotorized boat was in Nevada, Montana, and Alaska.

Table 3-58. Risk Ratios—Reported Boating Accidents per 100 Million Boat Days for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5]

State	Accidents Involving … (N per 100 Million Boat Days)								
	All Boats			Motorized Boats			Human-Powered Boats		
	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
Alabama	143	225	369	167	269	436	*	*	*
Alaska	628	111	739	831	64	895	456	228	684
Arizona	116	1,004	1,120	87	1,413	1,500	120	120	240
Arkansas	106	410	516	114	572	686	97	97	194
California	168	846	1,014	149	972	1,121	210	252	462
Colorado	97	243	340	91	680	770	107	*	107
Connecticut	90	448	538	127	718	845	57	171	227
Delaware	131	654	784	114	799	913	189	189	377
District of Columbia	*	455	455	*	3,324	3,324	*	*	*
Florida	117	457	574	143	617	760	62	31	93
Georgia	61	425	486	52	810	862	43	*	43
Hawaii	110	331	441	327	655	982	*	267	267
Idaho	214	548	762	215	904	1,119	217	109	326
Illinois	155	262	418	161	436	597	137	*	137
Indiana	71	212	283	50	350	400	63	63	126
Iowa	135	271	406	87	325	412	330	83	413
Kansas	56	282	339	45	453	498	78	*	78
Kentucky	200	277	477	202	404	606	212	*	212
Louisiana	141	449	590	166	559	725	*	*	*
Maine	56	225	281	115	259	375	*	88	88
Maryland	125	694	819	162	1,097	1,259	52	156	208
Massachusetts	143	414	556	136	652	788	99	133	232
Michigan	64	169	233	53	212	265	88	88	176
Minnesota	51	150	201	45	181	227	58	19	77
Mississippi	184	327	510	219	410	629	87	*	87

(continued)

Table 3-58. Risk Ratios—Reported Boating Accidents per 100 Million Boat Days for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5] (continued)

State	Accidents Involving … (N per 100 Million Boat Days)								
	All Boats			Motorized Boats			Human-Powered Boats		
	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
Missouri	95	554	649	94	723	818	99	*	99
Montana	415	369	784	223	558	781	574	246	820
Nebraska	116	347	463	138	506	644	*	*	*
Nevada	396	2,611	3,007	274	2,927	3,201	721	721	1,442
New Hampshire	69	208	277	100	400	501	40	*	40
New Jersey	71	595	666	94	872	967	38	38	75
New Mexico	148	741	889	210	1,048	1,258	*	*	*
New York	68	267	334	84	433	517	54	63	117
North Carolina	182	545	727	181	756	936	159	179	338
North Dakota	108	108	217	67	67	134	292	292	585
Ohio	137	412	549	141	409	550	102	374	476
Oklahoma	72	258	329	36	309	345	234	78	312
Oregon	183	321	504	164	493	657	180	180	359
Pennsylvania	114	255	370	159	408	566	88	162	250
Rhode Island	45	314	358		515	515	136	*	136
South Carolina	73	312	385	101	419	520	*	*	*
South Dakota	57	285	342	73	292	365	*	264	264
Tennessee	243	507	750	192	650	842	321	46	367
Texas	170	471	641	135	572	708	174	99	273
Utah	340	1,783	2,123	283	2,835	3,118	333	*	333
Vermont	153	51	204	231	115	346	96	*	96
Virginia	107	418	525	74	570	643	145	145	291
Washington	194	388	581	160	513	674	248	124	372
West Virginia	109	219	328	224	337	561	*	182	182
Wisconsin	85	313	398	80	357	437	86	86	173

(continued)

Table 3-58. Risk Ratios—Reported Boating Accidents per 100 Million Boat Days for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5] (continued)

State	Accidents Involving … (N per 100 Million Boat Days)								
	All Boats			Motorized Boats			Human-Powered Boats		
	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
Wyoming	102	714	816	136	954	1,090	*	*	*
Total U.S.	120	393	513	121	538	660	104	86	191

* Risk ratio numerator is zero.

1. Risk ratio is defined as the number of reported boating accidents divided by the total number of boat days (divided by 100 million). Federal law requires the operator or owner of a recreational vessel to file a boating accident report with the state reporting authority if the recreational vessel is involved in an accident that results in death of an individual, injury of an individual that requires medical treatment beyond first aid, a person disappears from the vessel under circumstances that indicate death or injury, there is damage to vessels and other property totaling at least $2,000, or the boat is destroyed.
2. Boat day is defined as a day on which at least one boat outing took place.
3. “Accidents involving casualties” includes accidents with no fatalities. “Casualties” includes both fatalities and injuries.
4. Source of boating accident data: 2018 Recreational Boating Statistics, USCG, 19 August 2019.
5. The category “Motorized Boats” includes open power boats, cabin power boats, pontoon boats, and PWCs; “Human-Powered Boats” includes kayaks, canoes, paddleboards, and rowed boats. “All Boats” includes “Motorized Boats,” “Human-Powered Boats,” and all other boat types.

Table 3-59. Risk Ratios—Reported Boating Accidents per 100 Million Boat Hours for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5]

State	Accidents Involving … (N per 100 Million Boat Hours)								
	All Boats			Motorized Boats			Human-Powered Boats		
	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
Alabama	19	29	48	21	33	54	*	*	*
Alaska	77	14	90	78	6	84	94	47	140
Arizona	10	90	101	6	105	111	19	19	38
Arkansas	17	64	81	15	77	92	23	23	47
California	23	115	138	18	115	133	54	65	118
Colorado	16	40	56	10	72	82	25	*	25
Connecticut	16	80	96	21	117	138	11	33	44
Delaware	19	94	113	13	88	100	49	49	98
District of Columbia	*	267	267	*	956	956	*	*	*
Florida	15	58	73	17	72	88	10	5	15
Georgia	8	58	67	6	91	97	8	*	8
Hawaii	19	58	77	38	77	115	*	66	66
Idaho	23	58	80	32	134	166	17	9	26
Illinois	22	37	59	20	53	73	30	*	30
Indiana	13	38	50	8	58	66	11	11	23
Iowa	15	29	44	10	37	46	30	7	37
Kansas	7	37	45	5	53	58	13	*	13
Kentucky	23	31	54	20	39	59	40	*	40
Louisiana	19	61	80	21	69	90	*	*	*
Maine	10	39	49	19	42	60	*	17	17
Maryland	18	100	119	20	138	158	10	30	40
Massachusetts	24	71	95	22	105	127	19	25	44
Michigan	11	29	40	8	31	39	21	21	42
Minnesota	8	23	30	6	25	32	13	4	17
Mississippi	26	47	73	29	54	83	19	*	19

(continued)

Table 3-59. Risk Ratios—Reported Boating Accidents per 100 Million Boat Hours for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5] (continued)

