

Marine Angler Expenditures on Durable Fishing Goods in the United States, 2014 *Preliminary Analysis*

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Overview

Purchases made by marine recreational anglers are an important source of economic activity in coastal areas around the United States. In recognition of the economic contributions anglers make to coastal economies, NOAA Fisheries conducts surveys every three to five years in order to gather data on expenditures made by anglers related to their marine recreational fishing trips and their annual purchases of durable fishing equipment (e.g., rods and reels, boats, vehicles, and second homes). Nationwide angler expenditure surveys were conducted in 2006 and 2011 that collected information both on trip-related expenditures and durable good purchases. In 2014, NOAA Fisheries surveyed anglers about their annual purchases on durable goods. NOAA Fisheries expects to conduct a trip-related expenditure survey in either 2016 or 2017. Breaking the survey into two parts reduces the complexity of conducting a large nationwide survey for both trip-related and durable good expenditures in the same year and allows NOAA Fisheries to provide data on a more timely basis.

Sampling Methods

The target population for the survey consisted of adult marine recreational anglers who had been saltwater fishing at least once in the last 12 months in a coastal state. The following coastal states were included in the survey:

Included States
Alabama, Alaska, California, Connecticut, Delaware, Florida, Georgia, Louisiana, Maine, Maryland, Massachusetts, Mississippi, New Hampshire, New Jersey, New York, North Carolina, Oregon, Rhode Island, South Carolina, Texas, Virginia, and Washington

In previous surveys, NOAA Fisheries identified marine anglers who had fished in the previous 12 months by intercepting them during a fishing trip or through the use of fishing license databases in states where NOAA did not conduct intercept surveys. In 2014, NOAA Fisheries drew the entire sample from the most recent license data in the National Saltwater Angler Registry license database or from state license files provided by individual states (Alaska, California, Oregon, Texas and Washington). The 2014 sample frame was based on state fishing license records that allowed fishing in saltwater. Table 1 shows the types of licenses in the sample frame by state. All samples included both resident and non-resident anglers and anglers with both saltwater only licenses and combination freshwater/saltwater or other combination licenses where applicable. For California, Oregon and Washington (all of which have a combination saltwater/freshwater license), the sample was restricted to those anglers who purchased a license in a coastal county. In Texas and Florida, which have a large number of combination license frames, additional proportional sampling techniques were used to draw samples from anglers in non-coastal counties.

The sample for each state was cleaned and drawn separately, using the same set of processing steps for each state. The sample was stratified by state and resident status (resident of the state of license or non-resident). Within those strata, samples were drawn randomly in proportion to 4 general license types: annual saltwater; annual combination (saltwater and freshwater, or saltwater plus other combinations (e.g. hunting)); daily saltwater; and daily combination. Table 1 summarizes the license types by state. In each case, the proportion of license-types for the sample drawn equaled that of the state's sample frame within a state/resident strata.

Table 1: License Types Included in Sample, by State

Alabama	<u>Saltwater</u> Annual	Maine	<u>Saltwater</u> Annual	Oregon	<u>Combo</u> Annual, Daily
Alaska	<u>Combo</u> Annual	Maryland	<u>Saltwater</u> Annual, Daily <u>Combo</u> Annual	Rhode Island	<u>Saltwater</u> Annual
California	<u>Combo</u> Annual, Daily	Massachusetts	<u>Saltwater</u> Annual	South Carolina	<u>Saltwater</u> Annual, Daily
Connecticut	<u>Saltwater</u> Annual, Daily <u>Combo</u> Annual	Mississippi	<u>Saltwater</u> Annual, Daily	Texas	<u>Saltwater</u> Annual <u>Combo</u> Annual, Daily
Delaware	<u>Combo</u>	New Hampshire	<u>Saltwater</u> Annual	Virginia	<u>Saltwater</u> Annual, Daily <u>Combo</u> Annual, Daily
Florida	<u>Saltwater</u> Annual <u>Combo</u> Annual	New Jersey	<u>Saltwater</u> Annual	Washington	<u>Saltwater</u> Annual <u>Combo</u> Annual, Daily
Georgia	<u>Saltwater</u> Annual	New York	<u>Saltwater</u> Annual		
Louisiana	<u>Saltwater</u> Annual, Daily <u>Combo</u> Annual	North Carolina	<u>Saltwater</u> Annual, Daily <u>Combo</u> Annual		

