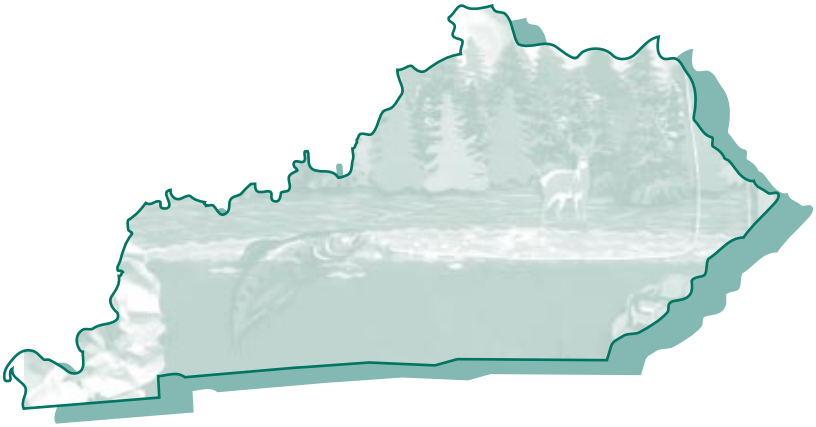
U.S. Fish and Wildlife Service

1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

Kentucky



1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation

Kentucky

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U.S. Department of the Interior
Bruce Babbitt, Secretary

FISH AND WILDLIFE SERVICE
Jamie Rappaport Clark, Director

U.S. Department of Commerce
William M. Daley, Secretary
Robert L. Mallett, Deputy Secretary

Economics and Statistics Administration
Lee Price, Acting Under Secretary
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James F. Holmes, Acting Director

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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure their development in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

The mission of the Department's Fish and Wildlife Service is to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people. The Service is responsible for national programs of vital importance to our natural resources, including administration of the Federal Aid in Sport Fish Restoration and the Federal Aid of Wildlife Restoration Programs. These two grant programs provide financial assistance to the States for projects to enhance and protect fish and wildlife resources and to assure their availability to the public for recreational purposes. Funds from the administrative portion of these programs are used to pay for the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation.

U.S. Department of Commerce
William M. Daley, Secretary
Robert L. Mallett, Deputy Secretary

Economics and Statistics Administration
Lee Price, Acting Under Secretary for Economic Affairs

BUREAU OF THE CENSUS
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Foreword

Ours is a country with a rich tradition of enjoying nature. Whether casting a fly or snapping a shutter, Americans find wildlife-associated recreation a source of lifelong enjoyment and renewal.

The results of the 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation reflect this national passion for wild things and wild places. Seventy-seven million Americans 16 years or older, or 40 percent of the adult population, enjoyed some form of wildlife-related recreation during 1996. In doing so, they pumped $100 billion into the national economy, supporting hundreds of thousands of jobs.

The mission of the U.S. Fish and Wildlife Service is to conserve and enhance our nation's fish and wildlife and its habitat. The Service works in partnership with state wildlife agencies, conservation organizations, sportsmen's groups, local governments, corporations, and individual citizens to perform this mission.

For conservation efforts to be effective, however, natural resource managers need detailed information on how people use fish and wildlife resources. The 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation is the most comprehensive survey of its kind. It is an important tool for natural resource professionals in planning and managing these resources for the enjoyment and benefit of all Americans.

The 1996 Survey was requested by the States through the International Association of Fish and Wildlife Agencies. It is the ninth in a series of surveys on resource use by anglers, hunters, and those who enjoy observing wildlife. The Survey has been sponsored by the Service since 1955. It is financed by hunters, anglers, and boaters through excise taxes on sporting arms, ammunition, fishing equipment, and motorboat fuels as authorized under the Federal Aid in Sport Fish and Wildlife Restoration Acts.

We can all be gratified that wildlife-related recreation and the conservation ethic that flows from it remain strong in America.

Jamie Rappaport Clark, Director
Fish and Wildlife Service
U.S. Department of the Interior

Survey Background and Method

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (Survey) has been conducted since 1955 and is one of the oldest and most comprehensive continuing recreation surveys. The purpose of the Survey is to gather information on the number of anglers, hunters, and wildlife-watching participants (formerly known as primary nonconsumptive wildlife-related participants) in the United States. Information also is collected on how often these recreationists participate and how much they spend on their activities.

The planning process for the 1996 Survey began in 1994 when the International Association of Fish and Wildlife Agencies (IAFWA) passed a resolution asking the Fish and Wildlife Service to conduct the ninth National Survey of wildlife-related recreation. Funding for the Survey came from the administrative portion of the Federal Aid in Sport Fish and Wildlife Restoration Programs.

Consultations with State and Federal agencies and nongovernmental organizations such as the Wildlife Management Institute, American Sportfishing Association, B.A.S.S., Inc., Wild Bird Feeding Institute, and American Fisheries Society started in early 1994 to ascertain survey content. Other sportsmen's organizations and conservation groups, industry representatives, and researchers also provided valuable advice on questionnaire development, data collection, and reporting.

Four regional technical committees were set up under the auspices of the IAFWA to ensure that State fish and wildlife agencies had an opportunity to participate in all phases of survey planning and design. The committees were made up of agency representatives.

The Survey was conducted in two phases by the U.S. Bureau of Census for the Fish and Wildlife Service. The first phase was the screen which began in April 1996. During the screening phase, the Bureau of Census interviewed a sample of 80,000 households nationwide, primarily by telephone, to determine who in the household had fished, hunted, or engaged in wildlife-watching activities in 1995, and who had engaged or planned to engage in those activities in 1996. In most cases, one adult household member provided information for all household members. It is important to note that the screen primarily covered 1995 activities while the next, more in-depth phase covered 1996 activities. For more information on the 1995 data, refer to Appendix B.

The second phase of the Survey consisted of detailed interviews conducted about every four months. The first interview wave began in April 1996, the second in September 1996, and the last in January 1997. Interviews were conducted with samples of likely anglers, hunters, and wildlife-watching participants who were identified in the initial screening phase. These interviews were conducted primarily by

telephone, with in-person interviews for those respondents who could not be reached by telephone. Respondents in the second survey phase were limited to those at least 16 years old. Each respondent provided information pertaining only to his or her activities and expenditures. Sample sizes were designed to provide statistically reliable results at the State level for fishing, hunting, and wildlife-watching activities. Altogether, interviews were completed for 22,578 anglers and hunters and 11,759 wildlife watchers. More detailed information on sampling procedures and response rates is found in Appendix D.

Comparability with Previous Surveys

The 1996 Survey questions and methodology were similar to those used in the 1991 Survey. Therefore, the 1996 estimates are comparable to the 1991 estimates. The 1996 Survey was the first to use computer-assisted interviews which improved the efficiency and timeliness of data collection.

The methodology of the 1996 and 1991 Surveys did differ significantly from the 1985 and 1980 Surveys, so their estimates are not directly comparable to those earlier surveys. The changes in methodology included reducing the recall period over which respondents had to remember their activities and expenditures. Previous Surveys used a 12-month recall period which resulted in greater reporting bias. Research on recall bias found that the amount of activity and expenditures reported in 12-month recall Surveys was over-estimated in comparison with the amount reported in shorter recall periods.

The trends information presented in this report takes the differences of the 1991 Survey into account in comparing its estimates with those of the 1996 Survey. See the Summary Section and Appendix C.

Highlights

Introduction

The National Survey of Fishing, Hunting, and Wildlife-Associated Recreation reports results from interviews with U.S. residents about their fishing, hunting, and other fish- and wildlife-related recreation. This report focuses on 1996 participation and expenditures of U.S. residents 16 years of age and older.

The numbers reported can be compared with those in the 1991 Survey reports. The methodology used in 1996 was similar to that used in 1991. These results should not be directly compared with the results from Surveys earlier than 1991 because of changes in methodology. These changes in methodology were made in 1991 and 1996 to improve accuracy in the information provided.

The report also provides information on participation in wildlife-related recreation in 1995, particularly of persons 6 to 15 years of age. The 1995 information is provided in Appendix B. Additional information about the scope and coverage of the Survey can be found in the Survey Background and Method section of this report. The remainder of this section defines important terms used in the Survey.

Wildlife-Associated Recreation

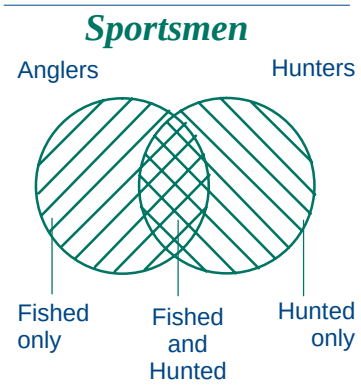
Wildlife-associated recreation includes fishing, hunting, and wildlife-watching activities. These categories are not mutually exclusive because many individuals enjoyed fish and wildlife in several ways in 1996. Wildlife-associated recreation is reported in two major categories: (1) fishing and hunting, and (2) wildlife watching (formerly referred to as nonconsumptive wildlife-related recreation). Wildlife-watching includes observing, photographing, and feeding fish and wildlife.

Fishing and Hunting

This Survey reports information about residents of the United States who fished or hunted in 1996, regardless of whether they were licensed. The fishing and hunting sections of this report are organized to report three groups: (1) sportsmen, (2) anglers, and (3) hunters.

Sportsmen

Sportsmen are persons who fished or hunted. Individuals who fished or hunted commercially in 1996 are reported as sportsmen only if they fished or hunted for recreation. The sportsmen group is composed of the three subgroups in the diagram below: (1) those who fished and



hunted, (2) those who only fished, and (3) those who only hunted. The total number of sportsmen is equal to the sum of people who only fished, only hunted, and both hunted and fished. It is not the sum of all anglers and all hunters, because those people who both fished and hunted are included in both the angler and hunter population and would be incorrectly counted twice.

Anglers

Anglers are sportsmen who only fished plus those who fished and hunted. The angler group includes not only licensed hook and line anglers, but also those who have no license and those who use special methods such as fishing with spears. Three types of fishing are reported: (1) freshwater, excluding the Great Lakes, (2) Great Lakes, and (3) saltwater. Since many anglers enjoyed more than one type of fishing, the total number of anglers is less than the sum of the three types of fishing.

Hunters

Hunters are sportsmen who only hunted plus those who hunted and fished. The hunter group includes not only licensed hunters using common hunting practices, but also those who have no license and those who engaged in hunting with a bow and arrow, muzzleloader, other primitive firearms, or a pistol or handgun. Four types of hunting are reported: (1) big game, (2) small game, (3) migratory bird, and (4) other animals. Since many hunters enjoyed more than one type of hunting, the sum of hunters for big game, small game, migratory bird, and other animals exceeds the total number of hunters.

Wildlife-Watching Activities

(formerly Nonconsumptive Wildlife-Related Recreation)

Since 1980, the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation has included information on wildlife-watching activities in addition to fishing and hunting. However, the 1991 and 1996 Surveys, unlike the 1980 and 1985 Surveys, collected data only for those activities where the primary purpose was wildlife watching (observing, photographing, or feeding wildlife). Secondary wildlife-watching activities, such as incidentally observing wildlife while pleasure driving, are not included.

Many people, including sportsmen, enjoyed wildlife-related recreation other than fishing or hunting. We refer to these nonharvesting activities, such as observing, feeding, or photographing fish and other wildlife, as wildlife-watching activities. Two types of wildlife-watching activity are reported: (1) nonresidential and (2) residential. Because some people participate in more than one type of wildlife-watching activity, the sum of participants in each type will be greater than the total number of wildlife-watching participants. Only those engaged in activities whose primary purpose was wildlife watching are included in the Survey. The two types of wildlife-watching activities are defined below.

Nonresidential

This group included persons who took trips or outings of at least 1 mile for the primary purpose of observing, feeding, or photographing fish and wildlife. Trips to fish or hunt or scout and trips to zoos, circuses, aquariums, and museums were not considered wildlife-watching activities.

Residential

This group included those whose activities are within 1 mile of home and involve one or more of the following: (1) closely observing or trying to identify birds or other wildlife; (2) photographing wildlife; (3) feeding birds or other wildlife on a regular basis; (4) maintaining natural areas of at least one-quarter acre where benefit to wildlife is the primary concern; (5) maintaining plantings (shrubs, agricultural crops, etc.) where benefit to wildlife is the primary concern; or (6) visiting public parks within 1 mile of home for the primary purpose of observing, feeding, or photographing wildlife.

Detail of Tables

Summary

Activities in the U.S. by Kentucky Residents 16 Years Old and Older

Fishing

Anglers	681,000
Days of fishing	10,306,000
Average days per angler	15
Total expenditures	$718,122,000
Trip-related	$236,484,000
Equipment and other	$481,638,000
Average per angler	$1,055
Average trip expenditure per day	$23

Hunting

Hunters	355,000
Days of hunting	5,619,000
Average days per hunter	16
Total expenditures	$342,892,000
Trip-related	$78,857,000
Equipment and other	$264,035,000
Average per hunter	$966
Average trip expenditure per day	$14

Wildlife Watching

Total wildlife-watching participants	951,000
Nonresidential	357,000
Residential	923,000
Total expenditures	$348,884,000
Trip-related	$81,991,000
Equipment and other	$266,893,000
Average per participant	$367

Activities by Participants 16 Years Old and Older in Kentucky

Fishing

Anglers	817,000
Days of fishing	9,631,000
Average days per angler	12
Total expenditures	$517,029,000
Trip-related	$222,149,000
Equipment and other	$294,880,000
Average per angler	$629
Average trip expenditure per day	$23

Hunting

Hunters	377,000
Days of hunting	5,454,000
Average days per hunter	14
Total expenditures	$342,868,000
Trip-related	$70,280,000
Equipment and other	$272,588,000
Average per hunter	$785
Average trip expenditure per day	$13

Wildlife Watching

Total wildlife-watching participants	1,081,000
Nonresidential	463,000
Residential	923,000
Total expenditures	$336,522,000
Trip-related	$70,759,000
Equipment and other	$265,763,000
Average per participant	$309

Wildlife-Associated Recreation

Participation by Kentucky Residents

The 1996 Survey revealed that 1.2 million Kentucky residents 16 years old and older engaged in fishing, hunting, or wildlife-watching activities. Of the total number of participants, 681 thousand fished, 355 thousand hunted, and 951 thousand participated in wildlife-watching activities where the enjoyment of wildlife was the primary purpose of the activity. Wildlife-watching activities included observing, feeding, and photographing wildlife.

The sum of anglers, hunters, and wildlife-watching participants exceeds the total number of participants in wildlife-related recreation because many individuals engaged in more than one wildlife-related activity.

Expenditures in Kentucky

In 1996, state residents and nonresidents spent $1.6 billion on wildlife-associated recreation in Kentucky. Of that total, trip-related expenditures were $363 million and equipment purchases totaled $1.1 billion. The remaining $103 million was spent on licenses, contributions, land ownership and leasing, and other items and services.

Participants in Wildlife-Associated Recreation

(State residents 16 years old and older)

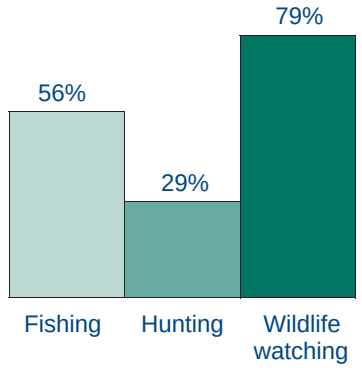
Total	**1.2 million**
Sportsmen	
Total	**779 thousand**
Anglers	681 thousand
Hunters	355 thousand
Wildlife Watching	
Total	**951 thousand**
Residential	923 thousand
Nonresidential	357 thousand

Source: Table 3, 28, 39, and other survey data

Detail does not add to total because of multiple responses.

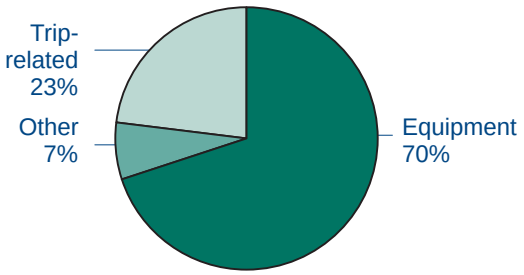
Percent of State Residents Participating, by Activity

Total = 100%



In-State Wildlife-Associated Recreation Expenditures

Total = $1.6 billion



Sportsmen

In 1996, there were 933 thousand state resident and nonresident sportsmen 16 years old and older who fished or hunted in Kentucky. This group included 817 thousand anglers (87 percent of all sportsmen) and 377 thousand hunters (40 percent of all sportsmen). Of the 933 thousand sportsmen who fished or hunted in the state, 556 thousand (60%) fished but did not hunt, in Kentucky. Another 117 thousand (13%) hunted but did not fish there. The remaining 260 thousand (28%) fished and hunted in Kentucky in 1996.

Sportsmen Participation in State

(State residents and nonresidents 16 years old and older)

Sportsmen (fished or hunted)	**933 thousand**
Anglers	**817 thousand**
Fished only	556 thousand
Fished and hunted	260 thousand
Hunters	**377 thousand**
Hunted only	117 thousand
Hunted and fished	260 thousand

Source: Table 1

Detail does not add to total because of multiple responses.

Anglers

Participants and Days of Fishing

In 1996, there were 817 thousand state residents and nonresidents 16 years old and older who fished in Kentucky. Of this total, 636 thousand anglers (78%) were state residents and 181 thousand anglers (22%) were nonresidents. Anglers fished a total of 9.6 million days in Kentucky—an average of 12 days per angler. State residents fished 8.9 million days, 92 percent of all fishing days within Kentucky, while nonresidents fished 755 thousand days—8 percent of all fishing days in the state.

Nearly 681 thousand Kentuckians 16 years old and older fished in the United States in 1996. These anglers fished a total of 10.3 million days. Approximately 636 thousand resident anglers (93%) fished in Kentucky. They spent 8.9 million days, 86 percent of their total fishing days, fishing in their resident state.

Some state residents fished only in other states or fished in other states as well as Kentucky. In 1996, 147 thousand anglers fished in other states, 22 percent of the resident angler total. They fished 1.4 million days as nonresidents, representing 14 percent of all days fished by Kentucky residents. For further details about fishing in Kentucky, see Table 3.

Anglers in State

(State residents and nonresidents 16 years old and older)

Anglers	**817 thousand**
Resident	636 thousand
Nonresident	181 thousand
Days of Fishing	**9.6 million**
Resident	8.9 million
Nonresident	755 thousand

Source: Table 3

In-State/Out-of-State

(State residents 16 years old and older)

Kentucky anglers	**681 thousand**
In Kentucky	636 thousand
In other states	147 thousand
Days of fishing	**10.3 million**
In Kentucky	8.9 million
In other states	1.4 million

Source: Table 3

Detail does not add to total because of multiple responses.

Fishing Expenditures in Kentucky

Anglers 16 years old and older spent $517 million on fishing expenses in Kentucky in 1996. Trip-related expenditures including food and lodging, transportation, and other expenses such as equipment rental or boat fuel totaled $222 million, 43 percent of all their fishing expenditures. They spent $72 million on food and lodging and $62 million on transportation. Other trip-related expenses such as equipment rental, bait, and fuel totaled $88 million. Each angler spent an average of $272 on trip-related costs during 1996.

Anglers spent $280 million on equipment in Kentucky in 1996, 54 percent of all fishing expenditures. Fishing equipment (rods, reels, line, etc.) totaled $89 million, 32 percent of the equipment total. Auxiliary equipment expenditures (tents, special fishing clothes, etc.) and special equipment expenditures (boats, trail bikes, etc.) amounted to $191 million, 68 percent of the equipment total. Special and auxiliary equipment are items that were purchased primarily for fishing, but could be used in activities other than fishing.

The purchase of other items such as magazines, membership dues, licenses, permits, stamps, and land leasing and ownership amounted to $15 million—3 percent of all fishing expenditures. For more details about fishing expenditures in Kentucky, see Tables 18, 20, and 21.

