Appendix D

Appendix D Sample Design and Statistical Accuracy

This appendix is partitioned into two parts. The second part, tables D-1 to D-4, reports approximate standard errors and 95-percent confidence intervals for selected measures of participation and expenditures for wildlife-related recreation.

Except for minor style changes, the first part of this appendix is the U.S. Bureau of the Census 'Source and Accuracy Statement' for the survey. This statement describes the sampling design for the 1991 survey and highlights the steps that were taken to produce estimates from the completed questionnaires. The statement explains the use of standard errors and confidence intervals. Finally, it provides comprehensive information about errors that are characteristic of surveys, and it provides the formulas and parameters that can be used to calculate an approximate standard error or confidence interval for each number published in this report.

Source and Accuracy Statement for the 1991 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

Source of Data

The estimates shown in this report are based on the data collected in the 1991 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (FHWAR).

The 1991 FHWAR survey was designed to provide state-level estimates of the number of people who participated in recreational hunting and fishing, and other forms of wildlife-related activities (e.g., wildlife observation) referred to as nonconsumptive use. Information was collected on the number of people engaged in the activities, where and how often they went to pursue them, the type of wildlife encountered, and the amounts of money spent for these activities.

The survey was conducted in two stages: an initial screening of households to identify likely sportsmen and nonconsumptive participants, and a series of followup interviews of selected persons to collect detailed data about their wildlife-related recreation during 1991.

The 1991 FHWAR sample was selected from expired samples from the Current Population Survey (CPS). As such, it is a multistage stratified sample of the U.S. population.

Sample Design

A. CPS-Current Population Survey

The expired CPS samples used for the 1991 FHWAR survey had been selected initially from the 1980 census files with coverage in all 50 states and the District of Columbia. The samples, while active, had been continually updated to reflect new construction. The sample addresses were located in more than 729 areas comprising more than 1,973 counties, independent cities, and minor civil divisions in the nation.

B. The FHWAR Screening Sample

The total screening sample consisted of roughly 128,700 households identified from previously interviewed CPS households. These households were last contacted for CPS sometime between November 1986 and March 1990. Beginning with March 1990 and working back, expired CPS sample households were accumulated until the designated sample size for each state was obtained. On the average, about 2,600 households per state

were contacted. Of these roughly 15.9 percent were found to be vacant or otherwise not to be enumerated. Of the remaining households roughly 5.5 percent could not be enumerated because the occupants were not found at home after repeated calls or were unavailable for some other reason. Overall, about 102,400 completed household interviews were obtained for a national response rate of approximately 94.5 percent. Roughly 68 percent of the interviewed households were contacted by telephone and the remaining interviewed households were contacted by personal visit. The field representatives asked the screening questions for all household members 6 years old and older. Interviewing for the screening sample was conducted during January and February of 1991.

The screening sample was split into two groups: self-respondent and proxy-respondent. Seventy five percent of the households were designated as proxy-respondents where a household respondent answered for all household members. The household respondent was a knowledgeable household member at least 18 years old. The remaining 25 percent of the sample households were self-respondents where each household member age 16 or older responded for himself or herself. A household respondent answered for persons less than 16 years old. Splitting the sample into two respondent types will allow us to see if the respondent type has an effect on the screener data.

C. The Detailed Samples

1. Sportsmen

The sportsmen detail sample was selected based on information reported during the screening phase. Every person 16 years of age and older was assigned to a category based on time devoted to hunting/fishing in the past or time expected to be devoted to hunting/fishing in the future. The three sportsmen categories are:

Active – a person who participated in hunting/fishing in 1990, already had participated in 1991 or intended to participate in 1991.

Inactive – a person who did not participate in hunting/fishing in 1990, participated in 1986- 1989, and did not intend to participate in 1991.

Nonparticipant – a person who did not participate in hunting/fishing in 1986-1990, and did not intend to participate in 1991.

The active and inactive groups were eligible for interview in the sportsmen detail sample.

The active sportsmen category included two groups, those who hunted/fished in 1990 and those who did not participate in 1990 but planned to or already had in 1991. Sportsmen who hunted/fished in 1990 were stratified into two substrata based on expenditures on hunting or fishing and the number of days of participation in hunting or fishing. The two substrata are:

Avid – a person who hunted or fished at least 30 days or spent at least $600 on either hunting or fishing.

Nonavid – a person who hunted or fished at least 1 day but not more than 29 days and did not spend more than $600 on either hunting or fishing.

All avid sportsmen and sportsmen who already had participated in 1991 were interviewed. About 18,000 avid sportsmen and sportsmen who already had participated in 1991 were identified from the screening sample. Nonavid sportsmen and those sportsmen who did not participate in 1990 were subsampled to yield the desired number of active sportsmen in each state.

Active sportsmen selected for the detail sample were contacted three times: May 1991, September 1991, and January 1992. The reference period was the preceding 4 months. If we were not able to obtain an interview, we attempted to interview the person in the next interviewing period. The recall period for these persons was longer. After the last interview, we had obtained data on the person's activities for the entire year of 1991. Inactive sportsmen selected for interview were contacted one time in January or February of 1992. The reference period was the preceding year.

About 42,500 persons were designated for interviews. The detailed sportsmen sample sizes varied considerably by state, ranging from about 24 persons for the District of Columbia to 1,217 persons for Michigan. During each interview period about 5 percent of the designated people were not found at home or were unavailable for some other reason. Overall, about 40,100 detailed sportsmen interviews were completed for a national response rate of about 95.2 percent.

2. Nonconsumptive Users

The nonconsumptive user detail sample was also selected based on information reported during the screening phase. Every person 16 years of age and older was assigned to a category based on time devoted to nonconsumptive activities in the past or time expected to be devoted to nonconsumptive activities in the future. The two categories are:

Active – a person who participated in a nonconsumptive activity in 1990, already had participated in 1991 or intended to participate in 1991.

Nonparticipant – a person who did not participate in a nonconsumptive activity in 1990, and did not intend to participate in 1991.

The active group was eligible for interview in the nonconsumptive user detail sample.

The active nonconsumptive user category included two groups, those who participated in 1990 and those who did not participate in 1990 but planned to or already had in 1991. Nonconsumptive users who participated in 1990 were stratified into two strata based on the distance traveled by the individual to participate in the nonconsumptive activity. The two strata are:

Primary Nonresidential – a person who took a trip of 1 mile or more to participate in a nonconsumptive activity.

Primary Residential – a person who participated in a nonconsumptive activity less than 1 mile from home.

The first stratum, primary nonresidential, was further categorized into two substrata based on expenditures on nonconsumptive activities and the number of days of participation in nonconsumptive activities. The two substrata are:

Avid – a person who participated at least 30 days or spent at least $300 on nonconsumptive activities.

Nonavid – a person who participated between 1 and 29 days and spent less than $300 on nonconsumptive activities.

Of the 8,400 avid nonconsumptive users and persons who already had participated in nonresidential activities in 1991 identified from the screening sample 6,500 were selected for interview in the detail sample. The rest of the active group was subsampled to get the desired sample size in each state.

