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Bridging the 50-State Survey
of Fishing, Hunting, and Wildlife-
Associated Recreation with
Previous National Survey of
Fishing, Hunting, and Wildlife-
Associated Recreation Trends

Final Methodology Overview

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THE ROCKVILLE INSTITUTE, FOR
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OVERVIEW

In 2016, the Rockville Institute conducted the 50-State Survey of Fishing, Hunting and Wildlife-Associated Recreation (FHWAR); see more details in Rockville Institute (2018). Concurrently, the Census Bureau conducted the 2016 National Survey of FHWAR; see more details in U.S. Department of the Interior, U.S. Fish & Wildlife Service, and U.S. Department of Commerce U.S. Census Bureau (2018). The two surveys were based on samples of addresses intended to be representative of the United States population living in households, and used questionnaires as nearly identical as possible. Both surveys identified likely sports-persons and wildlife watchers within sampled households, and individual participation surveys covered all of calendar year 2016. However, differences in sample design, sample selection process and mode of data collection resulted in estimates that were substantially different between the surveys.

Estimates from the 2016 National Survey of FHWAR are directly comparable to those from previous surveys such as the 2011 National Survey of FHWAR; see U.S. Department of the Interior, U.S. Fish & Wildlife Service, and U.S. Department of Commerce U.S. Census Bureau (2014). Due to its modest sample size, it can only produce reliable estimates at the national and census division level. In contrast, the 50-State Survey of FHWAR produced state-level estimates, but these estimates are not directly comparable to those from previous surveys. The Rockville Institute therefore completed a project to create new state-level estimates that are calibrated to those of the 2016 National Survey of FHWAR. The dual purpose of these calibrated estimates is to maintain the fine level of granularity of the 50-State Survey of FHWAR but enable comparison to previous National Surveys of FHWAR.

Through this bridging project, the Rockville Institute created new state-level tables showing adjusted survey

estimates by state of residency of the participants. These tables show the estimated demographics, participation, days, trips and expenditures, for fishing, hunting and wildlife-related activities for residents of each of the 50 states and DC. The tables correspond to Tables 5, 15, 22, 28, 30, 33, 35, and 36 in the state reports released by the Rockville Institute in 2018, with the exception of Tables 28 and 33, where we report an extended set of statistics compared to those reported in the 50-State Survey of FHWAR report.

The calibration procedure used to create these tables involved a combination of data harmonization and statistical modeling of the differences between the two surveys. The procedure consisted of the following major steps. First, the estimated demographic compositions of both surveys were aligned at the census division level, using survey calibration methods. Second, a statistical model was developed to account for the differences in participation rates in hunting, fishing and wildlife-related activities between the two surveys. This “bridging model” was used to predict state-level participating rates that are consistent with those obtained using the Census Bureau methodology. By combining these predicted participation rates with the harmonized population estimates, calibrated estimates of the numbers of participants in each state were obtained. Third, the characteristics of the participants’ activities, such as the number and type of activities, days of participation and types of associated expenditures, were adjusted by means of estimated products or ratios of these characteristics between the two surveys. Finally, applying these products or ratios to the calibrated estimates of the participant numbers made it possible to produce the calibrated tables of estimates mentioned above. For more details about the bridging project, see Rockville Institute (2020).

References

- Rockville Institute. 2018. *2016 50-State Survey of Fishing, Hunting, and Wildlife-Related Recreation: National*.
- Rockville Institute. 2020. *Bridging the 50-State Surveys of Fishing, Hunting, and Wildlife-Associated Recreation with Previous National Survey of Fishing, Hunting, and Wildlife-Associated Recreation Trends. Final Methodology Report*.
- U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce U.S. Census Bureau. 2014. *2011 National Survey of Fishing, Hunting, and Wildlife-Related Recreation*.
- U.S. Department of the Interior, U.S. Fish and Wildlife Service, and U.S. Department of Commerce U.S. Census Bureau. 2018. *2016 National Survey of Fishing, Hunting, and Wildlife-Related Recreation*.

APPENDIX A: POINT ESTIMATES

The tables in Appendix A depict the calibrated point estimates, subject to rounding error. The format of the calibrated tables in this appendix matches closely the format used in the 50-State Survey of FHWAR reports. Summary statistics reported in the calibrated tables are described below, by table.

Table 5

Fishing and hunting, participation, days, and trips

- Total fishing participation and total hunting participation: product-type statistics derived using model predictions for percent participation in the population and total population based on adjusted 50-State Survey of FHWAR weights.
- Total freshwater, freshwater except Great Lakes, Great Lakes, and saltwater fishing participation, total big game, small game, migratory birds, and other animals hunting participation: product-type statistics derived using total fishing participation, total hunting participation, percent participation of freshwater, freshwater except Great Lakes, Great Lakes, and saltwater fishing in all fishing, and percent participation of big game, small game, migratory birds, and other animals hunting in all hunting (columns denoted by %).
- Total fishing (all and subcategories) days/trips of participation and total hunting (all and subcategories) days/trips of participation: product-type statistics derived using total number of fishing (all and subcategories) participants, total number of hunting (all and subcategories) participants, and days/trips per participant (not displayed).
- Percent participation (columns denoted by %): statistics constructed using full adjusted 50-State Survey of FHWAR final weights, using data from the fishing or hunting survey for the fishing and hunting sections, respectively.

Table 15

Fishing and hunting, demographics

- Total population (all and subcategories): composite statistics constructed using 2-way composite factors to adjusted 50-State Survey of FHWAR final weights, using data from both the fishing and the hunting surveys.
- Total number of anglers and total number of hunters: product-type statistics derived using model predictions for percent participation in the population (columns denoted by % Pop.), and total population based on adjusted 50-State Survey of FHWAR final weights.
- Total number of sportspersons: ratio-type statistics derived using total number of anglers and percent anglers in sportspersons (not displayed).
- Total population, sportspersons, anglers, hunters, by demographics: product-type statistics, derived using total population, sportspersons, anglers, hunters participation, and percent demographic-specific participation in total participation (columns denoted by %).
- Percent demographic-specific population, sportspersons, anglers, hunters participation in total participation (columns denoted by %): composite statistics constructed using 2-way composite factors to adjusted 50-State Survey of FHWAR final weights, using data from the fishing and hunting surveys.
- Percent demographic-specific anglers and hunters participation in the total demographic-specific population (columns denoted by % Pop.): ratio-type statistics, derived using total demographic-specific anglers and hunters participation and total demographic-specific population.

- Percent total and demographic-specific sportspersons participation in the total and demographic-specific population (column denoted by % Pop.): ratio-type statistics, derived using total population and sportspersons participation.

Table 22

Fishing and hunting, spenders and expenses

- Total fishing and hunting expenditure (all and subcategories) amount, total fishing expenditure (all and subcategories) amount, total hunting expenditure (all and subcategories) amount, and total unspecified expenditure amount: product-type statistics derived using expenditure amount per participant (columns denoted by Average Per Sportsperson), and total sportspersons participation (all and subcategories), total anglers participation (all and subcategories), total hunters participation (all and subcategories) and total sportspersons participation, respectively.
- Expenditure amount per participant (columns denoted by Average Per Sportsperson) and expenditure amount per spender (columns denoted by Average Per Spender):
 - > Fishing section: statistics constructed using full adjusted 50-State Survey of FHWAR final weights, using data from the fishing survey only.
 - > Hunting section: statistics constructed using full adjusted 50-State Survey of FHWAR final weights, using data from the hunting survey only.
 - > Fishing and hunting, and unspecified sections: except for some expenses and spenders noted in the table footnotes, these are composite statistics constructed using 2-way composite factors to adjusted 50-State Survey of FHWAR final weights, using data from the fishing and hunting surveys.
- Total fishing and hunting (all and subcategories) number of spenders, total fishing (all and subcategories) number of spenders, total hunting (all and subcategories) number of spenders, and total unspecified number of spenders: product-type statistics derived using the percent spenders in total participation (not displayed), and total sportspersons participation (all and subcategories),

total anglers participation (all and subcategories), total hunters participation (all and subcategories) and total sportspersons participation, respectively.

Table 28

Wildlife watching, participation, days, and trips

- Total wildlife watching participation: product-type statistics derived using model predictions for percent participation in the population, and total population based on adjusted 50-State Survey of FHWAR final weights.
- Total away from home (all and subcategories) and around the home (all and subcategories) wildlife watching participation: product-type statistics derived using total wildlife watching participation, and percent participation of away from home (all and subcategories) and around the home (all and subcategories) wildlife watching in all wildlife watching (columns denoted by %).
- Total wildlife watching (all and subcategories) days/trips of participation: product-type statistics derived using total number of wildlife watching (all and subcategories) participants and days/trips per participant (not displayed).
- Percent participation (columns denoted by %): statistics constructed using full adjusted 50-State Survey of FHWAR final weights, using data from the wildlife watching survey.
- Percent participation in the total population (column denoted by % Pop.): ratio-type statistics, derived using total population from Table 30 and wildlife watching participation.