In-State Fishing Expenditures

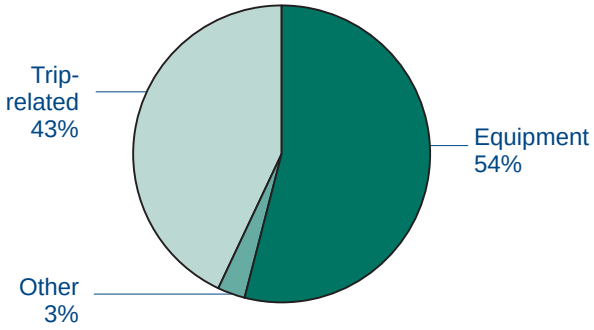
(State residents and nonresidents 16 years old and older)

Total	**$517 million**
Trip-related	$222 million
Equipment	$280 million
Fishing	$89 million
Auxiliary and special	$191 million
Other	$15 million

Source: Table 18

In-State Fishing Expenditures

Total: $517 million



Hunters

Participants and Days of Hunting

In 1996, there were 377 thousand residents and nonresidents 16 years old and older who hunted in Kentucky. Resident hunters numbered 348 thousand accounting for 92 percent of the hunters in Kentucky. There were 30 thousand nonresidents who hunted in Kentucky—8 percent of the state's hunters. Residents and nonresidents hunted 5.5 million days in 1996—an average of 14 days per hunter. Residents hunted on 5.3 million days in Kentucky or 98 percent of all hunting days, while nonresidents spent 117 thousand days hunting in Kentucky, 2 percent of all hunting days.

There were 355 thousand Kentucky residents 16 years old and older who hunted in the United States in 1996. Of the total 5.6 million days of hunting by state residents, 5.3 million days (95 percent of the total) were spent pursuing game within Kentucky.

Some state residents hunted only in another state or in another state as well as in Kentucky. Altogether, 44 thousand Kentucky hunters, 12 percent of the total, hunted as nonresidents in other states. Their 282 thousand days of hunting in other states represented 5 percent of all days Kentucky residents spent hunting in 1996. For more information on hunting activities by Kentucky residents, see Table 3.

Hunters in State

(State residents and nonresidents 16 years old and older)

Hunters	**377 thousand**
Resident	348 thousand
Nonresident	30 thousand
Days of hunting	**5.5 million**
Resident	5.3 million
Nonresident	117 thousand

Source: Table 3

In-State/Out-of-State

(State residents 16 years old and older)

Kentucky hunters	**355 thousand**
In Kentucky	348 thousand
In other states	44 thousand
Days of hunting	**5.6 million**
In Kentucky	5.3 million
In other states	282 thousand

Source: Table 3

Detail does not add to total because of multiple responses.

Hunting Expenditures in Kentucky

Hunters 16 years old and older spent $343 million in Kentucky in 1996. Trip-related expenses such as food and lodging, transportation, and other trip costs, including equipment rental fees, cost hunters $70 million, 20 percent of their total expenditures. They spent $41 million on food and lodging and $23 million on transportation. Other expenses such as equipment rental totaled $66 million for the year. The average trip-related expenditure per hunter was $186.

Hunters spent $207 million on equipment, 60 percent of all hunting expenditures. Hunting equipment (guns, ammunition, etc.) comprised 79 percent of all equipment costs, $163 million. Hunters spent $44 million on auxiliary equipment (tents, special hunting clothes, etc.) and special equipment (boats, trail bikes, etc.), accounting for 21 percent of total equipment expenditures for hunting. Special and auxiliary equipment are items that were purchased primarily for hunting but could be used in activities other than hunting.

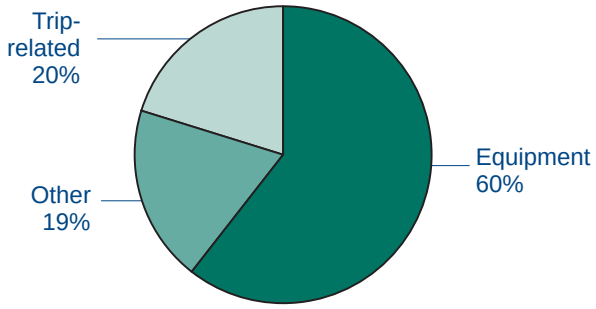
The purchase of other items such as magazines, membership dues, licenses, permits, and land leasing and ownership cost hunters $66 million—19 percent of all hunting expenditures. For more details on hunting expenditures in Kentucky, see Tables 19, 20, and 21.

In-State Hunting Expenditures
(State residents and nonresidents 16 years old and older)

Total	**$343 million**
Trip-related	$70 million
Equipment	$207 million
Hunting	$163 million
Auxiliary and special	$44 million
Other	$66 million

Source: Table 19

In-State Hunting Expenditures
Total: $343 million



Wildlife-Watching Activities

Participants and Days of Activity

In 1996, approximately 951 thousand state residents 16 years old and older participated in wildlife-watching activities such as observing, feeding, or photographing wildlife. Some state residents enjoyed their activities close to home and are called "residential" participants. There were 923 thousand residential participants in Kentucky in 1996.

Those persons whose primary purpose was to enjoy wildlife at least 1 mile from home are called "nonresidential" participants. People participating in nonresidential activities in Kentucky in 1996 numbered 463 thousand, of which 326 thousand were state residents and 137 thousand were non-residents.

In 1996, more than 326 thousand Kentuckians 16 years old and older enjoyed nonresidential wildlife-watching recreation activities within their state of residence. Of this group, 324 thousand participants observed wildlife, 187 thousand fed wildlife, and 135 thousand photographed wildlife. Since some individuals engaged in more than one of the three nonresidential activities during the year, the sum of wildlife observers, feeders, and photographers exceeds the total number of primary nonresidential participants.

Nonresidential In-State
(State residents and nonresidents 16 years old and older)

Participants, total	**463 thousand**
Observe wildlife	458 thousand
Feed wildlife	219 thousand
Photograph wildlife	205 thousand
Days, total	**5.8 million**
Observe wildlife	5.3 million
Feed wildlife	2.7 million
Photograph wildlife	584 thousand

Source: Table 30

Detail does not add to total because of multiple responses.

Kentuckians spent 5.3 million days engaged in nonresidential wildlife-watching activities in their state. During 1996, they spent 4.8 million days observing wildlife, 2.6 million days feeding wildlife, and 400 thousand days photographing wildlife. The sum of days observing, feeding, and photographing wildlife exceeds the total days of wildlife-watching activity because individuals may have engaged in more than one activity on some days. For further details about nonresidential activities, see Table 30.

Kentucky residents also took an active interest in wildlife around their homes. In 1996, 923 thousand state residents enjoyed observing, feeding, and photographing wildlife within 1 mile of their homes. Of this residential group, 848 thousand fed wildlife, 637 thousand observed wildlife, and 200 thousand photographed wildlife around their homes. Another 139 thousand participants maintained natural areas of 1/4 acre or more for the primary benefit of wildlife; 130 thousand participants maintained plantings for the benefit of wildlife; and 101 thousand residential participants visited public parks and natural areas within a mile of home. Adding the participants in these six activities results in a sum that exceeds the total number of residential participants because many people participated in more than one type of residential activity. For further details about Kentucky residents participating in residential wildlife-watching activities, see Table 33.

Residential Participants
(State residents 16 years old and older)

Total	**923 thousand**
Feed wildlife	848 thousand
Observe wildlife	637 thousand
Photograph wildlife	200 thousand
Maintain natural areas	139 thousand
Maintain plantings	130 thousand
Visit public areas	101 thousand

Source: Table 33

Detail does not add to total because of multiple responses.

Wildlife-Watching Expenditures in Kentucky

Participants 16 years old and older spent $337 million on wildlife-watching activities in Kentucky in 1996. Trip-related expenditures for wildlife-watching participants, including food and lodging ($39 million), transportation ($22 million), and other expenses such as equipment rental ($10 million) amounted to $71 million—21 percent of all wildlife-watching expenditures by participants. The average trip-related expenditure for nonresidential participants was $153 per person in 1996.

Wildlife-watching participants spent a total of $244 million on equipment—72 percent of all their expenditures. Specifically, wildlife-watching equipment (binoculars, special clothing, etc.) totaled $85 million, 35 percent of the equipment total. Auxiliary equipment expenditures (tents, backpacking equipment, etc.) and special equipment expenditures (campers, trucks, etc.) amounted to $158 million, 65 percent of all equipment costs. Special and auxiliary equipment are items that were purchased primarily for wildlife-watching recreation but could be used in activities other than wildlife-watching activities.

Other items purchased by wildlife-watching participants such as magazines, membership dues, and contributions, land leasing and ownership, and plantings totaled $22 million, 7 percent of all wildlife-watching expenditures. For more details about wildlife-watching expenditures in Kentucky, see Table 35.

In-State Wildlife-Watching Expenditures

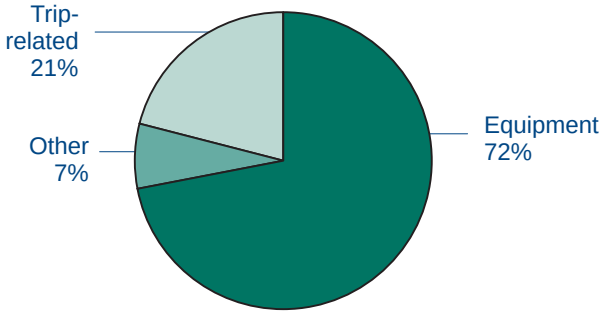
(State residents and nonresidents 16 years old and older)

Total	**$337 million**
Trip-related	$71 million
Equipment	$244 million
Wildlife-watching	$85 million
Auxiliary and special	$158 million
Other	$22 million

Source: Table 35

In-State Wildlife-Watching Expenditures

Total: $337 million



1991-1996 Survey Comparisons

Comparing the estimates from the 1991 and 1996 National Surveys provides a picture of wildlife-related recreation in the 1990's in Kentucky. Only the most general recreation estimates are presented here.

The correct way to compare estimates from two surveys is not to compare the estimates themselves, but to compare the confidence intervals around the estimates. A 90-percent confidence interval around an estimate gives the range of estimates that 90 percent of all possible representative samples would provide. If the 90-percent confidence intervals of two estimates overlap, it is not possible to say the two estimates are statistically different.

The state resident estimates cover the participation and expenditure activity of Kentucky residents anywhere in the U.S. The in-state estimates cover the participation, day, and expenditure activity of U.S. residents in Kentucky.

The expenditure estimates were made comparable by correcting the 1991 estimate for inflation and subtracting from the 1996 estimate the items that were not included in 1991. These expenditure estimates will not match the estimates presented elsewhere in this report.

Fishing
(Numbers in thousands)

	1991	1996	Percent change
State resident anglers	647	681	*
Anglers in-state	766	817	*
Days in-state	9,895	9,631	*
In-state trip-related expenditures	$187,001	$220,868	*
Total expenditures by state residents	$540,207	$716,754	*

** No change at the 90-percent level of significance.*

Hunting
(Numbers in thousands)

	1991	1996	Percent change
State resident hunters	340	355	*
Hunters in-state	370	377	*
Days in-state	6,042	5,454	*
In-state trip-related expenditures	$82,820	$66,745	*
Total expenditures by state residents	$272,455	$339,537	*

** No change at the 90-percent level of significance.*

Nonresidential Wildlife Watching
(Numbers in thousands)

	1991	1996	Percent change
State resident participants	382	357	*
Participants in-state	580	463	*
Days in-state	4,636	5,811	*

** No change at the 90-percent level of significance.*

Residential Wildlife Watching
(Numbers in thousands)

	1991	1996	Percent change
Total participants	1,175	923	–21%
Observers	800	637	–20%
Feeders	1,085	848	–22%

Wildlife-Watching Expenditures
(Numbers in thousands)

	1991	1996	Percent change
Trip–related expenditures by state residents	$69,047	$81,991	*
Total expenditures by state residents	$208,947	$337,651	*

** No change at the 90-percent level of significance.*

Guide to Statistical Tables

Purpose and Coverage of Tables

The statistical tables of this report were designed to meet a wide range of needs for those interested in knowing about wildlife-related recreation. Special terms used in these tables are defined in Appendix A.

The tables are based on responses to the 1996 Survey which was designed to collect data about participation in wildlife-related recreation. To have taken part in the Survey, a respondent must have been a U.S. resident (a resident of one of the 50 states or the District of Columbia). No one residing outside the United States (including U.S. citizens) was eligible for interviewing. Therefore, reported state and national totals do not include participation by those who were not U.S. residents or who were residing outside the United States.

Comparability With Previous Surveys

The numbers reported can be compared with those in the 1991 Survey Reports. The methodology used in 1996 was similar to that used in 1991. These results should not be directly compared to results from Surveys earlier than 1991 since there were major changes in methodology. These changes were made to improve accuracy in the information provided.

Coverage of an Individual Table

Since the Survey covers many activities in various places by participants of different ages, all table titles, headnotes, stubs, and footnotes are designed to identify and articulate each item being reported in the table. For example, the title of Table 2 shows that data about anglers and hunters, their days of participation, and their number of trips are being reported by type of activity. By contrast, the title of Table 6 indicates that it contains data on freshwater anglers and the days they fished for different species of fish.

Percentages Reported in the Tables

Percentages are reported in the tables for the convenience of the user. When exclusive groups are being reported, the base of a percentage is apparent from its context because the percents add to 100 percent (plus or minus a rounding error). For example, if a table reports the number of trips taken by big game hunters (51 percent), those taken by small game hunters (29 percent), those taken by migratory bird hunters (10 percent), and those taken by sportsmen hunting other animals (10 percent), these would form 100 percent because they are exclusive categories.

Percents should not add to 100 when nonexclusive groups are being reported. Using Table 2 as an example again, note that adding the percentages associated with total number of big game hunters, total small game hunters, total migratory bird hunters, and total hunters of other animals will not yield total hunters (100 percent) because respondents could hunt for more than one type of game.

When the base of the percentage may not be apparent in context, it is identified in a footnote. For example, Table 11 reports 3 percentages with different bases: one for the number of hunters, one for the number of trips, and one for days of hunting. Footnotes are used to clarify the bases of the reported percentages.

Footnotes to the Tables

Footnotes are used to clarify the information or items that are being reported in a table. Symbols in the body of a table indicate important footnotes. These symbols are used in the tables to refer to the same footnote each time they appear:

*	Estimate based on a small sample size.
...	Sample size too small to report data reliably.
W	Less than .5 dollars.
Z	Less than .5 percent.
X	Not applicable.
NA	Not asked.

Estimates based upon fewer than 10 responses are regarded as being based on a sample size that is too small for reliable reporting. An estimate based upon at least 10 but fewer than 30 responses is treated as an estimate based on a small sample size. Other footnotes appear, as necessary, to qualify or clarify the estimates reported in the tables.

In addition, these two important footnotes appear frequently:

- Detail does not add to total because of multiple responses.
- Detail does not add to total because of multiple responses and nonresponse.

"Multiple responses" is a term used to reflect the fact that individuals or their characteristics fall into more than one category. Using Table 2 as an example, those who fished in saltwater and freshwater appear in both of these totals. Yet each angler is represented only once in the "Total, all fishing" row. Similarly, those who hunt for big game and small game are counted only once as a hunter. Therefore, totals may be smaller than the sum of subcategories when multiple responses exist.

"Nonresponse" exists because the Survey questions were answered voluntarily and some respondents did not or could not answer all of the questions. The effect of nonresponses is illustrated in Table 15, where the reported total for fishing and hunting expenditures is greater than the sum of reported fishing expenditures plus reported hunting expenditures. This occurs because some respondents did not specify either "hunting" or "fishing" as the primary purpose of the purchase. As a result, it is known that the expenditures were for fishing or hunting, but it is not known whether they were primarily for fishing or primarily for hunting, which was the basis for putting them in the individual fishing and hunting expenditure tables. Totals are greater than the sum of subcategories when nonresponses have occurred.

Table 1. Fishing and Hunting In-State, by Resident and Nonresident Sportsmen: 1996

(Population 16 years old and older. Numbers in thousands)

Sportsmen	Total, state residents and nonresidents		Residents		Nonresidents	
	Number	Percent of sportsmen	Number	Percent of resident sportsmen	Number	Percent of nonresident sportsmen
Total sportsmen	**933**	**100**	**729**	**100**	**204**	**100**
Total anglers	**817**	**87**	**636**	**87**	**181**	**89**
Fished only	556	60	382	52	174	85
Fished and hunted	261	28	254	35	...	...
Total hunters	**377**	**40**	**348**	**48**	***30**	***15**
Hunted only	117	13	94	13	...	...
Hunted and fished	261	28	254	35	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

Table 2. Resident Anglers and Hunters, Days of Participation, and Trips, by Type of Fishing and Hunting: 1996

(Population 16 years old and older. Numbers in thousands)

Type of fishing and hunting	Participants		Days of participation		Trips	
	Number	Percent	Number	Percent	Number	Percent
FISHING						
Total, all fishing	**681**	**100**	**10,306**	**100**	**8,643**	**100**
Total, all freshwater	651	96	9,837	95	8,544	99
Freshwater, except Great Lakes	651	96	9,801	95	8,539	99
Great Lakes	...	...	...	...	...	...
Saltwater	*37	*5	*407	*4	*100	*1
HUNTING						
Total, all hunting	**355**	**100**	**5,619**	**100**	**5,656**	**100**
Big game	266	75	2,420	43	2,118	37
Small game	225	63	2,290	41	2,179	39
Migratory bird	75	21	765	14	772	14
Other animals	*48	*13	*599	*11	*587	*10

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

Table 3. Anglers and Hunters, Trips, and Days of Participation: 1996

(Population 16 years old and older. Numbers in thousands)

Anglers and hunters, trips, and days of participation	Activity in-state						Activity by state residents					
	Total, state residents and nonresidents		State residents		Nonresidents		Total, in state of residence and in other states		In state of residence		In other states	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
FISHING												
Total anglers	817	100	636	78	181	22	681	100	636	93	147	22
Total trips	8,332	100	7,915	95	418	5	8,643	100	7,915	92	729	8
Total days of fishing	9,631	100	8,876	92	755	8	10,306	100	8,876	86	1,430	14
Average days of fishing	12	(X)	14	(X)	4	(X)	15	(X)	14	(X)	10	(X)
HUNTING												
Total hunters	377	100	348	92	*30	*8	355	100	348	98	*44	*12
Total trips	5,578	100	5,494	98	*84	*2	5,656	100	5,494	97	*162	*3
Total days of hunting	5,454	100	5,337	98	*117	*2	5,619	100	5,337	95	*282	*5
Average days of hunting	15	(X)	15	(X)	*4	(X)	16	(X)	15	(X)	*6	(X)

* Estimate based on a small sample size. (X) Not applicable.

Note: Detail does not add to total because of multiple responses.

Table 4. Resident Anglers and Hunters by Place Fished or Hunted : 1996

(Population 16 years old and older. Numbers in thousands)

Place	Anglers		Hunters	
	Number	Percent	Number	Percent
PLACE FISHED OR HUNTED				
Total, all places	**681**	**100**	**355**	**100**
In state of residence only	534	78	311	88
In state of residence and other states	102	15	*37	*10
In other states only	*45	*7	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail may not add to total because of multiple responses and nonresponse.

Table 5. Freshwater Anglers, Trips, and Days of Fishing, and Type of Water: 1996

(Population 16 years old and older. Numbers in thousands)

Anglers, trips, and days of fishing	Activity in-state					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
Total anglers	**772**	**100**	**626**	**81**	**146**	**19**
Total trips	**8,332**	**100**	**7,915**	**95**	**418**	**5**
Total days of fishing	**9,631**	**100**	**8,876**	**92**	**755**	**8**
Average days of fishing	13	(X)	14	(X)	5	(X)
ANGLERS						
Total, all types of water	**772**	**100**	**626**	**81**	**146**	**19**
Ponds, lakes or reservoirs	710	100	571	81	138	19
Rivers or streams	278	100	229	82	*49	*18
DAYS OF FISHING						
Total, all types of water	**9,631**	**100**	**8,876**	**92**	**755**	**8**
Ponds, lakes or reservoirs	7,333	100	6,666	91	667	9
Rivers or streams	2,778	100	2,597	94	*181	*6

* Estimate based on a small sample size. (X) Not applicable.

Note: Detail does not add to total because of multiple responses.