The nonconsumptive user sample was interviewed at the same time as the active sportsmen detail sample.

About 28,000 persons were designated for interviews. During each interview period about 4 percent were not found at home or were unavailable for some other reason. Overall, about 26,700 interviews were completed for a national response rate of about 96.0 percent.

Estimation Procedure

Several stages of adjustments were involved in the estimation procedure used to derive the final 1991 FHWAR person weights. A brief description of the major components of the weights by sample is given below.

All statistics for the population 6 to 15 years of age were derived from the screening interview. Statistics for the population 16 and over come from both the screening and the detailed interviews. Estimates which come from the screening sample are presented in appendix C.

A. Screening Sample

Every interviewed person in the screening sample received a weight that was the product of the following factors:

1. **Base Weight.** The base weight is the inverse of the household's probability of selection.
2. **Household Noninterview Adjustment.** The noninterview adjustment inflates the weight assigned to interviewed households to account for households eligible for interview but for which no interview was obtained.
3. **First-Stage Adjustment.** The 729+ areas designated for our samples were selected from roughly 1,900 such areas of the United States. Some of our sample areas represent only themselves, and are referred to as self-representing. The remaining areas represent other areas similar in selected characteristics, and are thus designated nonself-representing. The first-stage factor reduces the component of variation arising out of sampling the nonself- representing areas.
4. **Second-Stage Adjustment.** This adjustment brings the estimates of the total population in each state into agreement with census-based estimates of the civilian noninstitutional and nonbarrack military populations for each state.

B. Sportsmen Sample

Every interviewed person in the sportsmen detail sample received a weight that was the product of the following factors:

1. **Screening Weight.** This is the person's final weight from the screening sample.
2. **Stratum Adjustment.** This factor inflates the weights of persons selected for the detail sample to account for the subsampling done within each sportsmen stratum.
3. **Sportsmen Noninterview Adjustment.** This factor

adjusts the weights of the interviewed sportsmen to account for sportsmen selected for the detail sample for which no interview was obtained. A person was considered a noninterview if he/she was not interviewed in the third wave of interviewing.

4. **Sportsmen Ratio Adjustment Factor.** This is a ratio adjustment of the detail sample to the screening sample within sportsmen sampling strata. This adjustment brings the population estimates of persons age 16 or older from the detail sample into agreement with the same estimates from the screening sample, which was a much larger sample.

5. **Long-Time Inactive Adjustment.** This is an adjustment designed to reduce the bias caused by not sampling unlikely participants.

   The survey sample was drawn from categories of potential participants in wildlife-related recreation activities identified by a screening of households in January 1991. Persons with a low probability of participating - i.e., persons who said they had not gone hunting or fishing in the last 5 years and who had no intention of going in 1991 - were omitted from the detailed interviews for efficiency. There is no standard statistical method of adjusting for the persons in that group who participated in 1991. An adjustment for their participation was made based on data collected from the detailed and screening interviews.

   Persons who said in the screener that they had not hunted in the previous five years and did not intend to hunt in 1991 were not eligible for selection for the detail sample as hunters. Some of these people were selected because of their fishing activity or plans. We adjusted the weights of the hunters in the sample for these people by assuming same participation rates for the people who did hunt and who were selected into the sample because of their fishing activity and those that were not selected into the sample.

   We made a similar adjustment for persons who fished in 1991 but in the screener said they had not fished in the previous 5 years and did not intend to fish in 1991.

C. Nonconsumptive User Sample

Every interviewed person in the nonconsumptive user detail sample received a weight that was the product of the following factors:

1. **Screening Weight.** This is the person's final weight from the screening sample.

2. **Nonconsumptive User Stratum Adjustment.** This factor inflates the weights of the persons selected for the detail sample to account for the subsampling done within each nonconsumptive user stratum.

3. **Nonconsumptive User Noninterview Adjustment.** This factor adjusts the weights of the interviewed nonconsumptive users to account for nonconsumptive users selected for the detail sample for which no interview was obtained. A person was considered a noninterview if he/she was not interviewed in the third wave of interviewing.

4. **Nonconsumptive User Ratio Adjustment Factor.** This is a ratio adjustment of the detail sample to the screening sample within nonconsumptive user sampling strata. This adjustment brings the population estimates of persons age 16 or older from the detail sample into agreement with the same estimates from the screening sample, which was a much larger sample.

An adjustment for long time inactive nonconsumptive users similar to the sportsmen long time inactive adjustment was not made because there were no inactives included in the nonconsumptive users sample upon which an adjustment could be based.

Accuracy of the Estimates

Since the 1991 estimates come from a sample, they may differ from figures from a complete census using the same questionnaires, instructions, and enumerators. A sample survey estimate has two possible types of error: sampling and nonsampling. The accuracy of an estimate depends on both types of error, but the full extent of the nonsampling error is unknown. Consequently, one should be particularly careful when interpreting results based on a relatively small number of cases or on small differences between estimates. The standard errors for the 1991 FHWAR estimates primarily indicate the magnitude of sampling error. They also partially measure the effect of some nonsampling errors in responses and enumeration, but do not measure systematic biases in the data. (Bias is the average over all possible samples of the

differences between the sample estimates and the actual value).

Nonsampling Variability

Let us suppose that a comparable complete enumeration was conducted, that is, an interview is attempted for every person 16 years old and over in the United States. Chances are we will not correctly estimate every parameter (for example, the proportion of people who fished) under consideration. In this instance the difference is due solely to nonsampling errors. Nonsampling errors also occur in sample surveys and can be attributed to several sources including the following:

- The inability to obtain information about all cases in the sample.
- Definitional difficulties.
- Differences in the interpretation of questions.
- Respondents' inability or unwillingness to provide correct information.
- Respondents' inability to recall information.
- Errors made in data collection such as in recording or coding the data.
- Errors made in processing the data.
- Errors made in estimating values for missing data.
- Failure to represent all units with the sample (undercoverage).

There were three particular undercoverage problems in this survey: sample attrition, i.e., loss of the original sample due to nonreturns from the field, processing, etc.; failure to represent new construction in the sampling frame for the period roughly between November 1986 and March 1990; and failure to give all potential participants a chance of selection for the detail sample.

Sportsmen and nonconsumptive users in 1991 who were either participating for the first time or were participating after a period of inactivity are somewhat underrepresented in the 1991 survey estimates. Unless at the time of the screening interview they had intentions of participating during 1991, they were not given a chance of selection for the detail sample. We tried to partially adjust for the missed long-time inactive participants with the long-time inactive sportsmen weighting adjustment.

Overall CPS undercoverage as compared to the level of the 1980 decennial census is about 7 percent. Generally, undercoverage is larger for males than for females and larger for Blacks and other races combined than for Whites. Ratio estimation to independent population controls, as described previously, partially corrects for the bias due to survey undercoverage. However, biases exist in the estimates to the extent that missed persons in missed households or missed persons in interviewed households have different characteristics from those of interviewed persons in the same age group. Further, the independent population controls used have not been adjusted for undercoverage in the 1980 census.