Table 30

Wildlife watching, demographics

- Total population (all and subcategories): composite statistics constructed using full adjusted 50-State Survey of FHWAR final weights, using data from the wildlife watching survey. Note that the total population estimates in Tables 15 and 30 differ due to demographic harmonization without state targets estimated from the National Survey of FHWAR (information not available); see Rockville Institute (2020) for more details about the demographic harmonization.

- Total number of wildlife watchers: product-type statistics derived using model predictions for percent participation in the population (columns denoted by % Pop.) and total population based on adjusted 50-State Survey of FHWAR weights.
- Total number of away from home or around the home wildlife watchers: product-type statistics derived using total number of wildlife watchers, and percent away from home or around the home wildlife watchers in all wildlife watchers (columns denoted by % Pop. in Table 35; not displayed).
- Total population, wildlife watchers, away from home, around the home, by demographics: product-type statistics, derived using total population, wildlife watchers, away from home, around the home participation, and percent demographic-specific participation in total participation (columns denoted by %).
- Percent demographic-specific population, wildlife watchers, away from home, around the home participation in total participation (columns denoted by %): composite statistics constructed using full adjusted 50-State Survey of FHWAR final weights, using data from the wildlife watching survey.
- Percent demographic-specific wildlife watchers, participation in the total demographic-specific population (column denoted by % Pop.): ratio-type statistics, derived using total demographic-specific wildlife watchers participation and total demographic-specific population.
- Percent total and demographic-specific away from home and around the home participation in the total and demographic-specific population (columns denoted by % Pop.): ratio-type statistics, derived using total population and away from home and around the home participation, respectively.

Table 33

Wildlife watching, spenders and expenditures — three versions for all wildlife watchers, away from home wildlife watchers, and around the home wildlife watchers

- Total wildlife watching expenditure (all and subcategories) amount: product-type statistics derived using total number of wildlife watching (all and subcategories)

participants and expenditure amount per participant (columns denoted by Average Per Wildlife Watcher).

- Expenditure amount per participant (columns denoted by Average Per Wildlife Watcher) and expenditure amount per spender (columns denoted by Average Per Spender): statistics constructed using full adjusted 50-State Survey of FHWAR final weights, using data from the wildlife watching survey only.
- Total wildlife watching (all and subcategories) number of spenders: product-type statistics derived using total number of wildlife watching (all and subcategories) participants and the percent spenders in total participation (columns denoted by Percent of Wildlife Watchers).
- Percent spenders in total participation (columns denoted by Percent of Wildlife Watchers): statistics constructed using full adjusted 50-State Survey of FHWAR final weights, using data from the wildlife watching survey only.

Table 35

Wildlife watchers participating in fishing and hunting

- Total number of wildlife watchers: product-type statistics derived using model predictions for percent participation in the population (columns denoted by % Pop. in Table 30), and total population based on adjusted 50-State Survey of FHWAR final weights (displayed in Table 30).
- Total number of away from home or around the home wildlife watchers: product-type statistics derived using total number of wildlife watchers, and percent away from home or around the home wildlife watchers in all wildlife watchers (columns not displayed).
- Total number of wildlife watchers, away from home, around the home who did not fish or hunt, fished or hunted, fished, hunted: product-type statistics, derived using total number of wildlife watchers, and percent sportsperson-specific category in the corresponding total participation (columns denoted by %).
- Percent sportsperson-specific category in the corresponding total participation (columns denoted by %): statistics constructed using full adjusted 50-State Survey of FHWAR final weights, using data from the wildlife watching survey.

Table 36

Sportspersons participating in wildlife watching

- Total number of sportspersons: ratio-type statistics derived using total number of anglers, percent anglers in sportspersons (not displayed).
- Total number of anglers or total number of hunters: product-type statistics derived using model predictions for percent participation in the population (columns denoted by % Pop. in Table 15), and total population based on adjusted 50-State Survey of FHWAR final weights (displayed in Table 15).
- Total number of sportspersons, anglers, or hunters who did not wildlife watch, wildlife watch, wildlife watch away from home, wildlife watch around the home: product-type statistics, derived using total number of sportspersons, anglers, or hunters, and percent wildlife watcher-specific category in the corresponding total participation (columns denoted by %).
- Percent wildlife watcher-specific category in the corresponding total participation (columns denoted by %): composite statistics constructed using 3-way composite factors to adjusted 50-State Survey of FHWAR final weights, using data from the fishing, hunting, and wildlife watching surveys.

Table 5 Missouri Resident Anglers and Hunters, Days of Participation and Trips in the United States, by Type of Fishing and Hunting: 2016
(Population 16 years and older. Numbers in thousands)

	PARTICIPANTS		DAYS OF PARTICIPATION		TRIPS	
	#	%	#	%	#	%
ALL FISHING	894	100	13,537	100	7,799	100
All freshwater	831	93	13,372	99	7,711	99
Freshwater, except Great Lakes	831	93	13,297	98	7,688	99
Great Lakes	5	1	74	1	23	0
Saltwater	80	9	166	1	87	1
ALL HUNTING	416	100	9,007	100	5,178	100
Big game	373	89	4,763	53	2,301	44
Small game	117	28	1,869	21	1,297	25
Migratory birds	53	13	1,341	15	1,124	22
Other animals	42	10	588	7	456	9

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

Table 15 Missouri Resident Anglers and Hunters, by Selected Characteristics: 2016
(State population 16 years and older. Numbers in thousands)

	POPULATION		SPORTSPERSONS			ANGLERS			HUNTERS		
	Total	%	Total	% Pop.	%	Total	% Pop.	%	Total	% Pop.	%
TOTAL	5,088	100	1,054	21	100	894	18	100	416	8	100
RESIDENCE DENSITY											
Urban	3,643	72	730	20	69	647	18	72	241	7	58
Rural	1,446	28	324	22	31	247	17	28	175	12	42
RESIDENCE SIZE											
Metropolitan Statistical Area (MSA)	4,244	83	860	20	82	749	18	84	309	7	74
1,000,000 or more	2,952	58	600	20	57	536	18	60	156	5	37
250,000 to 999,999	463	9	156	34	15	129	28	14	97	21	23
50,000 to 249,999	829	16	103	12	10	83	10	9	57	7	14
Outside MSA	844	17	194	23	18	145	17	16	107	13	26
SEX											
Male	2,428	48	724	30	69	607	25	68	316	13	76
Female	2,661	52	329	12	31	287	11	32	100	4	24
AGE											
16 to 17 years	159	3	44	28	4	44	28	5	10	6	2
18 to 24 years	976	19	294	30	28	257	26	29	123	13	29
25 to 34 years	649	13	80	12	8	73	11	8	44	7	11
35 to 44 years	591	12	176	30	17	162	27	18	29	5	7
45 to 54 years	644	13	188	29	18	149	23	17	97	15	23
55 to 64 years	941	18	159	17	15	126	13	14	60	6	14
65 years and older	1,129	22	112	10	11	82	7	9	53	5	13
65 to 74 years	617	12	70	11	7	57	9	6	28	4	7
75 and older	512	10	41	8	4	25	5	3	25	5	6
ETHNICITY											
Hispanic	271	5	122	45	12	117	43	13	4	1	1
Non-Hispanic	4,818	95	932	19	88	777	16	87	413	9	99
RACE											
White	4,481	88	883	20	84	759	17	85	376	8	90
African American	329	6	47	14	4	18	5	2	23	7	6
All Others	278	5	123	44	12	117	42	13	17	6	4

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Table 15 Missouri Resident Anglers and Hunters, by Selected Characteristics: 2016 (continued)
(State population 16 years and older. Numbers in thousands)

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	POPULATION		SPORTSPERSONS			ANGLERS			HUNTERS		
	Total	%	Total	% Pop.	%	Total	% Pop.	%	Total	% Pop.	%
ANNUAL HOUSEHOLD INCOME											
Less than \$20,000	536	11	50	9	5	43	8	5	22	4	5
\$20,000 to \$29,999	366	7	50	14	5	46	13	5	16	4	4
\$30,000 to \$39,999	380	7	150	40	14	133	35	15	30	8	7
\$40,000 to \$49,999	423	8	120	28	11	75	18	8	55	13	13
\$50,000 to \$74,999	572	11	109	19	10	89	16	10	62	11	15
\$75,000 to \$99,999	420	8	111	26	11	94	22	11	39	9	9
\$100,000 to \$149,999	557	11	104	19	10	100	18	11	26	5	6
\$150,000 or more	468	9	76	16	7	44	9	5	40	8	9
Not reported	1,367	27	284	21	27	269	20	30	128	9	31
EDUCATION											
8 years or less	365	7	138	38	13	131	36	15	16	4	4
9 to 12 years	1,632	32	281	17	27	225	14	25	141	9	34
1 to 3 years of college	1,470	29	419	29	40	356	24	40	172	12	41
4 years or more of college	1,622	32	215	13	20	181	11	20	87	5	21

NOTE: Detail does not add to total because of multiple responses. Percent population (% Pop.) columns show the percentage of each row's population who participated in the activity named by the column (the percentage of the population living in urban areas who fished, etc.). Columns labeled "% under Sportspersons, Anglers, and Hunters show the percentage of each column's participants who are described by the row heading (the percentage of anglers who lived in urban areas, etc.).

