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The 2017 Economic Contributions of Outdoor Recreation in Colorado

A regional and county-level analysis

Colorado Parks & Wildlife
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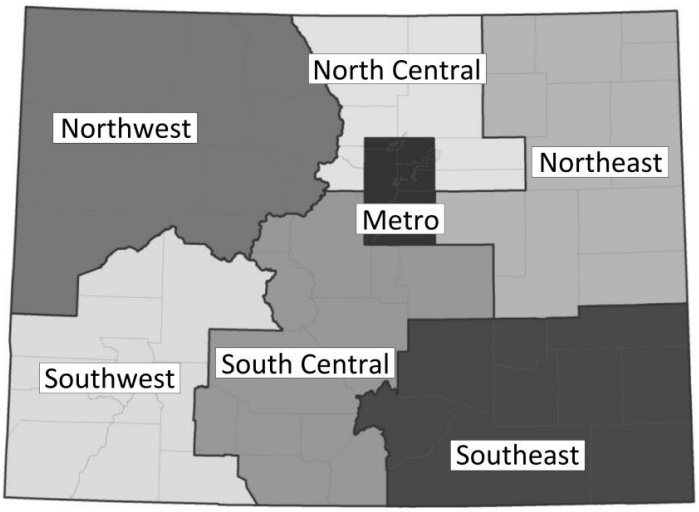
Executive Summary

This study, conducted by Southwick Associates for Colorado Parks and Wildlife, estimates the economic contributions of outdoor recreational activity in Colorado during 2017. The results are provided at the state-level as well as for 7 regions within the state.[1] Focusing on the state-level results below, the total economic output associated with outdoor recreation amounts to $62.5 billion dollars, contributing $35.0 billion dollars to the Gross Domestic Product of the state. This economic activity supports over 511,000 jobs in the state, which represents 18.7% of the entire labor force in Colorado and produces $21.4 billion dollars in salaries and wages. In addition, this output contributes $9.4 billion dollars in local, state and federal tax revenue. Similar interpretations can be applied to the regional results. Outdoor recreation constitutes a substantial part of the Colorado economy.

Total Economic Contribution of Outdoor Recreation in Colorado, by Region ($ values in millions)

	Northwest	North Central	Metro	Northeast	Southeast	South Central	Southwest	**State**
Output	$14,879	$13,846	$10,648	$505	$1,648	$6,384	$5,009	**$62,540**
Salaries & Wages	$5,088	$4,384	$3,862	$166	$494	$1,845	$1,673	**$21,372**
GDP Contribution	$8,276	$7,487	$6,167	$254	$808	$3,201	$2,657	**$34,997**
State/Local Taxes	$1,231	$1,002	$743	$51	$184	$615	$490	**$4,369**
Federal Taxes	$1,195	$1,074	$934	$39	$121	$439	$380	**$5,125**
Jobs	133,658	119,958	86,976	5,709	20,209	68,321	53,090	**511,059**

SCORP Regions



[1] Part of the analysis for this study was based on work performed or supported by the Outdoor Industry Association (OIA, 2017). This study uses a broader definition of outdoor recreation, and for this reason the results of these two studies should not be directly compared. Rather, these two studies should be used together to gain a better understanding of the economic contributions of outdoor recreation to the Colorado economy.

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1. Introduction

This study, conducted by Southwick Associates for Colorado Parks and Wildlife (CPW), was undertaken to quantify the economic contributions of outdoor recreation in Colorado for 2017. This investigation updates a similar study completed in 2014 (CPW, 2014). Both the current and original study are part of a broader CPW effort to characterize outdoor recreation both statewide and regionally for the Colorado Statewide Comprehensive Outdoor Recreation Plan (SCORP). Recreation contributions of multiple recreational activities were estimated. Fishing, hunting, and wildlife watching were of particular interest, and the specific contributions of these three activities were also examined. Additionally, the county-level contributions of hunting were estimated for a more detailed view of the economic contributions of hunting in Colorado.

Part of the analysis for this study was based on work performed or supported by the Outdoor Industry Association (OIA). In particular, the statewide economic contributions relied on data from a 2017 OIA study (OIA, 2017).[2] Although components of the analysis presented here relied on OIA data, the results of this study differ somewhat from the state-level results of the OIA study for two reasons. First, this study incorporates a wider range of outdoor recreation activities, which leads to larger economic estimates of outdoor recreation. Second, this study relies principally on the SCORP survey data to characterize participation, and these numbers differ from the OIA-based participation numbers as a consequence of using different data sources. For this reason, the results of these two studies should not be directly compared, but rather should be used together to gain a broader understanding of the economic contributions of outdoor recreation to the Colorado economy.

2. Data Sources & Methods

Outdoor recreation in this study includes a set of activities corresponding to questions in a CPW survey sent to 7,000 Colorado residents in early 2018 as part of the Colorado Statewide Comprehensive Outdoor Recreation Plan (SCORP, 2018)[3]. Spending in Colorado was estimated by applying spending profiles to participation numbers for the SCORP activities. Statewide spending was estimated using appropriate data sources for each activity group (Appendix D). In constructing spending profiles for each activity, this study largely relied on spending data from an OIA survey, administered for the purpose of quantifying the economic contributions of outdoor recreation with the U.S. and each of the 50 states (OIA, 2017). Because this study incorporated a wider range of activities than the OIA study, additional data sources were incorporated in characterizing spending profiles for certain activities. The estimation of

[2] The Outdoor Recreation Economy (OIA, 2017). https://outdoorindustry.org/advocacy/
[3] Additional details about the SCORP survey are included in Appendix G.

spending varied by activity as a result. Detailed descriptions of these procedures are included in Appendix E.

The spending estimates were analyzed using standard economic models to quantify economic contributions[4]. The definitions of key economic terms are presented in Appendix A. The IMPLAN economic modeling software was used to estimate economic contributions. Details of the economic contribution methodology are presented in Appendix B.

3. Outdoor Recreation Participation

The 2018 SCORP survey of Outdoor Recreation was used to characterize participation in Colorado regionally and statewide for residents of the state (SCORP, 2018). The survey included a set of 30 activities that were grouped into 5 larger categories (Table 1). The survey results suggest that outdoor recreation is very popular among Colorado residents, with an estimated 3.8 million adults (90% of adult residents) having engaged in at least one of the 30 activities in 2017. Trail activities were the most popular, with nearly 83% of adults participating. The Northwest and North Central regions were the two areas where the largest proportions of participants recreated, with 49% and 46% of Colorado adults talking part in outdoor recreation in those regions, respectively.

Table 1. SCORP Survey Activity Groups (SCORP, 2018)

Activity Group	Activities in Group
Trail/Road	Walking, Jogging/Running (outdoors), Hiking/Backpacking, Horseback riding, Road biking, Mountain biking, Off-highway vehicle (OHV) or 4-wheeling/motorcycling
Water-based	Swimming (outdoors), Power boating, Water/Jet skiing, Sailing, Canoeing/Kayaking, Whitewater rafting, Stand up paddle-boarding
Winter	Skiing (alpine/tele)/snowboarding, Sledding/tubing, Snowmobiling, Snowshoeing or cross-country skiing
Wildlife-related	Hunting, Fishing, Ice fishing, Bird Watching, Wildlife viewing (excluding bird watching)
Other Outdoor	Developed/RV camping, Tent camping, Picnicking, Target or skeet shooting, Rock climbing, Team or individual sports (outdoors), Playground activities

[4] All monetary values are reported in 2017 dollars. For example, spending profiles based on 2016 data were scaled up by 2.1% to account for inflation (U.S. Bureau of Labor Statistics).