Table 6. Freshwater Anglers and Days of Fishing, by Type of Fish: 1996

(Population 16 years old and older. Numbers in thousands)

Anglers and days of fishing	Activity in-state					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
ANGLERS						
Total, all types of fish	**772**	**100**	**626**	**81**	**146**	**19**
Crappie	233	100	193	83	*40	*17
Panfish	220	100	203	92	...	...
White bass, striped bass, striped bass hybrids	199	100	153	77	*45	*23
Black bass	405	100	339	84	*66	*16
Catfish, bullheads	251	100	239	95	...	...
Walleye, sauger	*32	*100	*28	*86	...	...
Trout	*39	*100	*33	*86	...	...
Anything[1]	198	100	167	84	...	...
Other freshwater fish	*37	*100	*37	*100	...	...
DAYS OF FISHING						
Total, all types of fish	**9,631**	**100**	**8,876**	**92**	**755**	**8**
Crappie	2,174	100	1,959	90	*215	*10
Panfish	2,024	100	1,884	93	...	...
White bass, striped bass, striped bass hybrids	1,860	100	1,611	87	*249	*13
Black bass	4,633	100	4,279	92	*354	*8
Catfish, bullheads	2,225	100	2,129	96	...	...
Walleye, sauger	*600	*100	*578	*96	...	...
Trout	*413	*100	*379	*92	...	...
Anything[1]	1,653	100	1,545	93	...	...
Other freshwater fish	*608	*100	*608	*100	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] Respondent identified "Anything" from a list of categories of fish.

Note: Detail does not add to total because of multiple responses. Excludes species where the estimate of the total was based on a sample size that was too small to report data reliably.

Table 7. Great Lakes Anglers, Trips, and Days of Fishing: 1996

(Not applicable to this state)

Table 8. Great Lakes Anglers and Days of Fishing, by Type of Fish: 1996

(Not applicable to this state)

Table 9. Saltwater Anglers, Trips, and Days of Fishing: 1996

(Not applicable to this state)

Table 10. Saltwater Anglers and Days of Fishing, by Type of Fish: 1996

(Not applicable to this state)

Table 11. Hunters, Trips, and Days of Hunting, by Type of Hunting: 1996

(Population 16 years old and older. Numbers in thousands)

Hunters, trips, and days of hunting	Activity in-state					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
HUNTERS						
Total, all hunting	**377**	**100**	**348**	**92**	***30**	***8**
Big game	282	100	266	94	...	...
Small game	226	100	216	95	...	...
Migratory bird	77	100	75	97	...	...
Other animals	*47	*100	*44	*93	...	...
TRIPS						
Total, all hunting	**5,578**	**100**	**5,494**	**98**	***84**	***2**
Big game	2,127	100	2,077	98	...	...
Small game	2,177	100	2,155	99	...	...
Migratory bird	686	100	684	100	...	...
Other animals	*588	*100	*579	*98	...	...
DAYS OF HUNTING						
Total, all hunting	**5,454**	**100**	**5,337**	**98**	***117**	***2**
Big game	2,380	100	2,289	96	...	...
Small game	2,259	100	2,233	99	...	...
Migratory bird	679	100	676	100	...	...
Other animals	*580	*100	*574	*99	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses.

Table 12. Hunters and Days of Hunting In-State, by Type of Game: 1996

(Population 16 years old and older. Numbers in thousands)

Type of game	Hunters, state residents and nonresidents		Days of hunting	
	Number	Percent	Number	Percent
Total, all types of game	**377**	**100**	**5,454**	**100**
Big game, total	**282**	**75**	**2,380**	**44**
Deer	271	72	2,003	37
Wild turkey	73	19	423	8
Small game, total	**226**	**60**	**2,259**	**41**
Rabbit, hare	138	37	1,058	19
Quail	74	20	395	7
Squirrel	146	39	970	18
Migratory birds, total	**77**	**20**	**679**	**12**
Geese	*21	*6	*273	*5
Duck	*20	*5	*224	*4
Dove	*54	*14	*320	*6
Other animals, total[1]	***47**	***12**	***580**	***11**

* Estimate based on a small sample size.

[1] Includes groundhog, raccoon, fox, coyote, crow, prairie dog, etc.

Note: Detail does not add to total because of multiple responses. Excludes species where the estimate of the total was based on a sample size that was too small to report data reliably.

Table 13. Hunters and Days of Hunting In-State, by Type of Land: 1996

(Population 16 years old and older. Numbers in thousands)

Hunters and days of hunting	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
HUNTERS						
Total, all types of land	**377**	**100**	**348**	**100**	***30**	***100**
Public land, total	*61	*16	*49	*14	...	...
Public land only	...	...	...	...	...	...
Public and private land	*46	*12	*41	*12	...	...
Private land, total	351	93	332	95	...	...
Private land only	306	81	291	84	...	...
Private and public land	*46	*12	*41	*12	...	...
DAYS OF HUNTING						
Total, all types of land	**5,454**	**100**	**5,337**	**100**	***117**	***100**
Public land[1]	*610	*11	*554	*10	...	...
Private land[2]	4,928	90	4,823	90	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] Days of hunting on public land includes both days spent solely on public land and those spent on public and private land.
[2] Days of hunting on private land includes both days spent solely on private land and those spent on private and public land.

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 14. Selected Characteristics of Resident Anglers and Hunters: 1996

(Population 16 years old and older. Numbers in thousands)

Characteristic	Population		Sportsmen (fished or hunted)			Anglers			Hunters		
	Number	Percent	Number	Percent who partici-pated	Percent of sportsmen	Number	Percent who partici-pated	Percent of anglers	Number	Percent who partici-pated	Percent of hunters
Total persons	**3,001**	**100**	**779**	**26**	**100**	**681**	**23**	**100**	**355**	**12**	**100**
Population density of residence:											
Urban	1,401	47	273	19	35	254	18	37	99	7	28
Rural	1,600	53	506	32	65	427	27	63	256	16	72
Population size of residence:											
MSA	1,279	43	286	22	37	262	20	38	106	8	30
1,000,000 or more	227	8	*37	*16	*5	*35	*15	*5	...	...	...
250,000 to 999,999	1,052	35	249	24	32	227	22	33	92	9	26
50,000 to 249,999	...	...	...	...	...	...	...	...	...	...	...
Outside MSA	1,722	57	494	29	63	419	24	62	249	14	70
Sex:											
Male	1,418	47	575	41	74	483	34	71	330	23	93
Female	1,583	53	204	13	26	198	12	29	*25	*2	*7
Age:											
16 to 17 years	119	4	*32	*27	*4	*32	*27	*5	...	...	...
18 to 24 years	319	11	104	32	13	98	31	14	*58	*18	*16
25 to 34 years	510	17	182	36	23	155	30	23	*76	*15	*21
35 to 44 years	646	22	219	34	28	195	30	29	98	15	27
45 to 54 years	494	16	112	23	14	100	20	15	*46	*9	*13
55 to 64 years	367	12	81	22	10	*53	*14	*8	*48	*13	*13
65 years and older	546	18	*51	*9	*7	*49	*9	*7	...	...	...
Race:											
White	2,832	94	754	27	97	661	23	97	337	12	95
Black	126	4	...	...	...	...	...	...	...	...	...
All others	*43	*1	...	...	...	...	...	...	...	...	...
Annual household income:											
Less than $10,000	328	11	*73	*22	*9	*69	*21	*10	...	...	...
$10,000 to $19,999	400	13	88	22	11	70	18	10	*48	*12	*13
$20,000 to $29,999	364	12	120	33	15	114	31	17	*40	*11	*11
$30,000 to $39,999	374	12	116	31	15	106	28	16	*52	*14	*15
$40,000 to $49,999	284	9	86	30	11	75	27	11	*38	*14	*11
$50,000 to $74,999	422	14	138	33	18	108	26	16	*67	*16	*19
$75,000 or more	253	8	88	35	11	*74	*29	*11	*45	*18	*13
Not reported	577	19	*72	*12	*9	*63	*11	*9	*40	*7	*11
Education:											
8 years or less	319	11	*32	*10	*4	*27	*8	*4	...	...	...
9 to 11 years	399	13	104	26	13	93	23	14	*69	*17	*19
12 years	1,187	40	326	27	42	277	23	41	171	14	48
1 to 3 years college	574	19	196	34	25	166	29	24	73	13	21
4 years college or more	522	17	123	23	16	119	23	17	*30	*6	*9

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses. "Percent who participated" shows the percent of each row's population who participated in the activity named by the column (the percent of those living in urban areas who fished, etc.). Remaining percent columns show the percent of each column's participants who are described by the row heading (the percent of anglers who lived in urban areas, etc.).

Table 15. Summary of Expenditures In-State by U.S. Residents for Fishing and Hunting: 1996

(Population 16 years old and older)

Expenditure item	Fishing and hunting			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsman (dollars)
Total	**1,221,372**	**921**	**1,326**	**1,157**
Food and lodging	112,986	668	169	121
Transportation	85,692	720	119	92
Other trip costs	93,751	627	150	100
Equipment (fishing, hunting)	272,176	652	417	248
Auxiliary equipment	72,427	317	229	77
Special equipment	503,818	98	5,141	436
Magazines and books	7,589	201	38	7
Membership dues and contributions	5,802	123	47	6
Other[1]	67,131	615	109	72
	Fishing			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per angler (dollars)
Total	**517,029**	**786**	**657**	**629**
Food and lodging	72,023	585	123	88
Transportation	62,235	630	99	76
Other trip costs	87,892	590	149	108
Fishing equipment	89,060	517	172	106
Auxiliary equipment	17,776	126	141	21
Special equipment	173,287	64	2,729	212
Magazines and books	1,941	68	28	2
Membership dues and contributions	*1,016	*36	*28	*1
Other[1]	11,800	512	23	14
	Hunting			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**342,868**	**384**	**893**	**785**
Food and lodging	40,964	253	162	109
Transportation	23,457	287	82	62
Other trip costs	5,860	81	73	16
Hunting equipment	162,690	288	565	351
Auxiliary equipment	22,087	131	168	58
Special equipment	...	...	...	...
Magazines and books	*2,198	*48	*46	*6
Membership dues and contributions	*3,021	*41	*75	*8
Other[1]	60,488	256	237	160

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] "Other" is made up of licenses, stamps, tags, permits, and land leasing and ownership.

Note: Detail does not add to total because of multiple responses and nonresponse. See Tables 18 to 20 for a detailed listing of expenditure items. Expenditures reported according to primary use of item.

Table 16. Summary of Trip and Equipment Expenditures In-State by U.S. Residents for Fishing, by Type of Fishing: 1996

(Not applicable to this state)

Table 17. Summary of Trip and Equipment Expenditures In-State by U.S. Residents for Hunting, by Type of Hunting: 1996
(Population 16 years old and older)

Expenditure item	Total, all hunting			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**277,161**	**376**	**738**	**611**
Food and lodging	40,964	253	162	109
Transportation	23,457	287	82	62
Other trip costs	5,860	81	73	16
Equipment	206,881	299	693	425
	Big game			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**106,515**	**290**	**368**	**360**
Food and lodging	24,373	200	122	86
Transportation	12,267	218	56	44
Other trip costs	*1,973	*34	*58	*7
Equipment	67,903	201	338	223
	Small game			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**88,819**	**219**	**406**	**304**
Food and lodging	9,624	129	74	43
Transportation	6,830	155	44	30
Other trip costs	*1,833	*41	*45	*8
Equipment	70,532	136	518	223
	Migratory bird			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**28,412**	**75**	**380**	**363**
Food and lodging	*5,888	*56	*105	*77
Transportation	*3,255	*54	*61	*42
Other trip costs	*1,458	*26	*57	*19
Equipment	*17,812	*37	*482	*226
	Other animals			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	***35,056**	***51**	***692**	***127**
Food and lodging	...	...	...	...
Transportation	*1,105	*31	*36	*24
Other trip costs	...	...	...	...
Equipment	*32,276	*31	*1,030	*67

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 18. In-State Expenditures by U.S. Residents for Fishing: 1996

(Population 16 years old and older)

Expenditure item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per angler (dollars)	Number (thousands)	Percent of anglers	Average per spender (dollars)
Total, all items	**517,029**	**629**	**786**	**96**	**657**
TRIP-RELATED EXPENDITURES					
Total trip-related	**222,149**	**272**	**694**	**85**	**320**
Food and lodging, total	**72,023**	**88**	**585**	**72**	**123**
Food	53,509	66	585	72	91
Lodging	18,514	23	142	17	130
Transportation	62,235	76	630	77	99
Other trip costs, total	**87,892**	**108**	**591**	**72**	**149**
Privilege and other fees[1]	8,085	10	97	12	83
Boating costs[2]	54,387	67	267	33	204
Bait	18,580	23	483	59	38
Ice	5,557	7	362	44	15
Heating and cooking fuel	*1,282	*2	*61	*8	*21
EQUIPMENT AND OTHER EXPENDITURES PRIMARILY FOR FISHING					
Fishing equipment, total	**89,060**	**106**	**517**	**63**	**172**
Reels, rods, and rod making components	37,074	43	292	36	127
Lines, hooks, sinkers, etc	16,209	19	469	57	35
Artificial lures and flies	17,188	21	376	46	46
Creels, stringers, fish bags, landing nets, and gaff hooks	1,882	2	106	13	18
Minnow seines, traps, and bait containers	1,450	2	81	10	18
Other fishing equipment[3]	15,257	19	156	19	98
Auxiliary equipment	17,776	21	126	15	141
Special equipment	173,287	212	64	8	2,729
Other fishing costs[4]	14,757	18	534	65	28

* Estimate based on a small sample size.

[1] Includes boat or equipment rental and fees for guides, pack trip (party and charter boats, etc.), public land use, and private land use.
[2] Boat launching, mooring, storage, maintenance, insurance, pumpout fees and fuel.
[3] Includes electronic fishing devices (depth finders, fish finders, etc.), tackle boxes, ice fishing equipment, and other fishing equipment.
[4] Includes magazine subscriptions, membership dues and contributions, land leasing and ownership, and licenses, stamps, tags, and permits.

Note: Detail does not add to total because of multiple responses and nonresponse. "Percent of anglers" may be greater than 100 percent because spenders who did not fish in this state are included.

Table 19. In-State Expenditures by U.S. Residents for Hunting: 1996

(Population 16 years old and older)

Expenditure item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per hunter (dollars)	Number (thousands)	Percent of hunters	Average per spender (dollars)
Total, all items	**342,868**	**785**	**384**	**102**	**893**
TRIP-RELATED EXPENDITURES					
Total trip-related	**70,280**	**186**	**318**	**84**	**221**
Food and lodging, total	**40,964**	**109**	**253**	**67**	**162**
Food	35,006	93	253	67	138
Lodging	*5,958	*16	*22	*6	*272
Transportation	23,457	62	287	76	82
Other trip costs, total	**5,860**	**16**	**81**	**21**	**73**
Privilege and other fees[1]	*2,325	*6	*27	*7	*86
Boating costs	*2,318	*6	*32	*8	*73
Heating and cooking fuel	*1,218	*3	*55	*15	*22
EQUIPMENT AND OTHER EXPENDITURES PRIMARILY FOR HUNTING					
Hunting equipment, total	**162,690**	**351**	**288**	**76**	**565**
Guns and rifles	72,936	191	121	32	603
Ammunition	15,131	40	243	64	62
Other hunting equipment[2]	74,623	120	188	50	397
Auxiliary equipment	22,087	58	132	35	168
Special equipment	...	...	...	...	...
Other hunting costs[3]	65,707	174	273	72	240

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] Includes guide fees, pack trip or package fees, public and private land use access fees, and rental of equipment such as boats and hunting or camping equipment.

[2] Includes bows, arrows, archery equipment, telescopic sights, decoys and game calls, hand loading equipment and components, hunting dogs and associated costs, hunting knives, and other hunting equipment.

[3] Includes magazine subscriptions, membership dues and contributions, land leasing and ownership, and licenses, stamps, tags, and permits.

Note: Detail does not add to total because of multiple responses and nonresponse. "Percent of hunters" may be greater than 100 percent because spenders who did not hunt in this state are included.

Table 20. In-State Expenditures by U.S. Residents for Special and Auxiliary Equipment Purchased Primarily for Fishing or Hunting: 1996

(Population 16 years old and older)

Equipment item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per sportsman (dollars)	Number (thousands)	Percent of sportsmen	Average per spender (dollars)
SPECIAL EQUIPMENT					
Special equipment, total	**503,818**	**436**	**98**	**11**	**5,141**
Boats and canoes	*148,421	*158	*28	*3	*5,364
Boat motors, boat trailer/hitch, and other boat accessories	*8,662	*8	*38	*4	*230
Travel or tent trailer, pickup, camper, van, motor home, cabin	*215,483	*231	*26	*3	*8,288
Trail bike, dune buggy, 4x4 vehicle, 4-wheeler, snowmobile	*130,150	*36	*20	*2	*6,508
Other special equipment	...	...	...	...	...
AUXILIARY EQUIPMENT					
Auxiliary equipment, total	**72,427**	**77**	**317**	**34**	**229**
Camping equipment	38,314	41	114	12	338
Special fishing or hunting clothing[1]	19,186	20	205	22	94
Other auxiliary equipment[2]	14,927	16	124	13	120

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] Also includes foul weather gear, rubber boots, and waders.

[2] Includes binoculars, field glasses, telescopes, snow shoes and skis, maintenance and repair of equipment, processing and taxidermy costs, and other equipment.

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 21. In-State Trip-Related Expenditures for Fishing and Hunting: 1996

(Population 16 years old and older)

Expenditure item	Total, state residents and nonresidents				State residents			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsman (dollars)	Amount (thousands of dollars)	Spenders (dollars)	Average per spender (dollars)	Average per sportsman (dollars)
Trip-related expenditures for fishing and hunting, total	**292,429**	**793**	**369**	**313**	**232,968**	**631**	**369**	**319**
TRIP-RELATED EXPENDITURES FOR FISHING								
Total	**222,149**	**694**	**320**	**272**	**169,403**	**556**	**305**	**266**
Food and lodging	72,023	585	123	88	50,206	460	109	79
Transportation	62,235	630	99	76	46,800	503	93	74
Privilege and other fees[1]	8,085	97	83	10	5,289	75	70	8
Boating costs[2]	54,387	267	204	67	44,224	197	224	70
Bait	18,580	483	38	23	16,982	398	43	27
Ice	5,557	362	15	7	4,783	284	17	8
Heating and cooking fuel	*1,282	*61	*21	*2	*1,120	*55	*20	*2
TRIP-RELATED EXPENDITURES FOR HUNTING								
Total	**70,280**	**318**	**221**	**186**	**63,565**	**291**	**219**	**183**
Food and lodging	40,964	253	162	109	37,720	229	165	109
Transportation	23,457	287	82	62	20,671	261	79	59
Privilege and other fees[1]	*2,325	*27	*86	*6	*2,226	*22	*102	*6
Boating costs[2]	*2,318	*32	*73	*6	*1,799	*29	*62	*5
Heating and cooking fuel	*1,218	*55	*22	*3	*1,149	*46	*25	*3

	Nonresidents			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsman (dollars)
Trip-related expenditures for fishing and hunting, total	**59,461**	**161**	**369**	**291**
TRIP-RELATED EXPENDITURES FOR FISHING				
Total	**52,746**	**138**	**382**	**292**
Food and lodging	21,817	125	174	121
Transportation	15,435	127	122	85
Privilege and other fees[1]	*2,796	*22	*127	*15
Boating costs[2]	*10,164	*70	*145	*56
Bait	*1,598	*85	*19	*9
Ice	*775	*77	*10	*4
Heating and cooking fuel	...	...	...	...
TRIP-RELATED EXPENDITURES FOR HUNTING				
Total	***6,715**	***27**	***251**	***226**
Food and lodging	*3,244	*24	*133	*109
Transportation	*2,786	*27	*104	*94
Privilege and other fees[1]	...	...	...	...
Boating costs[2]	...	...	...	...
Heating and cooking fuel	...	...	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] Includes boat and equipment rental and fees for guides, pack trips, public land use, and private land use.
[2] Boat launching, mooring, storage, maintenance, insurance, pumpout fees and fuel.