Mail Survey

The survey was done by mail and followed a truncated Modified Dillman method¹. In order to maximize the effectiveness of this survey mode, the mailing effort was initially divided into two mailing segments but ended up requiring a third mailing segment. The purpose of the first mailing segment was to establish accurate state response rates to better utilize the project's financial resources. The effort associated with the second segment was to be determined by the response rates from segment 1. The third segment was added after the response rates from the first two mailings were lower than expected and was implemented in order to increase the number of completed surveys returned for purposes of ensuring adequate sample sizes. Before the first mailing, one large sample was drawn that would be able to accommodate both the first and second mailings without having to sample again from the original frame. The third mailing was also able to be accommodated from this original sample draw. Therefore, the sample was done without replacement. Mailings occurred in May, July, and September 2014.

Anglers selected to participate in the study received an introductory letter explaining to them that they had been randomly chosen to participate in the survey and to expect a survey packet in the mail in the coming few days. A questionnaire booklet, a cover letter, and a business reply envelope were sent via postal mail. Approximately one week later, all anglers were sent a reminder post card in the mail. These postcards served two purposes: 1) to thank the respondent for participating and 2) to remind those who had not yet completed the survey to do so. This process was repeated for each of the three mailing segments. Four different questionnaires were used for the survey. California and Florida had questionnaires with a few unique questions; the remaining states received the same questionnaire. (Copies of all versions of the questionnaire are available upon request).

The survey asked anglers about their purchases of durable goods used at least in part for saltwater fishing in the prior 12 months in the state of licensure. The questionnaire asked for the angler's expenditures on fishing tackle and gear (fishing line, hooks, lures, etc.), rods and reels, fishing licenses, special clothing, publications (books, magazines, newspapers, etc.), camping equipment, binoculars, dues and contributions to fishing clubs, and

¹ See Don A. Dillman, Mail and Telephone Surveys: The Total Design Method. John Wiley and Sons, NY. 1978.

processing or taxidermy costs. For each item, the angler was asked what percent of use was for saltwater fishing versus freshwater fishing or other recreational activities, and what percent of the total cost was spent in the survey state. Anglers were asked if they owned a boat that they used for recreational marine fishing in the prior 12 months. If yes, anglers were asked about their purchases of both motorized and non-motorized boats and any associated costs such as boating electronics, mooring and storage, boat insurance, boat license and registration, and boat maintenance and repairs. Additional questions were asked on the length and horsepower of the boat, and the percentage of time in the prior 12 months that they had used it for marine recreational fishing. Similar questions were asked about the use of vehicles (e.g. cars, trucks, trailers, motor homes) and second homes for marine recreational fishing. As with boats, respondents were asked to estimate the percentage of time that the vehicle and second home were used for marine recreational fishing. The final section of the mail survey collected a set of socioeconomic and demographic variables, including gender, age, ethnicity, race, annual household income, education level, number of hours worked per week, and the years of marine fishing experience.

Angler Response to Survey Effort

Across all states, a total of 10,809 completed surveys were returned. The survey effort was successful in terms of meeting the goal of 10,548 surveys returned. Table 2 shows the number of surveys sent and completed by state and nationwide. A total of 103,993 anglers were sent an invitation to participate in the survey. All but 7,832 were delivered to the angler's address, which represents 7.5 percent of the total mailing. This rate is in line with mailings of this type. A total of 96,161 anglers received the survey and were able to participate. Just over 11 percent returned a completed survey. This survey was the first time that this sample frame was used without any pre-contact with the angler. In the past, anglers were contacted prior to sending the survey instrument via a field intercept or telephone call. Based on those methodologies, overall response rates were in the 25 to 50 percent range, so the rate without pre-contact was lower in this survey. The states with the highest rates were Washington (20.1%), New Jersey (19.5%), and

Maine (16.9%). States with the lowest rates were Georgia (6.3%) and Texas (7.6%).