Table 2. SCORP Survey Participants (thousands) for Activity Groups by Region (SCORP, 2018)

Activity	Northwest	North Central	Metro	Northeast	Southeast	South Central	Southwest	**State**
Trail/Road	1,603	1,706	1,469	273	356	1,250	710	**3,628**
Water-based	506	676	378	54	141	325	273	**1,758**
Winter	983	481	226	16	43	275	231	**1,747**
Wildlife-related	860	759	504	161	244	773	443	**2,201**
Other Outdoor	1,117	1,238	1,003	206	309	950	598	**3,070**
Any Outdoor Activity	2,049	1,942	1,628	452	569	1,579	972	**3,796**

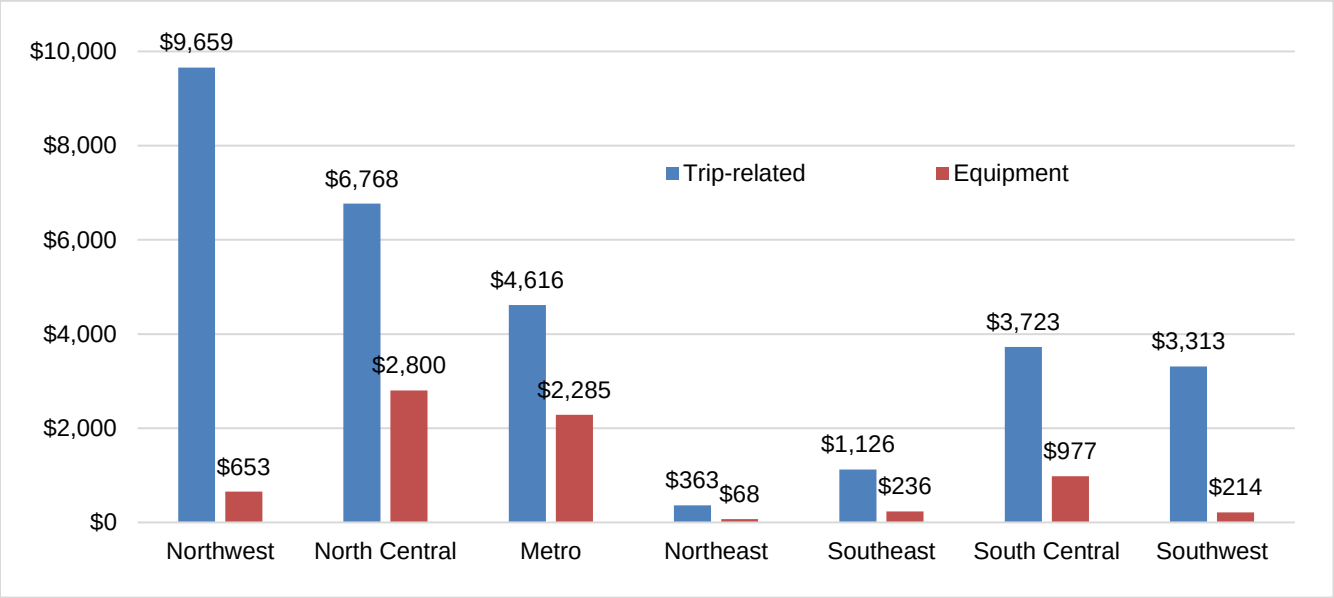
4. Outdoor Recreation Expenditures

The popularity of outdoor recreation by both Colorado residents and nonresidents leads to significant consumer spending in the Colorado economy. Outdoor recreationists in Colorado spent over $36.8 billion dollars on trips and equipment in 2017 (Table 3). The Northwest region included the largest amount of outdoor recreation spending at $10.3 billion, followed by the North Central region at $9.6 billion. Combined, these two regions accounted for over half of all the outdoor recreation spending within Colorado. Because retail sales are concentrated in more populous regions, the ratio of equipment to trip-related sales varies widely from one region to the next (Table 3). Figure one shows trip and equipment spending separately as well as the differences in magnitude between those two spending categories by county. Partly as a result of these differences, the nature of economic contributions (e.g., industries impacted, types of jobs supported) varies regionally.

Table 3. Spending by Region (millions) for Trip-Related versus Equipment Spending

	Northwest	North Central	Metro	Northeast	Southeast	South Central	Southwest	**State**
Total Spending								
Trip-related	$9,659	$6,768	$4,616	$363	$1,126	$3,723	$3,313	$29,569
Equipment	$653	$2,800	$2,285	$68	$236	$977	$214	$7,233
Total	$10,312	$9,568	$6,901	$431	$1,363	$4,700	$3,527	$36,802
Percent Spending by Type								
Trip-related	93.7%	70.7%	66.9%	84.3%	82.7%	79.2%	93.9%	80.3%
Equipment	6.3%	29.3%	33.1%	15.7%	17.3%	20.8%	6.1%	19.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Figure 1. Total Outdoor Recreation Spending by Region (in $millions)



5. Economic Contributions of Outdoor Recreation

As a result of the economic multiplier effect, the $36.8 billion dollars of outdoor recreation spending produces additional rounds of economic activity throughout the state's economy. These include indirect contributions, arising from additional spending within industries, and induced contributions, which result from spending of salaries and wages by employees of these industries. These indirect/induced effects total $29.0 billion, and when combined with direct expenditures, account for $62.5 billion dollars of output in the Colorado economy (Table 4). This total output includes $35.0 billion to the state's Gross Domestic Product (GDP), which is equal to 10.2% of the state's total GDP (BEA, 2018).[5]

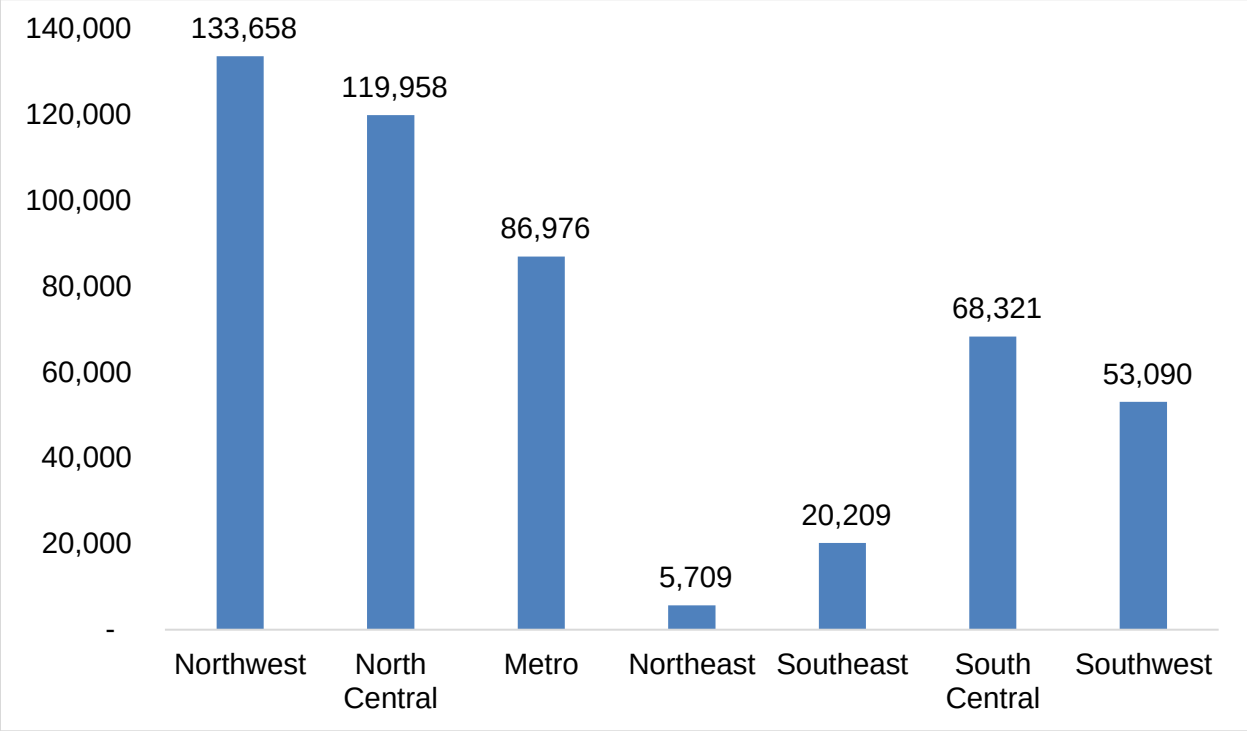
Table 4. Economic Contributions by Region (dollar values in $millions)

	Northwest	North Central	Metro	Northeast	Southeast	South Central	Southwest	**State**
Direct								
Output	$10,312	$9,568	$6,901	$431	$1,363	$4,700	$3,527	$36,802
Salaries & Wages	$3,288	$2,699	$2,242	$128	$339	$1,180	$1,119	$11,206
GDP Contribution	$5,206	$4,569	$3,479	$188	$558	$2,068	$1,713	$18,354
State/Local Taxes	$902	$760	$537	$43	$157	$507	$393	$2,977
Federal Taxes	$773	$667	$543	$30	$85	$289	$256	$2,749
Jobs	92,805	85,833	60,144	4,703	16,064	51,647	38,080	328,632
Indirect/Induced								
Output	$5,567	$5,096	$4,377	$133	$498	$2,131	$1,857	$29,039
Salaries & Wages	$1,800	$1,685	$1,620	$38	$155	$665	$554	$10,166
GDP Contribution	$3,070	$2,918	$2,688	$66	$250	$1,134	$943	$16,643
State/Local Taxes	$329	$242	$206	$8	$27	$108	$97	$1,392
Federal Taxes	$422	$407	$390	$9	$36	$150	$124	$2,376
Jobs	40,853	34,125	26,831	1,006	4,145	16,675	15,010	182,427
Total								
Output	$14,879	$13,846	$10,648	$505	$1,648	$6,384	$5,009	$62,540
Salaries & Wages	$5,088	$4,384	$3,862	$166	$494	$1,845	$1,673	$21,372
GDP Contribution	$8,276	$7,487	$6,167	$254	$808	$3,201	$2,657	$34,997
State/Local Taxes	$1,231	$1,002	$743	$51	$184	$615	$490	$4,369
Federal Taxes	$1,195	$1,074	$934	$39	$121	$439	$380	$5,125
Jobs	133,658	119,958	86,976	5,709	20,209	68,321	53,090	511,059

[5] GDP contribution is smaller than total output because GDP measures only the value-added production of goods and services (i.e., any intermediate inputs are excluded). While total output is a broader measure of economic activity, GDP contribution is included for comparison to the other GDP-based measures.