State	Accidents Involving … (N per 100 Million Boat Hours)								
	All Boats			Motorized Boats			Human-Powered Boats		
	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
Missouri	13	77	90	12	95	107	16	*	16
Montana	70	62	133	44	109	153	88	38	125
Nebraska	17	50	67	16	57	73	*	*	*
Nevada	47	312	359	31	326	356	188	188	376
New Hampshire	11	32	43	11	45	56	10	*	10
New Jersey	11	95	107	14	125	139	8	8	15
New Mexico	16	79	95	21	104	124	*	*	*
New York	10	38	47	10	51	61	10	11	21
North Carolina	27	82	110	24	101	125	36	41	77
North Dakota	18	18	35	9	9	19	121	121	242
Ohio	19	58	77	17	51	68	22	81	103
Oklahoma	7	25	32	3	28	31	34	11	46
Oregon	21	37	58	20	59	78	20	20	40
Pennsylvania	17	37	54	20	52	73	14	25	39
Rhode Island	7	49	56	0	72	72	28	*	28
South Carolina	9	40	49	12	48	60	*	*	*
South Dakota	5	25	30	5	21	26	*	119	119
Tennessee	25	53	79	19	65	84	40	6	46
Texas	21	58	79	15	63	78	37	21	59
Utah	42	218	260	30	301	332	53	*	53
Vermont	31	10	42	38	19	57	25	*	25
Virginia	14	56	70	9	66	74	28	28	55
Washington	27	53	80	20	64	84	46	23	70
West Virginia	17	33	50	25	38	63	*	39	39

(continued)

Table 3-59. Risk Ratios—Reported Boating Accidents per 100 Million Boat Hours for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5] (continued)

State	Accidents Involving … (N per 100 Million Boat Hours)								
	All Boats			Motorized Boats			Human-Powered Boats		
	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
Wisconsin	14	53	67	13	57	70	18	18	37
Wyoming	11	77	88	13	89	101	*	*	*
Total U.S.	17	54	71	15	66	81	19	16	35

* Risk ratio numerator is zero.

1. Risk ratio is defined as the number of reported boating accidents divided by the total number of boat hours (divided by 100 million). Federal law requires the operator or owner of a recreational vessel to file a boating accident report with the state reporting authority if the recreational vessel is involved in an accident that results in death of an individual, there is an injury of an individual requiring medical treatment beyond first aid, or a person disappears from the vessel.
2. Boat hour is defined as an hour of boating over all days on which at least one boat outing took place.
3. "Accidents involving casualties" includes accidents with no fatalities. "Casualties" includes both fatalities and injuries.
4. Source of boating accident data: 2018 Recreational Boating Statistics, USCG, 19 August 2019.
5. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

3.24 Recreational Boating Fatalities per 100 Million Person Boat Days

Table 3-60 provides the risk ratio estimates where the number of fatalities, rather than the number of accidents involving a fatality, are the numerators, and person boat days serve as the denominators. A person boat day is any part of a day that a person was aboard a boat when it was operated out on the water. The ratio is the risk of a person being a fatality while aboard a recreational boat out on the water in 2018.

The risk of a boating fatality in the United States across all types of boats in 2018 was a very low 51 per 100 million person boat days (51 per 100 million). This low rate is attributable to practicing safer boating behaviors due to boater education, regulations, and inspections, as well as safer boats and safe-boating technologies. The risk of a fatality in motorized boats was 43 per 100 million boat days but was significantly higher, 76 per 100 million days, on human-powered boats (e.g., canoes, kayaks, paddleboards, and rowed boats). The risk of reportable injuries in human-powered craft is lower than for motorized boats in large part because of the greater chance of reportable injuries being related to motors/engines, including fire or explosions that occur while underway and while anchored, moored, or docked if the fire resulted from the vessel or vessel equipment; water-skiing or other mishap involving a towable device; a person struck by a vessel, propeller, propulsion unit, or steering machinery; and carbon monoxide exposure.

The risk of a fatality per 100 million person boat days for all types of boats was lowest in Rhode Island (17 per 100 million person boat days), South Dakota (18 per 100 million person boat days), Minnesota (20 per 100 million person boat days), and Kansas (20 per 100 million person boat days). The risk was significantly higher in Alaska (290 per 100 million person boat days), Montana (216 per 100 million person boat days), and Nevada (153 per 100 million person boat days).

The average risk of a fatality in motorized boats in the United States in 2018 was 43 per 100 million person boat days. Risk of a fatality per 100 million person boat days on motorized boats was highest in Alaska (335 per 100 million person boat days), Montana (143 per 100 million person boat days), and Hawaii (119 per 100 million person boat days).

The average risk of fatalities in human-powered boats was 76 per 100 million person boat days. Risk of fatalities on a human-powered boat was highest in Nevada (476 per 100 million person boat days), Montana (341 per 100 million person boat days), and Alaska (320 per 100 million person boat days).

Table 3-60. Risk Ratios—Reported Fatalities, Injuries, Casualties per 100 Million Person Boat Days for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5]

State	(N per 100 Million Person Boat Days)								
	All Boats			Motorized Boats			Human-Powered Boats		
	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
Alabama	66	132	198	71	146	217	*	*	*
Alaska	290	92	382	335	93	428	320	160	480
Arizona	76	512	588	66	582	647	96	96	192
Arkansas	42	203	245	39	247	286	59	59	118
California	58	355	413	43	356	399	150	204	354
Colorado	40	105	145	24	195	219	62	0	62
Connecticut	47	236	283	55	286	341	40	162	202
Delaware	56	367	423	40	364	405	146	292	438
District of Columbia	*	331	331	*	1,018	1,018	*	*	*
Florida	46	239	285	48	268	315	43	43	86
Georgia	32	222	254	22	328	349	27	*	27
Hawaii	56	282	339	119	476	595	*	187	187
Idaho	86	214	299	65	286	351	128	77	205
Illinois	68	147	215	60	184	244	89	53	143
Indiana	23	91	114	12	116	128	35	35	69
Iowa	47	113	160	26	119	145	267	67	334
Kansas	20	127	147	13	172	185	40	*	40
Kentucky	76	122	198	66	155	221	140	*	140
Louisiana	66	268	335	72	307	379	*	*	*
Maine	23	98	121	36	90	126	*	53	53
Maryland	64	341	406	70	424	494	33	100	134
Massachusetts	60	270	330	45	332	377	62	144	206
Michigan	25	91	116	17	88	105	63	108	171
Minnesota	20	79	98	15	87	102	48	12	60
Mississippi	94	179	273	100	199	299	67	*	67
Missouri	37	264	301	33	294	327	75	*	75
Montana	216	149	365	143	171	314	341	128	469
Nebraska	41	176	217	38	190	228	*	*	*
Nevada	153	1,253	1,405	103	1,370	1,472	476	476	951
New Hampshire	35	111	145	37	146	183	31	*	31
New Jersey	28	366	394	30	435	465	26	26	51
New Mexico	52	362	414	63	443	506	*	*	*
New York	35	163	198	30	196	226	54	74	128
North Carolina	81	291	372	69	323	392	110	124	234
North Dakota	42	84	126	23	69	92	268	268	536
Ohio	51	165	217	45	145	189	79	291	370
Oklahoma	31	110	141	15	117	132	226	56	282
Oregon	93	252	345	62	319	380	119	167	287
Pennsylvania	54	134	188	56	146	202	54	125	179
Rhode Island	17	218	235	0	309	309	78	*	78
South Carolina	29	146	176	35	170	205	*	*	*