Figure 1: Response rates by state

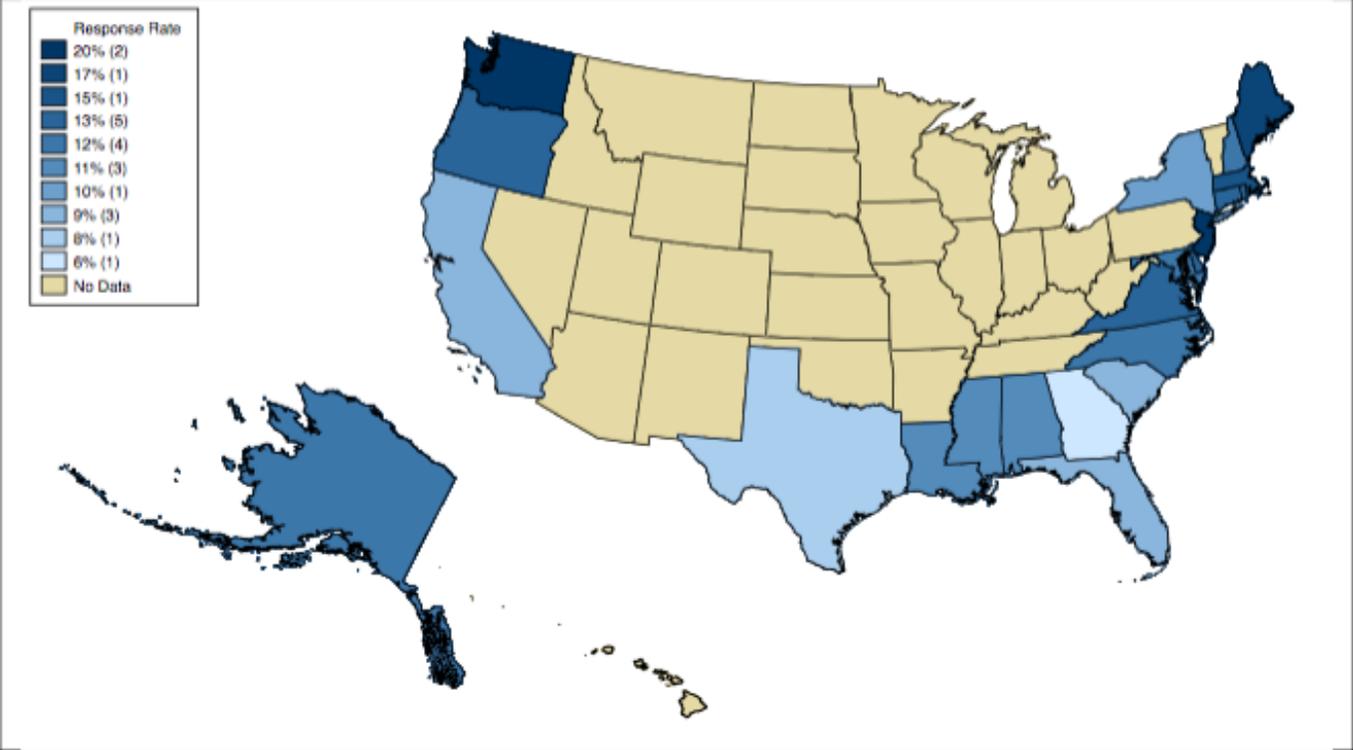


Table 2: Number of surveys sent, delivered and completed by state

States	Sent to angler	Delivered by angler	Surveys completed	Response Rate
Alabama	4,315	4,087	448	11.0%
Alaska	5,000	4,637	552	11.9%
California	10,160	9,084	814	9.0%
Connecticut	3,486	3,254	420	12.9%
Delaware	4,171	3,944	507	12.9%
Florida	10,553	9,604	858	8.9%
Georgia	6,228	5,838	370	6.3%
Louisiana	3,843	3,595	413	11.5%
Maine	2740	2,612	441	16.9%
Maryland	4,295	4,058	485	12.0%
Massachusetts	3,426	3,275	505	15.4%
Mississippi	4,244	3,727	418	11.2%
New Hampshire	4,198	3,417	406	11.9%
New Jersey	2,601	2,536	495	19.5%
New York	5,589	5,262	522	9.9%
North Carolina	4,198	3,842	459	11.9%
Oregon	3,066	2,731	367	13.4%
Rhode Island	3,497	3,304	433	13.1%
South Carolina	5,054	4,652	434	9.3%
Texas	7,330	6,574	501	7.6%
Virginia	3,915	3,650	464	12.7%
Washington	2,674	2,478	497	20.1%
Total	103,993	96,161	10,809	11.2%

