



Colorado Off-Highway Vehicle Coalition

Economic Contribution of Off-Highway Vehicle Recreation in Colorado

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www.cohvco.org



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1.0 Introduction

Colorado offers unique opportunities for motorized recreation throughout much of the State. This is mainly due to the vast amount of appropriate terrain for off-road motorized recreation. As such, the sport and industry of motorized recreation has enjoyed an increase in popularity in Colorado for both residents and non-residents. The Louis Berger Group, Inc. (Berger) evaluated the economic contribution of motorized recreation throughout Colorado for the 2007-08 season¹. The results are summarized in this report.

Much of the analysis presented here was based on a previous study completed by Hazen and Sawyer in 2001 titled *Economic Contribution of Off-Highway Vehicle Use in Colorado*.² The Hazen and Sawyer study included a household survey that collected valuable information on where and when motorized, enthusiasts utilize their vehicles for recreation, average expenditures associated with recreational trips, and annual expenditures associated with operating and maintaining vehicles. The data and information on expenditures collected in that study was adjusted for inflation and used in combination with current data on the number of households that participate in motorized recreation in the State to estimate the total economic contribution of the sport in Colorado.

This report is organized as follows. Section 2.0 describes the approach used by Berger to estimate the economic contribution of motorized recreation during the 2007-08 season. Section 3.0 summarizes the estimated number of resident and non-resident households that participate in motorized recreation. Section 4.0 provides the estimated expenditures made by OHV enthusiasts while using and maintaining their recreational vehicles. Section 5.0 summarizes the overall economic contribution of motorized recreation, and Section 6.0 provides a regional analysis.

2.0 Approach

The approach used to estimate the economic contribution of motorized recreation in Colorado required a series of steps which are described as follows.

- | | |
|--------|---|
| Step 1 | Estimate the number of households that participate in motorized recreation. |
| Step 2 | Estimate the total expenditures for day and overnight trips made while participating in motorized recreation. |

¹ Annual registrations are valid from April 1st through March 31st.

² Hazen and Sawyer, *Economic Contribution of Off-Highway Vehicle Use in Colorado*, July 2001, Hollywood, Florida.

- Step 3 Estimate annual expenditures to purchase and maintain vehicles and other expenditures supporting the recreational use of vehicles.
- Step 4 Estimate the economic contribution to the State of Colorado of total expenditures made by motorized recreational enthusiasts.

The approach to estimating the economic contribution of motorized recreation is similar to the one used for the 2001 study. However, Berger needed to adjust the approach at times to account for the use of different data sources or changes in assumptions. These adjustments are discussed in detail below.

3.0 Households that Participate in Motorized Recreation

The first step in estimating the economic contribution of a recreational activity is to estimate the number of participants in a particular activity. Participants in this case are defined as the number of households that participated in motorized recreation in Colorado during the 2007-08 season; the most recent year for available data. Participants were measured on a household level in order to be consistent with the expenditure data that was obtained during the 2001 study. These participants include Colorado households that participate in motorized recreation and non-resident households that travel to Colorado to participate in this activity. Where possible, the household estimates were made following the same approach and data sources used in the 2001 study. However, some information is no longer available, and for this reason different data sources and/or assumptions were required for some household estimates.

For all-terrain vehicles (ATVs), dirt bikes, and snowmobiles owned and operated by Colorado residents, the estimation of total household participants was similar to the approach used in the 2001 study. First, Berger contacted the Colorado Division of Parks and Outdoor Recreation (DPOR) to obtain data on annual registrations for ATVs, dirt bikes, and snowmobiles.³ The DPOR requires annual registration of OHVs, which it defines as two-wheel, three-wheel and four-wheel vehicles. DPOR provided an aggregation of the number of permits issued for ATVs, dirt bikes, and snowmobiles on an annual basis starting with the 1990-91 season through the 2007-08 season. This study used the registration data for the 2007-08 season, the most recent year for available data.

The number of households that participate in motorized recreation has steadily increased since 2000. **The most significant increase has occurred for dirt bikes and ATVs. Registrations for these vehicles types have increased by 145 percent between the 2000-01 season and the 2007-08 season (Figure 1).** DPOR reported that annual registration of snowmobiles increased by eight percent between the 2000-01 and 2007-08 seasons (Figure 2).

³ Tom Metsa, Colorado Division of Parks and Outdoor Recreation, Personal Communication, January, 2009.