(continued)

Table 3-60. Risk Ratios—Reported Fatalities, Injuries, Casualties per 100 Million Person Boat Days for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5] (continued)

State	(N per 100 Million Person Boat Days)								
	All Boats			Motorized Boats			Human-Powered Boats		
	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
South Dakota	18	128	146	20	119	139	*	249	249
Tennessee	90	303	393	62	342	403	237	34	271
Texas	65	210	275	43	226	269	145	64	209
Utah	104	657	761	58	748	805	243	*	243
Vermont	71	71	142	75	113	188	70	*	70
Virginia	53	220	273	36	252	288	102	102	205
Washington	90	202	292	60	213	273	223	99	322
West Virginia	60	106	166	65	131	196	*	128	128
Wisconsin	44	164	209	34	174	208	114	57	171
Wyoming	35	348	383	41	407	448	*	*	*
Total U.S.	51	200	251	43	227	270	76	73	148

* Risk ratio numerator is zero.

1. Risk ratio is defined as the number of reported fatalities, injuries, or casualties divided by the total number of person boat days (divided by 100 million). Federal law requires the operator or owner of a recreational vessel to file a boating accident report with the state reporting authority if the recreational vessel is involved in an accident that results in death of an individual, there is an injury of an individual requiring medical treatment beyond first aid, or a person disappears from the vessel.
2. Person boat day is defined as one day of boating for one person.
3. "Casualties" includes both fatalities and injuries.
4. Source of boating accident data: 2018 Recreational Boating Statistics, USCG, 19 August 2019.
5. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

3.25 Recreational Boating Fatalities per 100 Million Person Boat Hours

Another, more exact ratio indicating the risk of recreational boating fatalities employs person hours aboard recreational boats as the denominator, rather than person days (***Table 3-61***). A person hour is any part of an hour that one person is aboard a boat when it is being operated out on the water. Person hours per boating day are generally greater for motorized boats than for human-powered boats (see ***Tables 3-46*** and ***3-47***).

The risk of boating fatalities is 6 per 100 million person hours for all types of boats nationwide and 5 per 100 million person hours for motorized boating. The risk for fatalities nationwide was twice as high on human-powered boats, 13 per 100 million person hours.

States with the lowest reported fatalities per 100 million person hours on all boats were South Dakota (1 per 100 million person hours), Kansas (2 per 100 million person hours), and Rhode Island (2 per 100 million person hours). The states with the highest risk of fatalities were Montana (37 per 100 million person hours), Alaska (25 per 100 million person hours), and Nevada (18 per 100 million person hours).

The range for reported deaths per 100 million motorized person hours was between 0 in Rhode Island and 27 per 100 million person hours in Montana. Ten states reported 0 deaths aboard human-powered boats. In four states, the risk of human-powered boat fatalities was 4 or more times higher than the national average: Nevada (118 per 100 million person hours), North Dakota (93 per 100 million person hours), Alaska (59 per 100 million person hours), and Montana (52 per 100 million person hours).

Again, the risk of a casualty, meaning death or injury, was higher on motorized boats (31 per 100 million person hours) than on human-powered boats (25 per 100 million person hours).

Table 3-61. Reported Fatalities, Injuries, Casualties per 100 Million Person Boat Hours for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5]

	(N per 100 Million Person Boat Hours)								
	All Boats			Motorized Boats			Human-Powered Boats		
State	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
Alabama	8	15	23	8	17	25	*	*	*
Alaska	25	8	33	24	7	30	59	30	89
Arizona	6	38	43	4	39	44	16	16	33
Arkansas	6	28	33	5	30	35	15	15	30
California	8	46	53	5	44	49	34	46	80
Colorado	5	13	18	2	17	20	14	*	14
Connecticut	8	40	48	9	48	57	7	29	36
Delaware	6	41	47	4	33	37	34	68	103
District of Columbia	*	136	136	*	249	249	*	*	*
Florida	5	27	32	5	29	34	6	6	12
Georgia	4	27	31	2	35	37	5	*	5
Hawaii	8	39	47	13	53	66	*	48	48
Idaho	8	20	28	8	36	44	8	5	13
Illinois	8	18	27	7	21	*28	17	10	28
Indiana	4	15	19	2	19	21	6	6	12
Iowa	6	13	19	3	14	17	27	7	33
Kansas	2	16	18	2	20	21	7	*	7
Kentucky	8	12	20	6	15	21	26	*	26
Louisiana	9	35	44	9	38	47	*	*	*
Maine	4	16	20	6	14	20	*	10	10
Maryland	8	43	52	9	52	60	5	14	19
Massachusetts	9	41	50	7	50	57	10	22	32
Michigan	4	13	17	2	12	14	13	22	35
Minnesota	3	12	15	2	13	15	10	2	12
Mississippi	12	24	36	13	25	38	14		14
Missouri	4	32	36	4	34	38	12	*	12
Montana	37	26	63	27	32	60	52	20	72
Nebraska	5	20	25	4	20	24	*	*	*
Nevada	18	149	168	12	156	167	118	118	237
New Hampshire	3	10	13	3	11	14	7	*	7
New Jersey	4	53	57	4	62	67	4	4	8

(continued)

Table 3-61. Reported Fatalities, Injuries, Casualties per 100 Million Person Boat Hours for Motorized, Human-Powered, and All Boats by State of Operation, 2018[1,2,3,4,5] (continued)

State	(N per 100 Million Person Boat Hours)								
	All Boats			Motorized Boats			Human-Powered Boats		
	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties	Fatalities	Injuries	Casualties
New Mexico	5	36	41	6	42	48	*	*	*
New York	4	19	24	3	20	24	9	13	22
North Carolina	10	36	46	8	37	45	25	28	52
North Dakota	5	11	16	3	8	11	93	93	186
Ohio	6	19	25	5	15	20	17	63	80
Oklahoma	3	9	12	1	9	11	30	8	38
Oregon	11	30	41	7	37	45	14	20	35
Pennsylvania	7	18	25	6	17	23	9	21	30
Rhode Island	2	31	34	0	39	39	18	*	18
South Carolina	3	16	19	4	17	21	*	*	*
South Dakota	1	9	10	1	8	9	*	111	111
Tennessee	7	25	33	5	27	32	27	4	31
Texas	7	24	31	4	24	28	30	13	44
Utah	11	69	80	6	73	78	38	*	38
Vermont	13	13	27	13	19	32	16	*	16
Virginia	6	26	32	4	28	31	16	16	33
Washington	11	25	36	7	26	33	39	17	56
West Virginia	8	14	21	8	16	23	0	26	26
Wisconsin	7	26	33	5	27	32	22	11	33
Wyoming	3	31	34	3	33	36	*	*	*
Total U.S.	6	24	31	5	26	31	13	12	25

* Risk ratio's numerator is zero.