Table 22 Expenditures by Missouri Residents for Fishing and Hunting Both In and Out of Missouri: 2016
(State population 16 years and older. Numbers in thousands)

	AMOUNT (thousands of \$)	AVERAGE PER SPORTSPERSON (\$) ¹	AVERAGE PER SPENDER (\$) ¹	NUMBER OF SPENDERS (thousands)
FISHING AND HUNTING	4,657,367	4,420	4,720	987
Food and lodging	290,584	276	454	641
Transportation	225,889	214	383	590
Other trip costs ²	163,992	156	249	660
Equipment (fishing, hunting)	797,653	757	1,423	561
Auxiliary equipment ³	133,329	127	555	240
Special equipment ⁴	2,886,611	2,740	35,882	80
Magazines, books, and DVDs	6,016	6	68	89
Membership dues/contributions	26,769	25	297	90
Other ⁵	126,525	120	174	727
FISHING	2,043,506	2,286	2,341	873
Food and lodging	191,516	214	313	611
Transportation	131,446	147	228	577
Other trip costs ²	145,904	163	185	789
Fishing equipment	188,270	211	418	451
Auxiliary equipment ³	23,533	26	274	86
Special equipment ⁴	1,334,626	1,493	38,682	35
Magazines, books, and DVDs	2,167	2	58	37
Membership dues/contributions	6,379	7	132	48
Other ⁵	19,664	22	39	501
HUNTING	2,071,656	4,976	5,019	413
Food and lodging	88,506	213	287	308
Transportation	81,078	195	303	267
Other trip costs ²	23,306	56	215	108
Hunting equipment	479,006	1,151	1,629	294
Auxiliary equipment ³	72,492	174	376	193
Special equipment ⁴	1,228,205	2,950	32,981	37
Magazines, books, and DVDs	1,952	5	63	31
Membership dues/contributions	14,364	34	253	57
Other ⁵	82,746	199	200	413
UNSPECIFIED ⁶	87,525	83	852	103

1 Average expenditures are annual estimates.

2 Includes boating costs, equipment rental, guide fees, access fees, heating and cooking fuel, and ice and bait (for fishing only).

3 Includes sleeping bags, packs, duffel bags, tents, binoculars and field glasses, special fishing and hunting clothing, foul weather gear, boots and waders, maintenance and repair of equipment, processing and taxidermy costs, and electronic equipment such as a GPS device.

4 Includes big-ticket items bought primarily for hunting and fishing, including boats, campers, cabins, trail bikes, dune buggies, 4 x 4 vehicles, ATVs, 4-wheelers, snowmobiles, pickups, vans, travel and tent trailers, motor homes, house trailers, recreational vehicles (RVs) and other special equipment.

5 Includes land leasing and ownership, licenses, stamps, tags, permits, and plantings (for hunting only).

6 Respondent could not specify whether expenditure was primarily for either fishing or hunting.

NOTE: Individual estimates do not add to total because of multiple responses, nonresponse, the independent bridging of fishing and hunting participation, and the bridging of sportspersons participation relative to fishing participation.

Table 28 Missouri Resident Wildlife Watchers Both In and Out of Missouri: 2016
(State population 16 years and older. Numbers in thousands)

	PARTICIPANTS			DAYS OF PARTICIPATION		TRIPS	
	#	%	% Pop.	#	%	#	%
WILDLIFE WATCHERS	1,742	100	34	141,009	100	16,669	100
Away from home	935	54	18	20,000	14	16,668	100
Observe wildlife	725	42	14	17,175	12	x	x
Photograph wildlife	559	32	11	5,985	4	x	x
Feed wildlife	297	17	6	4,588	3	x	x
Around the home	1,724	99	34	121,010	86	x	x
Observe wildlife	1,069	61	21	91,893	65	x	x
Photograph wildlife	692	40	14	14,804	10	x	x
Feed wildlife	1,423	82	28	x	x	x	x
Visit parks or natural areas ¹	636	36	12	14,313	10	x	x
Maintain plantings or natural areas	357	21	7	x	x	x	x

x Not applicable

¹ Includes visits only to parks or natural areas within one mile of home.

NOTE: Detail does not add to total because of multiple responses. Percent population (% Pop.) columns show the percentage of each row's population who participated in the activity named by the column (the percentage of the population who observed wildlife away from home, etc.). Columns labeled "%" show the percentage of each column's participants who are described by the row heading (the percentage of wildlife watchers who observed wildlife away from home, etc.).

Table 30

Missouri Resident Wildlife Watchers, by Selected Characteristics: 2016

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

	POPULATION		TOTAL			AWAY FROM HOME			AROUND THE HOME		
	Total	%	Total	% Pop.	%	Total	% Pop.	%	Total	% Pop.	%
TOTAL	5,119	100	1,742	34	100	935	18	100	1,724	34	100
RESIDENCE DENSITY											
Urban	3,183	62	1,131	36	65	759	24	81	1,113	35	65
Rural	1,936	38	611	32	35	176	9	19	611	32	35
RESIDENCE SIZE											
Metropolitan Statistical Area (MSA)	3,973	78	1,416	36	81	750	19	80	1,398	35	81
1,000,000 or more	2,522	49	929	37	53	625	25	67	911	36	53
250,000 to 999,999	762	15	261	34	15	17	2	2	261	34	15
50,000 to 249,999	690	13	226	33	13	107	16	11	226	33	13
Outside MSA	1,146	22	326	28	19	185	16	20	326	28	19
SEX											
Male	2,158	42	736	34	42	427	20	46	718	33	42
Female	2,961	58	1,006	34	58	508	17	54	1,006	34	58
AGE											
16 to 17 years	169	3	40	24	2	40	24	4	40	24	2
18 to 24 years	485	9	65	13	4	—	—	—	65	13	4
25 to 34 years	833	16	351	42	20	227	27	24	351	42	20
35 to 44 years	1,049	21	355	34	20	327	31	35	336	32	19
45 to 54 years	880	17	337	38	19	150	17	16	337	38	20
55 to 64 years	570	11	222	39	13	91	16	10	222	39	13
65 years and older	1,133	22	374	33	21	100	9	11	374	33	22
65 to 74 years	518	10	193	37	11	63	12	7	193	37	11
75 and older	615	12	181	29	10	37	6	4	181	29	11
ETHNICITY											
Hispanic	543	11	181	33	10	47	9	5	181	33	10
Non-Hispanic	4,576	89	1,562	34	90	888	19	95	1,543	34	90
RACE											
White	4,515	88	1,492	33	86	708	16	76	1,473	33	85
African American	487	10	200	41	11	200	41	21	200	41	12
All Others	117	2	50	43	3	27	23	3	50	43	3

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Table 30 Missouri Resident Wildlife Watchers, by Selected Characteristics: 2016 (continued)
(State population 16 years and older. Numbers in thousands)

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	POPULATION		TOTAL			AWAY FROM HOME			AROUND THE HOME		
	Total	%	Total	% Pop.	%	Total	% Pop.	%	Total	% Pop.	%
ANNUAL HOUSEHOLD INCOME											
Less than \$20,000	409	8	134	33	8	82	20	9	134	33	8
\$20,000 to \$29,999	113	2	37	33	2	21	18	2	37	33	2
\$30,000 to \$39,999	253	5	86	34	5	40	16	4	86	34	5
\$40,000 to \$49,999	327	6	72	22	4	33	10	3	72	22	4
\$50,000 to \$74,999	947	19	379	40	22	319	34	34	379	40	22
\$75,000 to \$99,999	541	11	220	41	13	100	18	11	202	37	12
\$100,000 to \$149,999	603	12	203	34	12	69	11	7	203	34	12
\$150,000 or more	16	0	7	44	0	—	—	—	7	44	0
Not reported	1,909	37	606	32	35	272	14	29	606	32	35
EDUCATION											
8 years or less	530	10	233	44	13	94	18	10	233	44	14
9 to 12 years	1,350	26	359	27	21	157	12	17	341	25	20
1 to 3 years of college	1,323	26	539	41	31	344	26	37	539	41	31
4 years or more of college	1,916	37	611	32	35	340	18	36	611	32	35

— No sample data

NOTE: Detail does not add to total because of multiple responses and nonresponse. Percent population (% Pop.) columns show the percentage of each row's population who participated in the activity named by the column (the percentage of the population living in urban areas who participated, etc.). Columns labeled "% under TOTAL, Away From Home, and Around the Home show the percentage of each column's participants who are described by the row heading (the percentage of those who lived in urban areas, etc.).