Comparability of Data. Data obtained from the 1991 FHWAR and other sources are not entirely comparable. This results from differences in field interviewer training and experience and in differing survey processes. This is an example of nonsampling variability not reflected in the standard errors. Use caution when comparing results from different sources. (See appendix B.)

Note When Using Small Estimates. Because of the large standard errors involved, summary measures (such as medians and percentage distributions) would probably not reveal useful information when computed on a smaller base than 65,000 for sportsmen and 105,000 for nonconsumptive users. Take care in the interpretation of small differences. For instance, even a small amount of nonsampling error can cause a borderline difference to appear significant or not, thus distorting a seemingly valid hypothesis test.

Sampling Variability

The particular sample used for the 1991 Survey is one of a large number of all possible probability samples of the same size that could have been selected using the same sample design. Estimates derived from the different samples would differ from each other. This sample-to-sample variability is referred to as sampling variability and is generally measured by the standard error. The exact sampling error is unknown. However, guides to the potential size of the sampling error are provided by the standard error of the estimate.

Since the standard error of a survey estimate attempts to provide a measure of the variation among the estimates from the possible samples, it is a measure of the precision with which an estimate from a particular sample approximates the average result of all possible samples. Standard errors, as calculated by methods described next in "*Standard Errors and Their Use,*" are primarily measures of sampling variability, although they may include some nonsampling error.

The sample estimate and its standard error enable one to construct a confidence interval, a range that would include the average result of all possible samples with a known probability. For example, if all possible samples were surveyed under essentially the same general conditions and using the same sample design, and if an estimate and its standard error were calculated from each sample, then approximately 90 percent of the intervals from 1.645 standard errors below the estimate to 1.645 standard errors above the estimate would include the average result of all possible samples.

A particular confidence interval may or may not contain the average estimate derived from all possible samples. However, one can say with specified confidence that the interval includes the average estimate calculated from all possible samples.

Standard errors may also be used to perform hypothesis testing, a procedure for distinguishing between population parameters using sample estimates. One common type of hypothesis is that the population parameters are different. An example of this would be comparing the proportion of anglers to the proportion of hunters.

Tests may be performed at various levels of significance, where a significance level is the probability of concluding that the characteristics are different when, in fact, they are the same. To conclude that two parameters are different at the 0.10 level of significance, for example, the absolute value of the estimated difference between characteristics must be greater than or equal to 1.645 times the standard error of the difference.

The Census Bureau uses 90-percent confidence intervals and 0.10 levels of significance to determine statistical validity. Consult standard statistical textbooks for alternative criteria.

Standard Errors and Their Use. A number of approximations are required to derive, at a moderate cost, standard errors applicable to all the estimates in this report. Instead of providing an individual standard error for each estimate, parameters are provided to calculate standard errors for each type of characteristic. These parameters are listed in tables D-5 – D-10. Methods for using the parameters to calculate standard errors of various estimates are given in the next sections.

Standard Errors of Estimated Numbers. The approximate standard error, s_x, of an estimated number shown in this report can be obtained using the following formulas. Formula (1) is used to calculate the standard errors of levels of sportsmen, anglers, and nonconsumptive users.

$$s_x = \sqrt{ax^2 + bx}$$

Here, x is the size of the estimate and a and b are the parameters in the tables associated with the particular characteristic.

Formula (2) is used for standard errors of aggregates, i.e., trips, days, and expenditures.

$$s_x = \sqrt{ax^2 + bx + \frac{cx^2}{y}}$$

Here, x is again the size of the estimate; y is the base of the estimate; and a, b, and c are the parameters in the tables associated with the particular characteristic.

Illustration of the Computation of the Standard Error of an Estimated Number.

Table 1 in this report shows that 39,979,000 persons 16+ either fished or hunted in the United States in 1991. Using formula (1) with the parameters a = –0.000032 and b = 4,395 from table D-6, the approximate standard error on the estimated number of 39,979,000 sportsmen 16+ is

$$s_x = \sqrt{-0.000032x39{,}979{,}000^2 + 4{,}395x39{,}979{,}000} = 352{,}900$$

The 90-percent confidence interval for the estimated number of sportsmen 16+ is from 39,398,500 to 40,559,500, i.e., 39,979,000 + 1.645X352,900. Therefore, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all possible samples.

Table 1 shows that 14,063,000 hunters 16+ engaged in 235,806,000 days of participation in 1991. Using formula (2) with the parameters a = 0.000069, b = 9,445, and c = 5,567 from table D-8, the approximate standard error on 235,806,000 estimated days on an estimated base of 14,063,000 hunters is

$$s_x = \sqrt{0.000069x235{,}806{,}000^2 + 9{,}445x235{,}806{,}000 + \frac{5{,}567x235{,}806{,}000^2}{14{,}063{,}000}} = 5{,}298{,}600$$

The 90-percent confidence interval on the estimate of 235,806,000 days is from 227,098,800 to 244,522,200, i.e., 235,806,000 + 1.645X5,298,600. Again, a conclusion that the average estimate derived from all possible samples lies within a range computed in this way would be correct for roughly 90 percent of all possible samples.

Standard Errors of Estimated Percentages. The reliability of an estimated percentage, computed using sample data for both numerator and denominator, depends on the size of the percentage and its base. Estimated percentages are relatively more reliable than the corresponding estimates of the numerators of the percentages, particularly if the percentages are 50 percent or more. When the numerator and denominator of the percentage are in different categories, use the parameter in the tables indicated by the numerator.

The approximate standard error of an estimated percentage, $s_{x,p}$, can be obtained by use of the formula

$$s_{x,p} = \sqrt{bp(100-p)/x}$$

Here, x is the total number of sportsmen, hunters, etc., which is the base of the percentage; p is the percentage ($0 \leq p \leq 100$); and b is the parameter in the tables associated with the characteristic in the numerator of the percentage.

Illustration of the Computation of the Standard Error of an Estimated Percentage.

Table 16 in this report shows that of the 14,063,000 hunters 16+, 2.1 percent were Black. From table D-6 the appropriate b parameter is 2,872. Using formula (3), the approximate standard error on the estimate of 2.1 percent is

$$s_{x,p} = \sqrt{2{,}872 \times 2.1 \times 97.9 / 14{,}063{,}000} = 0.20$$

Consequently, the 90-percent confidence interval for the estimated percentage of Black hunters 16+ is from 1.8 percent to 2.4 percent, i.e., 2.1 + 1.645X0.20.

Standard Error of a Difference. The standard error of the difference between two sample estimates is approximately equal to

$$s_{x-y} = \sqrt{s_x^2 + s_y^2}$$

where s_x and s_y are the standard errors of the estimates x and y. The estimates can be numbers, percentages, ratios, etc. This will represent the actual standard error quite accurately for the difference between estimates of the same characteristic in two different areas, or for the difference between separate and uncorrelated characteristics in the same area. However, if there is a high positive (negative) correlation between the two characteristics, the formula will overestimate (underestimate) the true standard error.

Illustration of the Computation of the Standard Error of a Difference.