1. Risk ratio is defined as the number of reported fatalities, injuries, or casualties divided by the total number of person boat hours (divided by 100 million). Federal law requires the operator or owner of a recreational vessel to file a boating accident report with the state reporting authority if the recreational vessel is involved in an accident that results in death of an individual, injury of an individual requires medical treatment beyond first aid, or a person disappears from the vessel.
2. Person boat hour is defined as 1 hour of boating for one person.
3. "Casualties" includes both fatalities and injuries.
4. Source of boating accident data: 2018 Recreational Boating Statistics, USCG, 19 August 2019.
5. The category "Motorized Boats" includes open power boats, cabin power boats, pontoon boats, and PWCs; "Human-Powered Boats" includes kayaks, canoes, paddleboards, and rowed boats. "All Boats" includes "Motorized Boats," "Human-Powered Boats," and all other boat types.

3.26 Comparison of Fatality Ratios Employing Number of Registered Boats, Boat Days, Boat Hours, Person Boat Days, and Person Boat Hours as Denominators

The USCG recommends normalizing the number of accidents with a denominator. The USCG uses recreational vessel registration as a denominator to calculate a fatality rate expressed as the number of deaths per 100,000 registered recreational vessels. This measure is representative of the entire program (motorized and nonmotorized activity) but necessitates a caveat that not all states register the same types of vessels (many do not register nonmotorized vessels, which are represented in fatal accident data), and some states have longer boating seasons than others. However, this does not reflect the number of these registered boats that are taken out on the water in a given year, which is influenced by a multitude of factors including the economy, price of fuel, and weather. Unregistered boats are involved in accidents too but are not included in the denominator. To address these limitations, a major purpose of the NRBSS was to collect data to produce various exposure estimates that reflect the number of all boats, the number of boats that are operated, number of days and hours they are operated, and the persons aboard when they are operated.

Table 3-62 reports various risk ratios, including the 2018 reported deaths per 100,000 registered boats and shows consistency in the risk rankings based on different risk ratios. The national average fatality rate is 5 per 100,000 registered boats. The states with the highest fatality rates were Alaska (45 per 100,000 registered boats), Montana (21 per 100,000 registered boats), and Utah (14 per 100,000 registered boats). State with the lowest fatality rates were Minnesota, South Dakota, and Kansas.

The risk of boating fatalities was 51 per 100 million person days of boating in 2018. States with the highest risk when person days of boating is the denominator were Alaska (290 per million person boat days), Montana (216 per million person days), and Nevada (153 per million person boat days). The states with the lowest risk had ratios much lower than the national average: Rhode Island (17 per 100 million person days), South Dakota (18 per 100 million person days), and Minnesota (20 per 100 million person days).

When person hours of boating serve as the denominator, the states with the highest risk of boating fatalities were Montana (37 per 100 million person hours), Alaska (25 per 100 million person hours), and Nevada (18 per 100 million person hours). The states with the lowest risk measured with this risk ratio were South Dakota (1 per 100 million person hours), Rhode Island (2 per 100 million person hours), and Kansas (2 per 100 million person hours).

Table 3-62. Number of Boats by Registration Status, Boating-Related Fatality Rates, Risk Ratios, and Corresponding Ranking Order by State, 2018[1,2,3,4,5,6,7]

State	Number of Boats			Fatality Rate		Risk Ratio							
	All Registered Boats	All Unregistered Boats	All Boats	Deaths		Accidents Involving Fatalities, All Boats				Fatalities, All Boats			
	N (000)	N (000)	N (000)	Per 100,000 Registered Boats	Ranking Order	Per 100 Million Boat Days	Ranking Order	Per 100 Million Boat Hours	Ranking Order	Per 100 Million Person Boat Days	Ranking Order	Per 100 Million Person Boat Hours	Ranking Order
Alabama	245	174	419	6.9	19	143	17	19	17	66	15	8	12
Alaska	49	82	131	45.1	1	628	1	77	1	290	1	25	2
Arizona	123	136	260	8.9	10	116	25	10	41	76	11	6	25
Arkansas	172	169	342	4.1	33	106	32	17	24	42	32	6	25
California	670	607	1,277	5.1	27	168	13	23	11	58	21	8	12
Colorado	84	423	507	7.1	18	97	34	16	28	40	35	5	31
Connecticut	91	249	339	5.5	25	90	36	16	28	47	28	8	12
Delaware	55	81	136	3.6	36	131	22	19	17	56	22	6	25
District of Columbia	243	0	243	0.0	51	*	51	*	51	*	51	*	51
Florida	925	789	1,714	6.2	23	117	24	15	31	46	30	5	31
Georgia	331	452	783	3.3	41	61	45	8	45	32	40	4	36
Hawaii	12	24	36	8.1	14	110	28	19	17	56	22	8	12
Idaho	87	162	249	11.5	5	214	6	23	11	86	9	8	12
Illinois	246	320	566	6.9	19	155	14	22	14	68	14	8	12
Indiana	211	312	523	3.8	34	71	40	13	35	23	45	4	36
Iowa	231	109	340	3.5	38	135	21	15	31	47	28	6	25
Kansas	83	89	172	2.4	48	56	47	7	47	20	47	2	48
Kentucky	166	161	327	7.8	15	200	7	23	11	76	11	8	12
Louisiana	304	142	446	6.3	22	141	19	19	17	66	15	9	10
Maine	112	324	436	3.6	36	56	47	10	41	23	45	4	36
Maryland	170	321	491	9.4	8	125	23	18	22	64	18	8	12
Massachusetts	132	309	442	7.6	17	143	17	24	10	60	19	9	10
Michigan	795	934	1,729	2.8	46	64	44	11	37	25	44	4	36
Minnesota	819	205	1,025	1.7	49	51	49	8	45	20	47	3	43
Mississippi	127	90	217	8.7	11	184	9	26	8	94	5	12	5

(continued)

Table 3-62. Number of Boats by Registration Status, Boating-Related Fatality Rates, Risk Ratios, and Corresponding Ranking Order by State, 2018[1,2,3,4,5,6,7] (continued)