An important result of outdoor recreation spending is the number of jobs supported in the state. An estimated 511,000 jobs in Colorado are supported by outdoor recreation expenditures, which accounts for 18.7% of all jobs in Colorado, larger than the combined construction and manufacturing labor force in the state (BLS, 2018). These jobs are especially important to the economies of specific locales in the state. In the Northwest region alone nearly 134,000 jobs are supported by the total economic contribution of outdoor recreation (Figure 2).

Figure 2. Jobs Supported by Outdoor Recreation in Colorado Regions



6. Economic Contributions of Fishing, Hunting, and Wildlife Watching

Outdoor recreation includes a diverse set of activities that participants pursue in Colorado. Of particular interest for this study are the contributions of fishing, hunting, and wildlife watching. These three activities together produce over $5 billion dollars of economic output, which supports nearly 40,000 jobs within the state. Fishing alone contributes $2.4 billion dollars in economic output per year, supporting over 17,000 jobs in Colorado (Table 5).

Table 5. Total Economic Contributions of Fishing, Hunting, and Wildlife Watching by Region

	Northwest	North Central	Metro	Northeast	Southeast	South Central	Southwest	**State**
Economic Output ($millions)								
Fishing	$239	$691	$512	$29	$109	$353	$120	$2,445
Hunting	$136	$221	$166	$20	$24	$93	$55	$843
Wildlife Watching	$161	$762	$682	$23	$55	$277	$86	$2,436
Salaries & Wages ($millions)								
Fishing	$74	$194	$165	$9	$33	$97	$39	$757
Hunting	$50	$65	$53	$8	$8	$28	$22	$280
Wildlife Watching	$49	$184	$191	$7	$17	$72	$28	$637
GDP Contribution ($millions)								
Fishing	$122	$321	$261	$13	$53	$162	$61	$1,227
Hunting	$77	$113	$90	$11	$12	$46	$31	$457
Wildlife Watching	$88	$310	$320	$10	$28	$121	$45	$1,071
State & Local Taxes ($millions)								
Fishing	$17	$40	$28	$2	$12	$29	$11	$143
Hunting	$9	$11	$8	$2	$2	$6	$5	$44
Wildlife Watching	$11	$33	$31	$2	$5	$14	$7	$111
Federal Taxes ($millions)								
Fishing	$18	$47	$40	$2	$8	$22	$9	$180
Hunting	$12	$16	$13	$2	$2	$6	$5	$66
Wildlife Watching	$12	$44	$47	$2	$4	$16	$6	$154
Jobs								
Fishing	1,930	4,919	3,355	284	1,298	3,368	1,185	17,114
Hunting	1,488	1,885	1,238	368	443	1,213	869	7,937
Wildlife Watching	1,283	3,936	4,313	191	569	1,916	825	13,243

Pursuing big game is the most popular form of hunting in Colorado among both residents of the state and those traveling from other locations. Residents make up a majority of days spent hunting in the state at 69.8% (CPW, 2013a). The average non-resident big game hunter spends more money per day, and the economic output contributed by non-resident big game hunters makes up nearly 40 percent of the total (Table 6).

Table 6. Total Economic Contributions of Big Game Hunting in Colorado

	Output ($millions)	Labor Income ($millions)	GDP Contribution ($millions)	State/Local Taxes ($millions)	Federal Taxes ($millions)	Jobs
Resident	$374.3	$124.5	$197.4	$21.3	$29.1	2,999
Non-resident	$228.2	$95.1	$138.6	$13.0	$21.3	3,305
Total	$602.4	$219.6	$336.0	$34.4	$50.4	6,304

7. Hunting Economic Contributions by Destination County

Hunting is a popular form of outdoor recreation in Colorado, with participants that are typically active over many years. The type of hunting that Colorado residents and visitors engage in varies greatly by location. Through extensive surveys of hunters, CPW has been able to characterize hunting effort by destination county within the state over a range of species pursued (CPW, 2013). Using these survey results allowed us to estimate hunter effort by county of activity for three species groups; big game, small game, and waterfowl. Pursuing big game is the most popular hunting activity in Colorado, and the Northwest region includes the largest contribution of hunting effort by a fairly large margin (Table 7).

Table 7. Hunting Effort by Region in 2017[6]

	Northwest	North Central	Metro	Northeast	Southeast	South Central	Southwest	**State**
Hunter Days per Year								
Big Game	760,237	110,277	28,392	43,840	85,998	237,109	342,758	**1,608,611**
Small Game	113,185	69,838	4,500	123,235	39,273	47,007	40,378	**437,417**
Waterfowl	16,701	76,185	958	32,842	15,826	8,028	6,704	**157,244**

(CPW, 2012 Big Game, Small Game & Waterfowl Hunter Days by County, 2013)
(CPW, 2017 Big Game Hunter days by County, 2018)

[6] Note that small game and waterfowl days estimates were not available in 2017. We increased the 2012 days by 7.9% to produce a corresponding 2017 estimate. This percentage equals the observed change in Colorado big game hunter days over that time period.

The detailed hunting effort data also allowed economic contributions of hunting effort to be examined at the county level. The economic contributions of the top ten counties by total output from hunting are included in Table 8. Detailed contributions for all counties are displayed in Table 9.

Table 8. Top 10 Counties for Total Hunting Economic Contributions by Output

County	Output ($thousands)	Labor Income ($thousands)	GDP Contribution ($thousands)	State/Local Taxes ($thousands)	Federal Taxes ($thousands)	Jobs
El Paso	$61,819	$16,451	$28,871	$3,097	$3,774	577
Denver	$55,018	$18,123	$31,082	$2,430	$4,081	362
Jefferson	$50,820	$14,811	$24,828	$2,663	$3,604	467
Arapahoe	$50,793	$16,103	$28,776	$2,646	$3,945	398
Larimer	$46,843	$13,725	$23,341	$2,950	$3,314	549
Adams	$32,169	$9,368	$16,592	$1,886	$2,310	344
Weld	$30,724	$9,225	$14,734	$2,020	$2,185	402
Boulder	$29,753	$8,367	$14,579	$1,599	$1,890	262
Douglas	$29,437	$9,213	$16,291	$1,764	$2,330	316
Mesa	$26,868	$8,380	$13,483	$1,712	$2,035	392

Table 9. Total Hunting Economic Contributions by County

County	Output ($thousands)	Labor Income ($thousands)	GDP Contribution ($thousands)	State/Local Taxes ($thousands)	Federal Taxes ($thousands)	Jobs
Northwest Region						
Eagle	$14,109	$5,786	$8,917	$986	$1,334	144
Garfield	$15,249	$6,700	$8,961	$1,369	$1,457	217
Grand	$11,220	$4,120	$6,518	$1,174	$936	251
Jackson	$4,533	$1,416	$2,222	$607	$333	51
Mesa	$26,868	$8,380	$13,483	$1,712	$2,035	392
Moffat	$11,942	$4,271	$6,293	$807	$1,037	312
Pitkin	$3,839	$1,685	$2,536	$282	$333	40
Rio Blanco	$9,433	$4,741	$5,086	$1,229	$708	172
Routt	$13,264	$5,540	$8,222	$1,157	$1,306	219
Summit	$6,243	$2,143	$3,696	$505	$537	74
North Central Region						
Adams	$32,169	$9,368	$16,592	$1,886	$2,310	344
Arapahoe	$50,793	$16,103	$28,776	$2,646	$3,945	398
Boulder	$29,753	$8,367	$14,579	$1,599	$1,890	262
Clear Creek	$984	$443	$620	$96	$90	24
Gilpin	$462	$232	$311	$35	$51	14
Larimer	$46,843	$13,725	$23,341	$2,950	$3,314	549
Weld	$30,724	$9,225	$14,734	$2,020	$2,185	402
Metro Region						
Broomfield	$3,687	$1,203	$2,190	$233	$295	34
Denver	$55,018	$18,123	$31,082	$2,430	$4,081	362
Douglas	$29,437	$9,213	$16,291	$1,764	$2,330	316
Jefferson	$50,820	$14,811	$24,828	$2,663	$3,604	467
Northeast Region						
Cheyenne	$265	$72	$102	$48	$18	3
Elbert	$874	$348	$506	$95	$88	24
Kit Carson	$1,071	$413	$600	$103	$91	48
Lincoln	$1,117	$400	$619	$122	$83	25
Logan	$3,392	$1,518	$2,077	$292	$343	53
Morgan	$5,835	$1,948	$3,039	$608	$488	129
Phillips	$524	$257	$329	$44	$51	10
Sedgwick	$996	$236	$436	$132	$52	11
Washington	$800	$391	$434	$91	$81	28
Yuma	$2,272	$989	$1,284	$226	$214	41