Figure 1. Annual Resident ATV and Dirt Bike Registrations in Colorado

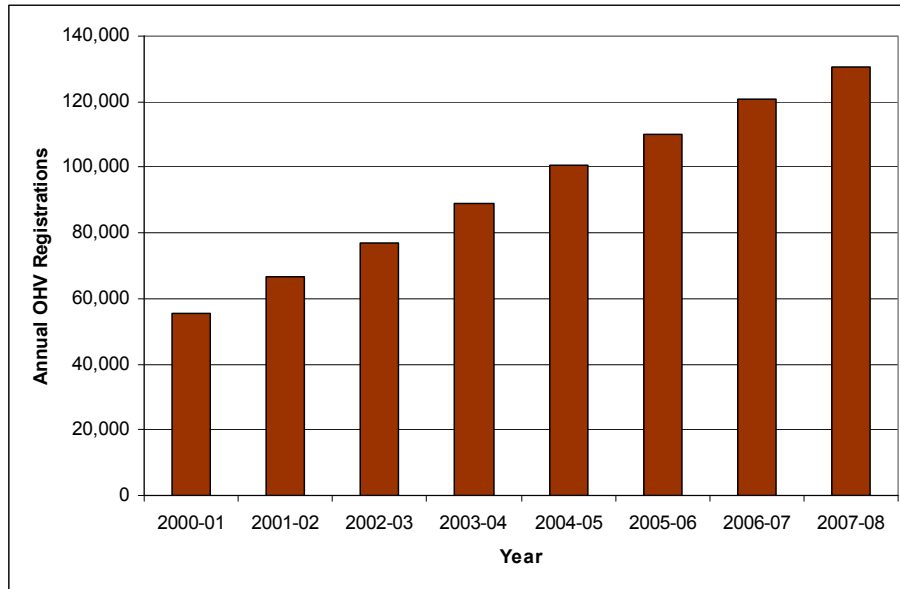
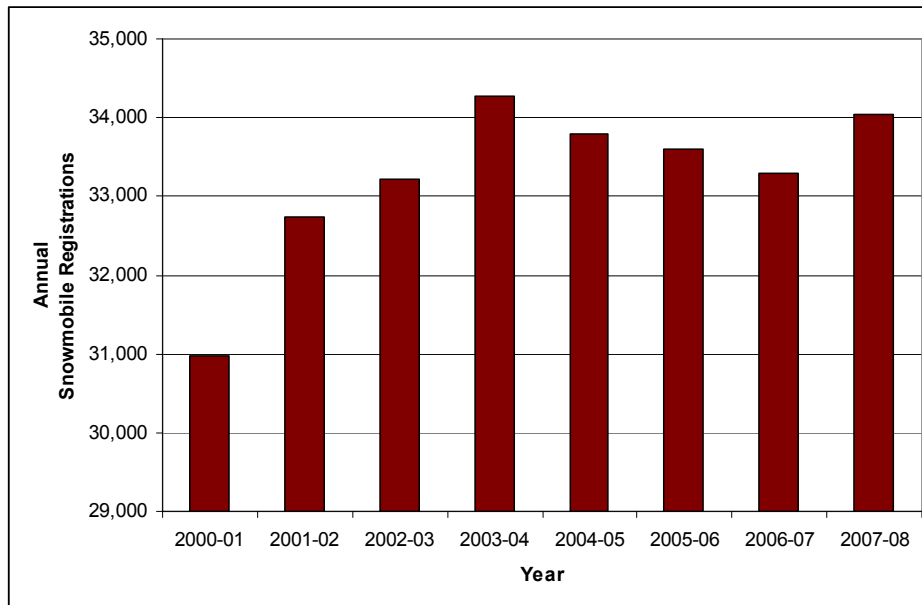


Figure 2. Annual Resident Snowmobile Registrations in Colorado



Annual registrations for each vehicle type were used to estimate of the number of households that own and utilize these vehicles for motorized recreation as follows. The number of annual registrations for each vehicle type was adjusted to account for households that use their

vehicles primarily for motorized recreation. This adjustment was taken from the 2001 study. The 2001 study was able to sort the registration database and eliminate those registered to businesses as well as limit the number of registrations to one per household. Because the current data provided by DPOR only included total number of registrations by vehicle type, this adjustment was not possible for this Berger study. To accommodate this issue, the total registrations for the 2007-08 season by vehicle type were adjusted to reflect the same proportions as used in the 2001 study. For instance, the 2001 study estimated that 48 percent of the total number of snowmobile registrations in Colorado was registered to a unique residential household which likely used their vehicle for recreation. This percentage was applied to the total number of snowmobiles registered in Colorado during the 2007-08 season, resulting in 16,059 households that potentially participated in motorized recreation. A similar adjustment was made to OHV registrations to estimate the number of households that use these vehicles for motorized recreation.