State	Number of Boats			Fatality Rate		Risk Ratio							
	All Registered Boats	All Unregistered Boats	All Boats	Deaths		Accidents Involving Fatalities, All Boats				Fatalities, All Boats			
	N (000)	N (000)	N (000)	Per 100,000 Registered Boats	Ranking Order	Per 100 Million Boat Days	Ranking Order	Per 100 Million Boat Hours	Ranking Order	Per 100 Million Person Boat Days	Ranking Order	Per 100 Million Person Boat Hours	Ranking Order
Missouri	290	271	561	4.8	29	95	35	13	35	37	36	4	36
Montana	63	141	204	20.6	2	415	2	70	2	216	2	37	1
Nebraska	89	477	566	4.5	31	116	25	17	24	41	34	5	31
Nevada	41	52	93	12.2	4	396	3	47	3	153	3	18	3
New Hampshire	95	310	405	5.2	26	69	42	11	37	35	37	3	43
New Jersey	150	184	334	3.3	41	71	40	11	37	28	43	4	36
New Mexico	33	38	70	6.2	23	148	16	16	28	52	26	5	31
New York	444	884	1,328	4.5	31	68	43	10	41	35	37	4	36
North Carolina	359	440	799	8.3	13	182	11	27	6	81	10	10	9
North Dakota	63	21	84	3.2	43	108	30	18	22	42	32	5	31
Ohio	573	0	573	3.0	44	137	20	19	17	51	27	6	25
Oklahoma	198	132	330	3.5	38	72	39	7	47	31	41	3	43
Oregon	168	409	577	10.1	7	183	10	21	15	93	6	11	6
Pennsylvania	307	535	842	4.6	30	114	27	17	24	54	24	7	21
Rhode Island	39	76	116	2.5	47	45	50	7	47	17	50	2	48
South Carolina	551	544	1,096	2.9	45	73	38	9	44	29	42	3	43
South Dakota	59	30	89	1.7	49	57	46	5	50	18	49	1	50
Tennessee	239	237	476	9.2	9	243	5	25	9	90	7	7	21
Texas	563	359	922	6.8	21	170	12	21	15	65	17	7	21
Utah	64	105	169	14.0	3	340	4	42	4	104	4	11	6
Vermont	29	89	118	10.5	6	153	15	31	5	71	13	13	4
Virginia	226	370	595	4.9	28	107	31	14	33	53	25	6	25
Washington	245	316	560	8.6	12	194	8	27	6	90	7	11	6
West Virginia	51	213	264	7.8	15	109	29	17	24	60	19	8	12
Wisconsin	616	476	1,089	3.4	40	85	37	14	33	44	31	7	21

(continued)

Table 3-62. Number of Boats by Registration Status, Boating-Related Fatality Rates, Risk Ratios, and Corresponding Ranking Order by State, 2018[1,2,3,4,5,6,7] (continued)

State	Number of Boats			Fatality Rate		Risk Ratio							
	All Registered Boats	All Unregistered Boats	All Boats	Deaths		Accidents Involving Fatalities, All Boats				Fatalities, All Boats			
	N (000)	N (000)	N (000)	Per 100,000 Registered Boats	Ranking Order	Per 100 Million Boat Days	Ranking Order	Per 100 Million Boat Hours	Ranking Order	Per 100 Million Person Boat Days	Ranking Order	Per 100 Million Person Boat Hours	Ranking Order
Wyoming	27	28	54	3.8	34	102	33	11	37	35	37	3	43
Total U.S.	11,824	13,399	25,223	5.3		120		17		51		6	

1. Source of boating accident and fatality data: 2018 Recreational Boating Statistics, USCG, 19 August 2019.
2. Ranking is presented in the descending order of the fatality rate. States with the same fatality rate were assigned the same ranking order.
3. Federal law requires the operator or owner of a recreational vessel to file a boating accident report with the state reporting authority if the recreational vessel is involved in an accident that results in death of an individual, injury of an individual requiring medical treatment beyond first aid, a person disappears from the vessel under circumstances that indicate death or injury, damage to vessels and other property totaling at least $2,000, or the boat is destroyed. Risk ratio is defined as the number of reported boating accidents or fatalities divided by the total number of boat days, boat hours, boat person days, or boat person hours (divided by 100 million).
4. Boat day is defined as a day on which at least one boat outing took place.
5. Boat hour is defined as an hour a boat was taken out on water.
6. Person boat day is defined as 1 day of boating for one person.
7. Person boat hour is defined as 1 hour of boating for one person.

* Risk ratio numerator is zero.

SECTION 4.
SUMMARY AND CONCLUSIONS

The NRBSS Exposure Survey findings document the scale of boat ownership and participation in recreational boating across the United States. The results reveal that collaborative efforts of different agencies, organizations, and the boating industry to make recreational boating safe have been effective, but it can be made even safer through targeted education, safety equipment/technology requirements, and enforcement. The findings also suggest the need for agencies and organizations engaged in recreational boating safety to continuously evaluate and adjust their priorities and strategies to respond to changes in the types of boats owned and the characteristics and behavior of boaters.

The primary purpose of the NRBSS Exposure Survey was to collect data needed to produce more precise risk ratios for assessing the effectiveness of boating safety programs at the national and state levels. However, it produced wide-ranging scientifically collected data about boat ownership and use that can benefit other agencies and purposes, including assessing the need and demand for boating facilities, calculating the economic impact of boating, estimating fuel consumption of recreational boats, assessing the impacts of proposed legislation and regulations, and identifying opportunities for new partnerships to enhance recreational boating safety and recreational boating opportunities. This report has highlighted some of the important findings from the NRBSS Exposure Survey, but the USCG has plans to produce a future series of fact sheets that report further analyses of the data.

Based on the survey data, it is estimated that approximately 25.2 million boats were owned by 14.5 million households in 2018. About 94% of the boats owned by these households were stored/kept most of the time in the states of the owners' permanent residences. While open powerboats continue to be the most owned type of boat, more households owned human-powered boats consisting of kayaks, canoes, rowed boats, and paddleboards. About 42% of boat-owning households owned only boats that are not required to be registered by a state, and almost 11% owned both registered and unregistered boats.

Of the 25.2 million boats that were owned in 2018, about 93% were in operating condition. Just over a third of the boats owned were taken out on the water at least once during 2018. The 9.15 million boats that were taken out on the water at least once in 2018 were operated 472 million days. Boats were out on the water an estimated 3.42 billion hours. It is estimated that persons were out on the water in recreational boats 10.2 billion (person) hours nationwide.

Although the NRBSS Participation Survey (Duffy et al., 2020b) found that recreational boaters were more diverse (e.g., with respect to race, ethnicity) than has been assumed, the NRBSS Exposure Survey results indicated that the demographic composition of boat owners is not similarly diverse. The vast majority of boats were owned by White households. Black/African Americans and Hispanics represent a very small percentage of boat-owning households. This may be a significant factor in limiting participation of more minority persons in boating given that the NRBSS Participation Survey found that not knowing anyone who owns a boat was a significant reason why more persons did not boat in 2018.