Table 33A Expenditures by Missouri Residents for All Wildlife Watching Both In and Out of Missouri: 2016
(State population 16 years and older. Numbers in thousands)

	AMOUNT (thousands of \$)	AVERAGE PER WILDLIFE WATCHER (\$) ¹	AVERAGE PER SPENDER (\$) ¹	NUMBER OF SPENDERS (thousands)	PERCENT OF WILDLIFE WATCHERS
ALL EXPENDITURES	2,789,364	1,601	2,074	1,345	77
TRIP-RELATED EXPENDITURES	860,048	494	1,124	765	44
Food and lodging	442,716	254	774	572	33
Food	327,041	188	572	572	33
Lodging	115,677	66	501	231	13
Transportation	304,566	175	428	711	41
Other trip costs ²	112,764	65	339	333	19
EQUIPMENT AND OTHER EXPENDITURES	1,929,315	1,107	1,621	1,190	68
Wildlife-watching equipment	357,010	205	312	1,145	66
Binoculars, spotting scopes	42,222	24	177	238	14
Film and photo processing	13,313	8	326	41	2
Cameras, special lenses, video cameras, and other photographic equipment, including memory cards	39,290	23	294	133	8
Day packs, carrying cases, and special clothing	90,791	52	286	317	18
Bird food	73,413	42	106	693	40
Food for other wildlife	49,539	28	192	258	15
Nest boxes, bird houses, bird feeders, and bird baths	45,984	26	75	611	35
Other equipment (including field guides)	2,459	1	44	56	3
Auxiliary equipment ³	61,116	35	219	279	16
Special equipment ⁴	945,833	543	5,058	187	11
Magazines, books, and DVDs	9,047	5	45	199	11
Membership dues and contributions	13,832	8	76	182	10
Land leasing and ownership	529,945	304	5,024	105	6
Plantings	12,534	7	62	204	12

1 Average expenditures are annual estimates.

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, other camping equipment, and other auxiliary equipment.

4 Includes boats, campers, cabins, trail bikes, dune buggies, 4 x 4 vehicles, ATVs, 4-wheelers, snowmobiles, pickups, vans, travel and tent trailers, motor homes, house trailers, recreational vehicles (RVs) and other special equipment.

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

Table 33B

Expenditures by Missouri Residents for Away-from-home Wildlife Watching Both In and Out of Missouri: 2016

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

	AMOUNT (thousands of \$)	AVERAGE PER WILDLIFE WATCHER (\$) ¹	AVERAGE PER SPENDER (\$) ¹	NUMBER OF SPENDERS (thousands)	PERCENT OF WILDLIFE WATCHERS
ALL EXPENDITURES	1,335,137	1,428	1,503	888	95
TRIP-RELATED EXPENDITURES	1,305,153	1,396	1,469	888	95
Food and lodging	663,528	710	1,466	453	48
Food	437,367	468	966	453	48
Lodging	226,161	242	662	342	37
Transportation	462,810	495	561	824	88
Other trip costs ²	178,814	191	887	202	22
EQUIPMENT AND OTHER EXPENDITURES	29,984	32	301	99	11
Wildlife-watching equipment	28,230	30	667	42	5
Binoculars, spotting scopes	28,230	30	667	42	5
Film and photo processing	—	—	—	—	—
Cameras, special lenses, video cameras, and other photographic equipment, including memory cards	—	—	—	—	—
Day packs, carrying cases, and special clothing	—	—	—	—	—
Bird food	—	—	—	—	—
Food for other wildlife	—	—	—	—	—
Nest boxes, bird houses, bird feeders, and bird baths	—	—	—	—	—
Other equipment (including field guides)	—	—	—	—	—
Auxiliary equipment ³	—	—	—	—	—
Special equipment ⁴	1,127	1	50	23	2
Magazines, books, and DVDs	477	1	24	20	2
Membership dues and contributions	151	0	10	15	2
Land leasing and ownership	—	—	—	—	—
Plantings	—	—	—	—	—

— No sample data

¹ Average expenditures are annual estimates.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, other camping equipment, and other auxiliary equipment.⁴ Includes boats, campers, cabins, trail bikes, dune buggies, 4 x 4 vehicles, ATVs, 4-wheelers, snowmobiles, pickups, vans, travel and tent trailers, motor homes, house trailers, recreational vehicles (RVs) and other special equipment.

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

Table 33C Expenditures by Missouri Residents for Around-the-home Wildlife Watching Both In and Out of Missouri: 2016
(State population 16 years and older. Numbers in thousands)

	AMOUNT (thousands of \$)	AVERAGE PER WILDLIFE WATCHER (\$) ¹	AVERAGE PER SPENDER (\$) ¹	NUMBER OF SPENDERS (thousands)	PERCENT OF WILDLIFE WATCHERS
ALL EXPENDITURES	2,154,213	1,250	2,308	933	54
TRIP-RELATED EXPENDITURES	x	x	x	x	x
Food and lodging	x	x	x	x	x
Food	x	x	x	x	x
Lodging	x	x	x	x	x
Transportation	x	x	x	x	x
Other trip costs ²	x	x	x	x	x
EQUIPMENT AND OTHER EXPENDITURES	2,154,213	1,250	2,308	933	54
Wildlife-watching equipment	193,156	112	213	909	53
Binoculars, spotting scopes	32,238	19	138	233	14
Film and photo processing	4,456	3	245	18	1
Cameras, special lenses, video cameras, and other photographic equipment, including memory cards	6,159	4	75	82	5
Day packs, carrying cases, and special clothing	24,272	14	174	140	8
Bird food	94,888	55	119	800	46
Food for other wildlife	11,923	7	83	144	8
Nest boxes, bird houses, bird feeders, and bird baths	18,580	11	38	486	28
Other equipment (including field guides)	638	0	45	14	1
Auxiliary equipment ³	14,904	9	88	169	10
Special equipment ⁴	1,536,228	891	11,375	135	8
Magazines, books, and DVDs	2,848	2	40	70	4
Membership dues and contributions	8,319	5	85	98	6
Land leasing and ownership	388,263	225	18,327	21	1
Plantings	10,496	6	51	207	12

— No sample data x Not applicable

¹ Average expenditures are annual estimates.

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, other camping equipment, and other auxiliary equipment.

⁴ Includes boats, campers, cabins, trail bikes, dune buggies, 4 x 4 vehicles, ATVs, 4-wheelers, snowmobiles, pickups, vans, travel and tent trailers, motor homes, house trailers, recreational vehicles (RVs) and other special equipment.

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

Table 35 Missouri Resident Wildlife Watchers Participating in Fishing or Hunting: 2016
(State population 16 years and older. Numbers in thousands)

	TOTAL		AWAY FROM HOME		AROUND THE HOME	
	#	%	#	%	#	%
ALL WILDLIFE WATCHERS	1,742	100	935	100	1,724	100
Did not fish or hunt	964	55	520	56	964	56
Fished or hunted	779	45	415	44	760	44
Fished	660	38	331	35	641	37
Hunted	483	28	248	27	464	27

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

Table 36 Missouri Resident Sportspersons Participating in Wildlife Watching: 2016
(State population 16 years and older. Numbers in thousands)

	SPORTSPERSONS		ANGLERS		HUNTERS	
	#	%	#	%	#	%
ALL SPORTSPERSONS	1,054	100	894	100	416	100
Did not watch wildlife	196	19	164	18	100	24
Watched wildlife	857	81	730	82	317	76
Away from home	527	50	447	50	179	43
Around the home	803	76	694	78	288	69

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

APPENDIX B: STANDARD ERRORS

The tables in Appendix B depict the standard errors, subject to rounding error, corresponding to the calibrated point estimates reported in the tables in Appendix A. Summary statistics reported in these calibrated tables are described below, by table.

Table 5

Fishing and hunting, participation, days, and trips

- Standard errors of total fishing participation and total hunting participation: product-type statistics derived using model point estimates and standard errors of percent participation in the population and survey point estimates and standard errors of total population based on adjusted 50-State Survey of FHWAR weights.
- Standard errors of total freshwater, freshwater except Great Lakes, Great Lakes, and saltwater fishing participation, total big game, small game, migratory birds, and other animals hunting participation: product-type statistics derived using point estimates and standard errors of total fishing participation, point estimates and standard errors of total hunting participation, point estimates and standard errors of percent participation of freshwater, freshwater except Great Lakes, Great Lakes, and saltwater fishing in all fishing, and point estimates and standard errors of percent participation of big game, small game, migratory birds, and other animals hunting in all hunting (columns denoted by %).
- Standard errors of total fishing (all and subcategories) days/trips of participation and total hunting (all and subcategories) days/trips of participation: product-type statistics derived using point estimates and standard errors of total number of fishing (all and subcategories) participants, point estimates and standard errors of total number of hunting (all and subcategories) participants, and point estimates and standard errors of days/trips per participant (not displayed).

- Standard errors of percent participation (columns denoted by %): statistics constructed using full adjusted 50-State Survey of FHWAR final and replicate weights, using data from the fishing or hunting survey for the fishing and hunting sections, respectively.

Table 15

Fishing and hunting, demographics

- Standard errors of total population (all and subcategories): composite statistics constructed using 2-way composite factors to adjusted 50-State Survey of FHWAR final and replicate weights, using data from both the fishing and the hunting surveys.
- Standard errors of total number of anglers and total number of hunters: product-type statistics derived using model point estimates and standard errors for percent participation in the population (columns denoted by % Pop.) and survey point estimates and standard errors of total population based on adjusted 50-State Survey of FHWAR final and replicate weights.
- Standard errors of total number of sportspersons: ratio-type statistics derived using point estimates and standard errors of total number of anglers and point estimates and standard errors of percent anglers in sportspersons (not displayed).
- Standard errors of total population, sportspersons, anglers, hunters, by demographics: product-type statistics, derived using point estimates and standard errors of total population, sportspersons, anglers, hunters participation, and point estimates and standard errors of percent demographic-specific participation in total participation (columns denoted by %).