(Continued) Total Hunting Economic Contributions by County

County	Output ($thousands)	Salaries & Wages ($thousands)	GDP Contribution ($thousands)	State/Local Taxes ($thousands)	Federal Taxes ($thousands)	Jobs
Southeast Region						
Baca	$570	$145	$271	$81	$33	7
Bent	$1,079	$382	$586	$130	$79	28
Crowley	$301	$103	$162	$39	$22	8
Huerfano	$2,100	$669	$1,054	$246	$180	48
Kiowa	$367	$89	$165	$56	$20	5
Las Animas	$3,395	$1,613	$1,922	$344	$342	85
Otero	$1,594	$495	$793	$173	$127	39
Prowers	$868	$294	$453	$93	$69	20
Pueblo	$10,846	$3,404	$5,802	$893	$827	165
South Central Region						
Alamosa	$1,480	$501	$801	$147	$117	35
Chaffee	$2,971	$1,074	$1,642	$279	$245	72
Conejos	$2,418	$915	$1,320	$269	$218	83
Costilla	$756	$285	$419	$87	$60	24
Custer	$1,558	$589	$841	$162	$154	51
El Paso	$61,819	$16,451	$28,871	$3,097	$3,774	577
Fremont	$2,593	$915	$1,412	$257	$206	81
Lake	$924	$343	$519	$106	$70	23
Mineral	$940	$355	$532	$104	$98	18
Park	$3,364	$1,138	$1,774	$403	$279	76
Rio Grande	$2,440	$839	$1,287	$257	$211	61
Saguache	$3,963	$1,548	$2,253	$432	$302	131
Teller	$1,566	$575	$876	$150	$142	32
Southwest Region						
Archuleta	$4,683	$1,723	$2,597	$471	$389	85
Delta	$6,225	$1,944	$3,085	$641	$455	129
Dolores	$2,328	$909	$1,306	$309	$150	71
Gunnison	$8,442	$3,096	$4,804	$825	$730	155
Hinsdale	$1,067	$221	$464	$161	$56	13
La Plata	$8,877	$3,332	$4,971	$627	$748	121
Montezuma	$2,855	$1,185	$1,600	$263	$253	70
Montrose	$8,299	$2,682	$4,288	$771	$646	175
Ouray	$1,686	$780	$979	$144	$151	27
San Juan	$713	$205	$341	$88	$50	8
San Miguel	$2,832	$1,170	$1,735	$273	$254	35

8. Comparison to Previous Studies

Previous studies have been undertaken to estimate the economic impacts of fishing, hunting, and wildlife watching in Colorado. CPW supported studies in 2004, 2008, and 2013 to estimate these economic contributions (CPW, 2004; CPW, 2008; CPW, 2013). Additionally, USFWS estimates expenditures for fishing, hunting, and wildlife watching by state every five years based on a National Survey (USFWS, 2011)[7]. The direct expenditure estimates of these studies are comparable in scope; retail trip and equipment expenditures made by fishing, hunting, and wildlife watchers in a given year. The spending estimates from each of these studies are summarized in Table 10 and compared to spending estimates utilized for this current study.

Table 10. Estimates of Annual Fishing, Hunting, and Wildlife Watching Expenditures from Comparable Data Sources

Data Source	Fishing and Hunting Expenditures	Wildlife Watching Expenditures
CPW (2004)	$845,300,000	$526,000,000
CPW (2008)	$1,017,800,000	$703,200,000
USFWS (2011)	$1,551,577,000	$1,432,579,000
CPW (2013)	$1,604,218,256	$1,322,968,136
Current Study	$1,875,008,881	$1,495,180,053

Different studies incorporate different data sources to characterize participation and spending habits of outdoor recreationists, the resulting expenditure estimates vary as a result. The current study relies largely on the USFWS National Survey to characterize average spending for fishers, hunters, and wildlife watchers. Because the participation numbers used in this study are similar to those estimated by USFWS, the overall statewide expenditures estimates are also similar.

[7] The most recent (2016) National Survey did not include estimates at the state level at the time of the writing of this report.

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Appendix A Definitions for Economic Contribution

Economic benefits can be estimated by two types of economic measures: economic contributions and economic values. An **economic contribution** addresses the business and financial activity resulting from the use of a resource. **Economic value**, on the other hand, is a non-business measure that estimates the value people receive from an activity after subtracting for their costs and expenditures. This concept is also known as consumer surplus.

There are three types of economic contribution: direct, indirect and induced. A **direct contribution** is defined as the economic contribution of the initial purchase made by the consumer (the original retail sale). **Indirect contributions** are the secondary effects generated from a direct contribution, such as the retailer buying additional inventory, and the wholesaler and manufacturers buying additional materials. Indirect contributions affect not only the industry being studied, but also the industries that supply the first industry. An **induced contribution** results from the salaries and wages paid by the directly and indirectly effected industries. The employees of these industries spend their income on various goods and services. These expenditures are induced contributions, which, in turn, create a continual cycle of indirect and induced effects.

The direct, indirect and induced contribution effects sum together to provide the overall economic contribution of the activity under study. As the original retail purchase (direct contribution) goes through round after round of indirect and induced effects, the economic contribution of the original purchase is multiplied, benefiting many industries and individuals. Likewise, the reverse is true. If a particular item or industry is removed from the economy, the economic loss is greater than the original lost retail sale. Once the original retail purchase is made, each successive round of spending is smaller than the previous round. When the economic benefits are no longer measurable, the economic examination ends.

This study presents several important measures:

Retail Sales – these include expenditures made by outdoor recreationists for equipment, travel expenses and services related to their outdoor activities over the course of the year. These combined initial retail sales represent the “direct output”.

Total Economic Effect – also known as “total output” or “total multiplier effect,” this measure reports the sum of the direct, indirect and induced contributions resulting from the original retail sale. This figure explains the total activity in the economy generated by a retail sale. Another way to look at this figure is, if the activity in question were to disappear and participants did not spend their money elsewhere, the economy would contract by this amount.

Salaries & Wages – this figure reports the total salaries and wages paid in all sectors of the economy as a result of the activity under study. These are not just the paychecks of those employees directly serving recreationists or manufacturing their goods, it also includes portions of the paychecks of, for example, the truck driver who delivers food to the restaurants serving

recreationists and the accountants who manage the books for companies down the supply chain, etc. This figure is based on the direct, indirect and induced effects, and is essentially a portion of the total economic effect figure reported in this study.

Jobs – much like Salaries and Wages, this figure reports the total jobs in all sectors of the economy as a result of the activity under study. These are not just the employees directly serving recreationists or manufacturing their goods, they also include, for example, the truck driver who delivers food to the restaurants serving recreationists and the accountants who manage the books for companies down the supply chain, etc. This figure is based on direct, indirect and induced effects.

GDP Contribution – this represents the total "value added" contribution of economic output made by the industries involved in the production of outdoor recreation goods and services. For a given industry, value added equals the difference between gross output (sales and other income) and intermediate inputs (goods and services imported or purchased from other industries). It represents the contribution to GDP in a given industry for production related to outdoor recreation.

Appendix B Methodology for Economic Contribution

The extent of the economic contributions associated with spending for outdoor recreation can be estimated in two ways:

- **Direct effects**: These include the jobs, income and tax revenues that are tied directly to the spending by outdoor recreationists without including multiplier effects.
- **Total effects**: These include the jobs, income and tax revenues that are tied directly to the spending by outdoor recreationists plus the jobs, income and tax revenues that result from the multiplier effects of outdoor recreation spending. The multiplier effect occurs when a direct purchase from a business leads to increased demand for goods and services from other businesses along their supply chain. Also included is economic activity associated with household spending of incomes earned in the affected businesses.

The economic contributions from outdoor recreation, both direct effects and total effects, were estimated with an IMPLAN input-output model for the state and regional economies of Colorado, and the county economies for hunting economic contributions. The IMPLAN model was developed by MIG, Inc. originally for use by the U.S. Forest Service. Inherent in each IMPLAN model is the relationship between the economic output of each industry (i.e. sales) and the jobs, income and taxes associated with a given level of output. Through those models, it is possible to determine the jobs, income and taxes supported directly by wildlife-based recreationists with and without the multiplier effects.