Of the 25.2 million boats owned, almost 11.82 million were registered in a state. Furthermore, almost 13.4 million were not required by law to be registered in the states where

they were kept/stored and operated. These were primarily, depending on the state, human-powered boats such as canoes, kayaks, paddleboards, and rowed boats.

The proportion of all boats that are unregistered is creating a number of financial and management issues and difficulties for boating safety and law enforcement agencies, as well as agencies that provide and manage boat access and infrastructure facilities. Foremost, owners of unregistered boats do not pay registration fees, and because most are human-powered boats, they do not purchase fuel for these boats and therefore do not pay fuel taxes, which support the development and maintenance of boating access and infrastructure as well as boating safety education and enforcement. Of special importance is the Sport Fish Restoration and Boating Trust Fund, which provides significant funding for boating safety and for boating access and infrastructure and is a "user pays, user benefits" program. Taxes on fishing tackle and equipment, motorboat fuel, imported boats and fishing equipment, and small engines are collected to create this fund of about $650 million a year. This money is then allocated to federal and state agencies for such programs as fisheries management, recreational boating safety, and boating access and infrastructure.

A number of states are currently considering expanding registration requirements to include various types and sizes of human-powered craft. Persons and organizations, both in support and opposition to requiring registration of human-powered craft, contend that there is a significant need for realistic estimates of the number of human-powered watercraft that would meet the proposed registration requirements in order to estimate the financial impact on the owners of these boats. Without this information, there can be no clear estimate of the revenue potentially generated or impact to the state's residents. The NRBSS Exposure Survey produced estimates of the numbers of human-powered boats for all states. Using the data, it would be possible to assess the socioeconomic characteristics of households, including household incomes, that own different types of human-powered boats.

The results also indicate the importance that persons who go out on human-powered boats be educated so that they practice safe boating. The risk of boating fatalities for human-powered boats (13 per 100 million person hours) was twice the national risk rate in 2018. This suggests that a greater proportion of boating safety efforts be directed at the owners and other persons who go out on the water aboard human-powered craft, including persons who rent them (e.g., from liveries) or are members of clubs that make these boats available to them.

Also, when canoes, kayaks, and rowed boats are found floating without anyone aboard, it often results in a search even when the boat just drifted away without anyone aboard. Because they are not registered, often there is no way to identify and therefore contact the owners. The USCG is offering "If found" decals to be placed on small, human-powered watercraft through the Operation Paddle Smart program. The information on the sticker helps response entities to quickly identify the boat's owner.

The data also support anecdotal and industry-reported data indicating that shared/joint ownership of recreational boats is becoming a more popular way to procure use of boats. However, there is some concern in the boating safety community related to how and what types of boating education these shared/joint owners receive. Because shared/joint owners are not identified on boat registrations and because they are usually not responsible for the boat's upkeep or insurance, it is difficult to identify and efficiently target them to receive boating safety information and education. This suggests the importance of boating safety agencies and

organizations to partner and cooperate with shared/joint ownership providers to ensure that the operators of these boats receive boater education.

The results document the significant importance of boat launch/access sites around the country. Over two-thirds, nearly 6 million, of the boats that were operated in 2018 were trailered or transported for the purpose of launching them out on the water. This underscores the importance of educational efforts, regulations, and facilities (e.g., boat washes) specifically aimed at reducing the introduction of aquatic invasive species related to recreational boating. The findings also provide confirmation of the need to develop facilities designed to accommodate and launch human-powered craft. Human-powered boats were transported and launched almost 64 million times in 2018.

Although there has been noteworthy progress related to equipment and technologies (e.g., EPIRBs) that advance boating safety and have been shown to save lives in the event of boating accidents, the data indicate that a relatively high percentage of boats, including ones that were operated over 3 nautical miles from shore in 2018, were not equipped with these available technologies. About a third of the boats in coastal and Great Lakes states that were operated at least once more than 3 nautical miles from shore were not equipped with EPIRBs. Only 13.9% of all boats and 22.8% of motorized boats operating in 2018 were equipped with VHF-DSC radios. About 17% of the motorized boats operating in 2018 were not, according to the owners, equipped with ECOS.

The risk ratios and other findings produced using NRBSS exposure estimates and USCG boating accident data show that recreational boating is safe but that it can be made even safer. There were 4,145 reported boating accidents in 50 states, the District of Columbia, and territories in 2018 that resulted in 633 deaths. The estimated risk of a boating accident involving a fatality was 120 per 100 million boat days (120 per 100 million) and 17 per 100 million boat hours nationwide in 2018. The risk of being a fatality in a boating accident was 51 per 100 million boating person days and 6 per 100 million person hours of boating. A comparison of risk ratios shows some significant difference in the risk of accidents in different states and on motorized versus human-powered boats. Although there are some similarities in the risk ratios that employ the number of fatalities and accidents that result in a fatality as the numerators and the number of registered boats, boat days and hours, and person days and hours as denominators, some notable and important differences warrant further analysis. For example, in a given year, a state may experience relatively few accidents that result in fatalities, but a large number of persons die in those accidents. In this case, the risk of being a fatality in a boating accident would be higher than the risk of being involved in a fatal accident. The risk ranking for states can be different depending on the risk ratio employed. For example, Arizona ranks 10th highest in risk when the ratio is fatalities per 100,000 registered boats, 25th in accidents involving a fatality per 100 million boat days, 11th in rate of fatalities per 100 million person days of boating, and 25th in terms of fatalities per 100 million person hours of boating. Connecticut ranks 25th when the ratio is fatalities per 100,000 registered boats but 12th in terms of fatalities per 100 million person hours of boating. This suggests that the USCG and state agencies use different risk ratios when assessing the effectiveness of boating safety programs depending on the purpose of the analysis.

REFERENCES

Code of Federal Regulations. 33 CFR Part 173—Vessel Numbering and Casualty and Accident Reporting. (§§ 173.51–173.59).

Duffy, T., Kilpatrick, G., Krotki, K., Lewis, T., McMichael, J., Palmer, D., Ridenhour, J., Ryder-Burge, A., Thomas, I., Willis, S., & Mahoney, E. (2020a). *National Recreational Boating Safety Survey: Methodology Report*. Washington, DC: U.S. Coast Guard.

Duffy, T., Kilpatrick, G., Krotki, K., Lewis, T., McMichael, J., Palmer, D., Ridenhour, J., Ryder-Burge, A., Thomas, I., Willis, S., & Mahoney, E. (2020b). *National Recreational Boating Safety Survey: Participation Survey Report*. Washington, DC: U.S. Coast Guard.