Angler Characteristics and Experience

The survey results indicate that marine saltwater anglers fished 28 days in the past year on average, and had 32 years of fishing experience (Table 3). Just over 85 percent of anglers were male, 93% were Caucasian, and their average age was 54 years old. On average, they worked 30 hours per week for pay. Figure 2 shows annual household income for anglers in 2013. Less than 7% of anglers made under \$20,000 per year, and 57% made between \$20,000 and \$100,000 per year. Thirty-six percent made over \$100,000 annually. Figure 3 shows the education level of anglers. Just over 27% had some college or an associates or technical degree, 26% had a bachelor's degree, and 18% had advanced degrees or coursework such as a doctorate, law degree, or medical degree. On the California questionnaire, anglers were asked what percentage of their expenditures were made in Northern California (counties north of Santa Barbara), Southern California², or out of state. On average, California anglers made 55% of their expenditures in Southern California, 37% in Northern California and 9% outside the state. They reported fishing 9 days on average in Northern California and 17 days in Southern California. In Florida, anglers spent an average 21 days fishing in the Gulf of Mexico and 14 days fishing in the Atlantic Ocean.

Table 3: Average angler characteristics

Variable	Mean	Std Error
Days fished in past 12 months	27.8	0.66
Percent Male	85.5%	NA
Age	53.5	1.31
Years of saltwater fishing	31.5	0.26
Hours worked per week	29.9	0.30

² San Diego, Imperial, Orange, Riverside, Los Angeles, San Bernadino, Ventura, and Santa Barbara counties.

Figure 2: Annual Household Income in 2013

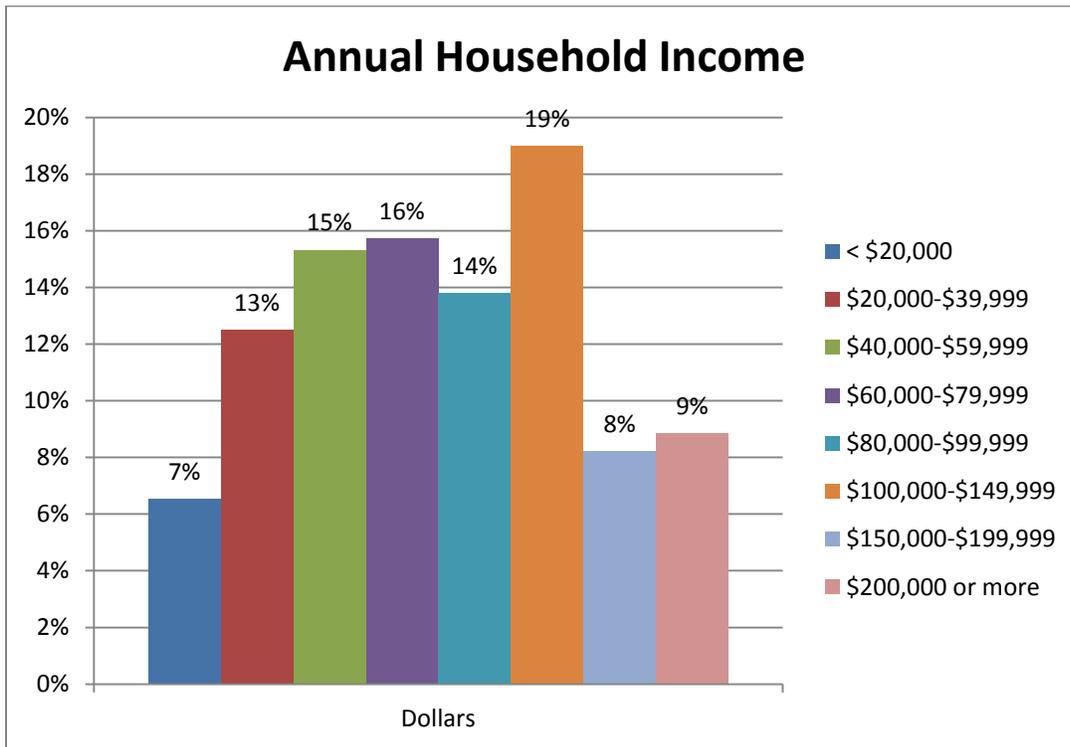
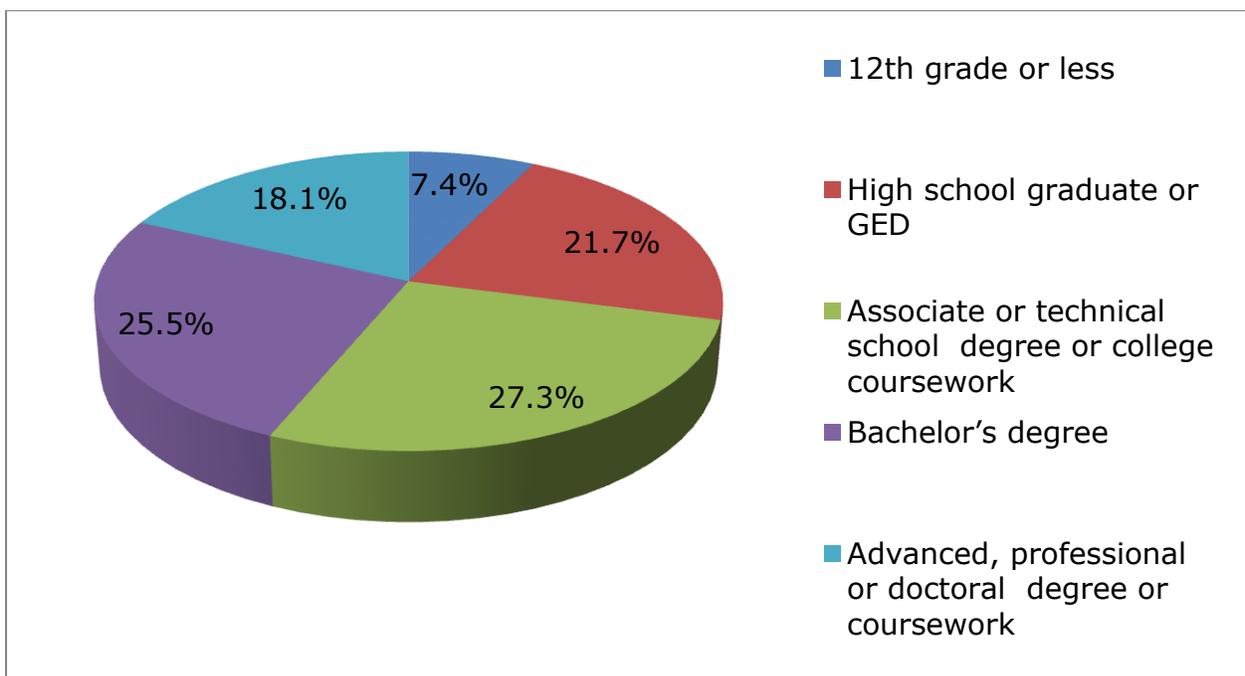