Input-output models describe how sales in one industry affect other industries. For example, once a consumer makes a purchase, the retailer buys more merchandise from wholesalers, who buy more from manufacturers, who, in turn, purchase new inputs and supplies. In addition, the salaries and wages paid by these businesses stimulate more benefits. Simply, the first purchase creates numerous rounds of purchasing. Input-output analysis tracks the flow of dollars from the consumer through all of the businesses that are affected, either directly or indirectly.

To apply the IMPLAN model, each specific expenditure for outdoor recreation activities was matched to the appropriate industry sector affected by the initial purchase. The spending was estimated with models of the Colorado economy, therefore all of the resulting contributions represent salaries and wages, total economic effects, jobs and tax revenues that occur within the state of Colorado. Likewise, models based on specific regions or counties represent the economic effects within the selected region or county. The results do not include any economic activity or indirect contributions that leak out of the state, region, or county of interest. As a result of this leakage, economic contributions at the state level are larger than the sum of corresponding regional or county contributions. This occurs because a portion spending in a particular region (or county) leaks to other regions (or counties) within the state, and this within-state leakage is captured in the Colorado model.

Estimating Tax Revenues

The IMPLAN model estimates detailed tax revenues at the state and local level and at the federal level. The summary estimates provided in this report represent the total taxes estimated by the IMPLAN model including all income, sales, property and other taxes and fees that accrue to the various local, state and federal taxing authorities.

Appendix C Spending Methodology

I. Overview

Spending in Colorado was estimated by applying spending profiles to participation numbers for 30 outdoor recreational activities (Table 11). The procedure involved first estimating participation and spending at the state level and then allocating spending to each region.

A. Estimating Participation

For most of these activities, a single data source was not sufficient to characterize both resident and non-resident participation in Colorado (Table 12). Procedures used to estimate final participation numbers varied between activities due to differences in the data available for each. The specific procedures used are detailed within sections II and III.

B. Estimating Spending at the State Level

Spending profiles for each activity group included a set of expenditures by item for a typical participant. Each spending profile included two components; equipment spending, and trip-related spending. Spending profiles were applied differently by activity due to differences in source data (Sections II and III).

C. Allocating Spending to each Region

Spending totals were allocated to regions differently for equipment and trip spending. We assumed that most consumers would not make many equipment purchases during a trip. Instead, they would likely purchase equipment prior to going on a trip. As a result many equipment purchases would be expected to occur in different regions than trip-related purchases. In order to more accurately reflect locations of equipment purchases, we used retail trade sales data by county (CDOR, 2012; Appendix H) to allocate these expenditures regionally. SCORP survey data was used to allocate trip-related expenditures. The percentages used to allocate regional expenditures are shown in Tables E2, F2, and G3.

Regional Allocation Calculations:

equipment spending in region j = (equipment spending) × (retail trade % in region j)
trip spending in region j = (trip spending) × (participation days % in region j)

II. Applying Profiles – General Approach

At the most basic level, spending was estimated using two data sources:

1. SCORP Survey: Used to estimate number of participants and days of participation
2. Secondary Source: Used to estimate spending per participant and/or per day

For each activity, spending in Colorado was estimated by multiplying the SCORP participation numbers by the relevant spending profile. Spending profiles are divided into two categories; trip spending (food, travel expenses, etc.) estimated on a per day basis, and equipment spending (apparel, gear, etc.) estimated on a per participant basis. Spending estimates are therefore based on two basic formulas:

*equipment spending = (count of participants) * (equip spending per participant)*
*trip spending = (days of activity) * (trip spending per day)*

Notes on Methodology Updates

It is important to note that the methodology used for this study was simplified from the previous (2014) report. The methodology in the previous report included a number of additional adjustments to avoid double-counting spending across activities. We were able to simplify our approach for the current study since these adjustments were already made in the secondary source estimates. So, for example, the OIA study was used to estimate hiking spending profiles. The adjusted trip profile is calculated by simply taking the total number of OIA hiking days divided by the total OIA hiking trip spending (which already includes adjustments to avoid double-counting).

Another change relates to the activity grouping used in the previous study. Because the most recent OIA study included larger sample sizes, we were able to incorporate spending profiles on a per-activity basis, so activity grouping was not necessary.

III. Applying Profiles – Selected Activities

Spending for several activities was estimated in a unique way due to the particular nature of the data that were used. Each of the following sub-sections includes the estimation details for the corresponding activity.

A. Fishing

In 2017 there were 776,472 anglers who purchases fishing licenses in Colorado (USFWS, Historical Fishing License Data, 2017). The per participant spending profile from the National Survey ($1,746.59 per person) was applied to estimate total fishing spending at the state level (USFWS, 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, 2016).

B. Hunting

Hunting spending profiles were also constructed using the USFWS 2016 National Survey. Hunter days by county (Table 17) were combined to estimate total hunter days in Colorado for residents and non-residents combined (CPW, 2018; CPW, 2013)[8]. For each hunting type[9] hunter day estimates were applied to the respective spending profiles to estimate total spending for hunting in Colorado. Trip spending by county was allocated using CPW participation estimates, and equipment spending by county was allocated using county trade sales data (CDOR, 2017; Appendix H).

C. Wildlife Watching

The 2018 SCORP survey was used to estimate total wildlife viewing days by Colorado residents. This was multiplied by the 2016 National Survey spending profile ($18.34 per day). For non-residents, the 2016 National Survey profile was multiplied by the most recent estimate of non-resident participation; the 2011 National Survey.

D. Golfing

The impact of golfing on the Colorado economy is based on national average spending by golf facilities for operations and capital investments, as well as estimated spending by golfers for equipment, apparel and media at on-course and off-course retail outlets (TEConomy Partners, LLC, 2018). Total spending in Colorado was estimated by multiplying the average per facility by 297 golf facilities in Colorado as reported by the National Golf Foundation and included in the TEConomy report. This estimate represents direct golf spending and does not include golf-related real estate, golf tourism or charitable events. Golf participation was not broken out as a separate activity in the SCORP survey. Therefore, the total golf spending was combined with other team or individual sports spending collected in the SCORP survey and distributed to regions based on total category regional participation.

E. Target Shooting

Data from a recent study of target shooting for the National Shooting Sports Foundation were used to estimate spending profiles for target shooters in Colorado (Southwick Associates, 2018). Detailed estimates of average spending per Colorado resident were used to construct the target shooter spending profile. This average spending profile was then applied to the regional SCORP survey participation numbers to estimate total spending per SCORP region.

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[8] Note that small game and waterfowl days estimates were not available in 2017. We increased the 2012 days by 7.9% to produce a corresponding 2017 estimate. This percentage equals the observed change in Colorado big game hunter days over that time period.

[9] Three hunting profiles were used: Big Game ($231.00 per day), Small Game ($142.99 per day), and Migratory Bird ($293.39 per day).

G. Running

The activity of running was defined differently for the OIA-based spending. In the OIA study, running participation was restricted to durations of 30 minutes or more, whereas the SCORP survey includes no such specification. As a result, the participants and days in the SCORP survey consists of a much broader range of activity than the corresponding OIA activity. For this reason, OIA estimates of total running spending were incorporated directly (i.e., not based on SCORP participation). This accounted for an estimated $1.6 billion in expenditures on running-specific equipment and trips.