National Highway Transportation Safety Administration (2019). 2018 U.S. Recreational Boating Statistical Abstract Full Report. https://www.nmma.org/statistics/publications/statistical-abstract

National Marine Manufacturers Association (2019). Traffic Safety Facts: Research Report. https://cdan.nhtsa.gov/tsftables/tsfar.htm

U.S. Coast Guard, Office of Auxiliary and Boating Safety (2012). *2012 National Recreational Boating Survey Report*. https://uscgboating.org/library/recreational-boating-servey/USCG-2012-NRBS-Report.pdf

U.S. Coast Guard, Office of Auxiliary and Boating Safety (2016). *National Recreational Boating Safety Program 2017–2021 Strategic Plan*. https://uscgboating.org/library/strategic-plan/Strategic-Plan-of-National-Recreational-Boating-Safety-Program-2017-thru-2021.pdf

U.S. Coast Guard, Office of Auxiliary and Boating Safety (2018). *2018 Recreational Boating Statistics*. https://uscgboating.org/library/accident-statistics/Recreational-Boating-Statistics-2018.pdf

U.S. Congress (2018). Foundations for Evidence-Based Policymaking Act of 2018. Public Law No: 115-435. https://www.congress.gov/bill/115th-congress/house-bill/4174

APPENDIX A
STATE OF STORAGE AND STATE OF RESIDENCE

It was important for the purpose of estimating state exposure rates to determine where boats are kept if the state is different from where the owner(s) resides. Some boats are not kept or used in the state of the owner's permanent residence. It is estimated that about 94.4% of all boats were stored/kept most of the time in the state of the owner's residence (***Tables A-1*** and ***A-2***). That means approximately 1.44 million boats nationwide were not stored/kept most of the time in the state of the owner's permanent residence.

Table A-1. Number and Percentage of Recreational Boats Stored Most of the Time in State of Residence, 2018[1,2,3,4]

State	All Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boat Types[5]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Alabama	397	94.9	180	94.9	3	86.7	14	92.3	28	82.3	1	95.0	29	100.0	95	97.9	7	92.3	39	98.3	1	69.8
Alaska	127	97.1	24	92.0	15	96.5	5	100.0	2	100.0	1	87.0	13	99.7	46	99.0	2	82.5	15	100.0	4	97.8
Arizona	239	92.0	68	82.5	2	88.4	11	96.0	25	99.7	2	100.0	14	100.0	72	94.8	20	97.8	24	99.0	1	49.1
Arkansas	329	96.8	129	98.0	2	100.0	21	94.3	9	96.9	—	51.5	21	84.7	73	98.3	13	99.3	48	98.2	13	98.1
California	1,235	96.7	381	96.0	59	93.8	22	96.5	140	93.7	41	98.6	50	96.9	332	98.8	46	99.4	144	96.4	20	99.8
Colorado	497	97.6	50	94.4	9	90.9	2	29.8	13	100.0	3	91.0	94	98.2	166	99.4	83	99.2	44	97.4	33	100.0
Connecticut	322	95.0	50	95.2	14	74.3	3	96.0	9	90.6	14	93.4	35	97.7	154	97.1	8	100.0	26	93.9	9	98.3
Delaware	117	85.7	27	89.3	5	46.9	3	69.6	4	50.3	9	92.9	12	99.9	47	99.4	2	24.2	8	100.0	—	100.0
District of Columbia	161	66.3	42	82.9	15	24.5	4	100.0	2	48.2	8	25.7	8	100.0	48	100.0	13	100.0	3	89.8	18	96.3
Florida	1,607	93.7	575	92.8	88	83.6	48	91.6	101	91.8	36	93.8	119	99.2	439	95.2	69	96.2	102	95.9	30	97.2
Georgia	750	96.1	241	93.0	8	96.4	11	91.0	46	98.2	12	100.0	67	97.9	210	97.4	24	100.0	115	98.4	16	92.9
Hawaii	35	98.5	6	99.5	3	99.4	—	100.0	1	100.0	1	70.4	5	100.0	10	100.0	7	100.0	1	100.0	1	100.0
Idaho	234	93.8	66	94.4	2	78.2	2	95.7	8	84.6	1	68.5	26	93.7	71	94.4	21	96.8	30	93.6	7	96.1
Illinois	532	94.1	156	92.1	12	77.5	27	93.7	23	86.6	4	92.0	37	94.7	172	95.0	11	100.0	77	100.0	13	100.0
Indiana	499	95.6	133	94.8	11	98.8	33	93.3	16	78.7	2	98.3	42	95.0	125	98.0	5	90.9	96	97.9	36	97.1
Iowa	326	95.8	147	94.9	8	95.0	15	90.6	17	95.0	6	90.1	26	99.3	95	97.4	2	100.0	10	99.3	—	100.0
Kansas	166	96.4	65	94.8	1	100.0	1	82.2	11	90.9	—	100.0	18	99.3	41	100.0	3	66.8	21	100.0	5	100.0
Kentucky	315	96.1	105	96.6	5	96.1	27	92.4	14	89.7	2	90.6	23	98.8	73	96.5	3	96.8	55	98.9	8	86.8
Louisiana	434	97.5	248	96.7	7	84.2	21	100.0	14	97.2	2	100.0	31	100.0	62	100.0	4	96.4	36	98.0	9	100.0
Maine	376	87.0	68	79.4	3	66.6	7	80.1	6	83.4	11	73.5	78	92.2	159	91.6	9	93.8	30	80.0	5	88.7
Maryland	447	91.4	86	84.3	22	70.7	4	66.9	12	69.7	18	78.4	64	99.4	183	99.3	16	96.7	37	94.0	5	100.0
Massachusetts	414	93.6	99	93.7	11	94.9	1	100.0	8	84.5	22	97.4	53	98.9	175	92.6	13	87.6	31	97.3	1	25.9
Michigan	1,661	96.0	406	93.5	70	92.9	130	95.6	97	93.4	23	91.5	184	97.9	483	98.2	55	95.1	198	98.0	15	97.4
Minnesota	967	94.4	408	94.1	7	92.5	91	94.3	48	91.0	9	81.3	151	93.7	145	96.1	37	98.1	41	99.3	30	94.4
Mississippi	204	94.3	101	92.5	2	93.8	6	84.2	6	82.9	1	93.6	8	93.3	35	99.1	5	99.5	33	99.2	7	93.5
Missouri	536	95.7	173	94.2	18	89.1	36	91.1	40	92.3	9	98.9	36	99.6	118	99.2	12	100.0	82	96.6	12	98.9
Montana	197	96.4	46	97.1	2	100.0	5	99.2	7	95.1	1	100.0	23	95.0	70	95.5	11	100.0	25	95.8	7	100.0
Nebraska	562	99.2	60	97.6	2	74.9	7	83.3	14	97.7	3	100.0	21	100.0	427	100.0	1	100.0	22	95.6	5	100.0
Nevada	85	92.1	24	81.4	1	73.4	—	92.4	9	96.2	1	100.0	5	100.0	27	95.9	6	100.0	11	100.0	1	100.0
New Hampshire	364	90.0	43	74.5	5	57.6	10	82.7	10	80.7	11	81.1	69	91.3	171	96.6	15	96.2	28	94.1	2	100.0
New Jersey	312	93.4	70	91.6	26	88.7	4	78.2	27	96.9	9	93.4	24	94.7	98	97.6	10	100.0	36	85.3	8	100.0
New Mexico	67	96.8	17	93.9	1	100.0	5	93.1	6	100.0	1	100.0	9	98.9	18	96.2	—	100.0	7	100.0	3	100.0