Table 16 shows that of the 14,063,000 hunters, 3,930,000 were in the age group 25-34, and 3,369,000 were in the age group 35-44. The corresponding percents are 28.0 percent and 24.0 percent, respectively. The apparent difference between the percent of hunters 25-34 and hunters 35-44 is 4.0 percent. Using formula (3) and the appropriate b parameter from table D-6, the approximate standard errors of 28.0 percent and 24.0 percent are 0.64 and 0.61, respectively. Using formula (4), the approximate standard error of the estimated difference of 4.0 percent is

$$s_{x-y} = \sqrt{0.64^2 + 0.61^2} = 0.88$$

The 90-percent confidence interval on the difference between hunters aged 25-34 and hunters aged 35-44 is from 2.6 to 5.4 percent, i.e., 4.0 + 1.645X0.88. Since this interval does not contain zero, we can conclude with 90 percent confidence that the percentage of hunters aged 25-34 is larger than the percentage of hunters aged 35-44.

Standard Errors of Estimated Averages. Certain mean values for sportsmen, anglers, etc., shown in the report were calculated as the ratio of two numbers. For example, average days per angler is calculated as:

$$\frac{x}{y} = \frac{\text{total days}}{\text{total anglers}}$$

Standard errors for these averages may be approximated by the use of formula (5) below.

$$s_{x/y} = \frac{x}{y}\sqrt{\left[\frac{s_x}{x}\right]^2 + \left[\frac{s_y}{y}\right]^2 - 2r\frac{s_x s_y}{xy}}$$

In formula (5), r represents the correlation coefficient between the numerator and the denominator of the estimate. In the above formula, use 0.7 as an estimate of r.

Illustration of the Computation of the Standard Error of an Estimated Average.

Table 8 shows that the average days per hunter 16+ for all hunting was 16.8 days. Using formulas (1) and (2) above, we compute the standard error on total days, 235,806,000, and total hunters, 14,063,000, to be 5,298,600 and 194,000, respectively. The approximate standard error on the estimated average of 16.8 days is

$$s_{x/y} = \frac{235{,}806{,}000}{14{,}063{,}000}\sqrt{\left[\frac{5{,}298{,}600}{235{,}806{,}000}\right]^2 + \left[\frac{194{,}000}{14{,}063{,}000}\right]^2 - 2x0.7x\frac{5{,}298{,}600x194{,}000}{235{,}806{,}000x14{,}063{,}000}} = 0.27$$

Therefore, the 90-percent confidence interval on the estimated average of 16.8 days is from 16.4 to 17.2, i.e., 16.8 + 1.645X0.27.

Table D-1. **Approximate Standard Errors and 95-Percent Confidence Intervals for Selected Fishing Estimates: 1991**

Anglers, days, and expenditures	Estimate	Standard error	Lower 95 percent	Upper 95 percent
Anglers (thousands)				
Total	35,578	340	34,911	36,246
Freshwater	31,041	325	30,404	31,679
Freshwater, except Great Lakes	30,186	322	29,555	30,817
Great Lakes	2,552	105	2,346	2,758
Saltwater	8,885	191	8,510	9,260
Days of fishing (thousands)				
Total	511,329	8,910	493,866	528,792
Freshwater	439,536	8,433	423,008	456,064
Freshwater, except Great Lakes	430,922	8,435	414,390	447,454
Great Lakes	25,335	1,921	21,569	29,101
Saltwater	74,696	2,884	69,044	80,348
Average days per angler				
Total	14.4	0.18	14.0	14.7
Freshwater	14.2	0.20	13.8	14.5
Freshwater, except Great Lakes	14.3	0.20	13.9	14.7
Great Lakes	9.9	0.55	8.8	11.0
Saltwater	8.4	0.24	7.9	8.9
Fishing expenditures (thousands)				
Total	$23,990,125	$841,502	$22,340,782	$25,639,468
Freshwater	$15,148,591	$547,155	$14,076,167	$16,221,015
Freshwater, except Great Lakes	$13,811,713	$501,667	$12,828,445	$14,794,981
Great Lakes	$1,336,879	$113,063	$1,115,275	$1,558,483
Saltwater	$4,991,952	$257,366	$4,487,514	$5,496,390
Average expenditure per angler				
Total	$674	$20	$636	$713
Freshwater	$488	$15	$460	$516
Freshwater, except Great Lakes	$458	$14	$431	$484
Great Lakes	$524	$33	$459	$589
Saltwater	$562	$22	$518	$605

Table D-2. **Approximate Standard Errors and 95-Percent Confidence Intervals for Selected Hunting Estimates: 1991**

Hunters, days, and expenditures	Estimate	Standard error	Lower 95 percent	Upper 95 percent
Hunters (thousands)				
Total	14,063	194	13,683	14,444
Big Game	10,745	171	10,410	11,081
Small Game	7,642	145	7,357	7,927
Migratory Bird	3,009	92	2,828	3,190
Other animals	1,411	63	1,287	1,535
Days of hunting (thousands)				
Total	235,806	5,299	225,421	246,191
Big Game	128,411	3,301	121,942	134,880
Small Game	77,132	2,339	72,547	81,717
Migratory Bird	22,235	1,076	20,125	24,345
Other animals	19,340	1,298	16,796	21,884
Average days per hunter				
Total	16.8	0.27	16.2	17.3
Big Game	12.0	0.22	11.5	12.4
Small Game	10.1	0.22	9.7	10.5
Migratory Bird	7.4	0.26	6.9	7.9
Other animals	13.7	0.66	12.4	15.0
Expenditures (thousands)				
Total	$12,336,435	$381,945	$11,587,822	$13,085,048
Big Game	$5,090,443	$186,564	$4,724,778	$5,456,108
Small Game	$1,549,816	$70,042	$1,412,533	$1,687,099
Migratory Bird	$686,025	$49,958	$588,107	$783,943
Other animals	$254,681	$29,508	$196,846	$312,516
Average expenditures per hunter				
Total	$877	$21	$837	$918
Big Game	$474	$13	$448	$500
Small Game	$203	$7	$189	$217
Migratory Bird	$228	$13	$203	$253
Other animals	$180	$16	$149	$212

Table D-3. **Approximate Standard Errors and 95-Percent Confidence Intervals for Selected Fishing and Hunting Expenditure Estimates: 1991**

(Numbers in thousands)