Appendix D Activity-specific Data

Table 11. SCORP Outdoor Recreation Activities

SCORP Survey Activity	Activity for Economic Estimates
Trail	
Walking	Trail (apparel only)
Jogging/Running (outdoors)	Running
Hiking/Backpacking	Hiking
Horseback riding	Horseback Riding
Road biking	Road biking
Mountain biking	Mountain biking
Off-highway vehicle (OHV)	Off-road
Water-based	
Swimming (outdoors)	Trail (apparel only)
Power boating	Power Boating
Water/Jet skiing	Water Skiing
Sailing	Sailing
Canoeing/Kayaking	Canoeing/Kayaking
Whitewater rafting	Whitewater rafting
Stand up paddleboarding	Stand up paddleboarding
Winter	
Skiing (alpine/tele)/snowboarding	Skiing (alpine/tele)/snowboarding
Sledding/tubing	Sledding/tubing
Snowmobiling	Snowmobiling
Snowshoeing or cross country skiing	Snowshoeing or cross country skiing
Wildlife-based	
Hunting	Hunting
Fishing	Fishing
Bird Watching	Wildlife Watching
Wildlife Watching (excluding birding)	Wildlife Watching
Ice fishing	None (captured in fishing overall)
Other Outdoor	
RV camping/cabins	RV Camping
Tent camping	Tent Camping
Picnicking	Trail (apparel only)
Target or skeet shooting	Target Shooting
Rock climbing	Rock Climbing
Team or individual sports (outdoors)	Trail (apparel only)
Playground activities	Trail (apparel only)

Table 12. Data Sources Used to Estimate Participation and Spending Profiles[10]

Activity	Spending Profile Data Source	Resident Participation Data Source
Trail		
Walking	OIA (2017)	SCORP (2018)
Jogging/Running (outdoors)	OIA (2017)	OIA (2017)
Hiking/Backpacking	OIA (2017)	SCORP (2018)
Horseback riding	OIA (2017)	SCORP (2018)
Road biking	OIA (2017)	SCORP (2018)
Mountain biking	OIA (2017)	SCORP (2018)
Off-highway vehicle (OHV)	OIA (2017)	SCORP (2018)
Water-based		
Swimming (outdoors)	OIA (2017)	SCORP (2018)
Power boating	OIA (2017)	SCORP (2018)
Water/Jet skiing	OIA (2017)	SCORP (2018)
Sailing	OIA (2017)	SCORP (2018)
Canoeing/Kayaking	OIA (2017)	SCORP (2018)
Whitewater rafting	OIA (2017)	SCORP (2018)
Stand up paddleboarding	OIA (2017)	SCORP (2018)
Winter		
Skiing (alpine/tele)/snowboarding	OIA (2017)	SCORP (2018)
Sledding/tubing	OIA (2017)	SCORP (2018)
Snowmobiling	OIA (2017)	SCORP (2018)
Snowshoeing or cross country skiing	OIA (2017)	SCORP (2018)
Wildlife-based		
Hunting	USFWS (2016)	CPW (2018), CPW (2013)
Fishing	USFWS (2016)	USFWS (2018)
Bird Watching	USFWS (2016)	SCORP (2018)
Wildlife Watching (excluding birding)	USFWS (2016)	SCORP (2018)
Other Outdoor		
RV camping/cabins	OIA (2017)	SCORP (2018)
Tent camping	OIA (2017)	SCORP (2018)
Picnicking	OIA (2017)	SCORP (2018)
Target or skeet shooting	NSSF (2017)	SCORP (2018)
Rock climbing	OIA (2017)	SCORP (2018)
Team or individual sports (outdoors)	OIA (2017)	SCORP (2018)
Playground activities	OIA (2017)	SCORP (2018)
Golfing	N/A	TEConomy Partners, LLC. (2018)

[10] Since the SCORP survey did not include non-resident respondents, the spending profile data sources were also used for non-resident participation for all activities except hunting, fishing, and golfing.

Table 13. SCORP Survey Annual Participant estimates (thousands) incorporated in Equipment Spending Calculation

	Northwest	North Central	Metro	Northeast	Southeast	South Central	Southwest
Trail/Road Activities							
Walking	1,079.4	1,334.7	1,146.6	188.1	295.6	893.5	508.3
Hiking/Backpacking	929.4	900.2	774.8	58.2	118.7	718.9	331.4
Horseback riding	89.6	64.9	80.6	24.6	24.6	78.4	42.5
Road biking	201.5	421.0	297.8	53.7	44.8	118.7	47.0
Mountain biking	232.9	282.2	210.5	11.2	31.4	185.9	138.8
Off-highway vehicle (OHV) or 4-wheeling/motorcycling	398.6	232.9	76.1	31.4	67.2	248.6	237.4
Water-based Activities							
Swimming (outdoors)	210.5	385.2	219.5	38.1	89.6	174.7	129.9
Power boating	163.5	132.1	103.0	22.4	49.3	76.1	71.7
Water/Jet skiing	24.6	11.2	62.7	9.0	22.4	4.5	17.9
Sailing	49.3	9.0	67.2	2.2	2.2	4.5	4.5
Canoeing/Kayaking	134.4	241.9	132.1	2.2	29.1	78.4	58.2
Whitewater rafting	154.5	118.7	51.5	-	6.7	58.2	103.0
Stand up paddleboarding	159.0	150.0	112.0	-	15.7	17.9	82.9
Winter Activities							
Skiing (alpine/tele)/snowboarding	797.2	230.7	73.9	2.2	6.7	179.2	181.4
Sledding/tubing	315.8	244.1	147.8	11.2	22.4	138.8	67.2
Snowmobiling	132.1	60.5	42.5	-	9.0	26.9	38.1
Snowshoeing/cross country skiing	288.9	230.7	71.7	2.2	9.0	73.9	107.5
Other Outdoor Activities							
RV camping/cabins	459.1	230.7	179.2	56.0	132.1	445.6	302.3
Tent camping	555.4	369.5	223.9	51.5	105.3	369.5	284.4
Picnicking	421.0	512.8	423.3	38.1	85.1	253.1	125.4
Team or individual sports (outdoors) (e.g., basketball, golf, tennis, etc.)	109.7	488.2	459.1	22.4	56.0	123.2	56.0
Target or skeet shooting	127.6	197.1	85.1	58.2	76.1	112.0	85.1
Rock climbing	89.6	127.6	58.2	22.4	2.2	76.1	31.4
Playground activities	159.0	546.4	405.3	35.8	47.0	168.0	64.9

Note: Regional participation is based on destination (not residence). For example, an estimated 900 million Colorado adults hiked in the Northwest region in 2017.

Table 14. SCORP Annual Days per Participant estimates for Trip Spending Calculation

	Northwest	North Central	Metro	Northeast	Southeast	South Central	Southwest
Trail/Road Activities							
Hiking/Backpacking	10.3	16.3	16	**	22.7	13.4	16.5
Horseback riding	3.4	**	**	**	**	13	11.1
Road biking	15.1	39.3	23.4	**	24.5	11.8	15.3
Mountain biking	21.5	12.7	14.5	**	28.1*	15.1	15.7
Off-highway vehicle (OHV)	9	3.4	10.8*	13.9*	10.7	8.7	8.9
Water-based Activities							
Power boating	4.3	4.5*	2.4*	**	16.1	6.2*	6.8
Water/Jet skiing	**	**	**	**	6.6*	**	6.6*
Sailing	**	**	**	**	**	**	**
Canoeing/Kayaking	6	6.3	4.4*	**	10.3*	3*	8.9
Whitewater rafting	4.2	**	**	**	**	6.1*	5.3
Stand up paddleboarding	4.8	5*	2.6*	**	**	**	8.4
Winter Activities							
Skiing (alpine/tele)/ snowboarding	12.6	13.5	**	**	**	5.1	9.2
Sledding/tubing	6.5	6.8	4.6*	**	**	3	6.1
Snowmobiling	7.7	**	**	**	**	**	5.2*
Snowshoeing/cross country skiing	5.6	6.5	**	**	**	5.8	7.5
Wildlife-related Activities							
Bird Watching	14.1	20.6	25.2	25	54.7	18.6	29.3
Wildlife viewing (excluding bird watching)	15	15.2	19.6	14.4	40.2	9.6	31.5
Other Outdoor Activities							
RV camping/cabins	6.7	5.9	9.3	3.2	5.8	6.3	5.9
Tent camping	9.6	10	9.3*	**	7.4	11.9	6.4
Rock climbing	16.6*	**	**	**	**	16*	18.9*

** Sample size is under 30, interpret with caution*
*** Sample size is less than 10, not reported*
Note: Regional participation is based on destination (not residence).