(continued)

Table A-1. Number and Percentage of Recreational Boats Stored Most of the Time in State of Residence, 2018[1,2,3,4] (continued)

State	All Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boat Types[5]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
New York	1,246	94.1	216	91.8	88	93.6	32	93.3	61	96.1	59	89.5	190	96.6	471	94.4	30	97.0	79	93.2	20	100.0
North Carolina	751	95.4	229	93.6	17	91.5	39	94.5	46	95.3	11	93.9	69	99.1	266	95.9	19	99.8	46	96.2	9	100.0
North Dakota	78	92.7	42	94.2	—	73.3	8	95.7	7	77.6	—	98.4	3	70.1	14	100.0	1	100.0	3	100.0	—	100.0
Ohio	549	95.7	178	92.6	31	95.2	30	98.5	37	88.4	8	89.1	63	98.7	192	99.3	—	100.0	9	97.4	1	100.0
Oklahoma	311	94.4	115	92.2	8	93.1	26	97.7	31	95.5	3	100.0	22	100.0	62	99.5	5	94.5	31	85.0	8	100.0
Oregon	571	98.6	137	97.9	8	89.0	2	94.6	12	85.2	6	99.4	54	99.7	219	99.7	13	100.0	102	98.8	18	99.6
Pennsylvania	813	96.6	181	94.6	15	83.4	23	98.2	20	70.5	7	89.9	95	97.7	323	99.5	20	100.0	123	98.5	6	99.5
Rhode Island	103	89.2	17	88.9	7	56.3	—	42.6	2	91.6	3	66.6	4	98.4	55	96.4	11	100.0	3	91.9	1	99.9
South Carolina	1,024	93.4	366	96.3	21	93.9	76	97.1	51	91.9	18	84.3	64	79.7	261	93.3	25	98.4	112	95.2	30	85.1
South Dakota	83	94.2	38	93.6	—	100.0	6	95.8	6	92.4	—	82.5	2	73.5	23	99.2	1	100.0	7	98.0	—	18.0
Tennessee	446	93.7	178	91.5	5	94.7	8	94.1	25	92.7	1	91.5	49	96.5	123	96.1	12	81.0	32	98.5	13	97.3
Texas	912	99.1	453	98.6	13	97.3	7	99.9	80	100.0	15	99.9	39	99.1	138	99.5	41	100.0	104	100.0	22	100.0
Utah	161	95.1	42	95.6	5	93.6	2	99.4	10	89.9	1	97.1	6	91.8	68	95.1	18	99.3	9	94.7	—	54.9
Vermont	103	87.8	16	84.6	4	100.0	3	100.0	1	78.7	5	65.8	15	95.6	46	92.8	2	88.7	11	72.1	—	100.0
Virginia	542	90.3	161	93.4	15	96.3	7	95.0	28	88.9	10	73.6	64	89.1	184	87.0	12	99.4	58	95.3	3	100.0
Washington	544	97.0	165	96.8	29	96.2	2	97.6	29	98.1	12	90.8	27	96.3	174	98.7	23	95.0	76	95.3	7	98.0
West Virginia	256	96.8	34	91.0	1	40.1	7	91.7	4	86.7	4	100.0	44	100.0	119	97.9	8	99.9	35	99.5	—	100.0
Wisconsin	879	80.6	402	86.8	11	85.0	59	76.0	29	64.4	16	63.0	95	73.4	126	75.0	10	51.5	119	86.5	12	92.0
Wyoming	55	98.5	19	96.6	2	97.9	2	100.0	4	98.4	1	100.0	7	99.6	11	100.0	1	100.0	7	100.0	1	100.0
Total U.S.	23,782	94.4	7,241	93.4	704	88.1	911	92.1	1,254	90.9	436	88.9	2,298	94.9	7,267	96.3	772	95.7	2,438	95.9	461	95.9

"—" Sample size too small.

1. Ns are in units of 1,000. (Ns for the District of Columbia are in units of 10.)
2. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
3. Respondents who owned boats were asked in what state and zip code the boat was stored for most of the time during the month for which exposure data were collected.
4. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
5. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.

Table A-2. Number and Percentage of Recreational Boats Stored Most of the Time in Census Region of Residence, 2018[1,2,3,4]

Census Region	All Boats		Open Power Boats		Cabin Power Boats		Pontoon Boats		PWCs		Sailboats		Canoes		Kayaks		Paddleboards		Rowed Boats		Other Boat Types[5]	
	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%	N (000)	%
Northeast	4,055	93.1	761	90.2	175	85.7	83	90.8	144	88.8	142	87.3	563	95.6	1,651	95.6	118	96.6	365	92.4	53	95.2
Midwest	6,838	93.5	2,205	92.5	171	91.3	446	91.2	345	87.7	77	84.7	677	92.4	1,964	96.4	137	90.5	687	95.9	129	96.1
South	8,847	94.6	3,230	94.4	219	84.4	324	93.8	499	92.1	145	89.6	725	95.5	2,370	95.9	266	95.5	892	96.9	177	94.6
West	4,042	96.5	1,045	94.7	139	93.8	58	91.2	266	94.5	72	96.0	333	97.6	1,282	98.1	251	98.5	494	97.0	102	98.3
Total U.S.	23,782	94.4	7,241	93.4	704	88.1	911	92.1	1,254	90.9	436	88.9	2,298	94.9	7,267	96.3	772	95.7	2,438	95.9	461	95.9

1. Recreational boats include open power boats (e.g., bass boats, ski boats), cabin power boats, pontoon boats, air boats, houseboats, PWCs (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, and rowed boats (e.g., jon boats, shells, sculls, and inflatable boats, but not inflatable tubes).
2. Respondents who owned boats were asked in what state and zip code the boat was stored for most of the time during the month for which exposure data were collected.
3. Ns are in units of 1,000.
4. Ratio adjustment was used to account for nonresponse, and rounding of numbers was applied, resulting in minor differences (majority below 0.5%) in numbers across tables and within tables.
5. The category "Other Boat Types" includes air boats, houseboats, and other boats not mentioned above, e.g., kiteboards, dragon boats, but not inflatable tubes.