Expenditures	Estimate	Standard error	Lower 95 percent	Upper 95 percent
Fishing and hunting expenditures				
Total	$40,923,429	$1,403,026	$38,173,497	$43,673,361
Trip-related	$15,288,354	$527,743	$14,253,979	$16,322,729
Food and Lodging	$6,777,500	$239,692	$6,307,704	$7,247,296
Transportation	$4,138,593	$145,388	$3,853,632	$4,423,554
Other trip costs	$4,372,262	$158,364	$4,061,868	$4,682,656
Equipment	$18,935,652	$684,814	$17,593,416	$20,277,888
Fishing/hunting	$7,634,336	$279,193	$7,087,119	$8,181,553
Auxiliary	$1,806,862	$84,859	$1,640,539	$1,973,185
Special	$9,494,454	$699,479	$8,123,475	$10,865,433
Other	$6,699,422	$243,419	$6,222,320	$7,176,524
Magazine subscriptions	$255,892	$13,523	$229,387	$282,397
Membership dues and contributions	$402,610	$25,110	$353,394	$451,826
Land leasing and ownership	$5,142,431	$492,758	$4,176,626	$6,108,236
Licenses, stamps, tags and permits	$898,489	$33,659	$832,517	$964,461
Fishing expenditures				
Total	$23,990,125	$841,502	$22,340,782	$25,639,468
Trip-related	$11,847,750	$418,008	$11,028,454	$12,667,046
Food and Lodging	$4,953,383	$179,708	$4,601,155	$5,305,611
Transportation	$2,799,922	$101,083	$2,601,799	$2,998,045
Other trip costs	$4,094,445	$148,815	$3,802,768	$4,386,122
Equipment	$9,365,188	$354,899	$8,669,585	$10,060,791
Fishing	$3,740,104	$143,213	$3,459,407	$4,020,801
Auxiliary	$619,433	$38,115	$544,728	$694,138
Special	$5,005,651	$443,650	$4,136,096	$5,875,206
Other	$2,777,186	$106,231	$2,568,973	$2,985,399
Magazines subscriptions	$88,468	$6,661	$75,413	$101,523
Membership dues and contributions	$73,399	$7,772	$58,166	$88,632
Land leasing and ownership	$2,128,619	$339,553	$1,463,096	$2,794,142
Licenses, stamps, tags and permits	$486,700	$19,241	$448,987	$524,413
Hunting expenditures				
Total	$12,336,435	$381,945	$11,587,822	$13,085,048
Trip-related	$3,440,604	$112,361	$3,220,376	$3,660,832
Food and Lodging	$1,824,117	$65,367	$1,695,998	$1,952,236
Transportation	$1,338,671	$44,968	$1,250,534	$1,426,808
Other trip costs	$277,817	$30,207	$218,611	$337,023
Equipment	$5,168,524	$182,751	$4,810,331	$5,526,717
Hunting	$3,283,413	$118,891	$3,050,387	$3,516,439
Auxiliary	$635,334	$38,671	$559,539	$711,129
Special	$1,249,777	$230,182	$798,621	$1,700,933
Other	$3,727,307	$125,657	$3,481,019	$3,973,595
Magazines subscriptions	$41,892	$4,360	$33,347	$50,437
Membership dues and contributions	$138,856	$14,267	$110,893	$166,819
Land leasing and ownership	$3,013,812	$516,512	$2,001,448	$4,026,176
Licenses, stamps, tags and permits	$532,747	$18,470	$496,545	$568,949

Table D-4. **Approximate Standard Errors and 95-Percent Confidence Intervals for Selected Nonconsumptive Estimates: 1991**

Participants and expenditures	Estimate	Standard error	Lower 95 percent	Upper 95 percent
Nonconsumptive Participants (thousands)				
Total primary participants	76,111	480	75,171	77,051
Primary nonresidential	29,999	475	29,068	30,930
Observe wildlife	28,812	469	27,893	29,731
Photograph wildlife	14,225	358	13,523	14,927
Feed wildlife	13,306	348	12,624	13,988
Primary residential	73,904	488	72,948	74,860
Observe wildlife	54,653	518	53,637	55,669
Photograph wildlife	16,990	374	16,257	17,723
Feed wildlife	65,423	509	64,425	66,421
Maintain natural areas	9,547	291	8,976	10,118
Maintain plantings	7,647	263	7,131	8,163
Visit public parks	15,525	360	14,819	16,231
Days of participation in primary nonresidential activities (thousands)				
Total	342,406	17,360	308,380	376,432
Observe wildlife	296,456	15,162	266,739	326,173
Photograph wildlife	81,600	5,133	71,539	91,661
Feed wildlife	102,104	6,744	88,886	115,322
Average days of participation in primary nonresidential activities				
Total	11.4	0.47	10.5	12.3
Observe wildlife	10.3	0.43	9.5	11.1
Photograph wildlife	5.7	0.28	5.2	6.3
Feed wildlife	7.7	0.39	6.9	8.4
Expenditures (thousands)				
Total	$18,103,887	$807,033	$16,522,101	$19,685,673
Trip-related	$7,482,073	$396,063	$6,705,790	$8,258,356
Food and lodging	$4,424,825	$245,389	$3,943,862	$4,905,788
Transportation	$2,609,341	$138,142	$2,338,584	$2,880,098
Other trip costs	$447,907	$34,491	$380,305	$515,509
Equipment	$9,559,774	$436,641	$8,703,957	$10,415,591
Nonconsumptive	$5,703,557	$259,713	$5,194,519	$6,212,595
Auxiliary	$349,986	$45,193	$261,408	$438,564
Special	$3,506,231	$684,200	$2,165,199	$4,847,263
Magazines	$320,900	$20,468	$280,783	$361,017
Membership dues and contributions	$741,140	$51,613	$639,979	$842,301

Table D-5. **a and b Parameters for Calculating Approximate Standard Errors of Sportsmen, Anglers, Hunters, and Nonconsumptive Users**[1]

State	6 years old and over		6-15 year olds only	
	a	b	a	b
United States	−0.0000118	2,669	−0.0000673	2,391
Alabama	−0.0006116	2,282	−0.0031691	1,968
Alaska	−0.0013864	629	−0.0045765	389
Arizona	−0.0006194	2,013	−0.0025525	1,386
Arkansas	−0.0007403	1,611	−0.0036775	1,357
California	−0.0001953	5,202	−0.0011774	5,032
Colorado	−0.0005021	1,501	−0.0030379	1,443
Connecticut	−0.0003050	887	−0.0022934	938
Delaware	−0.0004916	306	−0.0030632	291
Florida	−0.0002670	3,180	−0.0017448	2,776
Georgia	−0.0004358	2,551	−0.0022912	2,321
Hawaii	−0.0004746	474	−0.0024268	381
Idaho	−0.0008082	749	−0.0032099	581
Illinois	−0.0002717	2,858	−0.0013644	2,209
Indiana	−0.0003748	1,908	−0.0020777	1,712
Iowa	−0.0005406	1,392	−0.0029781	1,224
Kansas	−0.0004502	1,017	−0.0027162	1,024
Kentucky	−0.0004634	1,562	−0.0027266	1,486
Louisiana	−0.0005713	2,208	−0.0024716	1,740
Maine	−0.0007030	790	−0.0037719	645
Maryland	−0.0004325	1,855	−0.0026079	1,643
Massachusetts	−0.0002129	1,138	−0.0015340	1,083
Michigan	−0.0003476	2,909	−0.0019313	2,615
Minnesota	−0.0005451	2,154	−0.0028866	1,859
Mississippi	−0.0007184	1,686	−0.0035566	1,540
Missouri	−0.0004485	2,092	−0.0021324	1,546
Montana	−0.0008103	588	−0.0036880	461
Nebraska	−0.0007032	1,021	−0.0037975	919
Nevada	−0.0005222	562	−0.0027778	450
New Hampshire	−0.0004595	468	−0.0028000	434
New Jersey	−0.0002130	1,488	−0.0014061	1,378
New Mexico	−0.0007202	996	−0.0026031	669
New York	−0.0002120	3,423	−0.0012354	2,892
North Carolina	−0.0003168	1,903	−0.0018173	1,641
North Dakota	−0.0006465	374	−0.0030495	308
Ohio	−0.0002246	2,220	−0.0013278	2,094
Oklahoma	−0.0006190	1,788	−0.0029140	1,390
Oregon	−0.0004238	1,114	−0.0026995	1,096
Pennsylvania	−0.0003050	3,348	−0.0020045	3,151
Rhode Island	−0.0003436	310	−0.0021600	270
South Carolina	−0.0004618	1,469	−0.0025578	1,371
South Dakota	−0.0007407	471	−0.0039279	436
Tennessee	−0.0004086	1,849	−0.0022994	1,628
Texas	−0.0002984	4,553	−0.0016448	4,454
Utah	−0.0006587	998	−0.0027660	1,040
Vermont	−0.0006589	346	−0.0039241	310
Virginia	−0.0004226	2,335	−0.0021343	1,716
Washington	−0.0004833	2,133	−0.0033565	2,363
West Virginia	−0.0007768	1,307	−0.0040573	1,063
Wisconsin	−0.0005539	2,445	−0.0033165	2,368
Wyoming	−0.0011709	494	−0.0057532	443