- Standard errors of percent demographic-specific population, sportspersons, anglers, hunters participation in total participation (columns denoted by %): composite statistics constructed using 2-way composite factors to adjusted 50-State Survey of FHWAR final and replicate weights, using data from the fishing and hunting surveys.
- Standard errors of percent demographic-specific anglers and hunters participation in the total demographic-specific population (columns denoted by % Pop.): ratio-type statistics, derived using point estimates and standard errors of total demographic-specific anglers and hunters participation and total demographic-specific population.
- Standard errors of percent total and demographic-specific sportspersons participation in the total and demographic-specific population (column denoted by % Pop.): ratio-type statistics, derived using point estimates and standard errors of total population and sportspersons participation.

Table 22

Fishing and hunting, spenders and expenses

- Standard errors of total fishing and hunting expenditure (all and subcategories) amount, total fishing expenditure (all and subcategories) amount, total hunting expenditure (all and subcategories) amount, and total unspecified expenditure amount: product-type statistics derived using point estimates and standard errors of expenditure amount per participant (columns denoted by Average Per Sportsperson), and point estimates and standard errors of total sportspersons participation (all and subcategories), point estimates and standard errors of total anglers participation (all and subcategories), point estimates and standard errors of total hunters participation (all and subcategories) and point estimates and standard errors of total sportspersons participation, respectively.
- Standard errors of expenditure amount per participant (columns denoted by Average Per Sportsperson) and expenditure amount per spender (columns denoted by Average Per Spender):
 - > Fishing section: statistics constructed using full adjusted 50-State Survey of FHWAR final and replicate weights, using data from the fishing survey only.

- > Hunting section: statistics constructed using full adjusted 50-State Survey of FHWAR final and replicate weights, using data from the hunting survey only.
- > Fishing and hunting, and unspecified sections: except for some expenses and spenders noted in the table footnotes, these are composite statistics constructed using 2-way composite factors to adjusted 50-State Survey of FHWAR final and replicate weights, using data from the fishing and hunting surveys.
- Standard errors of total fishing and hunting (all and subcategories) number of spenders, total fishing (all and subcategories) number of spenders, total hunting (all and subcategories) number of spenders, and total unspecified number of spenders: product-type statistics derived using the point estimates and standard errors of percent spenders in total participation (not displayed), and point estimates and standard errors of total sportspersons participation (all and subcategories), point estimates and standard errors of total anglers participation (all and subcategories), point estimates and standard errors of total hunters participation (all and subcategories) and point estimates and standard errors of total sportspersons participation, respectively.

Table 28

Wildlife watching, participation, days, and trips

- Standard errors of total wildlife watching participation: product-type statistics derived using model point estimates and standard errors of percent participation in the population, and survey point estimates and standard errors of total population based on adjusted 50-State Survey of FHWAR final and replicate weights.
- Standard errors of total away from home (all and subcategories) and around the home (all and subcategories) wildlife watching participation: product-type statistics derived using point estimates and standard errors of total wildlife watching participation, point estimates and standard errors of percent participation of away from home (all and subcategories) and point estimates and standard errors of around the home (all and subcategories) wildlife watching in all wildlife watching (columns denoted by %).

- Standard errors of total wildlife watching (all and sub-categories) days/trips of participation: product-type statistics derived using point estimates and standard errors of total number of wildlife watching (all and subcategories) participants and point estimates and standard errors of days/trips per participant (not displayed).
- Standard errors of percent participation (columns denoted by %): statistics constructed using full adjusted 50-State Survey of FHWAR final and replicate weights, using data from the wildlife watching survey.
- Standard errors of percent participation in the total population (column denoted by % Pop.): ratio-type statistics, derived using point estimates and standard errors of total population from Table 30 and point estimates and standard errors of wildlife watching participation.

Table 30

Wildlife watching, demographics

- Standard errors of total population (all and subcategories): composite statistics constructed using full adjusted 50-State Survey of FHWAR final and replicate weights, using data from the wildlife watching survey. Note that the standard errors of total population estimates in Tables 15 and 30 differ due to demographic harmonization without state targets estimated from the National Survey of FHWAR (information not available); see Rockville Institute (2020) for more details about the demographic harmonization.
- Standard errors of total number of wildlife watchers: product-type statistics derived using model point estimates and standard errors of percent participation in the population (columns denoted by % Pop.) and survey standard error of total population based on adjusted 50-State Survey of FHWAR final and replicate weights.
- Standard errors of total number of away from home or around the home wildlife watchers: product-type statistics derived using point estimates and standard errors of total number of wildlife watchers and point estimates and standard errors of percent away from home or around the home wildlife watchers in all wildlife watchers (columns denoted by % Pop. in Table 35).

- Standard errors of total population, wildlife watchers, away from home, around the home, by demographics: product-type statistics, derived using point estimates and standard errors of total population, wildlife watchers, away from home, around the home participation and point estimates and standard errors of percent demographic-specific participation in total participation (columns denoted by %).
- Standard errors of percent demographic-specific population, wildlife watchers, away from home, around the home participation in total participation (columns denoted by %): composite statistics constructed using full adjusted 50-State Survey of FHWAR final and replicate weights, using data from the wildlife watching survey.
- Standard errors of percent demographic-specific wildlife watchers in the total demographic-specific population (column denoted by % Pop.): ratio-type statistics, derived using point estimates and standard errors of total demographic-specific wildlife watchers participation and point estimates and standard errors of total demographic-specific population.
- Standard errors of percent total and demographic-specific away from home and around the home participation in the total and demographic-specific population (columns denoted by % Pop.): ratio-type statistics, derived using point estimates and standard errors of total population and away from home and around the home participation, respectively.

Table 33

Wildlife watching, spenders and expenditures — three versions for all wildlife watchers, away from home wildlife watchers, and around the home wildlife watchers

- Standard errors of total wildlife watching expenditure (all and subcategories) amount: product-type statistics derived using point estimates and standard errors of total number of wildlife watching (all and subcategories) participants and point estimates and standard errors of expenditure amount per participant (columns denoted by Average Per Wildlife Watcher).

- Standard errors or expenditure amount per participant (columns denoted by Average Per Wildlife Watcher) and expenditure amount per spender (columns denoted by Average Per Spender): statistics constructed using full adjusted 50-State Survey of FHWAR final and replicate weights, using data from the wildlife watching survey only.
- Standard errors of total wildlife watching (all and subcategories) number of spenders: product-type statistics derived using point estimates and standard errors of total number of wildlife watching (all and subcategories) participants and point estimates and standard errors of the percent spenders in total participation (columns denoted by Percent of Wildlife Watchers).
- Standard errors of percent spenders in total participation (columns denoted by Percent of Wildlife Watchers): statistics constructed using full adjusted 50-State Survey of FHWAR final and replicate weights, using data from the wildlife watching survey only.

Table 35

Wildlife watchers participating in fishing and hunting

- Standard errors of total number of wildlife watchers: product-type statistics derived using model point estimates and standard errors of percent participation in the population (columns denoted by % Pop. in Table 30) and survey point estimates and standard errors of total population based on adjusted 50-State Survey of FHWAR final and replicate weights (displayed in Table 30).
- Standard errors of total number of away from home or around the home wildlife watchers: product-type statistics derived using point estimates and standard errors of total number of wildlife watchers and point estimates and standard errors of percent away from home or around the home wildlife watchers in all wildlife watchers (columns not displayed).
- Standard errors of total number of wildlife watchers, away from home, around the home who did not fish

or hunt, fished or hunted, fished, hunted: product-type statistics, derived using point estimates and standard errors of total number of wildlife watchers and point estimates and standard errors of percent sportsperson-specific category in the corresponding total participation (columns denoted by %).

- Standard errors or percent sportsperson-specific category in the corresponding total participation (columns denoted by %): statistics constructed using full adjusted 50-State Survey of FHWAR final and replicate weights, using data from the wildlife watching survey.

Table 36

Sportspersons participating in wildlife watching

- Standard errors of total number of sportspersons: ratio-type statistics derived using point estimates and standard errors of total number of anglers and point estimates and standard errors of percent anglers in sportspersons (not displayed).
- Standard errors of total number of anglers or total number of hunters: product-type statistics derived using model point estimates and standard errors of percent participation in the population (columns denoted by % Pop. in Table 15) and survey point estimates and standard errors of total population based on adjusted 50-State Survey of FHWAR weights (displayed in Table 15).
- Standard errors of total number of sportspersons, anglers, or hunters who did not wildlife watch, wildlife watch, wildlife watch away from home, wildlife watch around the home: product-type statistics, derived using point estimates and standard errors of total number of sportspersons, anglers, or hunters and point estimates and standard errors of percent wildlife watcher-specific category in the corresponding total participation (columns denoted by %).
- Standard errors of percent wildlife watcher-specific category in the corresponding total participation (columns denoted by %): composite statistics constructed using 3-way composite factors to adjusted 50-State Survey of FHWAR final and replicate weights, using data from the fishing, hunting, and wildlife watching surveys.