Table 15. Colorado Resident Spending Profiles per Activity **(OIA, 2017)**

	Trip-related spending (per day)	Annual Equipment spending (per participant)
Other Outdoor		
Tent camping	$134	$265
Rock climbing	$150	$264
RV camping/cabins	$71	$846
Picnicking	$0	$33
Playground activities	$0	$33
Team or individual sports (outdoors) (e.g., basketball, golf, tennis, etc.)	$0	$33
Trail/Road		
Mountain biking	$46	$213
Road biking	$22	$196
Hiking/Backpacking	$47	$134
Horseback riding	$80	$343
Off-highway vehicle (OHV) or 4-wheeling/motorcycling	$45	$328
Jogging/Running (outdoors)	$16	$219
Walking	$0	$33
Water-based		
Canoeing/Kayaking	$71	$15
Stand up paddleboarding	$56	$155
Powerboating	$50	$351
Whitewater rafting	$118	$264
Sailing	$49	$448
Water/Jet skiing	$40	$89
Swimming (outdoor)	$0	$33
Winter		
Skiing (alpine/tele)/Snowboarding	$243	$603
Snowshoeing/Cross country skiing	$87	$178
Snowmobiling	$74	$323
Sledding/Tubing	$0	$46

Note: Spending details for activities that don't use OIA-based estimates are included in Appendix C Spending Methodology

Table 16. Colorado Estimated Total Spending per Activity

Outdoor Activities	Nonresidents[a]	Residents	Total
Fishing	N/A	N/A	**$1,384,660,430**
Shooting	$0	$490,053,759	**$490,053,759**
Wildlife viewing (excluding bird watching)	$481,513,459	$1,013,666,594	**$1,495,180,053**
Big game hunting	$163,035,349	$216,349,118	**$379,384,466**
Small game hunting[b]	N/A	N/A	**$63,861,420**
Waterfowl hunting[b]	N/A	N/A	**$47,102,565**
Golfing	N/A	N/A	**$817,168,577**
Skiing (alpine/tele)/Snowboarding	$4,392,006,177	$4,909,020,465	**$9,301,026,642**
Mountain biking	$105,480,964	$1,001,721,450	**$1,107,202,414**
Road biking	$342,059,305	$870,969,667	**$1,213,028,972**
Tent camping	$1,132,663,903	$2,141,717,404	**$3,274,381,307**
Canoeing/Kayaking	$432,342,149	$302,513,892	**$734,856,041**
Rock climbing	$361,858,405	$660,847,172	**$1,022,705,577**
Hiking/Backpacking	$2,151,434,334	$2,946,794,791	**$5,098,229,125**
Horseback riding	$383,109,812	$792,537,568	**$1,175,647,380**
Snowshoeing/Cross country skiing	$639,224,084	$542,601,911	**$1,181,825,994**
Off-highway vehicle (OHV) or 4-wheeling/motorcycling	$545,370,815	$786,302,666	**$1,331,673,481**
Stand up paddleboarding	$79,792,687	$219,337,851	**$299,130,538**
Picnicking	$0	$45,610,306	**$45,610,306**
Playground activities	$0	$40,997,191	**$40,997,191**
Power boating	$277,421,290	$368,183,723	**$645,605,012**
Whitewater rafting	$98,060,849	$365,210,964	**$463,271,813**
Jogging/Running (outdoors)	$808,814,397	$856,563,077	**$1,665,377,475**
RV camping/Cabins	$574,494,535	$1,896,612,753	**$2,471,107,288**
Sailing	$97,913,245	$88,173,000	**$186,086,245**
Sledding/Tubing	$0	$40,269,933	**$40,269,933**
Snowmobiling	$327,326,093	$251,154,680	**$578,480,773**
Swimming (outdoors)	$0	$34,003,115	**$34,003,115**
Team or individual sports (outdoors)	$0	$35,193,596	**$35,193,596**
Walking	$0	$104,836,738	**$104,836,738**
Water/Jet skiing	$26,425,219	$48,093,087	**$74,518,305**
All Activites			**$36,802,476,533**

[a]Nonresident includes trip spending only

[b]Separate spending estimates based on residency were not produced for fishing, golfing, small game hunting, and waterfowl hunting.

Appendix E CPW Hunter Days by County

Table 17. Hunting Participation by County in Hunter Days **(CPW, 2018; CPW, 2013)**

County	Big Game	Small Game	Waterfowl
Northwest Region			
Eagle	62,791	7,730	1,603
Garfield	100,116	10,605	2,134
Grand	108,189	4,796	2,106
Jackson	61,277	3,296	976
Mesa	78,227	43,788	6,540
Moffat	97,687	25,868	1,790
Pitkin	22,788	1,448	51
Rio Blanco	92,870	2,897	799
Routt	111,277	8,264	548
Summit	25,015	4,494	154
North Central Region			
Adams	4,481	3,561	7,089
Arapahoe	4,322	4,468	728
Boulder	10,473	9,399	5,878
Clear Creek	7,433	4,769	-
Gilpin	4,978	1,222	-
Larimer	66,552	14,183	14,983
Weld	12,038	32,236	47,506
Metro Region			
Broomfield	483	-	-
Denver	1,578	46	142
Douglas	7,850	1,284	694
Jefferson	18,481	3,170	121
Northeast Region			
Cheyenne	3,247	700	-
Elbert	8,768	2,310	136
Kit Carson	4,096	10,260	194
Lincoln	7,863	4,161	113
Logan	5,641	21,592	8,781
Morgan	3,960	18,715	18,630
Phillips	480	9,429	105
Sedgwick	1,907	16,079	3,039
Washington	2,936	11,059	375
Yuma	4,942	28,930	1,468

(Continued) Hunting Participation by County in Hunter Days (CPW, 2018; CPW, 2013)

County	Big Game	Small Game	Waterfowl
Southeast Region			
Baca	4,913	4,355	134
Bent	4,419	7,781	3,006
Crowley	2,231	697	766
Huerfano	21,803	619	162
Kiowa	4,010	1,115	602
Las Animas	28,726	2,178	1,845
Otero	4,352	6,980	2,985
Prowers	3,125	5,109	1,402
Pueblo	12,417	10,439	4,925
South Central Region			
Alamosa	7,766	3,115	1,534
Chaffee	20,758	4,891	960
Conejos	25,244	3,086	142
Costilla	8,012	70	256
Custer	14,975	1,965	187
El Paso	17,046	4,653	592
Fremont	20,450	3,624	286
Lake	5,846	6,434	15
Mineral	11,696	404	41
Park	30,929	6,094	1,211
Rio Grande	17,725	5,762	1,454
Saguache	45,481	4,007	1,049
Teller	11,182	2,903	301
Southwest Region			
Archuleta	35,675	7,407	67
Delta	41,387	5,734	2,708
Dolores	25,665	1,724	-
Gunnison	75,169	5,096	650
Hinsdale	16,776	132	-
La Plata	34,073	5,695	481
Montezuma	21,619	2,924	128
Montrose	44,671	8,078	2,602
Ouray	14,979	278	21
San Juan	9,068	999	-
San Miguel	23,675	2,311	46

Appendix F Retail Trade Sales by County

Table 18. Retail Trade Sales by County (CDOR, 2015[a])

County	Trade Sales	% of State Total
Northwest Region		
Eagle	$895,221	1.35%
Garfield	$1,011,264	1.52%
Grand	$160,955	0.24%
Jackson	$10,543	0.02%
Mesa	$2,183,408	3.29%
Moffat	$189,238	0.29%
Pitkin	$348,020	0.52%
Rio Blanco	$55,190	0.08%
Routt	$348,346	0.53%
Summit	$608,117	0.92%
North Central Region		
Adams	$5,697,508	8.59%
Arapahoe	$8,889,189	13.40%
Boulder	$3,855,848	5.81%
Clear Creek	$81,823	0.12%
Gilpin	$11,236	0.02%
Larimer	$4,038,476	6.09%
Weld	$3,106,335	4.68%
Metro Region		
Broomfield	$1,008,975	1.52%
Denver	$7,613,904	11.48%
Douglas	$3,982,905	6.00%
Jefferson	$7,069,549	10.66%
Northeast Region		
Cheyenne	$14,220	0.02%
Elbert	$146,396	0.22%
Kit Carson	$88,029	0.13%
Lincoln	$139,613	0.21%
Logan	$284,896	0.43%
Morgan	$306,094	0.46%
Phillips	$17,258	0.03%
Sedgwick	$24,757	0.04%
Washington	$13,663	0.02%
Yuma	$106,949	0.16%

(Continued). Retail Trade Sales by County (CDOR, 2015)

County	Trade Sales	% of State Total
Southeast Region		
Baca	$41,540	0.06%
Bent	$23,059	0.03%
Crowley	$16,568	0.02%
Huerfano	$65,846	0.10%
Kiowa	$11,709	0.02%
Las Animas	$170,706	0.26%
Otero	$191,333	0.29%
Prowers	$160,785	0.24%
Pueblo	$2,000,847	3.02%
South Central Region		
Alamosa	$342,012	0.52%
Chaffee	$263,645	0.40%
Conejos	$34,653	0.05%
Costilla	$12,090	0.02%
Custer	$23,201	0.03%
El Paso	$7,525,106	11.34%
Fremont	$340,110	0.51%
Lake	$47,375	0.07%
Mineral	$9,286	0.01%
Park	$65,577	0.10%
Rio Grande	$75,314	0.11%
Saguache	$25,219	0.04%
Teller	$211,815	0.32%
Southwest Region		
Archuleta	$115,808	0.17%
Delta	$290,862	0.44%
Dolores	$18,303	0.03%
Gunnison	$189,076	0.28%
Hinsdale	$8,848	0.01%
La Plata	$741,886	1.12%
Montezuma	$361,865	0.55%
Montrose	$527,781	0.80%
Ouray	$26,853	0.04%
San Juan	$5,950	0.01%
San Miguel	$90,829	0.14%

[a]The latest full year of data available from CDOR was 2015.