[1]These parameters are to be used only to calculate estimates of standard errors for characteristics developed from the screening sample.

Table D-6. **a and b Parameters for Calculating Approximate Standard Errors of Levels for the Detail Sportsmen Sample**

State	Sportsmen and anglers 16+		Hunters 16+	
	a	b	a	b
United States	−0.000032	4,395	−0.000014	2,872
Alabama	−0.001284	3,350	−0.000452	2,028
Alaska	−0.001049	534	−0.000533	389
Arizona	−0.001024	2,542	−0.000653	2,057
Arkansas	−0.000984	1,874	−0.000688	1,555
California	−0.000726	9,809	−0.000284	5,976
Colorado	−0.000802	1,936	−0.000729	1,830
Connecticut	−0.001130	1,585	−0.000381	951
Delaware	−0.001214	459	−0.000350	276
Florida	−0.000757	5,471	−0.000570	4,598
Georgia	−0.000638	3,018	−0.000469	2,627
Hawaii	−0.001467	824	−0.000381	441
Idaho	−0.000969	835	−0.001275	998
Illinois	−0.000965	5,509	−0.000668	4,374
Indiana	−0.000983	3,220	−0.000534	2,252
Iowa	−0.000905	1,826	−0.000729	1,616
Kansas	−0.000644	1,217	−0.000592	1,163
Kentucky	−0.000899	2,232	−0.000514	1,640
Louisiana	−0.001103	3,073	−0.000360	1,864
Maine	−0.000958	916	−0.000833	854
Maryland	−0.001090	2,776	−0.000521	1,979
Massachusetts	−0.000910	2,189	−0.000462	1,513
Michigan	−0.000525	3,538	−0.000218	2,451
Minnesota	−0.000661	2,415	−0.000415	1,860
Mississippi	−0.001820	2,905	−0.000585	1,538
Missouri	−0.000949	3,179	−0.000611	2,445
Montana	−0.001371	819	−0.001189	744
Nebraska	−0.001090	1,273	−0.000671	1,000
Nevada	−0.001357	958	−0.001135	853
New Hampshire	−0.001420	861	−0.000653	547
New Jersey	−0.000873	2,822	−0.000369	1,804
New Mexico	−0.001087	1,210	−0.001122	1,230
New York	−0.000931	6,658	−0.000354	4,061
North Carolina	−0.000888	3,274	−0.000502	2,347
North Dakota	−0.000911	455	−0.000562	348
Ohio	−0.000837	4,486	−0.000490	3,202
Oklahoma	−0.000696	1,898	−0.001058	2,412
Oregon	−0.000966	1,836	−0.000681	1,456
Pennsylvania	−0.001028	5,797	−0.000520	4,077
Rhode Island	−0.001104	517	−0.000219	276
South Carolina	−0.001248	2,463	−0.000621	1,670
South Dakota	−0.001170	607	−0.000779	483
Tennessee	−0.000861	2,723	−0.000331	1,700
Texas	−0.000808	7,823	−0.000442	5,473
Utah	−0.000631	979	−0.000986	1,226
Vermont	−0.001037	444	−0.000786	379
Virginia	−0.000685	2,917	−0.000469	2,439
Washington	−0.000981	3,234	−0.001141	3,590
West Virginia	−0.000793	1,318	−0.001212	1,596
Wisconsin	−0.001093	3,578	−0.000559	2,455
Wyoming	−0.001606	603	−0.001019	456

Table D-7. **a, b, and c Parameters for Calculating Approximate Standard Errors for Expenditures for the Detail Sportsmen Sample**

State	Sportsmen and anglers 16+			Hunters 16+		
	a	b	c	a	b	c
United States	0.000745	34,470	16,835	−0.000274	17,643	16,954
Alabama	0.028530	−38,534	6,557	0.030372	−54,158	4,026
Alaska	0.018611	−1,076	384	0.004880	7,829	623
Arizona	0.013489	−3,777	4,390	0.042530	−68,524	3,446
Arkansas	0.009865	−1,423	3,087	0.004490	−89,190	6,649
California	0.027217	273,355	7,227	0.031160	−168,238	12,140
Colorado	0.007850	−4,466	3,093	0.009625	−47,715	4,096
Connecticut	0.021108	−7,442	2,286	0.020330	−12,693	1,932
Delaware	0.017594	−3,713	889	0.029927	−3,775	425
Florida	0.023619	30,561	7,698	0.046200	−176,405	8,906
Georgia	0.017015	6,534	5,515	0.022700	−130,448	11,910
Hawaii	0.022298	−846	1,288	0.077950	−5,020	467
Idaho	0.007513	−3,331	1,367	0.009691	−6,013	1,457
Illinois	0.005565	−9,417	11,598	0.018169	−87,947	6,690
Indiana	0.008574	−43,203	8,233	0.024170	−124,142	5,444
Iowa	0.002365	−15,013	3,719	0.034476	−42,093	2,366
Kansas	0.013822	−7,587	1,872	0.039090	−54,605	2,611
Kentucky	0.023614	11,585	3,464	0.020540	−27,324	3,376
Louisiana	0.030260	−28,497	5,042	0.025550	−115,743	7,292
Maine	0.012997	−9,830	1,612	0.010974	−8,335	1,284
Maryland	0.023826	−686	3,308	0.011030	−20,197	4,064
Massachusetts	0.013047	−31,394	5,442	0.013405	13,784	2,105
Michigan	0.014449	−96,888	11,103	0.004782	−37,776	8,038
Minnesota	0.010570	−23,060	5,043	0.001701	−13,909	4,092
Mississippi	0.002090	−74,387	10,961	0.011080	−102,074	6,251
Missouri	0.009317	−24,336	5,227	0.013525	−67,063	4,390
Montana	0.007344	−1,738	1,323	0.005268	114	1,279
Nebraska	0.009074	−5,195	2,139	0.018807	−18,565	1,790
Nevada	0.014154	−15,238	2,314	0.013870	−6,060	1,161
New Hampshire	0.001028	−17,581	2,364	0.018435	−9,120	948
New Jersey	0.007586	−36,453	6,828	0.018993	7,371	2,363
New Mexico	0.018114	−1,548	1,491	0.031320	−10,448	1,732
New York	0.001665	−34,650	16,464	0.002663	112,661	6,318
North Carolina	0.011615	−24,756	6,173	0.018443	−47,032	5,470
North Dakota	0.008821	−2,124	666	0.009315	−6,902	569
Ohio	0.004213	−35,115	8,926	0.012912	−62,926	7,384
Oklahoma	0.009985	−14,260	3,595	0.043804	−834	1,963
Oregon	0.005453	−11,903	4,228	0.007854	−1,130	2,479
Pennsylvania	0.000416	−83,888	20,828	0.015999	7,428	7,478
Rhode Island	0.020288	−5,285	689	0.054010	−3,549	392
South Carolina	0.010860	−28,489	4,734	0.014430	−45,449	3,850
South Dakota	0.015625	−1,308	673	0.010036	−12,819	972
Tennessee	0.012744	−18,120	4,952	0.006234	−59,874	4,533
Texas	0.013120	−32,602	9,846	0.004451	17,951	10,125
Utah	0.016880	−6,103	1,982	0.009898	−14,696	1,820
Vermont	0.001944	−15,681	1,579	0.053670	−11,001	718
Virginia	0.013836	6,730	4,561	0.023587	−26,835	3,063
Washington	0.005950	−19,151	5,965	0.053290	−94,821	3,905
West Virginia	−0.000448	−5,976	2,586	0.008732	−9,638	1,901
Wisconsin	0.009191	−19,263	5,304	0.006010	−93,592	9,429
Wyoming	0.017028	−1,035	1,010	0.018940	−9,791	1,193