Table 5 SE Standard Errors of Missouri Resident Anglers and Hunters, Days of Participation and Trips in the United States,
by Type of Fishing and Hunting: 2016
(Population 16 years and older. Numbers in thousands)

	PARTICIPANTS		DAYS OF PARTICIPATION		TRIPS	
	#	%	#	%	#	%
ALL FISHING	156.56	0.00	4,048.01	0.00	2,291.81	0.00
All freshwater	157.49	6.82	4,226.74	0.82	2,390.44	0.86
Freshwater, except Great Lakes	157.49	6.82	4,207.79	1.05	2,385.26	0.96
Great Lakes	4.99	0.56	79.79	0.58	24.93	0.32
Saltwater	63.88	7.08	181.98	0.82	70.67	0.86
ALL HUNTING	81.37	0.00	2,734.52	0.00	2,240.21	0.00
Big game	74.66	4.05	1,437.31	5.31	1,001.55	7.70
Small game	39.91	8.01	755.41	10.83	575.67	16.65
Migratory birds	26.24	5.91	1,102.72	12.44	939.27	16.56
Other animals	20.64	4.64	392.22	3.91	319.07	5.77

Table 15 SE Standard Errors of Missouri Resident Anglers and Hunters, by Selected Characteristics: 2016
(State population 16 years and older. Numbers in thousands)

	POPULATION		SPORTSPERSONS			ANGLERS			HUNTERS		
	Total	%	Total	% Pop.	%	Total	% Pop.	%	Total	% Pop.	%
TOTAL	171.32	0.00	192.42	3.85	0.00	156.56	3.02	0.00	81.37	1.58	0.00
RESIDENCE DENSITY											
Urban	254.48	4.05	149.00	4.32	6.43	129.35	3.76	7.08	59.09	1.69	8.75
Rural	204.25	4.05	89.09	6.93	6.43	75.84	5.77	7.08	49.53	3.83	8.75
RESIDENCE SIZE											
Metropolitan Statistical Area (MSA)	188.42	2.33	162.10	3.92	3.90	136.72	3.32	4.40	64.41	1.55	5.44
1,000,000 or more	246.38	4.43	145.31	5.21	9.21	134.13	4.79	10.88	53.28	1.86	10.71
250,000 to 999,999	140.17	2.68	81.84	20.39	7.41	79.10	19.04	8.61	57.55	13.94	13.31
50,000 to 249,999	164.35	3.29	37.17	5.12	3.09	32.85	4.44	3.34	22.85	3.07	4.89
Outside MSA	120.61	2.33	53.79	7.17	3.90	46.37	6.02	4.40	30.49	4.04	5.44
SEX											
Male	207.12	3.38	159.21	7.04	8.55	137.10	6.04	9.83	66.82	2.97	6.26
Female	173.01	3.38	107.09	4.10	8.55	100.05	3.82	9.83	32.22	1.24	6.26
AGE											
16 to 17 years	71.83	1.40	32.25	23.92	3.01	31.95	23.73	3.52	10.38	7.08	2.50
18 to 24 years	197.32	3.57	109.77	12.79	9.24	103.53	11.87	10.59	58.59	6.52	13.09
25 to 34 years	149.29	3.01	36.68	6.33	3.25	34.92	5.97	3.69	23.27	3.92	5.29
35 to 44 years	180.08	3.51	95.21	18.49	8.65	94.42	18.02	10.23	13.75	2.76	3.07
45 to 54 years	103.07	2.09	55.05	9.75	4.16	47.72	8.29	4.54	29.69	5.21	5.58
55 to 64 years	122.37	2.38	47.62	5.52	3.64	41.55	4.75	4.00	20.18	2.30	4.01
65 years and older	126.01	2.51	32.84	3.11	2.49	27.05	2.53	2.60	18.94	1.76	3.88
65 to 74 years	105.37	2.05	22.38	4.12	1.77	19.80	3.57	1.95	10.77	1.91	2.29
75 and older	98.96	1.98	15.03	3.32	1.25	11.38	2.42	1.19	10.85	2.33	2.36
ETHNICITY											
Hispanic	197.46	3.84	120.95	55.53	11.48	120.88	54.70	13.54	3.79	1.70	0.91
Non-Hispanic	181.33	3.84	207.54	4.37	11.48	180.85	3.80	13.54	80.75	1.71	0.91
RACE											
White	232.16	3.75	188.36	4.33	9.38	162.64	3.73	10.65	78.35	1.80	6.61
African American	117.68	2.29	42.38	13.87	4.00	14.80	4.90	1.64	22.73	7.34	5.46
All Others	165.64	3.25	98.15	44.04	9.22	97.04	42.98	10.78	14.45	6.35	3.44

(continued on next page)

Table 15 SE Standard Errors of Missouri Resident Anglers and Hunters, by Selected Characteristics: 2016 (continued)
(State population 16 years and older. Numbers in thousands)

(continued from previous page)

	POPULATION		SPORTSPERSONS			ANGLERS			HUNTERS		
	Total	%	Total	% Pop.	%	Total	% Pop.	%	Total	% Pop.	%
ANNUAL HOUSEHOLD INCOME											
Less than \$20,000	150.49	2.97	20.82	4.67	1.81	19.22	4.24	2.01	11.80	2.48	2.69
\$20,000 to \$29,999	116.42	2.33	21.53	7.32	1.88	21.11	7.04	2.21	9.87	3.02	2.30
\$30,000 to \$39,999	156.66	3.07	96.98	30.30	8.98	95.75	29.07	10.55	15.66	5.23	3.56
\$40,000 to \$49,999	152.91	3.01	56.87	16.91	5.07	34.25	10.31	3.60	30.59	8.60	7.02
\$50,000 to \$74,999	105.84	2.17	38.46	7.58	3.18	34.51	6.69	3.50	21.43	4.26	4.31
\$75,000 to \$99,999	112.73	2.29	40.16	11.91	3.35	36.05	10.49	3.64	20.19	5.42	4.58
\$100,000 to \$149,999	147.53	2.98	48.86	10.08	4.34	48.61	9.94	5.16	13.92	2.79	3.17
\$150,000 or more	126.02	2.51	32.79	8.25	2.87	22.31	5.40	2.38	20.68	4.97	4.70
Not reported	287.25	5.00	129.86	10.46	11.49	125.29	10.05	13.19	58.98	4.74	13.09
EDUCATION											
8 years or less	207.67	4.00	119.04	39.09	11.23	118.60	38.41	13.22	11.85	4.10	2.80
9 to 12 years	195.87	3.94	81.13	5.38	6.06	71.09	4.66	6.72	47.37	3.08	9.44
1 to 3 years of college	234.54	4.44	125.56	9.68	9.61	117.59	8.89	11.33	56.31	4.26	11.06
4 years or more of college	209.06	4.36	64.78	4.35	4.97	59.07	3.92	5.66	34.83	2.26	7.44

NOTE: Percent population (% Pop.) columns show the percentage of each row's population who participated in the activity named by the column (the percentage of the population living in urban areas who fished, etc.). Columns labeled "% Pop." under Sportspeople, Anglers, and Hunters show the percentage of each column's participants who are described by the row heading (the percentage of anglers who lived in urban areas, etc.).

Table 22 SE Standard Errors of Expenditures by Missouri Residents for Fishing and Hunting Both In and Out of Missouri: 2016
(State population 16 years and older. Numbers in thousands)

	AMOUNT (thousands of \$)	AVERAGE PER SPORTSPERSON (\$) ¹	AVERAGE PER SPENDER (\$) ¹	NUMBER OF SPENDERS (thousands)
FISHING AND HUNTING	2,535,183.78	2,305.48	2,488.74	213.24
Food and lodging	96,709.59	78.05	111.04	167.92
Transportation	87,491.70	74.48	120.87	155.03
Other trip costs ²	53,616.60	42.93	91.34	170.17
Equipment (fishing, hunting)	363,250.37	321.23	513.97	148.02
Auxiliary equipment ³	53,327.48	45.80	136.21	77.51
Special equipment ⁴	1,951,435.16	1,813.76	18,730.63	35.72
Magazines, books, and DVDs	2,878.25	2.57	19.48	35.55
Membership dues/contributions	17,014.97	15.73	162.81	32.52
Other ⁵	46,852.48	39.35	63.85	184.54
FISHING	1,555,524.34	1,719.95	1,765.62	154.49
Food and lodging	79,705.30	82.15	114.45	186.93
Transportation	52,233.26	53.27	70.40	173.77
Other trip costs ²	56,076.90	56.72	67.36	144.17
Fishing equipment	88,331.02	93.11	132.34	145.15
Auxiliary equipment ³	10,928.27	11.50	94.21	35.97
Special equipment ⁴	1,349,027.13	1,509.56	42,340.78	24.77
Magazines, books, and DVDs	1,559.57	1.72	24.59	23.72
Membership dues/contributions	4,481.97	4.93	87.68	26.19
Other ⁵	9,944.70	10.60	23.31	150.96
HUNTING	1,433,256.97	3,367.29	3,398.60	80.76
Food and lodging	36,856.67	79.71	111.97	68.95
Transportation	48,050.24	111.10	179.69	66.22
Other trip costs ²	15,349.85	35.90	126.21	44.88
Hunting equipment	239,832.85	540.79	693.55	62.97
Auxiliary equipment ³	28,560.87	60.74	146.25	66.88
Special equipment ⁴	1,067,713.93	2,548.05	18,876.74	25.14
Magazines, books, and DVDs	1,131.89	2.61	29.66	17.68
Membership dues/contributions	12,368.63	29.50	185.89	29.04
Other ⁵	27,310.71	53.90	54.41	80.76
UNSPECIFIED ⁶	69,076.55	64.87	627.26	36.68

1 Average expenditures are annual estimates.

2 Includes boating costs, equipment rental, guide fees, access fees, heating and cooking fuel, and ice and bait (for fishing only).