Appendix G SCORP Survey

A survey of Colorado resident participation was administered by Colorado Parks & Wildlife in collaboration with SSI in early 2018. The survey included 20 questions designed to characterize outdoor activity at the level of the 7 SCORP regions. Both email and mail-based surveys were employed.

Sample Design: by CPW, with collaboration from SSI

Target Population	Colorado residents aged 18 or older
Sampling Frame	Provided by SSI, from two data sources: 1. List of CO landline phone numbers (mailing addresses) 2. List of CO cellphone numbers (billing addresses)
Sampling Method	Stratification by 7 Colorado regions (random sampling within regions). For each region, 60% were drawn from the landline list & 40% from the cellphone list.
Survey Instrument	Questionnaire sent to selected addresses, including 2 survey response options: a. Online survey b. Paper mail-in

Data Collection: Response Statistics by Sampling Frame

	Listed Landline Address Sample	**Cellphone Billing Address Sample**	**Uncertain** (didn't report ID)	**Total**
# Surveys Sent	4200 (600 per region)	2800 (400 per region)	N/A	7000
# Survey Responses	976	810	125	1911
Response Rate	23% (+ 0 to 3.0%)	29% (+ 0 to 4.4%)	N/A	27.3%

Survey data were cleaned for consistency and accuracy. The per-questions specific details are included in the summary below.

Data Cleaning Summary

SCORP Question #	Question Summary	Outliers and Invalid values to set to Missing	Notes
Q3	Outdoor trips - % overnight	999	
Q5	# days by activity by region	Blank values were set to missing only if the respondent didn't fill in data for any of the activity-region options (i.e., they didn't answer the question). Otherwise blanks were set to zero	Online range responses were recoded to point values to match the point value coding of the mail survey: We use midpoints for all categories but the last (highest value) where we set to the lowest (e.g., recoding "51+" to 51)
Q6	# days by outdoor rec area		If days > 0 and activity = "No" (change "No" to "Yes" for activity)
Q9	minutes per week outdoors	> 1,000 minutes (16.6667 hours per week, 3.3333 hours each day/5 days – not uncommon for extremely active individuals)	If minutes > 0 and activity = "No" (change "No" to "Yes" for activity)
Q14	year of birth	remove cases < 18 years of age	
Q15	gender	"other", "prefer not to say"	
Q16	current zip code		Missing and out of state zip codes added from sampling frame when possible
Q17	how many years lived in CO	(years in CO) – (years lived) > 2	
Q18	race	those with no reasonable Census equivalent (e.g., rainbow, human, etc.)	Other (7) "White American" response was changed to White (1)
	Numeric variables		All numeric variables: If a numeric range was entered (instead of an exact number), it was replaced with the midpoint of the range. The same is true for items with ordinal numeric scales, but the lowest number was used to represent the highest range in the scale

Survey Weighting

Frequency weighting was applied to correct for differences in demographic distributions between the survey respondents and the target population. The target population consists of all Colorado residents aged 18 and over. The most recently available US Census data (2016 estimates) were utilized to estimate demographic distributions of the target population. Two data sources were used for this purpose:

Target Population Demographic	**Data Source Used**
Age, Sex, Race	SC-EST2016-ALLDATA6: Annual State Resident Population Estimates for 6 Race Groups (5 Race Alone Groups and Two or More Races) by Age, Sex, and Hispanic Origin: April 1, 2010 to July 1, 2016. *Accessed via direct download from the Census website in November 2017* https://www2.census.gov/programs-surveys/popest/technical-documentation/file-layouts/2010-2016/sc-est2016-alldata6.pdf
Region	American Community Survey (2016 estimates): • Dataset: ACS5 (ACS 5-Year Detailed Tables) • Table: B01001 (SEX BY AGE) broken out by county *Accessed using the US Census data API through the R package "acs" in May 2018* (Glenn, 2018)

Weighting Method

The R package "anesrake" was used to perform the rake weighting operation (Pasek, 2018). A weighting cap was set to 15 to minimize extreme weights.[11]

R Syntax: *Where "y" refers to the SCORP cleaned survey dataset (N=1910) and "census" refers to the population demographic distributions*

```
# calculate weights
z <- anesrake(census, y, caseid = y$SortID, force1 = TRUE, cap = 15, verbose = FALSE)
```

[11] The weighting cap results in N=10 survey respondents with a weight of 15. Without the cap, these would have received weighting values between 15 and 32 (the highest weight value for a run without any cap).

Survey & Population Distributions

		Survey Count	Survey Percent	Survey Weighted Percent	Census Percent
Region					
1	Northwest	268	14.1%	6.9%	6.9%
2	North Central	256	13.5%	37.4%	37.4%
3	Metro	338	17.8%	30.2%	30.2%
4	Northeast	173	9.1%	2.1%	2.1%
5	Southeast	272	14.3%	4.3%	4.3%
6	South Central	315	16.6%	15.4%	15.4%
7	Southwest	278	14.6%	3.8%	3.8%
		1900	100.0%	100.0%	100.0%
Age					
1	18 to 44	175	9.7%	49.5%	49.5%
2	45 to 64	796	43.9%	33.1%	33.1%
3	65 and over	841	46.4%	17.4%	17.4%
		1812	100.0%	100.0%	100.0%
Race					
1	Other	221	12.4%	27.8%	27.8%
2	White (Non-Hispanic)	1567	87.6%	72.2%	72.2%
		1788	100.0%	100.0%	100.0%
Sex					
1	Male	668	36.8%	50.0%	50.0%
2	Female	1147	63.2%	50.0%	50.0%
		1815	100.0%	100.0%	100.0%

R Summary Output

```
[1] "Raking converged in 25 iterations"
$`convergence`
[1] "Complete convergence was achieved after 25 iterations"

$base.weights
[1] "No Base Weights Were Used"

$raking.variables
[1] "age"    "sex"    "region" "race"

$weight.summary
    Min.  1st Qu.   Median     Mean  3rd Qu.     Max.
 0.07315  0.15161  0.40895  1.00000  0.90959 15.00007

$selection.method
[1] "variable selection conducted using _pctlim_ - discrepancies selected using _total_."

$general.design.effect
[1] 4.871879

$age
      Target Unweighted N Unweighted %     Wtd N  Wtd % Change in %  Resid. Disc. Orig. Disc.
1     0.4951          175   0.09657837  890.4038 0.4951   0.3985216 -5.551115e-17   0.3985216
2     0.3311          796   0.43929360  595.4609 0.3311  -0.1081936  0.000000e+00  -0.1081936
3     0.1738          841   0.46412804  312.5675 0.1738  -0.2903280  0.000000e+00  -0.2903280
Total 1.0000         1812   1.00000000 1798.4323 1.0000   0.7970433  5.551115e-17   0.7970433

$sex
      Target Unweighted N Unweighted %     Wtd N  Wtd % Change in %  Resid. Disc. Orig. Disc.
1     0.5002          668    0.3680441  891.7531 0.5002   0.1321559 -1.110223e-16   0.1321559
2     0.4998         1147    0.6319559  891.0400 0.4998  -0.1321559  0.000000e+00  -0.1321559
Total 1.0000         1815    1.0000000 1782.7932 1.0000   0.2643118  1.110223e-16   0.2643118

$region
      Target Unweighted N Unweighted %      Wtd N  Wtd % Change in %  Resid. Disc. Orig. Disc.
1     0.0691          268   0.14105263  131.34743 0.0691 -0.07195263  1.387779e-17 -0.07195263
2     0.3739          256   0.13473684  710.72076 0.3739  0.23916316 -5.551115e-17  0.23916316
3     0.3016          338   0.17789474  573.29067 0.3016  0.12370526  0.000000e+00  0.12370526
4     0.0208          173   0.09105263   39.53729 0.0208 -0.07025263  0.000000e+00 -0.07025263
5     0.0433          272   0.14315789   82.30599 0.0433 -0.09985789  0.000000e+00 -0.09985789
6     0.1535          315   0.16578947  291.77758 0.1535 -0.01228947 -2.775558e-17 -0.01228947
7     0.0378          278   0.14631579   71.85142 0.0378 -0.10851579  0.000000e+00 -0.10851579
Total 1.0000         1900   1.00000000 1900.83114 1.0000  0.72573684  9.714451e-17  0.72573684

$race
      Target Unweighted N Unweighted %     Wtd N  Wtd % Change in % Resid. Disc. Orig. Disc.
1     0.2783          221    0.1236018  493.5878 0.2783   0.1546982            0   0.1546982
2     0.7217         1567    0.8763982 1279.9938 0.7217  -0.1546982            0  -0.1546982
Total 1.0000         1788    1.0000000 1773.5816 1.0000   0.3093964            0   0.3093964
```