Table D-8. **a, b, and c Parameters for Calculating Approximate Standard Errors for Days or Trips for the Detail Sportsmen Sample**

State	Sportsmen and anglers 16+			Hunters 16+		
	a	b	c	a	b	c
United States	−0.000144	−28,529	17,917	0.000069	9,445	5,567
Alabama	−0.002322	−8,057	10,284	0.013585	−3,849	3,113
Alaska	0.017254	−433	344	0.007475	−775	572
Arizona	0.014448	121	2,357	0.017234	−8,222	3,986
Arkansas	0.013145	−1,560	2,761	−0.000013	468	3,079
California	0.019127	8,300	4,057	0.015920	−5,272	11,342
Colorado	0.004447	−7,501	5,350	0.027855	−2,709	2,302
Connecticut	0.006748	−1,650	2,102	0.045472	660	1,069
Delaware	0.014386	−1,429	879	0.022828	−451	376
Florida	0.004190	−7,941	9,726	0.060620	−2,325	4,311
Georgia	−0.004071	−9,819	11,283	0.018543	5,055	2,474
Hawaii	0.030213	−1,267	1,390	0.107950	−226	383
Idaho	0.001369	−1,642	2,166	0.011626	−331	1,456
Illinois	0.004376	−10,396	13,001	0.008279	−563	5,853
Indiana	−0.005679	−17,955	10,407	0.011527	−9,519	3,795
Iowa	0.002951	−2,071	4,109	0.007895	−6,046	3,143
Kansas	0.007352	−604	1,497	−0.002003	−8,016	3,489
Kentucky	−0.003142	−2,893	4,370	0.007808	−3,893	3,484
Louisiana	0.013202	−16,559	6,777	0.012199	2,044	2,135
Maine	−0.011035	−3,485	4,005	0.007157	−2,867	1,806
Maryland	0.045450	−1,164	1,915	0.035718	−1,442	2,437
Massachusetts	0.004395	−3,357	4,018	0.006853	−2,991	2,303
Michigan	−0.001452	−16,536	14,076	0.004264	−10,292	5,610
Minnesota	0.008364	−7,130	5,743	0.005830	−9,272	4,802
Mississippi	−0.017627	−10,434	11,811	−0.001552	−2,439	2,916
Missouri	0.012202	−4,169	5,187	0.006883	2,284	2,840
Montana	0.004255	−1,379	1,718	0.002052	−1,580	1,417
Nebraska	0.002607	−2,690	3,064	0.005199	−1,921	1,554
Nevada	0.003045	−1,649	1,798	0.115390	−242	411
New Hampshire	0.000214	−1,570	1,633	0.009654	640	627
New Jersey	0.010017	−4,620	5,660	0.008681	11,245	1,642
New Mexico	0.017088	−1,424	1,838	0.047235	127	827
New York	0.005934	43,758	8,137	0.000654	−10,622	7,656
North Carolina	0.002948	−6,843	6,520	0.001450	−2,510	3,978
North Dakota	0.014352	−279	583	0.004591	−486	621
Ohio	0.002097	−14,149	9,795	0.005342	−10,571	6,469
Oklahoma	−0.000714	−5,313	6,427	0.037022	−8,855	4,250
Oregon	0.028740	−2,964	3,304	0.006202	−4,366	2,940
Pennsylvania	0.017015	38,935	1,385	0.000078	−4,935	7,128
Rhode Island	0.030402	−466	557	0.049018	−158	295
South Carolina	0.006928	28,696	1,559	0.002727	−2,574	2,846
South Dakota	0.005192	−725	1,179	0.003239	−2,324	1,152
Tennessee	0.007245	1,883	2,263	0.001422	−5,173	3,626
Texas	0.001997	−17,658	19,396	0.022648	−4,099	6,813
Utah	0.003485	370	1,570	0.017024	−1,801	1,444
Vermont	0.002760	−57	890	0.000718	−2,381	887
Virginia	0.001179	−18,439	10,318	0.037767	−3,002	3,410
Washington	0.000425	−7,499	9,611	0.102630	−12,596	5,122
West Virginia	−0.010583	−5,227	4,180	0.021073	−4,218	2,077
Wisconsin	0.013691	−9,186	7,120	0.006278	−12,752	5,707
Wyoming	−0.004748	−1,159	1,555	−0.002873	−917	949

Table D-9. **a and b Parameters for Calculating Approximate Standard Errors of Levels of Nonconsumptive Users for the Detail Nonconsumptive User Sample**

