

Angler Expenditures

The surveys obtained information on total expenditures made during the trip that might involve multiple days and multiple participants. Therefore, information about party size and trip duration was collected so that trip expenditures could be estimated as per person, per day expenditures.

Data for all intercepted survey participants and all mail survey participants contained the home zip code of the participant. Round trip travel distance between the participant's home zip code and the actual latitude and longitude of the intercept site or the county of their most recent trip, in the case of license frame states, was calculated. The American Automobile Association's 2006 average variable cost of operating a vehicle (\$0.145/mile) was used to convert distance to private transportation expenditures. While all surveys asked the respondent to supply private transportation costs, missing values in the data set were replaced with the calculated value.

Respondents to expenditure surveys conducted through the mail often leave questions unanswered if no spending occurred for the item(s) of interest. This makes it difficult to determine whether the actual response should have been zero or the respondent skipped-over that portion of the survey. To avoid making assumptions about a respondent's intentions, screening questions were added to the survey for every grouping of expenditure categories. If a respondent answered the screening question in the affirmative for a particular group of expenditure items (i.e., fishing tackle or gear), all subsequent missing responses for each of the individual expense items within that group were coded as zeros. For respondents that provided negative responses to the screening questions, all subsequent missing responses were coded as missing data.

All expenditure groupings included an "other" category allowing an open-ended response for expenditure type and amount. These verbatim responses were then re-coded and added into the appropriate expenditure categories.

Because all durable goods can be used for multiple activities, each expenditure grouping, or in some cases individual categories, included a question about the percent of time the goods purchased in the grouping or category were used for saltwater fishing. The percentage given was used to reduce the expenditure amount used for estimation. In the first round of expenditure surveys that NMFS conducted, respondents were instructed to provide expenditures only for those categories in which the goods purchased were used primarily for saltwater fishing. In order to stay consistent with this notion of primacy, if a respondent said the item was used less than 50% of the time for saltwater fishing, the expenditure amount was re-coded as a zero.

Intercept surveys designed to collect a random sample of trips, as in the MRIP, generally incur an avidity bias as more avid anglers have a higher likelihood of being sampled. If this avidity bias is present in the data it would not affect the estimation of anglers' daily trip expenditures since the intercept selection probability employed by the MRIP is uniform across fishing trips. However, the avidity bias could affect the fishing equipment and durable expenditure estimates to the extent they are correlated with avidity. The last round of expenditure studies conducted by NMFS (Steinback and

Gentner 2001; Gentner et al 2001; Gentner et al 2001a) used the MRIP intercept survey approach to sample anglers and a positive relationship between avidity and expenditures was found and corrected for with a weight developed by Thomson (1991). For this study, we did not test for this bias, but assumed that it exists for the fishing equipment and durable good expenditures since our sample of anglers originated from the MRIP intercept survey. The same weight developed by Thomson (1991) was used to correct for the avidity bias.

In addition to the avidity bias weight, another weight was developed in both the MRIP and license frame states to account for differences between expected and actual fishing effort in 2006. In the MRIP states, intercept sampling is based on quotas developed using expected fishing effort during a two-month sampling period (i.e., wave). Expected fishing effort is simply the effort estimate for the same two-month wave in the previous year. To ensure that the triplelevel expenditure estimates are based upon the actual effort distributions that occurred in 2006, each expenditure data point in a particular stratum (i.e., state, mode, wave, residency status) was weighted by the proportion of total estimated effort in 2006 occurring in that stratum. The next section provides a narrative of the effort and participation estimates used in this study.

In all license frame states, a similar weight was used because sampling levels were based on quotas developed using expected license sales during the sampling period. Expected license sales by sampling period were predicted from 2005 license sales rates. Since both trip and durable good expenditures were collected from mail surveys sent to license holders, all expenditure data points were weighted by the number of anglers sampled in a stratum divided by the total saltwater license sales that occurred in that stratum in 2006.

Outliers were removed from the data set by strata (resident status and state of intercept/licensure) by expenditure category. 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 2000) and any strata/category combination with a proportion of standard error (PSE) greater than 20% had the upper 1% of its distribution truncated.

Statistical tests were conducted to examine the potential effects of non-response bias and survey mode differences. Firstly, to examine potential differences between non-respondents and respondents, 10% of the mail survey non-respondents were re-contacted by telephone and asked about their demographic characteristics and their expenditures on fishing gear, fishing tackle, and fishing rods and reels. Secondly, the follow-up expenditure survey was conducted using a mail survey this time instead of a telephone survey, primarily to enhance the ability of the respondent to look up and provide an accounting of detailed annual expenditures. To test the impact of this decision, half of the anglers surveyed in Florida were mailed a follow-up expenditure survey and half were contacted by telephone using the same survey instrument. Results of these tests are shown below.

For policy purposes, only those expenditures that generate economic activity matter. Angler purchases of used goods from private parties do not generate any economic activity and are considered transfer payments from one household to another. Respondents were asked if expenditures on boats, vehicles, and second homes were made new or used, from dealers or private parties, or were financed. If a boat, vehicle, or home was purchased new the entire purchase price was used for estimation. If any of these items were purchased used from a private party and not financed, the expenditure was not included. If the purchase was financed, regardless of whether used or new, financed charges were assumed to be 2% of the loan principal. To calculate the loan principal and the 2006 interest payment to the banking sector, microdata from the Consumer Expenditure Survey (CES) were used to calculate the average loan term, the average principal balance, and the average interest rate (CES 2006). Amortization equations were used to develop the additional categories for each respondent purchasing a financed vehicle, boat, or second home. Additionally, for second homes, the average U.S. property tax was obtained from the National Association of Homebuilders (NAHB 2007). Real estate commissions from home purchases were assumed to be 6%.

This excerpt can be found on page 6 in [Gentner, Brad, and Scott Steinback. 2008. The Economic Contribution of Marine Angler Expenditures in the United States, 2006. U.S. Department of Commerce, NOAA Technical Memorandum. NMFS-F/SPO-94, 301 p.](#)