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 22. Summary of Expenditures in the U.S. by State Residents for Fishing and Hunting: 1996

(Population 16 years old and older)

Expenditure item	Fishing and hunting			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per sportsman (dollars)
Total	**1,426,156**	**735**	**1,940**	**1,829**
Food and lodging	139,208	572	243	179
Transportation	87,293	621	141	112
Other trip costs	88,840	541	164	114
Equipment (fishing, hunting)	279,728	606	462	359
Auxiliary equipment	90,185	333	271	116
Special equipment	654,652	104	6,295	840
Magazines and books	8,322	214	39	11
Membership dues and contributions	5,961	124	48	8
Other[1]	71,967	524	137	92
	Fishing			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per angler (dollars)
Total	**718,122**	**639**	**1,125**	**1,055**
Food and lodging	93,090	503	185	137
Transportation	61,300	546	112	90
Other trip costs	82,094	514	160	121
Fishing equipment	99,380	495	201	146
Auxiliary equipment	31,199	131	239	46
Special equipment	336,155	74	4,531	494
Magazines and books	2,265	70	32	3
Membership dues and contributions	*1,047	*36	*29	*2
Other[1]	11,593	433	27	17
	Hunting			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**342,892**	**338**	**1,016**	**966**
Food and lodging	46,118	238	194	130
Transportation	25,993	274	95	73
Other trip costs	6,746	71	96	19
Hunting equipment	154,882	275	563	437
Auxiliary equipment	23,643	147	161	67
Special equipment	...	...	...	...
Magazines and books	*2,526	*55	*46	*7
Membership dues and contributions	*3,071	*43	*72	*9
Other[1]	65,508	243	269	185

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] "Other" is made up of licenses, stamps, tags, permits, and land leasing and ownership.

Note: Detail does not add to total because of multiple responses and nonresponse. See Tables 25 to 27 for a detailed listing of expenditure items. Expenditures reported according to primary use of item.

Table 23. Summary of Trip and Equipment Expenditures in the U.S. by State Residents for Fishing, by Type of Fishing: 1996

(Not applicable to this state)

Table 24. Summary of Trip and Equipment Expenditures in the U.S. by State Residents for Hunting, by Type of Hunting: 1996
(Population 16 years old and older)

Expenditure item	Total, all hunting			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**271,788**	**331**	**821**	**766**
Food and lodging	46,118	238	194	130
Transportation	25,993	274	95	73
Other trip costs	6,746	71	96	19
Equipment	192,931	289	668	544
	Big game			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**122,041**	**270**	**453**	**443**
Food and lodging	25,422	186	137	96
Transportation	12,594	206	61	47
Other trip costs	*3,194	*36	*88	*12
Equipment	80,831	207	390	288
	Small game			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**92,866**	**215**	**432**	**396**
Food and lodging	13,006	129	101	58
Transportation	8,129	152	54	36
Other trip costs	*1,810	*36	*50	*8
Equipment	69,921	148	472	294
	Migratory bird			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	**30,081**	**71**	**425**	**403**
Food and lodging	*6,648	*54	*124	*89
Transportation	*4,349	*51	*85	*58
Other trip costs	*1,710	*23	*74	*23
Equipment	*17,375	*35	*494	*233
	Other animals			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per hunter (dollars)
Total	***7,202**	***45**	***161**	***108**
Food and lodging	...	...	...	...
Transportation	*921	*30	*31	*19
Other trip costs	...	...	...	...
Equipment	...	...	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse. Includes expenditures by state residents in other states.

Table 25. Expenditures in the U.S. by State Residents for Fishing: 1996

(Population 16 years old and older. Includes Great Lakes and saltwater fishing expenditures)

Expenditure item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per angler (dollars)	Number (thousands)	Percent of anglers	Average per spender (dollars)
Total, all items	**718,122**	**1,055**	**639**	**94**	**1,125**
TRIP-RELATED EXPENDITURES					
Total trip-related	**236,484**	**347**	**601**	**88**	**394**
Food and lodging, total	**93,090**	**137**	**503**	**74**	**185**
Food	63,470	93	503	74	126
Lodging	29,620	44	116	17	255
Transportation	61,300	90	546	80	112
Other trip costs, total	**82,094**	**121**	**514**	**76**	**160**
Privilege and other fees[1]	27,866	41	131	19	213
Boating costs[2]	28,046	41	218	32	129
Bait	19,213	28	442	65	44
Ice	5,601	8	301	44	19
Heating and cooking fuel	*1,368	*2	*63	*9	*22
EQUIPMENT AND OTHER EXPENDITURES PRIMARILY FOR FISHING					
Fishing equipment, total	**99,380**	**146**	**495**	**73**	**201**
Reels, rods, and rod making components	39,699	58	279	41	142
Lines, hooks, sinkers, etc	17,406	26	456	67	38
Artificial lures and flies	18,629	27	350	51	53
Creels, stringers, fish bags, landing nets, and gaff hooks	1,852	3	105	15	18
Minnow seines, traps, and bait containers	1,580	2	91	13	17
Other fishing equipment[3]	20,214	30	152	22	133
Auxiliary equipment	31,199	46	131	19	239
Special equipment	336,155	494	74	11	4,531
Other fishing costs[4]	14,904	22	449	66	33

* Estimate based on a small sample size.

[1] Includes boat or equipment rental and fees for guides, pack trip (party and charter boats, etc.), public land use, and private land use.
[2] Boat launching, mooring, storage, maintenance, insurance, pumpout fees and fuel.
[3] Includes electronic fishing devices (depth finders, fish finders, etc.), tackle boxes, ice fishing equipment, and other fishing equipment.
[4] Includes magazine subscriptions, membership dues and contributions, land leasing and ownership, and licenses, stamps, tags, and permits.

Note: Detail does not add to total because of multiple responses and nonresponse. Includes expenditures by state residents in other states.

Table 26. Expenditures in the U.S. by State Residents for Hunting: 1996

(Population 16 years old and older)

Expenditure item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per hunter (dollars)	Number (thousands)	Percent of hunters	Average per spender (dollars)
Total, all items	**342,892**	**966**	**338**	**95**	**1,016**
TRIP-RELATED EXPENDITURES					
Total trip-related	**78,857**	**222**	**300**	**85**	**263**
Food and lodging, total	**46,118**	**130**	**238**	**67**	**194**
Food	38,235	108	238	67	161
Lodging	*7,883	*22	*31	*9	*256
Transportation	25,993	73	274	77	95
Other trip costs, total	**6,746**	**19**	**71**	**20**	**96**
Privilege and other fees[1]	*3,390	*10	*24	*7	*142
Boating costs[2]	*1,829	*5	*29	*8	*63
Heating and cooking fuel	*1,527	*4	*46	*13	*33
EQUIPMENT AND OTHER EXPENDITURES PRIMARILY FOR HUNTING					
Hunting equipment, total	**154,882**	**437**	**275**	**77**	**563**
Guns and rifles	90,231	254	127	36	710
Ammunition	16,281	46	247	70	66
Other hunting equipment[3]	48,370	136	174	49	277
Auxiliary equipment	23,643	67	147	41	161
Special equipment	...	...	...	...	...
Other hunting costs[4]	71,104	200	259	73	274

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] Includes guide fees, pack trip or package fees, public and private land use access fees, and rental of equipment such as boats and hunting or camping equipment.

[2] Boat launching, mooring, storage, maintenance, insurance, pumpout fees and fuel.

[3] Includes bows, arrows, archery equipment, telescopic sights, decoys and game calls, hand loading equipment and components, hunting dogs and associated costs, hunting knives, and other hunting equipment.

[4] Includes magazine subscriptions, membership dues and contributions, land leasing and ownership, licenses, stamps, tags, and permits.

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 27. Expenditures in the U.S. by State Residents for Special and Auxiliary Equipment Purchased Primarily for Fishing or Hunting: 1996

(Population 16 years old and older)

Equipment item	Expenditures		Spenders		
	Amount (thousands of dollars)	Average per sportsman (dollars)	Number (thousands)	Percent of sportsmen	Average per spender (dollars)
SPECIAL EQUIPMENT					
Special equipment, total	**654,652**	**840**	**104**	**13**	**6,295**
Boats and canoes	*239,581	*307	*37	*5	*6,571
Boat motors, boat trailer/hitch, and other boat accessories	*9,931	*13	*37	*5	*272
Travel or tent trailer, pickup, camper, van, motor home, cabin	*281,299	*361	*30	*4	*9,377
Trail bike, dune buggy, 4x4 vehicle, 4-wheeler, snowmobile	*122,878	*158	*21	*3	*5,851
Other special equipment	...	...	...	...	...
AUXILIARY EQUIPMENT					
Auxiliary equipment, total	**90,185**	**116**	**333**	**43**	**271**
Camping equipment	52,193	67	113	14	463
Special fishing or hunting clothing[1]	20,845	27	224	29	93
Other auxiliary equipment[2]	17,147	22	133	17	129

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] Also includes foul weather gear, rubber boots, and waders.

[2] Includes binoculars, field glasses, telescopes, snow shoes and skis, maintenance and repair of equipment, processing and taxidermy costs, and other equipment.

Note: Detail does not add to total because of multiple responses and nonresponse. Includes expenditures by state residents in other states.

Table 28. State Residents Participating in Wildlife Watching: 1996

(Population 16 years old and older. Numbers in thousands)

Participants	Number	Percent of participants	Percent of population
Total participants	**951**	**100**	**32**
Nonresidential	357	38	12
Residential	923	97	31
Observe wildlife	637	67	21
Photograph wildlife	200	21	7
Feed wild birds or other wildlife	848	89	28
Maintain plantings or natural areas	225	24	7
Visit public parks	*101	*11	*3

* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses. The column showing percent of participants is based on total participants. The column showing percent of population is based on the state population 16 years old and older, including those who did not participate in wildlife watching.

Table 29. U.S. Residents Participating in Wildlife Watching In-State: 1996

(Population 16 years old and older. Numbers in thousands)

Participants	Number	Percent
Total participants	**1,081**	**100**
Nonresidential	463	43
Residential	923	85

Note: Detail does not add to total because of multiple responses.

Table 30. Participants, Trips, and Days of Participation in Nonresidential (Away From Home) Activities: 1996

(Population 16 years old and older. Numbers in thousands)

Participants, trips, and days of participation	Activity in-state					
	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
PARTICIPANTS						
Total participants	**463**	**100**	**326**	**100**	***137**	***100**
Observe wildlife	458	99	324	99	*134	*98
Photograph wildlife	205	44	135	41	*70	*51
Feed wildlife	219	47	187	57	...	...
TRIPS						
Total trips	5,370	100	5,089	100	*281	*100
Average days per trip	1	(X)	1	(X)	*2	(X)
DAYS OF PARTICIPATION						
Total days	**5,811**	**100**	**5,327**	**100**	***484**	***100**
Observing wildlife	5,287	91	4,831	91	*457	*94
Photographing wildlife	584	10	400	8	*184	*38
Feeding wildlife	2,712	47	2,638	50	...	...
Average days per participant	13	(X)	16	(X)	*4	(X)
Observing wildlife	12	(X)	15	(X)	*3	(X)
Photographing wildlife	3	(X)	3	(X)	*3	(X)
Feeding wildlife	12	(X)	14	(X)	...	(X)

* Estimate based on a small sample size. ... Sample size too small to report data reliably. (X) Not applicable.

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 31. Nonresidential (Away From Home) Participants Visiting Public Areas In-State and Type of Site Visited: 1996

(Population 16 years old and older. Numbers in thousands)

Participants and sites	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
Total participants	**463**	**100**	**326**	**100**	***137**	***100**
Visited public areas	349	75	241	74	*108	*79
Did not visit public areas	*115	*25	*85	*26	...	...
Total, all sites	**463**	**100**	**326**	**100**	***137**	***100**
Lakes and streamsides	341	74	252	77	*89	*65
Marsh, wetland, swamp	*119	*26	*79	*24	...	...
Woodland	389	84	269	83	*120	*87
Brush-covered areas	266	57	207	64	...	...
Open field	316	68	234	72	*83	*60
Man-made area	202	43	149	46	...	...
Other	...	...	...	...	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of nonresponse.

Table 32. In-State Nonresidential Participants by Wildlife Observed, Photographed, or Fed: 1996

(Population 16 years old and older. Numbers in thousands)

Wildlife observed, photographed, or fed	Total, state residents and nonresidents		State residents		Nonresidents	
	Number	Percent	Number	Percent	Number	Percent
Total all wildlife	**463**	**100**	**326**	**70**	***137**	***30**
Total birds	**278**	**100**	**212**	**76**	***66**	***24**
Birds of prey	127	100	*87	*69	...	...
Waterfowl	207	100	166	80	...	...
Shorebirds	*81	*100	*72	*88	...	...
Songbirds	246	100	183	75	*63	*25
Other birds	113	100	*98	*87	...	...
Total land mammals	**375**	**100**	**267**	**71**	***108**	***29**
Large land mammals	264	100	186	71	*78	*29
Small land mammals	327	100	225	69	*102	*31
Fish	169	100	137	81	...	...
Other wildlife	149	100	*87	*59	*61	*41

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of nonresponse.

Table 33. Participation in Residential (Around the Home) Activities: 1996

(State population 16 years old and older. Numbers in thousands)

Residential activity	Participants	
	Number	Percent
Total residential participants	**923**	**100**
Observe wildlife	637	69
Visit public parks[1]	*101	*11
Photograph wildlife	200	22
Feed wildlife	848	92
Maintain natural areas	139	15
Maintain plantings	*131	*14
OBSERVE WILDLIFE		
Participants observing:		
Total, all wildlife	**637**	**100**
Birds	626	98
Land mammals	596	94
Large mammals	348	55
Small mammals	539	84
Amphibians or reptiles	224	35
Insects or spiders	257	40
Fish and other wildlife	151	24
Participants observing:		
Total, 1 day or more	**637**	**100**
1 to 10 days	182	29
11 to 50 days	172	27
51 to 200 days	166	26
201 days or more	*98	*15
VISIT PUBLIC PARKS[1]		
Participants visiting:		
Total, 1 day or more	***101**	***100**
1 to 5 days	*50	*49
6 to 10 days	...	...
11 days or more	...	...
PHOTOGRAPH WILDLIFE		
Participants photographing:		
Total, 1 day or more	**200**	**100**
1 to 3 days	*84	*42
4 to 10 days	*106	*53
11 or more days	...	...

Residential activity	Participants	
	Number	Percent
FEED WILDLIFE		
Participants feeding:		
Total, all wildlife	**848**	**100**
Wild birds	836	99
Other wildlife	283	33
Months fed wild birds:		
January	635	76
February	624	75
March	612	73
April	556	66
May	503	60
June	511	61
July	503	60
August	502	60
September	509	61
October	503	60
November	511	61
December	572	68
Average months fed wild birds[2]	8	(X)
Months fed other wildlife:		
January	181	64
February	181	64
March	163	58
April	128	45
May	135	48
June	136	48
July	149	52
August	153	54
September	155	55
October	136	48
November	145	51
December	143	50
Average months fed other wildlife[3]	6	(X)

* Estimate based on a small sample size. ... Sample size too small to report data reliably. (X) Not applicable.

[1] Includes visits only to parks or publicly owned areas within 1 mile of home.
[2] Based on the number of months where participant fed wild birds at least once a week.
[3] Based on the number of months where participant fed other wildlife at least once.

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 34. Selected Characteristics of State Residents Participating in Wildlife Watching: 1996

(Population 16 years old and older. Numbers in thousands)

Characteristic	Population		Participants								
			Total			Nonresidential			Residential		
	Number	Percent	Number	Percent who participated	Percent	Number	Percent who participated	Percent	Number	Percent who participated	Percent
Total persons	**3,001**	**100**	**951**	**32**	**100**	**357**	**12**	**100**	**923**	**31**	**100**
Population density of residence:											
Urban	1,401	47	363	26	38	133	9	37	354	25	38
Rural	1,600	53	588	37	62	225	14	63	569	36	62
Population size of residence:											
MSA	1,279	43	369	29	39	135	11	38	356	28	39
1,000,000 or more	227	8	*40	*18	*4	...	...	...	*40	*18	*4
250,000 to 999,999	1,052	35	329	31	35	118	11	33	316	30	34
50,000 to 249,999	...	...	...	...	...	...	...	...	...	...	...
Outside MSA	1,722	57	582	34	61	222	13	62	567	33	61
Sex:											
Male	1,418	47	477	34	50	195	14	55	454	32	49
Female	1,583	53	474	30	50	162	10	45	469	30	51
Age:											
16 to 17 years	119	4	...	...	...	...	...	...	...	...	...
18 to 24 years	319	11	*48	*15	*5	...	...	...	*48	*15	*5
25 to 34 years	510	17	184	36	19	*97	*19	*27	164	32	18
35 to 44 years	646	22	204	32	21	97	15	27	201	31	22
45 to 54 years	494	16	195	39	20	*74	*15	*21	193	39	21
55 to 64 years	367	12	*110	*30	*12	*34	*9	*9	*106	*29	*11
65 years and older	546	18	172	31	18	...	...	...	172	31	19
Race:											
White	2,832	94	936	33	98	348	12	97	908	32	98
Black	126	4	...	...	...	...	...	...	...	...	...
All others	*43	*1	...	...	...	...	...	...	...	...	...
Annual household income:											
Less than $10,000	328	11	*78	*24	*8	...	...	...	*78	*24	*8
$10,000 to $19,999	400	13	142	36	15	*60	*15	*17	129	32	14
$20,000 to $29,999	364	12	142	39	15	*56	*15	*16	142	39	15
$30,000 to $39,999	374	12	146	39	15	*64	*17	*18	146	39	16
$40,000 to $49,999	284	9	*103	*36	*11	*44	*15	*12	*97	*34	*10
$50,000 to $74,999	422	14	147	35	15	*55	*13	*15	143	34	15
$75,000 or more	253	8	*82	*32	*9	*27	*11	*7	*82	*32	*9
Not reported	577	19	*111	*19	*12	...	...	...	*107	*19	*12
Education:											
8 years or less	319	11	*81	*25	*9	...	...	...	*81	*25	*9
9 to 11 years	399	13	*119	*30	*12	...	...	...	*119	*30	*13
12 years	1,187	40	308	26	32	145	12	40	299	25	32
1 to 3 years college	574	19	240	42	25	*101	*18	*28	227	40	25
4 years college or more	522	17	203	39	21	*89	*17	*25	197	38	21

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses and nonresponse. "Percent who participated" shows the percent of each row's population who participated in the activity named by the column (the percent of those living in urban areas who participated, etc.). Percent columns show the percent of each column's participants who are described by the row heading (the percent of those who participated who live in urban areas, etc.).

Table 35. In-State Expenditures by U.S. Residents for Wildlife Watching: 1996

(Population 16 years old and older)

Expenditure item	Expenditures (thousands of dollars)	Average per participant (dollars)	Spenders		
			Number (thousands)	Percent of wildlife-watching participants[1]	Average per spender (dollars)
Total, all items	**336,522**	**309**	**1,014**	**94**	**332**
TRIP EXPENDITURES					
Total trip-related	**70,759**	**153**	**435**	**94**	**163**
Food and lodging	39,289	85	350	76	112
Food	28,562	62	350	76	82
Lodging	*10,727	*23	*100	*21	*108
Transportation	21,811	47	401	86	54
Other trip costs[2]	*9,658	*21	*106	*23	*92
EQUIPMENT AND OTHER EXPENDITURES					
Total	**265,763**	**243**	**852**	**79**	**312**
Wildlife-watching equipment, total	**85,460**	**77**	**825**	**76**	**104**
Binoculars, spotting scopes	*4,736	*4	*71	*7	*67
Film and developing	8,700	8	236	22	37
Cameras, special lenses, videocameras, and other photographic equipment	*12,893	*11	*38	*3	*344
Day packs, carrying cases, and special clothing	*2,731	*3	*38	*3	*72
Bird food	38,442	35	641	59	60
Food for other wildlife	5,770	5	181	17	32
Nest boxes, bird houses, bird feeders, and bird baths	11,650	10	304	28	38
Other equipment	...	...	...	...	...
Auxiliary equipment[3]	*3,414	*3	*55	*5	*62
Special equipment[4]	...	...	...	...	...
Magazines and books	4,390	4	155	14	28
Membership dues and contributions	*12,439	*11	*115	*11	*108
Land leasing and ownership	...	...	...	...	...
Plantings	*5,296	*5	*93	*9	*57

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] Percent of wildlife-watching participants column for trip-related expenditures is based on nonresidential participants. For equipment and other expenditures, the percent of wildlife-watching participants column is based on total wildlife-watching participants.