3 Includes sleeping bags, packs, duffel bags, tents, binoculars and field glasses, special fishing and hunting clothing, foul weather gear, boots and waders, maintenance and repair of equipment, processing and taxidermy costs, and electronic equipment such as a GPS device.

4 Includes big-ticket items bought primarily for hunting and fishing, including boats, campers, cabins, trail bikes, dune buggies, 4 x 4 vehicles, ATVs, 4-wheelers, snowmobiles, pickups, vans, travel and tent trailers, motor homes, house trailers, recreational vehicles (RVs) and other special equipment.

5 Includes land leasing and ownership, licenses, stamps, tags, permits, and plantings (for hunting only).

6 Respondent could not specify whether expenditure was primarily for either fishing or hunting.

Table 28 SE Standard Errors of Missouri Resident Wildlife Watchers Both In and Out of Missouri: 2016
(State population 16 years and older. Numbers in thousands)

	PARTICIPANTS			DAYS OF PARTICIPATION		TRIPS	
	#	%	% Pop.	#	%	#	%
WILDLIFE WATCHERS	187.73	0.00	2.81	32,215.66	0.00	5,937.66	0.00
Away from home	167.92	7.76	3.52	7,382.45	3.25	6,501.14	0.00
Observe wildlife	160.19	8.07	3.28	5,877.72	2.87	x	x
Photograph wildlife	164.91	8.86	3.31	3,274.51	1.60	x	x
Feed wildlife	102.83	5.64	2.05	2,092.08	1.17	x	x
Around the home	186.71	1.11	4.33	27,873.11	3.25	x	x
Observe wildlife	202.41	9.61	4.21	22,370.59	6.59	x	x
Photograph wildlife	153.20	7.72	3.14	5,700.56	3.15	x	x
Feed wildlife	180.24	5.47	4.02	x	x	x	x
Visit parks or natural areas ¹	163.94	8.60	3.32	7,403.34	3.36	x	x
Maintain plantings or natural areas	118.54	6.47	2.37	x	x	x	x

x Not applicable

¹ Includes visits only to parks or natural areas within one mile of home.

NOTE: Percent population (% Pop.) columns show the percentage of each row's population who participated in the activity named by the column (the percentage of the population who observed wildlife away from home, etc.). Columns labeled "%" show the percentage of each column's participants who are described by the row heading (the percentage of wildlife watchers who observed wildlife away from home, etc.).

Table 30 SE Standard Errors of Missouri Resident Wildlife Watchers, by Selected Characteristics: 2016
(State population 16 years and older. Numbers in thousands)

	POPULATION		TOTAL			AWAY FROM HOME			AROUND THE HOME		
	Total	%	Total	% Pop.	%	Total	% Pop.	%	Total	% Pop.	%
TOTAL	356.01	0.00	187.73	2.81	0.00	167.91	3.52	0.00	186.71	4.33	0.00
RESIDENCE DENSITY											
Urban	466.23	7.58	188.97	7.90	8.34	151.07	5.89	7.08	188.26	7.82	8.44
Rural	388.96	7.58	158.69	10.36	8.34	72.40	4.16	7.08	159.04	10.38	8.44
RESIDENCE SIZE											
Metropolitan Statistical Area (MSA)	456.67	5.12	178.15	6.07	5.31	158.18	4.53	9.02	177.25	6.02	5.38
1,000,000 or more	438.16	7.24	178.72	9.55	8.55	149.87	7.34	10.79	178.01	9.45	8.65
250,000 to 999,999	382.14	7.17	138.58	25.03	7.83	14.97	2.27	1.59	138.41	25.02	7.91
50,000 to 249,999	161.03	3.52	68.17	12.50	3.68	50.33	8.15	5.06	68.53	12.55	3.74
Outside MSA	235.06	5.12	98.42	10.38	5.31	89.37	8.47	9.02	98.73	10.40	5.38
SEX											
Male	262.33	6.40	148.66	8.04	7.26	133.99	6.66	11.94	147.12	7.93	7.29
Female	475.35	6.40	165.99	7.82	7.26	142.79	5.55	11.94	165.76	7.81	7.29
AGE											
16 to 17 years	109.15	2.18	31.38	23.96	1.79	32.29	24.38	3.42	31.37	23.95	1.81
18 to 24 years	297.60	5.76	43.22	12.12	2.46	—	—	—	43.19	12.11	2.49
25 to 34 years	228.03	4.72	112.29	17.74	6.10	109.15	15.09	11.00	112.64	17.78	6.19
35 to 44 years	395.89	7.34	153.08	19.37	8.56	148.05	18.36	14.78	152.48	18.89	8.64
45 to 54 years	323.56	6.08	137.28	21.02	7.64	70.81	10.20	7.12	136.96	20.99	7.70
55 to 64 years	168.49	3.41	76.34	17.67	4.18	54.62	10.69	5.67	76.50	17.69	4.24
65 years and older	208.52	4.35	89.23	9.94	4.60	41.11	3.97	4.02	89.63	9.97	4.67
65 to 74 years	109.56	2.30	56.71	13.47	3.05	29.46	6.25	2.95	56.93	13.51	3.09
75 and older	192.81	3.84	55.73	12.94	3.01	21.84	4.01	2.26	55.85	12.96	3.05
ETHNICITY											
Hispanic	333.75	6.32	138.28	32.65	7.90	49.83	10.61	5.34	138.24	32.65	7.99
Non-Hispanic	351.33	6.32	216.92	5.42	7.90	166.85	3.94	5.34	216.02	5.38	7.99
RACE											
White	329.37	7.01	223.46	5.50	8.96	195.15	4.47	16.09	222.51	5.47	9.05
African American	371.91	7.12	160.67	45.54	9.19	157.81	45.12	16.70	160.56	45.53	9.28
All Others	63.00	1.26	28.51	33.60	1.62	20.12	21.15	2.12	28.52	33.61	1.63

(continued on next page)

Table 30 SE Standard Errors of Missouri Resident Wildlife Watchers, by Selected Characteristics: 2016 (continued)
(State population 16 years and older. Numbers in thousands)

(continued from previous page)

	POPULATION		TOTAL			AWAY FROM HOME			AROUND THE HOME		
	Total	%	Total	% Pop.	%	Total	% Pop.	%	Total	% Pop.	%
ANNUAL HOUSEHOLD INCOME											
Less than \$20,000	154.31	3.10	51.93	17.68	2.88	46.91	13.73	4.84	51.99	17.69	2.91
\$20,000 to \$29,999	42.45	0.87	16.78	19.24	0.94	13.34	13.68	1.39	16.81	19.26	0.95
\$30,000 to \$39,999	75.30	1.56	32.47	16.27	1.80	22.09	9.88	2.27	32.68	16.34	1.83
\$40,000 to \$49,999	127.22	2.67	31.69	12.90	1.77	21.85	7.71	2.29	31.74	12.91	1.80
\$50,000 to \$74,999	232.22	4.92	111.69	15.33	6.00	117.00	14.86	11.09	111.86	15.35	6.07
\$75,000 to \$99,999	142.68	3.06	70.80	16.92	3.85	48.06	10.13	4.85	65.18	15.54	3.58
\$100,000 to \$149,999	184.58	3.91	79.63	16.74	4.42	42.06	7.81	4.37	79.59	16.73	4.46
\$150,000 or more	15.81	0.31	7.00	63.60	0.40	—	—	—	7.01	63.62	0.41
Not reported	584.42	9.21	187.20	13.81	10.13	156.82	9.30	16.20	186.38	13.78	10.18
EDUCATION											
8 years or less	331.03	6.30	140.81	38.16	8.00	68.79	17.08	7.25	140.66	38.14	8.07
9 to 12 years	244.94	5.50	91.91	8.35	4.81	61.62	5.03	5.96	85.33	7.81	4.49
1 to 3 years of college	394.10	7.17	159.19	17.09	8.56	146.54	13.52	14.45	158.87	17.08	8.62
4 years or more of college	351.66	7.05	143.51	9.51	7.36	121.93	7.15	11.48	143.45	9.50	7.43

— No sample data

NOTE: Percent population (% Pop.) columns show the percentage of each row's population who participated in the activity named by the column (the percentage of the population living in urban areas who participated, etc.). Columns labeled "% under TOTAL, Away From Home, and Around the Home show the percentage of each column's participants who are described by the row heading (the percentage of those who lived in urban areas, etc.).