State	Primary nonresidential users		All nonconsumptive users[1]	
	a	b	a	b
United States	−0.000094	10,345	−0.000088	9,722
Alabama	−0.000691	2,398	−0.001069	2,946
Alaska	−0.002091	817	−0.002814	1,010
Arizona	−0.002184	4,125	−0.002653	4,757
Arkansas	−0.001418	2,248	−0.002136	2,922
California	−0.002838	28,828	−0.002973	30,038
Colorado	−0.001952	3,708	−0.002368	4,342
Connecticut	−0.001824	2,789	−0.002321	3,411
Delaware	−0.001447	549	−0.001863	655
Florida	−0.002349	13,284	−0.002524	14,134
Georgia	−0.001212	4,275	−0.001975	5,970
Hawaii	−0.000971	633	−0.001289	735
Idaho	−0.001659	1,156	−0.002100	1,367
Illinois	−0.001728	8,929	−0.002028	10,182
Indiana	−0.001708	5,021	−0.001959	5,607
Iowa	−0.001686	2,878	−0.002792	4,312
Kansas	−0.001952	2,592	−0.002742	3,420
Kentucky	−0.001451	3,024	−0.001980	3,807
Louisiana	−0.001014	2,775	−0.001824	3,813
Maine	−0.001892	1,517	−0.002362	1,804
Maryland	−0.001963	4,595	−0.001950	4,572
Massachusetts	−0.001912	5,006	−0.002247	5,768
Michigan	−0.002008	9,330	−0.002276	10,367
Minnesota	−0.002043	5,423	−0.002594	6,625
Mississippi	−0.001392	2,284	−0.001461	2,346
Missouri	−0.001834	5,297	−0.002590	7,047
Montana	−0.002077	1,092	−0.002716	1,346
Nebraska	−0.001555	1,654	−0.002729	2,527
Nevada	−0.001814	1,178	−0.002228	1,375
New Hampshire	−0.001682	1,109	−0.002220	1,391
New Jersey	−0.001732	5,466	−0.002117	6,472
New Mexico	−0.001757	1,581	−0.002017	1,727
New York	−0.001824	12,284	−0.002377	15,325
North Carolina	−0.001231	4,225	−0.001367	4,572
North Dakota	−0.001537	605	−0.002130	759
Ohio	−0.001857	9,338	−0.002332	11,413
Oklahoma	−0.002464	4,517	−0.002751	4,942
Oregon	−0.001941	3,217	−0.002337	3,766
Pennsylvania	−0.001747	10,161	−0.002241	12,498
Rhode Island	−0.001822	930	−0.002427	1,184
South Carolina	−0.001428	2,505	−0.002508	3,662
South Dakota	−0.001219	612	−0.001646	738
Tennessee	−0.002210	5,527	−0.002570	6,262
Texas	−0.001836	12,634	−0.002091	13,972
Utah	−0.001964	1,871	−0.003083	2,619
Vermont	−0.001677	665	−0.001786	699
Virginia	−0.002110	6,539	−0.003464	9,915
Washington	−0.002340	6,783	−0.002322	6,739
West Virginia	−0.001790	1,985	−0.001623	1,873
Wisconsin	−0.001793	5,306	−0.002414	6,742
Wyoming	−0.002136	717	−0.002535	809

[1]Use these parameters for: total nonconsumptive users and primary residential users.

Table D-10. **a, b, and c Parameters for Calculating Approximate Standard Errors for Expenditures and Days or Trips for Nonconsumptive Users**

State	Expenditures			Days or trips		
	a	b	c	a	b	c
United States	0.001215	−282,226	45,885	0.000987	−60,563	52,811
Alabama	0.024139	−9,379	4,098	0.018332	−1,449	3,778
Alaska	0.026812	−8,153	1,170	0.014523	−805	1,206
Arizona	0.023064	−20,364	5,437	0.013842	−6,283	8,922
Arkansas	0.030419	−27,113	3,108	0.021343	−3,154	3,606
California	0.062820	−40,744	20,464	0.083140	−37,154	43,490
Colorado	0.070850	−18,657	5,204	0.056430	−6,763	7,756
Connecticut	0.019390	−11,363	4,382	0.016898	−6,496	6,367
Delaware	0.023965	−4,782	935	0.009040	−629	1,084
Florida	0.020540	−30	29,437	0.001485	−25,490	24,770
Georgia	0.013762	−16,567	9,698	0.058840	−3,549	6,485
Hawaii	0.045890	−2,820	878	0.022950	−735	1,391
Idaho	0.014826	−4,670	1,827	0.009063	−3,202	3,010
Illinois	0.031830	−69,745	17,258	0.003981	−13,077	17,614
Indiana	0.015877	15,202	9,997	0.002404	−6,885	10,423
Iowa	0.016991	−22,437	4,615	0.018967	−2,973	5,811
Kansas	0.025093	−9,399	3,851	0.002322	−3,201	4,962
Kentucky	0.016727	−47,093	7,655	0.023920	−4,865	8,041
Louisiana	0.023500	−32,823	5,830	0.059580	−4,383	5,780
Maine	0.010085	−16,556	3,017	0.001313	−2,978	3,563
Maryland	0.005947	26,331	9,024	0.047920	−7,463	8,233
Massachusetts	0.009778	−4,391	10,512	0.005279	−11,297	12,718
Michigan	0.048560	−69,873	12,523	0.009817	−14,832	19,522
Minnesota	0.022050	−40,965	10,643	0.044920	−7,952	9,931
Mississippi	0.031680	37,625	2,650	0.031717	−2,263	3,602
Missouri	0.043330	−17,567	11,392	0.013076	−24,564	14,369
Montana	0.025931	−3,917	1,783	0.005356	−2,059	2,364
Nebraska	0.024994	54,614	1,058	0.018741	−2,335	3,580
Nevada	0.033870	−16,308	2,314	0.013184	−1,504	2,185
New Hampshire	0.011799	−8,549	2,135	0.012387	−1,752	2,449
New Jersey	0.010069	−45,658	10,664	0.011673	−3,259	8,525
New Mexico	0.038710	15,720	2,553	0.058800	−1,872	2,196
New York	0.018378	−93,452	24,061	0.017948	−6,374	16,002
North Carolina	0.007832	−65,772	9,255	0.013342	−6,894	10,406
North Dakota	0.024253	434	593	0.023215	−734	1,129
Ohio	0.014133	59,639	10,783	0.009514	−29,385	23,110
Oklahoma	0.043254	−43,610	6,312	0.054340	−37,951	13,662
Oregon	0.028490	14,151	5,638	0.010153	−5,199	7,825
Pennsylvania	0.013522	−32,299	17,430	0.019134	−12,423	21,369
Rhode Island	0.033382	−203	1,218	0.009271	−1,475	1,704
South Carolina	0.025928	−9,766	3,216	0.067680	−2,369	4,161
South Dakota	0.045880	−13,835	1,422	0.015271	−3,894	2,242
Tennessee	0.036348	−10,592	5,006	0.011982	−27,873	11,873
Texas	0.036702	−277,947	23,888	0.009839	−31,816	33,326
Utah	0.034840	−2,067	2,771	0.003765	−2,307	3,918
Vermont	0.011607	−5,393	1,249	0.008395	−2,664	1,666
Virginia	0.010021	3,592	8,595	0.016696	−10,043	10,862
Washington	0.019285	59,681	7,549	0.008059	−6,772	12,897
West Virginia	0.017676	894	1,702	0.087620	−2,413	2,289
Wisconsin	0.014365	40,476	8,693	−0.001194	−15,463	13,311
Wyoming	0.014594	−9,350	1,442	0.002206	−1,753	2,011