[2] Includes equipment rental and fees for guides, pack trips, public land use and private land use, boat fuel, other boating costs, and heating and cooking fuel.

[3] Includes tents, tarps, frame packs and other backpacking equipment, and other camping equipment.

[4] Includes travel or tent trailers, off-the-road vehicles, pickups, campers, vans, motor homes, boats, and other special equipment.

Note: Detail does not add to total because of multiple responses and nonresponse. "Percent of wildlife-watching participants" may be greater than 100 percent because spenders who did not participate in wildlife watching in this state are included.

Table 36. In-State Trip-Related Expenditures for Nonresidential (Away From Home) Participation: 1996

(Population 16 years old and older)

Expenditure item	Total, state residents and nonresidents			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per participant (dollars)
Total	**70,759**	**435**	**163**	**153**
Food and lodging	39,289	350	112	85
Transportation	21,811	401	54	47
Privilege and other fees[1]	*2,499	*79	*32	*5
Other[2]	*7,160	*45	*158	*15
	State residents			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per participant (dollars)
Total	**48,973**	**304**	**161**	**150**
Food and lodging	25,407	231	110	78
Transportation	14,248	287	50	44
Privilege and other fees[1]	*2,159	*45	*48	*7
Other[2]	*7,160	*45	*158	*22
	Nonresidents			
	Amount (thousands of dollars)	Spenders (thousands)	Average per spender (dollars)	Average per participant (dollars)
Total	***21,785**	***130**	***167**	***159**
Food and lodging	*13,882	*119	*117	*101
Transportation	*7,563	*114	*66	*55
Privilege and other fees[1]	...	...	...	...
Other[2]	...	...	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

[1] Includes equipment rental and fees for guides, pack trips, public land use, and private land use.
[2] Boat launching, mooring, storage, maintenance, insurance, pumpout fees, fuel, and heating and cooking fuel.

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 37. Expenditures in the U.S. by State Residents for Wildlife Watching: 1996

(Population 16 years old and older)

Expenditure item	Expenditures (thousands of dollars)	Average per participant (dollars)	Spenders		
			Number (thousands)	Percent of wildlife-watching participants[1]	Average per spender (dollars)
Total, all items	**348,884**	**367**	**831**	**87**	**420**
TRIP EXPENDITURES					
Total trip-related	**81,991**	**229**	**335**	**94**	**245**
Food and lodging	47,003	132	262	73	179
Food	31,899	89	262	73	122
Lodging	*15,105	*42	*86	*24	*176
Transportation	21,771	61	317	89	69
Other trip costs[2]	*13,217	*37	*104	*29	*127
EQUIPMENT AND OTHER EXPENDITURES					
Total	**266,893**	**281**	**770**	**81**	**347**
Wildlife-watching equipment, total	**85,036**	**89**	**750**	**79**	**113**
Binoculars, spotting scopes	*4,413	*5	*72	*8	*61
Film and developing	8,450	9	221	23	38
Cameras, special lenses, videocameras, and other photographic equipment	*12,149	*13	*36	*4	*337
Day packs, carrying cases, and special clothing	*3,014	*3	*44	*5	*68
Bird food	39,573	42	616	65	64
Food for other wildlife	5,937	6	183	19	32
Nest boxes, bird houses, bird feeders, and bird baths	11,073	12	288	30	38
Other equipment	*426	*(W)	*45	*5	*9
Auxiliary equipment[3]	*3,414	*4	*55	*6	*62
Special equipment[4]	...	...	...	...	...
Magazines and books	4,585	5	171	18	27
Membership dues and contributions	13,799	15	112	12	123
Land leasing and ownership	...	...	...	...	...
Plantings	*5,296	*6	*93	*10	*57

* Estimate based on a small sample size. ... Sample size too small to report data reliably. (W) Less than 0.5 dollar.

[1] Percent of wildlife-watching participants column for trip-related expenditures is based on nonresidential participants. For equipment and other expenditures, the percent of wildlife-watching participants column is based on total wildlife-watching participants.

[2] Includes equipment rental and fees for guides, pack trips, public land use and private land use, boat fuel, other boating costs, and heating and cooking fuel.

[3] Includes tents, tarps, frame packs and other backpacking equipment, and other camping equipment.

[4] Includes travel or tent trailers, off-the-road vehicles, pickups, campers, vans, motor homes, boats, and other special equipment.

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 38. Participation of State Resident Wildlife-Watching Participants in Fishing and Hunting: 1996

(Population 16 years old and older. Numbers in thousands)

	Total, nonresidential and residential		Wildlife-watching activity			
			Nonresidential		Residential	
	Number	Percent	Number	Percent	Number	Percent
Total participants	**951**	**100**	**357**	**100**	**923**	**100**
Wildlife-watching participants who:						
Did not fish or hunt	427	45	102	29	440	48
Fished or hunted	524	55	255	71	483	52
Fished	458	48	227	64	421	46
Hunted	262	28	138	39	237	26

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 39. Participation of State Resident Sportsmen in Wildlife-Watching Activities: 1996

(Population 16 years old and older. Numbers in thousands)

Sportsmen	Sportsmen		Anglers		Hunters	
	Number	Percent	Number	Percent	Number	Percent
Total sportsmen	**779**	**100**	**681**	**100**	**355**	**100**
Sportsmen who:						
Did not engage in wildlife-watching activities	255	33	223	33	93	26
Engaged in wildlife-watching activities	524	67	458	67	262	74
Nonresidential	255	33	227	33	138	39
Residential	483	62	421	62	237	67

Note: Detail does not add to total because of multiple responses and nonresponse.

Table 40. Participants in Wildlife-Associated Recreation, by Participant's State of Residence: 1996

(Population 16 years old and older. Numbers in thousands)

Participant's state of residence	Population	Total participants		Sportsmen		Wildlife-watching participants	
		Number	Percent of population	Number	Percent of population	Number	Percent of population
U.S., total	**201,472**	**76,964**	**38**	**39,694**	**20**	**62,868**	**31**
Alabama	3,306	1,264	38	788	24	988	30
Alaska	432	279	65	187	43	216	50
Arizona	3,234	1,210	37	497	15	999	31
Arkansas	1,914	890	47	596	31	658	34
California	23,777	7,097	30	2,938	12	5,959	25
Colorado	2,929	1,535	52	732	25	1,244	42
Connecticut	2,514	928	37	375	15	774	31
Delaware	560	232	41	118	21	192	34
Florida	11,239	3,642	32	1,988	18	2,840	25
Georgia	5,544	1,960	35	1,093	20	1,622	29
Hawaii	900	201	22	136	15	123	14
Idaho	879	484	55	336	38	355	40
Illinois	8,979	3,740	42	1,761	20	3,137	35
Indiana	4,456	1,876	42	972	22	1,542	35
Iowa	2,174	1,032	47	607	28	828	38
Kansas	1,916	793	41	437	23	607	32
Kentucky	3,001	1,206	40	779	26	951	32
Louisiana	3,227	1,271	39	927	29	861	27
Maine	966	511	53	266	28	443	46
Maryland	3,912	1,537	39	629	16	1,323	34
Massachusetts	4,726	1,835	39	622	13	1,638	35
Michigan	7,267	3,134	43	1,748	24	2,585	36
Minnesota	3,473	1,663	48	1,212	35	1,325	38
Mississippi	2,032	680	33	519	26	458	23
Missouri	4,056	1,888	47	1,081	27	1,623	40
Montana	672	394	59	222	33	315	47
Nebraska	1,232	539	44	289	23	428	35
Nevada	1,214	365	30	223	18	258	21
New Hampshire	887	448	51	181	20	394	44
New Jersey	6,129	1,864	30	821	13	1,574	26
New Mexico	1,276	501	39	281	22	370	29
New York	13,944	3,800	27	1,708	12	3,169	23
North Carolina	5,605	2,364	42	1,217	22	1,984	35
North Dakota	483	190	39	148	31	112	23
Ohio	8,522	3,281	39	1,280	15	2,816	33
Oklahoma	2,484	1,199	48	798	32	860	35
Oregon	2,472	1,260	51	619	25	1,048	42
Pennsylvania	9,298	3,886	42	1,664	18	3,442	37
Rhode Island	759	284	37	111	15	243	32
South Carolina	2,842	1,093	38	718	25	829	29
South Dakota	541	249	46	204	38	165	30
Tennessee	4,120	1,792	44	820	20	1,507	37
Texas	14,186	4,695	33	2,772	20	3,553	25
Utah	1,396	558	40	331	24	415	30
Vermont	455	242	53	116	26	217	48
Virginia	5,168	2,278	44	1,090	21	1,905	37
Washington	4,207	1,908	45	1,018	24	1,621	39
West Virginia	1,467	593	40	374	26	452	31
Wisconsin	3,897	1,961	50	1,151	30	1,651	42
Wyoming	366	192	53	139	38	143	39

Note: Detail does not add to total because of multiple responses. U.S. totals include responses from participants residing in the District of Columbia, as described in the statistical reliability appendix.

Appendix A

Appendix A: *Definitions*

Annual household income - Total 1995 income of household members before taxes and other deductions.

Auxiliary equipment - Items of equipment such as camping gear that are owned primarily for wildlife-associated recreation. Items of auxiliary equipment are listed in Table 20 (fishing and hunting) and Table 37 (wildlife watching).

Big game - Antelope, bear, deer, elk, moose, wild turkey, and similar large animals which are hunted.

Census Divisions:

East North Central:

Illinois
Indiana
Michigan
Ohio
Wisconsin

East South Central:

Alabama
Kentucky
Mississippi
Tennessee

Middle Atlantic:

New Jersey
New York
Pennsylvania

Mountain:

Arizona
Colorado
Idaho
Montana
Nevada
New Mexico
Utah
Wyoming

New England:

Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

Pacific:

Alaska
California
Hawaii
Oregon
Washington

South Atlantic:

Delaware
District of Columbia
Florida
Georgia
Maryland
North Carolina
South Carolina
Virginia
West Virginia

West North Central:

Kansas
Iowa
Minnesota
Missouri
Nebraska
North Dakota
South Dakota

West South Central:

Arkansas
Louisiana
Oklahoma
Texas

Day - Any part of a day spent in a given activity. For example, if someone hunted 2 hours one day and 3 hours another day, it would be recorded as 2 days of hunting. If someone hunted 2 hours in the morning and 3 hours in the evening of the same day, it would be considered 1 day of hunting.

Education - The highest completed grade of school or year of college.

Expenditures - Money spent in 1996 for wildlife-related recreation trips in the U.S., or wildlife-related recreational equipment purchased in the U.S. (and Canada where specified). Expenditures include both money

spent by participants for themselves and the value of gifts they received.

Federal land - Public land owned by the Federal government such as National Forests and National Wildlife Refuges.

Fishing - The sport of catching or attempting to catch fish with a hook, line, net, bow and arrow, or spear, fishing equipment, also catching or gathering shellfish (clams, crabs, etc,). The noncommercial seining or netting of fish, unless the fish are for use as bait. For example, seining for smelt is fishing, but seining for bait minnows is not included as fishing.

Fishing equipment - Items owned primarily for fishing. These items are listed in Table 18.

Freshwater - Reservoirs, lakes, ponds, and the nontidal portions of rivers and streams.

Great Lakes fishing - Fishing in Lakes Superior, Michigan, Huron, St. Clair, Erie, and Ontario, their connecting waters such as the St. Mary's River system, Detroit River, St. Clair River, and the Niagara River, and the St. Lawrence River south of the bridge at Cornwall, New York. Great Lakes fishing includes fishing in tributaries of the Great Lakes for smelt, steelhead, and salmon.

Home - The starting point of a wildlife-related recreational trip. It may be a permanent residence, or a temporary or seasonal residence such as a cabin.

Hunting - The sport of shooting or attempting to shoot wildlife with firearms or archery equipment.

Hunting equipment - Items owned primarily for hunting. These items are listed in Table 19.

Local land - Public land owned by local government such as county parks or municipal watersheds.

Maintain natural areas - To set aside one-quarter acre or more of natural environment such as wood lots or open fields for the primary purpose of benefiting wildlife.

Maintain plantings - To introduce or encourage the growth of food and cover plants for the primary purpose of benefiting wildlife.

Migratory birds - Birds that regularly migrate from one region or climate to another. The survey focuses on migratory birds which may be hunted, including bandtailed pigeons, coots, ducks, doves, gallinules, geese, rails, and woodcocks.

Multiple responses - The term used to reflect the fact that individuals or their characteristics fall into more than one reporting category. An example of a big game hunter who hunted for deer and elk demonstrates the effect of multiple responses. In this case, adding the number of deer hunters (1) and elk hunters (1) would overstate the number of big game hunters (1) because deer and elk hunters are not mutually exclusive categories. In contrast, total participants is the sum of male and female participants, because male and female are mutually exclusive categories.

Nonresidential activity - Trips or outings at least one mile from home for the primary purpose of observing, photographing, or feeding wildlife. Trips to zoos, circuses, aquariums, and museums are not included.

Nonresidents - Individuals who do not live in the state being reported. For example, a person living in Texas who watches whales in California is a nonresident participant in California.

Nonresponse - Nonresponse is a term used to reflect the fact that some survey respondents provide incomplete sets of information. For example, a survey respondent may have been unable to identify the primary type of hunting for which a gun was bought. Hunting expenditures will reflect the gun purchase, but it will not appear as spending for big game or any other type of hunting. Nonresponses result in reported totals that are greater than the sum of their parts.

Observe - To take special interest in or try to identify birds, fish, or other wildlife.

Other animals - Coyotes, crows, foxes, groundhogs, prairie dogs, raccoons, and similar animals that are often regarded as varmints or pests. Other animals may be classified as unprotected or nongame animals by the state in which they are hunted.

Participants - Individuals who engaged in fishing, hunting, or a wildlife-watching activity.

Primary purpose - The principal motivation for an activity, trip, or expenditure.

Public areas - Public lands owned by local, state, or Federal governments.

Public land - Land that is owned by the local, state, or Federal government.

Private land - Land that is owned by a private individual, group of individuals, or nongovernmental organization. Residential activity - Activity within 1 mile of home with a primary purpose that is wildlife-related: (1) closely observing or trying to identify birds or other wildlife, (2) photographing wildlife, (3) feeding birds or other wildlife on a regular basis, (4) maintaining natural areas of at least one-quarter acre for which benefit to wildlife is the primary purpose, (5) maintaining plantings (shrubs, agricultural crops, etc.) for which benefit to wildlife is the primary purpose, or (6) visiting public parks within 1 mile of home for the purpose of observing, photographing, or feeding wildlife.

Residents - Individuals who lived in the state being reported. For example, persons who live in California and watch whales in California are resident participants in California.

Rural - Respondent identified that he/she lived in a rural, nonfarm, or rural, farm area when given the following choices: urban; rural, nonfarm; rural, farm.

Saltwater - Oceans, tidal bays and sounds, and the tidal portions of rivers and streams.

Screening interviews - The first survey contact with a household. Screening interviews use brief conversations with either the respondent or a household representative in each household to identify respondents who are eligible for in-depth interviews. In addition, screening interviews are used to gather some data about the individuals in the households, such as their age and sex. Screening interviews are discussed in the Survey Background and Method section of this report.

Small game - Grouse, partridge, pheasants, quail, rabbits, squirrels, and similar small animals and birds for which many states have small game seasons and bag limits.

(MSA) - Metropolitan Statistical Area - Except in the New England States, an MSA is a county or group of contiguous counties containing at least one city of 50,000 or more inhabitants, or twin cities (i.e., cities with contiguous boundaries and constituting, for general social and economic purposes, a single community) with a combined population of at least 50,000. Also included in an MSA are contiguous counties that are socially and economically integrated with the central city. In the New England States, an MSA consists of towns and cities instead of counties. Each MSA must include at least one central city.

Special equipment - Items of equipment including boats and pickup trucks that are owned primarily for wildlife-related recreation. Special equipment items are listed in Table 20 (fishing and hunting) and Table 37 (wildlife watching).

Spenders - Individuals who reported an expenditure value for fishing, hunting, or wildlife-watching activities or equipment.

Sportsmen - Individuals who engaged in fishing, hunting, or both.

State Land - Public land owned by a state such as state parks or state wildlife management areas.

Trip - An outing involving fishing, hunting, or wildlife-watching activities. In the context of this survey, a trip may begin from an individual's principal residence or from another place, such as a vacation home or the home of a relative. A trip may last an hour, a day, or many days.

Type of fishing - Three types of fishing are reported: Fishing in (1) freshwater, except Great Lakes, (2) Great Lakes, and (3) saltwater.

Type of hunting - Four types of hunting are reported: Hunting for (1) big game, (2) small game, (3) migratory bird, and (4) other animals.

Urban - Respondent identified that he/she lived in a rural, nonfarm; or rural, farm area when given the following choices: urban; rural, nonfarm; rural, farm.

Wildlife - Animals such as birds, fish, insects, mammals, amphibians, and reptiles that are living in natural or wild environments. Wildlife does not include animals living in aquariums, zoos, and other artificial surroundings, or domestic animals such as farm animals or pets.

Wildlife-associated recreation - Recreational fishing, hunting, or wildlife watching.

Wildlife-watching activity - An activity engaged in primarily for the purpose of feeding, photographing, or observing fish or other wildlife. In previous years this was termed nonconsumptive activity. (See also residential and nonresidential activities.)

Wildlife-watching equipment - Items owned primarily for observing, photographing, or feeding wildlife. These items are listed in Table 37.

Appendix B

Appendix B: *Selected Data From Screening Interviews*

The 1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation was carried out in two phases. The first (or screening) phase began in April 1996. The main purpose of this phase was to collect information about persons 16 years old and older in order to develop a sample of potential sportsmen and wildlife-watching participants for the second (or detailed) phase. Information was also collected on the number of persons 6 to 15 years old who participated in wildlife-related recreation activities in 1995. These data are reported here in order to include the recreation activity of 6- to 15-year-olds in this report.

It is important to emphasize that the information reported here from the 1996 screening questionnaires relates to activity only up to and including 1995. Also, these data were based on long-term recall (at least 12-month recall was required for most of these tables) and were reported, in most cases, by one household respondent speaking for all household members rather than the shorter term recall of the actual participant, as in the case of the 1996 detailed phase.

Tables B-1 to B-3 report data on participants 6 to 15 years old in 1995. Detailed expenditures and recreational activity data were not gathered for the 6- to 15-year-old participants.

Because of the difference in methodologies of the screening phase and the detailed phase of the 1996 Survey, the data are not comparable. Only participants 16 years old and older were eligible for the detailed phase. The detailed phase was a series of three interviews conducted at 4-month intervals. The screening interviews were 1-year recall. The shorter recall period of the detailed phase had better data accuracy. It has been found in survey studies that in many cases longer recall periods result in over-estimating participation in and expenditures on wildlife-related recreation activities.

Table B-1. State Residents 6- to 15-Years-Old Participating in Fishing and Hunting: 1995

(State population 6 to 15 years old. Numbers in thousands)

Sportsmen	Sportsmen 6 to 15 years old		
	Number	Percent of sportsmen	Percent of population
Total sportsmen	**251**	**100**	**44**
Total anglers	**238**	**95**	**42**
Fished only	200	80	35
Fished and hunted	*38	*15	*7
Total hunters	***51**	***20**	***9**
Hunted only	...	...	...
Hunted and fished	*38	*15	*7

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Detail does not add to total because of multiple responses. Column showing percent of sportsmen is based on the "Total sportsmen" row. Column showing percent of population is based on the state population 6 to 15 years old, including those who did not fish or hunt. Data reported on this table are from screening interviews in which one adult household member responded for household members 6 to 15 years old. The screening interview required the respondent to recall 12 months worth of activity. Includes state residents who fished or hunted only in other countries.