Figure 3: Education Level of Anglers



Preliminary Analysis and Next Steps

Mean durable expenditures have been estimated by state and resident status for each durable expenditure category following the same methodology as for the 2011 National Marine Recreational Fishing Expenditure Survey (Lovell et al., 2013). The percentages of time the item was used for marine recreational fishing and the percent spent in the survey state were each multiplied by the expenditure amount in order to estimate the amount spent in the survey state on marine fishing. As with the prior expenditure surveys in 2006 and 2011, only durable goods used primarily for marine fishing (50% or over) were included in the final analysis. For any items that anglers reported using less than 50% of the time for marine fishing, expenditures were recoded to zero.

Outliers within each expenditure category and survey strata (i.e., state/resident) were removed from the data set. The decision rule for outliers allowed strata with low variances to remain intact while strata with high variances had outliers removed. Initial weighted mean estimates for all expenditures categories were generated using the Proc Surveymeans procedure in SAS (SAS Version 9.3, 2011) and any strata/category combination with a proportion of standard error (PSE) greater than 20% had the upper 1% of its distribution truncated.

The same procedures were used to estimate mean durable expenditures at a national level. This allowed for any purchase to be included regardless of whether or not it was purchased in the survey state. For the purchase of new and used boats, new and used vehicles, and second homes, the wide variation in expenditures and greatly increased sample sizes required slight adjustments to the decision rule for outliers based on visual inspection of the data and best professional judgment.

Total expenditures will be estimated once angler participation estimates for 2014 are available from NOAA Fisheries and individual states. Typically, these are available for most states other than Alaska around May of the following year. Mean expenditures will be multiplied by the number of anglers in each state and resident status to obtain total expenditures. Total expenditures at the state and national level will then be used to estimate economic impacts using the standard NOAA Fisheries regional input-output

models developed for marine recreational fishing (Lovell et al., 2013) using the latest version of IMPLAN software (2012 version).

References

Lovell, Sabrina, Scott Steinback, and James Hilger. 2013. The Economic Contribution of Marine Angler Expenditures in the United States, 2011. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-134.