Table 33A SE Standard Errors of Expenditures by Missouri Residents for All Wildlife Watching Both In and Out of Missouri: 2016
(State population 16 years and older. Numbers in thousands)

	AMOUNT (thousands of \$)	AVERAGE PER WILDLIFE WATCHER (\$) ¹	AVERAGE PER SPENDER (\$) ¹	NUMBER OF SPENDERS (thousands)	PERCENT OF WILDLIFE WATCHERS
ALL EXPENDITURES	1,076,771.16	596.87	757.98	197.20	7.72
TRIP-RELATED EXPENDITURES	509,655.86	289.30	688.04	155.27	7.60
Food and lodging	268,870.43	152.74	456.55	134.58	6.91
Food	225,192.84	128.39	386.30	134.58	6.91
Lodging	49,584.70	27.70	281.17	101.97	5.71
Transportation	161,088.74	91.04	227.66	153.96	7.71
Other trip costs ²	84,484.82	48.26	264.90	107.03	5.82
EQUIPMENT AND OTHER EXPENDITURES	850,493.36	476.06	676.16	191.12	8.18
Wildlife-watching equipment	111,136.27	60.19	87.64	187.77	8.17
Binoculars, spotting scopes	21,108.49	11.90	82.73	96.03	5.34
Film and photo processing	10,506.14	6.01	195.91	20.57	1.16
Cameras, special lenses, video cameras, and other photographic equipment, including memory cards	22,960.00	13.03	163.02	59.67	3.34
Day packs, carrying cases, and special clothing	41,308.78	23.17	79.29	108.21	5.93
Bird food	17,998.89	9.33	16.20	161.27	8.25
Food for other wildlife	32,278.11	18.38	91.71	101.45	5.63
Nest boxes, bird houses, bird feeders, and bird baths	19,559.39	10.92	22.05	165.29	8.75
Other equipment (including field guides)	1,830.10	1.05	46.76	38.03	2.17
Auxiliary equipment ³	27,888.93	15.64	69.10	105.79	5.86
Special equipment ⁴	598,474.89	340.43	3,492.54	98.61	5.57
Magazines, books, and DVDs	3,951.79	2.21	14.99	92.14	5.17
Membership dues and contributions	5,862.37	3.27	23.33	65.08	3.58
Land leasing and ownership	408,951.31	233.76	2,027.60	81.83	4.68
Plantings	4,828.76	2.68	26.54	84.86	4.73

¹ Average expenditures are annual estimates.

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, other camping equipment, and other auxiliary equipment.

⁴ Includes boats, campers, cabins, trail bikes, dune buggies, 4 x 4 vehicles, ATVs, 4-wheelers, snowmobiles, pickups, vans, travel and tent trailers, motor homes, house trailers, recreational vehicles (RVs) and other special equipment.

Table 33B SE Standard Errors of Expenditures by Missouri Residents for Away-from-home Wildlife Watching
Both In and Out of Missouri: 2016

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

	AMOUNT (thousands of \$)	AVERAGE PER WILDLIFE WATCHER (\$) ¹	AVERAGE PER SPENDER (\$) ¹	NUMBER OF SPENDERS (thousands)	PERCENT OF WILDLIFE WATCHERS
ALL EXPENDITURES	1,402,722.05	1,502.53	1,681.86	169.06	6.09
TRIP-RELATED EXPENDITURES	1,363,433.12	1,460.19	1,635.17	169.06	6.09
Food and lodging	721,490.04	773.60	935.34	411.59	43.86
Food	498,775.50	535.48	695.32	411.59	43.86
Lodging	229,113.11	245.14	380.37	322.22	34.39
Transportation	427,105.77	455.45	611.43	185.61	12.17
Other trip costs ²	220,118.00	236.74	795.33	194.47	20.77
EQUIPMENT AND OTHER EXPENDITURES	40,093.57	43.19	289.96	102.39	10.96
Wildlife-watching equipment	39,068.34	42.11	0.00	58.60	6.32
Binoculars, spotting scopes	39,068.34	42.11	0.00	58.60	6.32
Film and photo processing	—	—	—	—	—
Cameras, special lenses, video cameras, and other photographic equipment, including memory cards	—	—	—	—	—
Day packs, carrying cases, and special clothing	—	—	—	—	—
Bird food	—	—	—	—	—
Food for other wildlife	—	—	—	—	—
Nest boxes, bird houses, bird feeders, and bird baths	—	—	—	—	—
Other equipment (including field guides)	—	—	—	—	—
Auxiliary equipment ³	—	—	—	—	—
Special equipment ⁴	1,500.07	1.62	0.00	30.00	3.23
Magazines, books, and DVDs	529.89	0.57	7.18	21.90	2.35
Membership dues and contributions	201.34	0.22	0.00	20.13	2.17
Land leasing and ownership	—	—	—	—	—
Plantings	—	—	—	—	—

— No sample data

¹ Average expenditures are annual estimates.

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, other camping equipment, and other auxiliary equipment.

⁴ Includes boats, campers, cabins, trail bikes, dune buggies, 4 x 4 vehicles, ATVs, 4-wheelers, snowmobiles, pickups, vans, travel and tent trailers, motor homes, house trailers, recreational vehicles (RVs) and other special equipment.

Table 33C SE Standard Errors of Expenditures by Missouri Residents for Around-the-home Wildlife Watching
Both In and Out of Missouri: 2016

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

	AMOUNT (thousands of \$)	AVERAGE PER WILDLIFE WATCHER (\$) ¹	AVERAGE PER SPENDER (\$) ¹	NUMBER OF SPENDERS (thousands)	PERCENT OF WILDLIFE WATCHERS
ALL EXPENDITURES	1,342,518.17	771.52	1,311.55	242.71	12.88
TRIP-RELATED EXPENDITURES	x	x	x	x	x
Food and lodging	x	x	x	x	x
Food	x	x	x	x	x
Lodging	x	x	x	x	x
Transportation	x	x	x	x	x
Other trip costs ²	x	x	x	x	x
EQUIPMENT AND OTHER EXPENDITURES	1,342,518.17	771.52	1,311.55	242.71	12.88
Wildlife-watching equipment	67,144.05	37.23	50.39	238.30	12.66
Binoculars, spotting scopes	18,410.28	10.55	57.46	138.94	7.97
Film and photo processing	4,425.08	2.57	202.88	15.53	0.90
Cameras, special lenses, video cameras, and other photographic equipment, including memory cards	3,429.18	1.96	50.74	52.28	3.01
Day packs, carrying cases, and special clothing	20,897.21	12.10	63.11	106.33	6.14
Bird food	28,157.71	15.30	22.37	223.36	12.02
Food for other wildlife	6,623.79	3.79	42.41	60.93	3.44
Nest boxes, bird houses, bird feeders, and bird baths	6,302.28	3.49	6.12	173.75	9.66
Other equipment (including field guides)	661.13	0.38	0.00	14.70	0.85
Auxiliary equipment ³	10,947.17	6.32	22.71	109.92	6.32
Special equipment ⁴	1,201,628.47	694.47	5,258.74	107.30	6.20
Magazines, books, and DVDs	1,872.35	1.08	15.06	40.73	2.34
Membership dues and contributions	6,923.81	4.01	153.47	75.15	4.34
Land leasing and ownership	399,002.71	231.55	18,296.90	15.17	0.88
Plantings	4,735.11	2.68	26.31	103.34	5.89

— No sample data x Not applicable

¹ Average expenditures are annual estimates.

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, other camping equipment, and other auxiliary equipment.

⁴ Includes boats, campers, cabins, trail bikes, dune buggies, 4 x 4 vehicles, ATVs, 4-wheelers, snowmobiles, pickups, vans, travel and tent trailers, motor homes, house trailers, recreational vehicles (RVs) and other special equipment.

Table 35 SE Standard Errors of Missouri Resident Wildlife Watchers Participating in Fishing or Hunting: 2016
(State population 16 years and older. Numbers in thousands)

	TOTAL		AWAY FROM HOME		AROUND THE HOME	
	#	%	#	%	#	%
ALL WILDLIFE WATCHERS	187.73	0.00	167.91	0.00	186.71	0.00
Did not fish or hunt	189.06	9.12	152.84	13.15	188.39	9.15
Fished or hunted	178.87	9.12	142.04	13.15	177.10	9.15
Fished	162.72	8.45	118.74	11.18	161.19	8.49
Hunted	164.52	9.01	111.83	11.15	164.15	9.12

Table 36 SE Standard Errors of Missouri Resident Sportspersons Participating in Wildlife Watching: 2016
(State population 16 years and older. Numbers in thousands)

	SPORTSPERSONS		ANGLERS		HUNTERS	
	#	%	#	%	#	%
ALL SPORTSPERSONS	192.42	0.00	156.56	0.00	81.37	0.00
Did not watch wildlife	65.17	5.25	60.54	6.05	39.57	8.43
Watched wildlife	165.77	5.25	138.47	6.05	70.82	8.43
Away from home	131.36	8.62	116.93	9.87	55.09	10.44
Around the home	159.66	6.11	133.47	6.25	67.47	9.13