Table B-2. Selected Characteristics of Resident Anglers and Hunters 6 to 15 Years Old: 1995

(State population 6 to 15 years old. Numbers in thousands)

Characteristic	Population		Sportsmen (fished or hunted)			Anglers			Hunters		
	Number	Percent	Number	Percent who partici-pated	Percent of sportsmen	Number	Percent who partici-pated	Percent of anglers	Number	Percent who partici-pated	Percent of hunters
Total persons	**566**	**100**	**251**	**44**	**100**	**238**	**42**	**100**	***51**	***9**	***100**
Population density of residence:											
Urban	259	46	92	35	37	86	33	36	...	...	...
Rural	307	54	159	52	63	153	50	64	*45	*15	*87
Population size of residence:											
MSA	230	41	91	40	36	87	38	36	...	...	...
1,000,000 or more	*39	*7	...	...	...	...	...	...	...	...	...
250,000 to 999,999	191	34	74	39	30	70	37	30	...	...	...
50,000 to 249,999	...	...	...	...	...	...	...	...	...	...	...
Outside MSA	337	59	160	48	64	152	45	64	*41	*12	*79
Sex:											
Male	290	51	170	59	68	162	56	68	*47	*16	*92
Female	276	49	81	29	32	76	28	32	...	...	...
Age:											
6 to 8 years	170	30	*66	*39	*26	*66	*39	*28	...	...	...
9 to 11 years	175	31	87	50	35	82	47	35	...	...	...
12 to 15 years	221	39	99	45	39	90	41	38	*36	*16	*71
Race:											
White	522	92	246	47	98	233	45	98	*51	*10	*100
Black	*41	*7	...	...	...	...	...	...	...	...	...
All others	...	...	...	...	...	...	...	...	...	...	...
Annual household income:											
Less than $10,000	*62	*11	*25	*41	*10	*25	*41	*11	...	...	...
$10,000 to $19,999	77	14	*36	*47	*14	*36	*47	*15	...	...	...
$20,000 to $29,999	70	12	*30	*43	*12	*28	*40	*12	...	...	...
$30,000 to $39,999	77	14	*37	*48	*15	*35	*45	*15	...	...	...
$40,000 to $49,999	*41	*7	*25	*60	*10	*25	*60	*10	...	...	...
$50,000 to $74,999	104	18	*43	*42	*17	*43	*42	*18	...	...	...
$75,000 or more	*51	*9	*21	*41	*8	*21	*41	*9	...	...	...
Not reported	84	15	*34	*41	*14	*26	*30	*11	...	...	...

* Estimate based on a small sample size. ... Sample size too small to report data reliably.

Note: Percent who participated shows the percent of each row's population who participated in the activity named by the column (the percent of those living in urban areas who fished, etc.). Remaining percent columns show the percent of each column's participants who are described by the row heading (the percent of anglers who lived in urban areas, etc.). Data reported on this table are from screening interviews in which one adult household member responded for 6- to 15-year-olds. The screening interview required the respondent to recall 12 months worth of activity. Includes state residents who fished or hunted only in other countries.

Table B-3. State Residents 6- to 15-Years-Old Participating in Wildlife Watching: 1995

(State population 6 to 15 years old. Numbers in thousands)

Participants	Number	Percent of participants	Percent of population
Total participants	**295**	**100**	**52**
Nonresidential	137	46	24
Residential	274	93	48
Observe wildlife	197	67	35
Photograph wildlife	*32	*11	*6
Feed wild birds or other wildlife	190	64	34
Maintain plantings or natural areas	*53	*18	*9

* Estimate based on a small sample size.

Note: Detail does not add to total because of multiple responses. The column showing percent of participants is based on total participants. The column showing percent of population is based on the State population 6 to 15 years old, including those who did not participate in wildlife watching. Data reported on this table are from screening interviews in which one adult household member responded for household members 6 to 15 years old. The screening interview required the respondent to recall 12 months worth of activity.

Appendix C

Appendix C.

National and Regional 1991-1996 Comparison

The 1991 and 1996 Surveys used similar methodologies and all published information for the two Surveys is directly comparable.

Comparisons of the 1991 and 1996 Survey estimates at the national level for fishing and hunting show that while participation remained the same expenditures and days increased significantly over that 5 year period. In 1991 there were 35.6 million anglers and 14.1 million hunters. In 1996 there were 35.2 million anglers and 14.0 million hunters. In 1996 anglers spent 37 percent more and hunters spent 45 percent more than they did in 1991 for their trips and equipment. In 1996 hunters were afield 9 percent more days than in 1991, while anglers fished 22 percent more days. Although participation in wildlife (observing, feeding, and photographing wildlife) decreased 17 percent nationally, from 76.1 million in 1991 to 62.9 million in 1996, expenditures for trips and equipment for wildlife watching increased 21 percent. See Tables C-1 through C-3 for the national and regional estimates.

The 1996 Survey underwent a number of changes in order to improve data collection, lower costs, and meet the data needs of its constituents.

The most significant survey design differences between the 1991 Survey and the 1996 Survey are as follows:

1. The 1991 Survey data were collected by interviewers filling out paper questionnaires. The data entries were keyed in a separate operation after the interview. The 1996 Survey data were collected by the use of computer-assisted interviews, where the questionnaire was programmed into computers and the interviewer keyed in the responses at the time of the interview.
2. The 1991 Survey screening phase was conducted in January and February of 1991, when the sample households were contacted and a household respondent was interviewed on behalf of the entire household. The 1991 screening interview primarily consisted of socio-demographic questions and wildlife-related recreation questions concerning activity in the year 1990 and intentions for the year 1991. The 1996 Survey screening phase was conducted April through June of 1996 in conjunction with the first wave of the detailed phase. The 1996 screening interview primarily consisted of socio-demographic questions and wildlife-related recreation questions concerning activity in the year 1995 and intentions for the year 1996.
3. In the 1991 Survey an attempt was made to contact every sample person in all three detailed interview waves. In the 1996 Survey the respondents who were interviewed in the first detailed interview wave were not contacted again until the third wave. Also, all interviews in the second wave were conducted by

telephone. In-person interviews were only conducted in the first and third wave.

Important instrument changes:

1. The 1991 Survey instrument expenditure section collected information on all wildlife-related recreation purchases made by participants without reference to where the purchase was made. The 1996 Survey instrument expenditure section included a question for each purchase that asked in which state the purchase was made.
2. In 1991 respondents were asked what kind of fishing they did, i.e., Great Lakes, other freshwater, or saltwater, and then asked what states they did it in. In 1996 respondents were asked in which states they fished, and then were asked the pertinent kind of fishing questions. This method had the advantage of not asking about, for example, saltwater fishing when they only fished in a noncoastal state.
3. In 1991 respondents were asked how many days they "actually" hunted or fished for a particular type of game or fish, and then how many days they "chiefly" hunted or fished for the same type of game or fish rather than another type of game or fish. To get total days of hunting or fishing for a particular type of game or fish, the "actually" day response was used, while to get the sum of all days hunting or fishing the "chiefly" days were summed. In 1996 respondents were asked their total days of hunting or fishing in the country and each state, then how many days they hunted or fished for a particular type of game or fish.
4. Trip-related and equipment expenditure categories were not the same for both Surveys. "Guide fee" and "Pack trip or package fee" were two separate trip-related expenditure items in 1991, while they were combined into one category in the 1996 Survey. "Boating costs" was added to the 1996 hunting and wildlife-watching trip-related expenditure sections. "Heating and cooking fuel" was added to all of the trip-related expenditure sections. "Spearfishing equipment" was moved from a separate category, to the "other" list. "Rods" and "Reels" were two separate categories in 1991, but were combined in 1996. "Lines, hooks, sinkers, etc." was one category in 1991, but split into "Lines" and "Hooks, sinkers, etc." in 1996. "Food used to feed other wildlife" was added to the wildlife-watching equipment section, "Boats" and "Cabins" were added to the wildlife-watching special equipment section, and "Land leasing and ownership" was added to the wildlife-watching expenditures section.
5. Questions asking sportsmen if they participated as much as they wanted were added to the 1996 Survey instrument. If the sportsman said no, they were asked why not.
6. The 1991 Survey included questions about participation in organized fishing competitions, anglers using bows and arrows, nets or seines, or spearfishing, hunters using pistols or handguns, and target shooting in preparation for hunting. These questions were not included in the 1996 Survey.
7. The 1996 Survey included questions about catch and release fishing and persons with disabilities participating in wildlife-related recreation. These questions were not part of the 1991 Survey.
8. The 1991 Survey included questions about average distance traveled to recreation sites. These questions were not included in the 1996 Survey.
9. The 1996 Survey included some questions about the last trip the respondent took during the interview. These included information of the type of trip, where the activity took place, and the distance and direction to the site visited.
10. The 1991 Survey collected data on hunting, fishing, and wildlife watching by U.S. residents in Canada. The 1996 Survey collected data on fishing and wildlife watching by U.S. residents in Canada.

Table C-1. Comparison of Wildlife-Related Recreation in the U.S.: 1991 and 1996

(Numbers in millions)

Participants, days, and expenditures	1991 number	1996 number	Percent change
Hunters, total	14.1	14.0	no change*
Hunting days, total	235.8	256.7	9
Hunting expenditures**, total	$14,187	$20,613	45
Anglers, total	35.6	35.2	no change*
Fishing days, total	511.3	625.9	22
Fishing expenditures**, total	$27,589	$37,797	37
Total wildlife watching	76.1	62.9	-17
Residential	73.9	60.8	-18
Nonresidential	30.0	23.7	-21
Days, nonresidential	342.4	313.8	no change*
Total wildlife-watching expenditures**	$21,242	$25,654	21

* Not different from zero at the 10-percent level. This means that for 90 percent of all possible samples, the estimate for one survey year is not different from the estimate for the other survey year.

**Expenditure estimates were made comparable by correcting the 1991 estimate for inflation and subtracting from the 1996 estimate the items that were not included in 1991.

Table C-2. Anglers and Hunters, by Census Division: 1991 and 1996

(U.S. population 16 years old and older. Numbers in thousands)

Sportsmen	1991		1996	
	Number	Percent	Number	Percent
UNITED STATES				
Total population	189,964	100	201,472	100
Sportsmen	39,979	21	39,694	20
Anglers	35,578	19	35,246	17
Hunters	14,063	7	13,975	7
New England				
Total population	10,180	100	10,306	100
Sportsmen	1,658	16	1,673	16
Anglers	1,545	15	1,520	15
Hunters	444	4	465	5
Middle Atlantic				
Total population	29,216	100	29,371	100
Sportsmen	4,508	15	4,192	14
Anglers	3,871	13	3,627	12
Hunters	1,746	6	1,453	5
East North Central				
Total population	32,188	100	33,121	100
Sportsmen	7,202	22	6,912	21
Anglers	6,264	19	6,006	18
Hunters	2,789	9	2,712	8
West North Central				
Total population	13,504	100	13,875	100
Sportsmen	4,143	31	3,977	29
Anglers	3,647	27	3,416	25
Hunters	1,709	13	1,917	14
South Atlantic				
Total population	33,682	100	36,776	100
Sportsmen	6,996	21	7,282	20
Anglers	6,441	19	6,636	18
Hunters	2,083	6	2,050	6
East South Central				
Total population	11,667	100	12,459	100
Sportsmen	2,984	26	2,907	23
Anglers	2,635	23	2,514	20
Hunters	1,279	11	1,301	10
West South Central				
Total population	19,926	100	21,811	100
Sportsmen	5,125	26	5,093	23
Anglers	4,592	23	4,616	21
Hunters	1,843	9	1,812	8
Mountain				
Total population	10,092	100	11,966	100
Sportsmen	2,488	25	2,761	23
Anglers	2,079	21	2,411	20
Hunters	1,069	11	1,061	9
Pacific				
Total population	29,508	100	31,787	100
Sportsmen	4,875	17	4,897	15
Anglers	4,505	15	4,501	14
Hunters	1,101	4	1,203	4

Table C-3. Wildlife-Watching Participants, by Census Division: 1991 and 1996

(U.S. population 16 years old and older. Numbers in thousands)

Wildlife watching	1991		1996	
	Number	Percent	Number	Percent
UNITED STATES				
Total population	189,964	100	201,472	100
Wildlife-watching participants	76,111	40	62,868	31
Nonresidential	29,999	16	23,652	12
Residential	73,904	39	60,751	30
New England				
Total population	10,180	100	10,306	100
Wildlife-watching participants	4,598	45	3,710	36
Nonresidential	1,856	18	1,443	14
Residential	4,544	45	3,586	35
Middle Atlantic				
Total population	29,216	100	29,371	100
Wildlife-watching participants	10,556	36	8,185	28
Nonresidential	4,166	14	2,960	10
Residential	10,282	35	8,023	27
East North Central				
Total population	32,188	100	33,121	100
Wildlife-watching participants	14,511	45	11,731	35
Nonresidential	5,572	17	4,501	14
Residential	14,175	44	11,297	34
West North Central				
Total population	13,504	100	13,875	100
Wildlife-watching participants	6,924	51	5,089	37
Nonresidential	2,654	20	1,927	14
Residential	6,722	50	4,900	35
South Atlantic				
Total population	33,682	100	36,776	100
Wildlife-watching participants	13,047	39	11,252	31
Nonresidential	4,450	13	3,992	11
Residential	12,813	38	10,964	30
East South Central				
Total population	11,667	100	12,459	100
Wildlife-watching participants	4,864	42	3,904	31
Nonresidential	1,592	14	1,118	9
Residential	4,765	41	3,795	30
West South Central				
Total population	19,926	100	21,811	100
Wildlife-watching participants	7,035	35	5,933	27
Nonresidential	2,459	12	2,096	10
Residential	6,817	34	5,773	26
Mountain				
Total population	10,092	100	11,966	100
Wildlife-watching participants	4,437	44	4,099	34
Nonresidential	2,215	22	1,967	16
Residential	4,145	41	3,855	32
Pacific				
Total population	29,508	100	31,787	100
Wildlife-watching participants	10,139	34	8,966	28
Nonresidential	5,035	17	3,648	11
Residential	9,641	33	8,558	27

Appendix D

Appendix D: *Sample Design and Statistical Accuracy*

This Appendix is partitioned into two parts. 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 1996 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.

The second part, Tables D-1 to D-3, reports approximate standard errors for selected measures of participation and expenditures for wildlife-related recreation.

Source and Accuracy Statement for the Kentucky State Report of the 1996 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 **1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation** (FHWAR).

The 1996 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 wildlife-watching 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 wildlife-watching participants, and a series of follow-up interviews of selected persons to collect detailed data about their wildlife-related recreation during 1996.

The 1996 FHWAR sample was selected primarily from the 1991 FHWAR Survey sample. The 1991 sample was selected from expired samples from the Current Population Survey (CPS). The 1996 sample was supplemented with a panel of newly constructed housing units to account for housing units built after the 1991 sample selection. The state samples are multistage stratified samples of the U.S. population within each state.

Sample Design

A. CPS - Current Population Survey

The expired CPS samples used for the 1991 FHWAR Survey, and subsequently the 1996 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.

To save interviewing costs, sample was reduced in some sample areas, and other areas were dropped entirely. The 1996 FHWAR old construction sample addresses were located in 574 areas comprising 1,013 counties, independent cities, and minor civil divisions.

B. Supplemental New Construction Sample

To account for housing units built since the 1991 FHWAR sample was selected, a new construction panel was selected from expired CPS new construction files. These units were last interviewed between March 1994 and June 1995. This sample was added in the same areas that were retained for the 1996 FHWAR old construction sample.

C. The FHWAR Screening Sample

The screening sample consisted of households identified from the above sources. In Kentucky, about 1,293 household interviews were assigned. Of these, roughly 19.0 percent were found to be vacant or otherwise not to be enumerated. About 4.4 percent were not completed in telephone centers and were not assigned personal visit interviews due to cost constraints. Of the remaining households, about 16.5 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 827 completed household interviews were obtained for a response rate of approximately 83.5 percent. The field representatives asked the screening questions for all household members 6 years old and older. Interviewing for the screening sample was conducted during April, May, and June of 1996.

D. The Detailed Samples

1. Sportsmen

The State sportsmen detailed 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 previous years, participation in hunting/fishing in 1996 by the time of the screening interview, and intentions to fish or hunt during the remainder of 1996.

Each person was placed into one of the following six groups based on their past participation in fishing/hunting activities:

Active - a person who had already participated in 1996 at the time of the screening interview.

Avid - a person who hunted or fished at least 30 days or spent at least $600 on either hunting or fishing in 1995.

Average - a person who hunted or fished at least 4 days but not more than 29 days or spent between $26 to $599 on hunting or fishing in 1995.

Infrequent - a person who hunted or fished at least 1 day but not more than 3 days and spent less than $26 on hunting or fishing in 1995.

Inactive - a person who did not participate in hunting/fishing in 1995, but did participate in 1991 to 1994.

Nonparticipant - a person who did not participate in hunting/fishing in 1991 to 1995.

Each person not in the Active group was asked their likelihood of going hunting/fishing in 1996:

- Very Likely
- Somewhat Likely
- Somewhat Unlikely
- Very Unlikely

Persons were selected for the detailed phase based on a combination of these two groupings. All Active and Avid sportsmen, and all persons who said they were Very Likely to fish/hunt in 1996 were interviewed. Nonparticipants who said they were Somewhat Unlikely or Very Unlikely to participate in 1996 were not eligible for a detailed interview. All other persons were subsampled to yield the desired number of sportsmen in each state.

Active sportsmen were given the detailed interview twice - at the same time as the screening interview (April to June 1996) and again in January/February 1997. All other sportsmen were also interviewed twice - first in August/September 1996, then in January/February 1997. If we were not able to obtain the first interview, we attempted to interview the person in the final interviewing period with the reference period being the entire year.

About 517 persons were designated for interviews in Kentucky. Overall, about 458 detailed sportsmen interviews were completed for a response rate of 88.6 percent.

2. *Wildlife-Watching Participants*

The State wildlife-watching detailed 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 wildlife-watching activities in previous years, participation in 1996 by the time of the screening interview, and intentions to participate in activities during the remainder of 1996.

Each person was placed into one of the following six groups based on their past participation in wildlife-watching activities:

Active - a person who had already participated in 1996 at the time of the screening interview.

Avid - a person who participated at least 21 days or spent at least $300 on wildlife-watching activities in 1995.

Average - a person who participated at least 4 days but not more than 20 days or spent between $26 and $299 on wildlife-watching activities in 1995.

Infrequent - a person who participated at least 1 day but not more than 3 days and spent less than $26 on wildlife-watching activities in 1995.

Residential - a person who participated in wildlife-watching activities in 1995 around the home, but did not take any trips to participate in wildlife-watching activities.

Nonparticipant - a person who did not participate in wildlife-watching activities in 1991-1995.

Each person not in the Active group was asked their likelihood of participating in wildlifewatching activities in 1996:

- Very Likely
- Somewhat Likely
- Somewhat Unlikely
- Very Unlikely

Persons were selected for the detailed phase based on a combination of these two groupings. Nonparticipants who said they were Very Unlikely to participate in 1996 were not eligible for a detailed interview. All other persons were subsampled to yield the desired number of wildlife-watching participants in each state.

Wildlife-watching participants were given the detailed interview twice. Some received their first detailed interview at the same time as the screening interview (April to June 1996). The rest received their first interview in August/September 1996. All wildlife-watching participants received their second interview in January/February 1997. If we were not able to obtain the first interview, we attempted to interview the person in the final interviewing period with the reference period being the entire year.

About 310 persons were designated for interviews in Kentucky. Overall, about 270 detailed wildlife-watching participant interviews were completed for a response rate of 87.1 percent.

Estimation Procedure

Several stages of adjustments were involved in the estimation procedure used to derive the final 1996 FHWAR person weights. A brief description of the major components of the weights 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 detailed interviews. Estimates which come from the screening sample are presented in Appendix B.

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 households probability of selection.

2. *Personal Visit Subsampling Factor.* Some households could not be interviewed by telephone because there was not a good telephone number or address for the unit. Due to budget constraints, not all of these cases could be followed up with a personal visit. This factor inflates the weights of those cases which were selected for personal visits to account for those similar cases which were not selected.

3. *Household Noninterview Adjustment.* The noninterview adjustment inflated the weight assigned to interviewed households to account for households eligible for interview but for which no interview was obtained.

4. *First-Stage Adjustment.* The 574+ 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.
5. *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 detailed sample received a weight that was the product of the following factors:

1. *Screening Weight.* This is the persons final weight from the screening sample.
2. *Sportsmen Stratum Adjustment.* This factor inflated 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 detailed 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 detailed sample to the screening sample within sportsmen sampling strata. This adjustment brings the population estimates of persons age 16 or older from the detailed sample into agreement with the same estimates from the screening sample, which was a much larger sample.

C. Wildlife-Watching Participant Sample

Every interviewed person in the wildlife-watching participant detailed sample received a weight that was the product of the following factors:

1. *Screening Weight.* This is the persons final weight from the screening sample.
2. *Wildlife-Watching Participant Stratum Adjustment.* This factor inflated the weights of persons selected for the detailed sample to account for the subsampling done within each wildlife-watching participant stratum.
3. *Wildlife-Watching Participant Noninterview Adjustment.* This factor adjusts the weights of the interviewed wildlife-watching participants to account for wildlife-watching participants selected the detailed 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. *Wildlife-Watching Participant Ratio Adjustment Factor.* This is a ratio adjustment of the detailed sample to the screening sample within the wildlife-watching participant 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.

Accuracy of the Estimates

Since the 1996 estimates came 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 1996 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 the processing of data.
- Errors made in estimating values for missing data.
- Failure to represent all units with the sample (undercoverage).

Overall CPS undercoverage is estimated to be about 8 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.

Comparability of Data. Data obtained from the 1996 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 C.)

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 base smaller than 100,000. 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 state sample used for the 1996 FHWAR is one of a large number of all possible samples of the same size that could have been selected using the same sample design. Estimates derived from the different sample 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 95 percent of the intervals from 1.96 standard errors below the estimate to 1.96 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 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 characteristics are different at the 0.05 level of significance, for example, the absolute value of the estimated difference between characteristics must be greater than or equal to 1.96 times the standard error of the difference.

This report uses 95-percent confidence intervals and 0.05 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-4 to D-9. 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 wildlife-watching participants.

$$s_x = \sqrt{ax^2 + bx} \qquad (1)$$

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.

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

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. Suppose that a table shows that 39,694,000 persons 16+ either fished or hunted in the United States in 1996. Using formula (1) with the parameters a = -0.00004 and b = 7,950 from Table D- 5, the approximate standard error of the estimated number of 39,694,000 sportsmen 16+ is

$$s_x = \sqrt{-0.00004x39{,}694{,}000^2 + 7{,}950x39{,}694{,}000} = 502{,}100$$

The 95-percent confidence interval for the estimated number of sportsmen 16+ is from 38,709,900 to 40,678,100, ie., 39,694,000 ± 1.96x502,100. 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 95 percent of all possible samples.

Suppose that another table shows that 13,975,000 hunters 16+ engaged in 256,676,000 days of participation in 1996 in the United States. Using formula (2) with the parameters a = 0.000284, b = -64,721, and c = 20,674 from Table D-7, the approximate standard error on 256,676,000 estimated days on an estimated base of 13,975,000 hunters is

$$s_x = \sqrt{0.000284x56{,}676{,}000^2 + (-64{,}721)x256{,}676{,}000 + \frac{20{,}674x256{,}676{,}000^2}{13{,}975{,}000}} = 9{,}978{,}100$$

The 95-percent confidence interval on the estimate of 256,676,000 days is from 237,118,900 to 276,233,100, ie., 256,676,000 ± 1.96x9,978,100. 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 95 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 the denominator of the percentage are in different categories, use the parameter in the tables indicated by the numerator.

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

$$s_{x,p} = \sqrt{\frac{bp(100 - p)}{x}} \qquad (3)$$

Here, x is the total number of sportsmen, hunters, etc., which is the base of the percentage; p is the percentage (0p100); 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. Suppose that a table shows that of the 13,975,000 hunters 16+ in the United States, 22.0 percent hunted migratory birds. From Table D-5, the appropriate b parameter is 5,818.Using formula (3), the approximate standard error on the estimate of 22.0 percent is

$$s_{x,p} = \sqrt{\frac{5{,}818x22.0x78.0}{13{,}975{,}000}} = 0.85$$

Consequently, the 95-percent confidence interval for the estimated percentage of migratory bird hunters 16+ is from 20.3 percent to 23.7 percent, ie. 22.0 ± 1.96x0.85.

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

$$s_{x-y} = \sqrt{s_x^2 + s_y^2} \qquad (4)$$

where $_x$ 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. Suppose that a table shows that of the 13,975,000 hunters in the United States, 2,783,000 were in the age group 25-34, and 3,819,000 were in the age group 35-44. The corresponding percentages are 19.9 percent and 27.3 percent, respectively. The apparent difference between the percent of hunters 25-34 and hunters 35-44 is 7.4 percent. Using formula (3) and the appropriate b parameter from Table D-5, the approximate standard errors of 19.9 percent and 27.3 percent are 0.81 and 0.91, respectively. Using formula (4), the approximate standard error of the estimated difference of 7.4 percent is

$$s_{x-y} = \sqrt{0.81^2 + 0.91^2} = 1.22$$

The 95-percent confidence interval on the difference between hunters aged 25-34 and hunters aged 35-44 is from 5.0 to 9.8 percent, i.e., 7.4 ± 1.96x1.22. Since the interval does not contain zero, we can conclude with 95 percent confidence that the percentage of hunters aged 25-34 is smaller 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.

$$s_{x/y} = \frac{x}{y}\sqrt{\left[\frac{s_x}{x}\right]^2 + \left[\frac{s_y}{y}\right]^2 - 2r\frac{s_x s_y}{xy}} \qquad (5)$$

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

Illustration of the Computation of the Standard Error of an Estimated Average. Suppose that a table shows that the average days per angler 16+ for all fishing in the United States was 17.8 days. Using formulas (1) and (2) above, we compute the standard error on total days, 625,893,000, and total anglers, 35,246,000, to be 19,183,000 and 480,000, respectively. The approximate standard error on the estimated average of 17.8 days is

$$s_{x/y} = \frac{625{,}893{,}000}{35{,}246{,}000}\sqrt{\left[\frac{19{,}183{,}000}{625{,}893{,}000}\right]^2 + \left[\frac{480{,}000}{35{,}246{,}000}\right]^2 - 2\text{x}0.7\text{x}\frac{19{,}183{,}000\text{x}480{,}000}{625{,}893{,}000\text{x}35{,}246{,}000}} = 0.41$$

Therefore, the 95-percent confidence interval on the estimated average of 17.8 days is from 17.0 to 18.6, i.e., 17.8 ± 1.96x0.41.

Table D-1. Approximate Standard Errors of Resident Anglers, Days of Fishing by State Residents, and Expenditures for Fishing by State Residents

(Numbers in thousands)

State	Participation		Days		Expenditures in dollars	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Alabama	698	46	15,337	1,338	$755,268	$138,436
Alaska	178	10	3,218	628	$216,519	$38,508
Arizona	443	36	4,749	1,171	$321,813	$60,193
Arkansas	494	39	8,018	1,192	$217,913	$52,641
California	2,721	186	39,158	7,197	$3,717,430	$649,627
Colorado	671	44	7,856	890	$645,469	$124,295
Connecticut	364	22	6,081	684	$279,605	$42,880
Delaware	109	7	2,327	280	$179,935	$30,018
Florida	1,948	133	41,489	7,050	$2,783,806	$483,766
Georgia	982	69	16,139	2,415	$1,214,402	$203,638
Hawaii	132	10	2,667	540	$88,419	$15,379
Idaho	281	20	3,724	559	$235,734	$40,592
Illinois	1,591	102	26,747	3,087	$1,967,498	$367,424
Indiana	854	54	16,405	1,588	$799,930	$107,114
Iowa	512	35	8,676	654	$419,575	$64,843
Kansas	371	32	7,104	1,998	$276,642	$55,493
Kentucky	681	45	10,306	939	$718,122	$149,593
Louisiana	860	61	20,934	4,414	$896,877	$142,037
Maine	207	16	4,039	628	$132,921	$33,454
Maryland	569	39	10,014	2,438	$666,089	$154,595
Massachusetts	601	42	11,024	1,981	$706,802	$131,046
Michigan	1,485	107	27,602	4,721	$1,479,968	$257,520
Minnesota	1,078	79	21,237	5,983	$1,568,434	$254,558
Mississippi	431	34	8,476	1,016	$536,298	$99,548
Missouri	935	66	15,135	1,539	$633,269	$128,657
Montana	163	12	1,857	232	$101,973	$14,913
Nebraska	239	19	3,272	370	$189,386	$31,474
Nevada	208	14	2,900	377	$325,513	$45,599
New Hampshire	159	11	3,159	532	$219,427	$58,661
New Jersey	788	53	16,683	2,438	$1,172,815	$212,863
New Mexico	235	17	2,761	705	$181,240	$35,300
New York	1,493	97	27,570	3,961	$1,889,112	$321,949
North Carolina	1,122	82	20,602	4,033	$1,321,394	$309,340
North Dakota	114	8	1,793	224	$137,104	$23,234
Ohio	1,108	77	19,434	1,969	$955,254	$170,075
Oklahoma	755	54	13,834	2,197	$534,330	$128,928
Oregon	525	39	8,260	1,121	$622,533	$110,472
Pennsylvania	1,346	95	24,284	2,358	$942,953	$148,435
Rhode Island	104	7	2,158	443	$150,002	$36,370
South Carolina	674	40	14,015	2,025	$746,607	$153,342
South Dakota	168	12	2,473	244	$162,751	$27,619
Tennessee	705	48	12,927	1,702	$492,999	$86,691
Texas	2,508	197	55,884	15,339	$3,055,911	$672,133
Utah	296	20	3,261	289	$190,474	$27,859
Vermont	87	7	1,868	258	$136,020	$28,065
Virginia	950	59	16,256	2,958	$905,647	$142,585
Washington	945	83	12,756	2,795	$677,943	$139,915
West Virginia	269	20	5,680	906	$189,992	$36,065
Wisconsin	969	68	14,546	1,343	$937,048	$144,009
Wyoming	114	8	1,412	162	$96,133	$16,703

Table D-2. Approximate Standard Errors of Resident Hunters, Days of Hunting by State Residents, and Expenditures for Hunting by State Residents

(Numbers in thousands)

State	Participation		Days		Expenditures in dollars	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Alabama	266	26	6,880	1,861	$536,653	$134,646
Alaska	66	7	1,031	190	$143,667	$34,649
Arizona	150	18	1,611	529	$208,972	$69,489
Arkansas	329	33	8,617	2,982	$541,733	$205,459
California	578	87	8,500	3,234	$1,026,171	$385,333
Colorado	248	33	3,373	1,050	$477,905	$178,762
Connecticut	68	9	884	226	$85,975	$23,250
Delaware	32	4	680	245	$31,379	$7,786
Florida	234	47	5,519	1,749	$471,602	$163,035
Georgia	365	39	6,862	1,250	$858,437	$271,517
Hawaii	24	4	275	75	$20,237	$7,070
Idaho	183	17	2,736	479	$183,878	$39,756
Illinois	443	50	7,176	1,290	$527,072	$117,953
Indiana	347	33	6,248	1,471	$280,264	$68,074
Iowa	301	23	5,063	508	$223,099	$33,170
Kansas	217	25	3,786	1,147	$316,718	$105,371
Kentucky	355	37	5,619	848	$342,892	$82,115
Louisiana	366	38	7,833	973	$637,690	$202,169
Maine	148	14	2,694	719	$215,846	$80,540
Maryland	125	17	1,744	396	$97,721	$29,454
Massachusetts	88	14	1,775	439	$140,896	$39,919
Michigan	872	80	18,281	3,730	$1,836,130	$422,666
Minnesota	573	55	7,192	1,033	$522,426	$133,582
Mississippi	300	26	6,726	628	$501,561	$78,367
Missouri	500	48	8,227	1,791	$663,980	$152,380
Montana	143	11	1,497	188	$97,425	$15,395
Nebraska	137	15	2,234	560	$98,520	$18,819
Nevada	60	7	784	181	$113,991	$34,901
New Hampshire	69	7	1,240	212	$61,115	$13,026
New Jersey	93	17	2,390	717	$183,188	$69,615
New Mexico	93	11	681	74	$86,754	$23,088
New York	608	60	11,770	1,743	$865,994	$197,814
North Carolina	352	42	8,477	2,018	$561,993	$148,641
North Dakota	81	7	1,127	228	$91,150	$17,844
Ohio	453	47	7,805	1,260	$489,293	$110,236
Oklahoma	288	41	5,698	1,341	$422,999	$147,265
Oregon	275	32	4,354	1,099	$604,068	$169,586
Pennsylvania	752	65	12,806	1,822	$648,246	$168,211
Rhode Island	22	3	450	122	$26,266	$9,994
South Carolina	243	23	6,517	1,201	$350,233	$75,400
South Dakota	110	9	1,895	274	$98,993	$16,448
Tennessee	381	36	9,972	2,467	$824,891	$239,492
Texas	829	102	16,522	5,542	$1,276,037	$297,063
Utah	115	16	1,564	460	$170,172	$64,697
Vermont	70	6	1,594	195	$96,035	$16,833
Virginia	399	38	7,501	2,221	$429,472	$139,197
Washington	259	43	4,828	1,455	$341,719	$124,367
West Virginia	257	22	5,647	1,209	$234,045	$40,641
Wisconsin	598	57	10,342	2,580	$1,428,174	$250,467
Wyoming	70	7	956	153	$108,288	$31,688

Table D-3. Approximate Standard Errors of Resident Nonresidential Participants, Days of Nonresidential Participation by State Residents, and Trip-Related Expenditures for Nonresidential Activities by State Residents

(Numbers in thousands)

State	Participation		Days		Expenditures in dollars	
	Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Alabama	259	30	3,187	614	$68,569	$15,683
Alaska	128	17	2,531	507	$104,983	$21,322
Arizona	432	52	7,405	3,649	$162,431	$49,991
Arkansas	212	30	3,734	1,425	$46,341	$12,875
California	2,391	323	31,795	9,133	$1,579,434	$385,072
Colorado	603	67	9,754	2,243	$320,791	$108,916
Connecticut	257	34	3,089	780	$216,133	$51,456
Delaware	77	12	1,082	279	$26,850	$7,136
Florida	1,088	136	12,760	3,004	$490,757	$132,886
Georgia	553	56	5,788	1,339	$247,096	$50,348
Hawaii	57	6	1,045	268	$42,814	$12,845
Idaho	157	24	1,824	515	$59,370	$18,873
Illinois	1,370	146	15,203	3,144	$683,319	$165,192
Indiana	444	57	6,233	2,263	$94,865	$20,194
Iowa	367	49	4,768	1,259	$97,328	$26,118
Kansas	215	25	3,740	1,005	$54,367	$13,718
Kentucky	357	44	6,007	2,717	$81,991	$22,979
Louisiana	306	42	3,661	1,007	$113,916	$26,678
Maine	140	22	1,297	331	$28,781	$5,803
Maryland	528	61	7,554	1,632	$329,798	$96,876
Massachusetts	697	120	10,581	2,363	$255,819	$68,357
Michigan	1,075	142	16,765	4,220	$394,150	$114,120
Minnesota	511	81	6,572	2,365	$155,585	$46,151
Mississippi	100	16	1,812	762	$51,479	$19,296
Missouri	528	68	8,410	3,616	$163,227	$45,386
Montana	162	18	1,898	415	$52,978	$15,124
Nebraska	192	21	2,170	601	$49,183	$11,644
Nevada	121	17	1,585	460	$62,666	$18,950
New Hampshire	169	21	3,501	1,038	$43,201	$14,227
New Jersey	623	79	8,357	3,180	$475,648	$198,687
New Mexico	186	21	2,732	1,334	$43,620	$12,952
New York	1,027	132	10,731	2,779	$291,798	$84,528
North Carolina	556	61	10,693	2,844	$155,236	$36,221
North Dakota	40	5	422	105	$9,969	$2,664
Ohio	921	127	11,716	2,886	$196,586	$56,321
Oklahoma	289	42	6,079	2,952	$81,166	$24,652
Oregon	408	54	5,511	1,350	$179,301	$52,096
Pennsylvania	1,311	200	15,369	4,365	$340,351	$109,309
Rhode Island	84	12	1,352	575	$28,292	$10,382
South Carolina	274	28	3,369	805	$94,479	$22,800
South Dakota	74	10	1,500	617	$15,879	$3,418
Tennessee	401	54	3,683	1,051	$154,491	$58,213
Texas	1,289	186	15,280	7,154	$518,246	$206,945
Utah	220	27	1,787	296	$53,985	$15,045
Vermont	96	13	2,087	555	$23,582	$8,004
Virginia	757	97	5,857	1,594	$241,240	$70,011
Washington	664	91	8,645	1,638	$251,781	$93,324
West Virginia	127	15	1,760	458	$21,640	$5,486
Wisconsin	691	99	9,511	3,970	$163,476	$72,601
Wyoming	86	11	925	200	$23,089	$6,646

Table D-4. a and b Parameters for Calculating Approximate Standard Errors of Sportsmen, Anglers, Hunters, and Wildlife-Watching Participants[1]

State	6 years old and over		6 to 15 year olds only	
	a	b	a	b
United States	**-0.0000293**	**7,036**	**-0.0001730**	**6,802**
Alabama	-0.0007658	3,006	-0.0045721	2,853
Alaska	-0.0016494	891	-0.0078073	851
Arizona	-0.0007435	2,905	-0.0035985	2,429
Arkansas	-0.0015613	3,586	-0.0093159	3,568
California	-0.0004437	12,684	-0.0021696	10,501
Colorado	-0.0010526	3,678	-0.0054729	3,136
Connecticut	-0.0004624	1,370	-0.0030619	1,384
Delaware	-0.0007495	496	-0.0048252	497
Florida	-0.0008158	10,724	-0.0052840	10,288
Georgia	-0.0008276	5,497	-0.0046706	5,161
Hawaii	-0.0007649	818	-0.0036491	624
Idaho	-0.0019908	2,158	-0.0107087	2,206
Illinois	-0.0005554	5,947	-0.0030051	5,259
Indiana	-0.0007461	3,951	-0.0043700	3,697
Iowa	-0.0011081	2,877	-0.0055425	2,350
Kansas	-0.0014181	3,289	-0.0095877	3,883
Kentucky	-0.0008677	3,095	-0.0050246	2,854
Louisiana	-0.0013993	5,541	-0.0067735	4,965
Maine	-0.0013646	1,565	-0.0089672	1,641
Maryland	-0.0006731	3,125	-0.0038993	2,866
Massachusetts	-0.0004201	2,322	-0.0025174	2,024
Michigan	-0.0011076	9,650	-0.0065555	9,512
Minnesota	-0.0018230	7,669	-0.0113093	8,301
Mississippi	-0.0011869	2,942	-0.0063244	2,827
Missouri	-0.0011350	5,510	-0.0071610	5,736
Montana	-0.0016020	1,309	-0.0107517	1,559
Nebraska	-0.0010324	1,539	-0.0059077	1,536
Nevada	-0.0007191	1,034	-0.0045759	1,025
New Hampshire	-0.0007429	787	-0.0041897	729
New Jersey	-0.0004586	3,309	-0.0027233	2,982
New Mexico	-0.0008985	1,407	-0.0042457	1,244
New York	-0.0004135	6,802	-0.0024510	6,179
North Carolina	-0.0009739	6,451	-0.0077718	8,005
North Dakota	-0.0013156	769	-0.0105784	1,079
Ohio	-0.0006359	6,467	-0.0040206	6,638
Oklahoma	-0.0017508	5,258	-0.0086514	4,542
Oregon	-0.0010579	3,113	-0.0057919	2,728
Pennsylvania	-0.0006440	7,068	-0.0045985	7,730
Rhode Island	-0.0004340	387	-0.0027388	367
South Carolina	-0.0007407	2,510	-0.0039015	2,138
South Dakota	-0.0013538	898	-0.0093934	1,146
Tennessee	-0.0009665	4,710	-0.0063386	4,792
Texas	-0.0009775	16,780	-0.0049099	15,196
Utah	-0.0010417	1,856	-0.0033747	1,306
Vermont	-0.0013854	751	-0.0099425	865
Virginia	-0.0007734	4,710	-0.0040605	3,760
Washington	-0.0010698	5,389	-0.0060313	5,012
West Virginia	-0.0012417	2,129	-0.0084177	2,096
Wisconsin	-0.0015108	7,090	-0.0085200	6,833
Wyoming	-0.0018715	840	-0.0090238	758

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

Table D-5. a and b Parameters for Calculating Approximate Standard Errors of Levels for the Detailed Sportsmen Sample

State	Sportsmen and anglers 16+		Hunters 16+	
	a	b	a	b
United States	**-0.000040**	**7,950**	**-0.000015**	**5,818**
Alabama	-0.001402	3,972	-0.000628	2,797
Alaska	-0.001751	923	-0.001244	764
Arizona	-0.001249	3,555	-0.000187	2,190
Arkansas	-0.002147	4,216	-0.001824	3,869
California	-0.000733	14,753	-0.000529	13,292
Colorado	-0.000886	3,430	-0.001837	4,844
Connecticut	-0.000783	1,637	-0.000336	1,265
Delaware	-0.000931	539	-0.001384	646
Florida	-0.000784	10,579	-0.000594	9,725
Georgia	-0.000936	5,750	-0.000267	4,186
Hawaii	-0.000829	837	-0.000660	787
Idaho	-0.001461	1,852	-0.001478	1,862
Illinois	-0.001269	8,507	-0.000549	5,923
Indiana	-0.000783	4,024	-0.000375	3,209
Iowa	-0.001202	2,989	-0.000220	1,823
Kansas	-0.001474	3,340	-0.001195	3,086
Kentucky	-0.001453	3,935	-0.001783	4,408
Louisiana	-0.001338	5,444	-0.000572	4,229
Maine	-0.001160	1,465	-0.001046	1,409
Maryland	-0.000587	3,004	-0.000126	2,354
Massachusetts	-0.001367	3,732	-0.000390	2,277
Michigan	-0.000980	9,209	-0.000615	7,944
Minnesota	-0.001842	7,710	-0.000917	5,755
Mississippi	-0.001589	3,357	-0.000709	2,449
Missouri	-0.001327	5,904	-0.000891	5,010
Montana	-0.000963	1,048	-0.000961	1,047
Nebraska	-0.001551	1,835	-0.001693	1,916
Nevada	-0.001152	1,247	-0.000461	907
New Hampshire	-0.001313	996	-0.000508	701
New Jersey	-0.000993	4,319	-0.000417	3,230
New Mexico	-0.000960	1,443	-0.000661	1,267
New York	-0.000449	6,946	-0.000244	6,109
North Carolina	-0.001480	7,686	-0.000462	5,203
North Dakota	-0.001258	753	-0.000784	621
Ohio	-0.000479	5,945	-0.000206	5,040
Oklahoma	-0.001628	5,086	-0.002761	6,678
Oregon	-0.001539	3,735	-0.001882	4,179
Pennsylvania	-0.000913	7,956	-0.000262	5,806
Rhode Island	-0.000950	513	-0.000664	443
South Carolina	-0.001246	3,184	-0.000530	2,229
South Dakota	-0.002456	1,262	-0.001127	823
Tennessee	-0.000148	3,323	-0.000304	3,587
Texas	-0.001283	18,641	-0.000320	12,769
Utah	-0.000729	1,629	-0.001987	2,542
Vermont	-0.001324	738	-0.000788	625
Virginia	-0.000551	4,219	-0.000324	3,719
Washington	-0.003472	10,616	-0.002192	7,830
West Virginia	-0.000612	1,688	-0.001310	2,177
Wisconsin	-0.000735	5,548	-0.001007	6,088
Wyoming	-0.001124	653	-0.002247	934

Table D-6. a, b, and c Parameters for Calculating Approximate Standard Errors for Expenditures for the Detailed Sportsmen Sample

State	Sportsmen and anglers 16+			Hunters 16+		
	a	b	c	a	b	c
United States	**0.000150**	**-192,623**	**34,364**	**0.000277**	**-478,142**	**33,707**
Alabama	0.022140	-31,979	7,632	0.041030	-34,071	5,795
Alaska	0.023245	-15,072	1,467	0.043010	-17,754	1,016
Arizona	0.025451	-1,413	4,134	0.073680	-289,994	5,746
Arkansas	0.046100	-35,277	6,033	0.128750	-223,947	4,961
California	0.020212	-180,816	28,097	0.121120	-136,518	11,478
Colorado	0.027113	-31,215	6,499	0.126930	-19,131	3,212
Connecticut	0.014369	-20,672	3,246	0.051520	30,475	1,407
Delaware	0.019906	-3,294	842	0.035500	-5,858	785
Florida	0.018422	-54,019	21,952	0.051760	-276,536	15,998
Georgia	0.017194	38,491	10,236	0.077200	-264,814	8,387
Hawaii	0.019313	-3,794	1,361	0.086390	-1,253	797
Idaho	0.016458	-19,925	3,682	0.026210	-102,915	3,831
Illinois	0.023997	-118,822	16,341	0.027055	-235,002	10,288
Indiana	0.008054	-37,770	7,805	0.044360	-113,025	5,115
Iowa	0.016916	-4,999	3,458	0.005885	-88,869	4,861
Kansas	0.033115	-5,365	2,597	0.094000	-144,269	3,670
Kentucky	0.033294	-35,489	6,480	0.031030	-211,390	9,091
Louisiana	0.012738	-6,921	10,247	0.077410	-178,559	8,417
Maine	0.051020	-11,191	2,468	0.118050	-62,158	3,145
Maryland	0.043650	-36,620	5,657	0.068670	-9,067	2,690
Massachusetts	0.022765	-70,099	6,656	0.011280	-40,800	5,986
Michigan	0.017766	-94,006	17,933	0.021460	-386,383	27,458
Minnesota	0.016251	-2,890	10,828	0.045130	-194,991	11,809
Mississippi	0.016620	-34,650	7,371	-0.001980	-78,252	7,986
Missouri	0.031920	-38,417	8,626	0.023030	-171,746	14,407
Montana	0.012655	-4,035	1,384	0.009135	1,629	2,229
Nebraska	0.019808	-3,439	1,803	0.015060	21,116	2,870
Nevada	0.006082	-11,623	2,767	0.073300	-57,009	1,223
New Hampshire	0.060070	-13,210	1,758	0.020440	-20,168	1,638
New Jersey	0.019375	-108,500	10,322	0.089840	-152,277	5,197
New Mexico	0.029329	-4,702	1,937	0.055030	-40,824	1,474
New York	0.013940	-128,454	20,807	0.028680	-107,377	14,284
North Carolina	0.038160	-174,985	18,106	0.046780	1,355	8,152
North Dakota	0.021979	-777	752	0.024171	-23,882	1,149
Ohio	0.018212	-76,116	14,481	0.011040	-360,018	17,181
Oklahoma	0.043300	-88,548	10,547	0.098030	-41,671	6,498
Oregon	0.008560	-61,773	11,911	0.054460	-223,614	6,661
Pennsylvania	0.009523	-138,047	20,372	0.053860	-155,572	10,311
Rhode Island	0.048180	-10,693	1,055	0.126010	-18,309	422
South Carolina	0.032550	-49,811	6,362	0.019070	185,472	6,243
South Dakota	0.008600	-27,856	3,357	0.014299	574	1,458
Tennessee	0.022255	-24,179	6,024	0.047520	-469,509	13,865
Texas	0.032800	-300,879	38,595	0.019380	-347,416	29,092
Utah	0.009578	-16,645	3,479	0.112610	-242,080	3,839
Vermont	0.007530	-20,073	2,991	0.012590	39,217	1,230
Virginia	0.007276	-173,725	16,133	0.089620	-203,860	6,212
Washington	0.033116	-38,664	8,578	0.105180	-41,288	6,989
West Virginia	0.018591	-28,940	4,606	0.012360	-42,917	4,494
Wisconsin	0.011515	-92,109	11,387	0.013420	-129,738	10,352
Wyoming	0.022142	-1,139	914	0.070790	-32,872	1,042

Table D-7. a, b, and c Parameters for Calculating Approximate Standard Errors for Days or Trips for the Detailed Sportsmen Sample

State	Sportsmen and anglers 16+			Hunters 16+		
	a	b	c	a	b	c
United States	**-0.000487**	**-324,198**	**68,529**	**0.000284**	**-64,721**	**20,674**
Alabama	-0.011070	-11,692	13,572	0.056950	-1,149	4,361
Alaska	0.033200	-490	902	0.011283	-2,292	1,633
Arizona	0.056570	4,289	1,496	0.092450	-2,138	2,510
Arkansas	0.013786	2,864	3,940	0.104810	-7,656	5,216
California	0.029946	-4,196	10,727	0.126460	-18,167	11,833
Colorado	0.005428	-2,711	5,203	0.073060	-15,717	7,066
Connecticut	0.003347	-2,052	3,505	0.043562	-1,460	1,594
Delaware	0.007255	-490	812	0.107830	-1,125	758
Florida	0.013367	-24,334	31,352	0.050630	-11,393	12,144
Georgia	-0.002390	-20,940	25,606	0.009602	-4,615	8,856
Hawaii	0.030060	-1,400	1,521	0.031530	-464	1,088
Idaho	-0.004433	-18,648	8,978	0.012581	-5,338	3,657
Illinois	0.001066	-31,929	21,399	0.010252	-13,269	10,598
Indiana	-0.005908	-10,895	13,612	0.043800	-5,762	4,346
Iowa	-0.006627	-4,499	6,572	-0.005814	-6,150	5,151
Kansas	0.072300	-1,103	2,570	0.075350	-3,708	3,786
Kentucky	-0.000490	-4,426	6,283	0.005267	-9,012	6,791
Louisiana	0.027440	-12,750	15,168	-0.008006	-11,412	9,108
Maine	0.009860	-5,593	3,254	0.055710	-5,057	2,588
Maryland	0.050010	-3,282	5,469	0.022913	-2,192	3,737
Massachusetts	0.026976	-1,916	3,299	0.026656	-1,886	3,137
Michigan	0.013471	-64,347	26,902	0.024363	-8,048	15,439
Minnesota	0.067180	-14,162	13,867	0.003570	-3,330	10,044
Mississippi	0.002499	-3,774	5,306	-0.006274	-3,468	4,651
Missouri	-0.013391	-20,814	23,469	0.032758	-3,368	7,531
Montana	0.007369	-729	1,403	0.002089	-3,220	2,255
Nebraska	-0.001529	-2,946	3,633	0.052340	-617	1,483
Nevada	0.008313	-1,068	1,857	0.032699	-1,208	1,338
New Hampshire	0.021018	-749	1,202	0.011513	-764	1,264
New Jersey	0.006822	-20,863	12,441	0.040160	-7,095	4,902
New Mexico	0.058190	-319	1,665	-0.006373	507	1,618
New York	0.006621	-75,595	25,019	0.005049	-13,667	10,969
North Carolina	0.026990	-7,929	13,144	0.026400	-5,933	10,903
North Dakota	0.000737	-1,235	1,770	0.030689	-488	875
Ohio	-0.008811	-17,533	22,138	0.006268	-4,917	9,261
Oklahoma	-0.004210	-22,761	23,462	0.022440	-12,402	10,113
Oregon	-0.003514	-13,057	12,352	0.047340	-8,303	5,034
Pennsylvania	-0.004771	-29,038	20,722	0.005890	-13,456	11,579
Rhode Island	0.035533	-488	716	0.055023	16	418
South Carolina	0.016055	-1,772	3,332	0.012010	-7,443	5,606
South Dakota	-0.012421	-2,325	3,881	0.006947	264	1,520
Tennessee	-0.010925	-15,873	20,791	0.043900	-14,556	7,158
Texas	0.064330	-20,030	28,511	0.093890	-7,271	15,821
Utah	-0.010885	-7,389	6,213	0.061040	-6,144	3,385
Vermont	-0.011266	-3,627	2,815	-0.002376	-458	1,235
Virginia	0.035180	125,224	-9,283	0.072310	388	6,109
Washington	0.036450	61,568	6,373	0.053870	-15,132	10,384
West Virginia	0.014927	-1,405	2,899	0.033992	-1,412	3,115
Wisconsin	-0.002327	-13,236	11,393	0.044300	-29,411	12,437
Wyoming	0.002976	-753	1,220	0.003873	-1,048	1,592

Table D-8. a and b Parameters for Calculating Approximate Standard Errors of Levels of Wildlife-Watching Participants for the Detailed Wildlife-Watching Participants Sample

State	Nonresidential users		All wildlife-watching participants[1]	
	a	b	a	b
United States	**-0.000276**	**25,931**	**-0.000305**	**28,168**
Alabama	-0.001433	3,758	-0.002465	4,921
Alaska	-0.014534	4,139	-0.015101	4,282
Arizona	-0.005141	8,512	-0.004974	8,299
Arkansas	-0.003210	4,887	-0.004132	5,615
California	-0.006775	59,801	-0.008521	72,793
Colorado	-0.005938	10,978	-0.013074	21,640
Connecticut	-0.005230	5,813	-0.007233	7,680
Delaware	-0.009246	2,459	-0.008584	2,306
Florida	-0.003500	20,728	-0.006692	32,623
Georgia	-0.001243	6,315	-0.001948	7,705
Hawaii	-0.000145	693	-0.000308	726
Idaho	-0.007455	4,802	-0.008880	5,492
Illinois	-0.005391	22,958	-0.007053	28,807
Indiana	-0.003253	8,771	-0.005209	12,532
Iowa	-0.007071	9,220	-0.006115	8,203
Kansas	-0.001433	3,300	-0.003303	4,700
Kentucky	-0.004163	6,866	-0.003590	6,210
Louisiana	-0.002342	6,532	-0.003035	7,261
Maine	-0.007341	4,524	-0.007111	4,410
Maryland	-0.004920	9,619	-0.005532	10,555
Massachusetts	-0.017685	32,902	-0.012769	24,195
Michigan	-0.005775	24,896	-0.007232	29,654
Minnesota	-0.007326	16,496	-0.005645	13,799
Mississippi	-0.000510	2,528	-0.001380	3,060
Missouri	-0.003803	10,811	-0.005533	14,250
Montana	-0.006528	3,155	-0.009016	4,087
Nebraska	-0.004063	3,104	-0.005025	3,601
Nevada	-0.005595	2,961	-0.006091	3,157
New Hampshire	-0.007437	3,782	-0.010707	5,245
New Jersey	-0.005500	13,386	-0.008007	18,395
New Mexico	-0.004430	3,118	-0.005759	3,762
New York	-0.003815	20,825	-0.007202	34,790
North Carolina	-0.001502	7,617	-0.002002	8,721
North Dakota	-0.001385	781	-0.002006	888
Ohio	-0.005364	22,355	-0.007372	29,104
Oklahoma	-0.003454	7,195	-0.001870	5,394
Oregon	-0.007073	10,056	-0.011343	14,985
Pennsylvania	-0.011110	45,226	-0.014233	56,614
Rhode Island	-0.007440	2,262	-0.009585	2,836
South Carolina	-0.001651	3,399	-0.001422	3,176
South Dakota	-0.005296	1,781	-0.004510	1,605
Tennessee	-0.003042	8,360	-0.004086	10,197
Texas	-0.004424	32,407	-0.004044	30,685
Utah	-0.005642	4,613	-0.006619	5,198
Vermont	-0.009714	2,822	-0.010510	3,020
Virginia	-0.006274	17,138	-0.006328	17,260
Washington	-0.006308	16,668	-0.007175	18,535
West Virginia	-0.000729	1,840	-0.001846	2,470
Wisconsin	-0.007849	19,480	-0.008227	20,218
Wyoming	-0.009622	2,285	-0.007294	1,851

[1]Use these parameters for: total wildlife-watching participants and residential users.

Table D-9. a, b, and c Parameters for Calculating Approximate Standard Errors for Expenditures and Days or Trips for Wildlife-Watching Participants

State	Expenditures			Days or trips		
	a	b	c	a	b	c
United States	**0.002397**	**54,854**	**59,894**	**0.004371**	**-26,991**	**38,946**
Alabama	0.036681	-18,572	3,935	0.011362	-3,080	6,929
Alaska	0.033200	-489	902	0.033200	-490	902
Arizona	0.085600	-24,154	3,865	0.232510	-7,261	4,855
Arkansas	0.039340	-17,237	7,682	0.126590	-6,938	4,442
California	0.035321	1,067,697	50,145	0.052960	-492,479	107,684
Colorado	0.048110	-591,648	39,405	0.017830	-20,910	22,425
Connecticut	0.032120	-21,061	5,992	0.042120	-5,381	6,004
Delaware	0.027760	-22,636	2,973	0.003640	-10,483	5,591
Florida	0.031830	-262,997	42,131	0.017280	-64,794	47,008
Georgia	0.013884	-70,051	15,019	0.031240	-23,045	14,502
Hawaii	0.064090	-15,686	1,341	0.038060	-2,779	1,738
Idaho	0.074700	-41,520	4,112	0.052940	-2,501	4,439
Illinois	0.032820	-136,223	32,872	0.027820	58,516	15,204
Indiana	0.006691	-40,890	16,403	0.122280	615	4,192
Iowa	0.042340	2,565	9,634	0.019080	-25,174	20,514
Kansas	0.049730	28,458	2,682	0.046990	-3,368	5,621
Kentucky	0.057270	-82,495	7,466	0.190170	-34,160	7,178
Louisiana	0.015699	-56,977	11,140	0.057300	-3,617	5,930
Maine	0.014378	32,335	3,270	0.051680	15,634	175
Maryland	0.030510	-305,840	24,949	0.024640	-17,150	12,820
Massachusetts	0.037380	-61,675	20,522	-0.005400	-76,328	43,555
Michigan	0.061770	-196,154	22,084	0.029460	-37,292	38,827
Minnesota	0.037860	-560,903	26,760	0.112360	-726	8,805
Mississippi	0.097820	-25,306	3,928	0.147200	-4,425	3,214
Missouri	0.051350	-307,535	14,174	0.138350	-83,740	29,824
Montana	0.060400	-10,180	3,130	0.025541	-6,368	4,142
Nebraska	0.022050	-40,731	6,287	0.038910	7,544	6,580
Nevada	0.068910	-18,553	2,740	0.059320	-4,583	3,379
New Hampshire	0.073310	-15,254	5,644	0.020010	-11,117	12,021
New Jersey	0.149260	-108,166	14,765	0.127580	-3,798	11,031
New Mexico	0.071300	-19,200	3,055	0.219380	659	3,498
New York	0.067090	264,223	15,441	0.033550	-33,800	37,645
North Carolina	0.023769	-75,748	15,550	0.049300	-20,978	13,008
North Dakota	0.032330	-1,750	1,453	0.020354	-1,274	1,794
Ohio	0.032960	-396,988	40,707	0.041190	22,105	16,194
Oklahoma	0.069700	-20,480	5,997	0.204660	-13,045	9,633
Oregon	0.059410	-49,805	9,458	0.020200	-30,808	18,514
Pennsylvania	0.082590	295,032	21,758	0.039050	-55,252	59,257
Rhode Island	0.110000	-26,416	2,010	0.166510	-285	1,206
South Carolina	0.040330	-19,536	4,583	0.029840	-26,641	9,633
South Dakota	0.030560	16,289	974	0.144230	-15,927	2,616
Tennessee	0.106240	-192,365	13,204	0.045640	-19,985	16,505
Texas	0.130150	-261,303	31,449	0.207090	5,535	15,119
Utah	0.051580	-4,059	5,598	-0.003608	-2,355	7,127
Vermont	0.096280	-1,490	1,518	0.035450	10,053	2,920
Virginia	0.063470	4,565	14,349	0.054850	-13,451	16,263
Washington	0.100400	15,783	22,301	-0.004180	-17,728	27,976
West Virginia	0.031242	-12,231	3,829	0.037480	-9,680	4,534
Wisconsin	0.197550	360,528	-1,524	0.159790	-15,203	11,080
Wyoming	0.056740	-26,047	2,288	0.020139	-13,601	3,552