While DPOR had provided the total number of registered two-wheel vehicles (dirt bikes), the total number of residential households who own and use dual sport bikes for recreational purposes was not known. Therefore, this number was estimated by extrapolating the ratio of dirt bikes to dual sport bikes established in the 2001 study. Assuming that the ratio of households owning dirt bikes to households owning dual sport bikes was the same in the 2007-08 season as in the 2000-01 season, this resulted in an estimate of 12,834 households owning dual sport bikes. These two vehicle types were grouped into a single category, “dirt and dual sport bikes,” for a total of 40,591 households.

Estimates for the number of Colorado households who recreationally use ATVs is 75,913. The estimate for dirt bikes is 40,591, and the estimate for snowmobiles is 16,059. Note the significant increase in the number of households that own and operate ATVs and dual purpose or dirt bikes for recreational purposes. This is consistent with data provided by DPOR, which has realized a 145 percent increase in the number of OHV registrations between the 2000-01 and 2007-08 seasons.

The number of households using four-wheel-drive vehicles (4-WDs) for motorized recreation was estimated using information provided by the Colorado Department of Revenue (CODR). The CODR publishes an Annual Report summarizing the number of registered vehicles by type⁴. Berger obtained the 2008 Annual Report, which provides data from 2007, to observe the total number of registered 4-WD vehicles in the state of Colorado for the year 2007. The 2001 study established an average of 2.5 vehicles per household, which was used to estimate that there were 365,150 resident households owning 4-WD vehicles in 2007. The total number of households owning a 4-WD was then adjusted to account for the percentage of households that use these vehicles for motorized recreation, a percentage also established in the 2001 study (Hazen and Sawyer, 2001). As a result, Berger estimated that 51,486 households used their vehicles for motorized recreation in Colorado during the 2007-08 season. Note that this estimate is lower than the estimate from the 2001 study, which used a different data source.

⁴ Colorado Department of Revenue, *Annual Report Colorado Department of Revenue, 2007*, www.revenue.state.co.us/TaxStats.

Registration information was also used to estimate the number of non-resident households coming to Colorado for motorized recreation. The DPOR requires individuals coming to Colorado for motorized recreation to register their vehicles. The exception during the 2007-08 season is that vehicles registered in other states were not required to obtain a Colorado registration. Therefore, the number of non-resident households coming to Colorado for motorized recreation is likely underestimated. However, this rule changed after the 2007-08 season. In future years, all non-resident vehicles will require a Colorado registration. For this report, however, total non-resident registrations for each vehicle type were adjusted to estimate the number of households that participate in motorized recreation, similar to resident households.

The data needed to estimate non-resident households who use their 4-WDs for recreation in Colorado was not available. The total participant estimate provided in Table 1 was based on expert opinion provided by Colorado Off-Highway Vehicle Coalition (COHVCO) members, and includes the number of non-resident users who come to popular trail areas in the State to use their 4-WD vehicles. This likely is a conservative estimate of the number of non-resident households who use their 4-WD vehicles for motorized recreation in Colorado.

The analysis showed that over 180,000 resident households likely participated in some sort of motorized recreation in the 2007-08 season in Colorado, and nearly 30,000 non-resident households traveled to Colorado to participate in motorized recreation. The resident and non-resident household estimates are summarized in Table 1.

Table 1. Estimated Population of Households Who Used OHVs and Snowmobiles for Motorized Recreation in Colorado in 2007-08 Season

User Residence	ATVs	Dual Purpose or Dirt Bikes	Snowmobiles	4-WD Vehicles	Total
In Colorado	75,913	40,591	16,059	51,486	184,049
Outside Colorado	16,381	8,759	1,297	3500	29,937

4.0 Expenditures Associated with Motorized Recreation

Motorized recreation contributes to the economy as motorized recreational enthusiasts purchase vehicles or related accessories or as they spend money to operate and maintain their vehicles. For this study, expenditures were separated into two types:

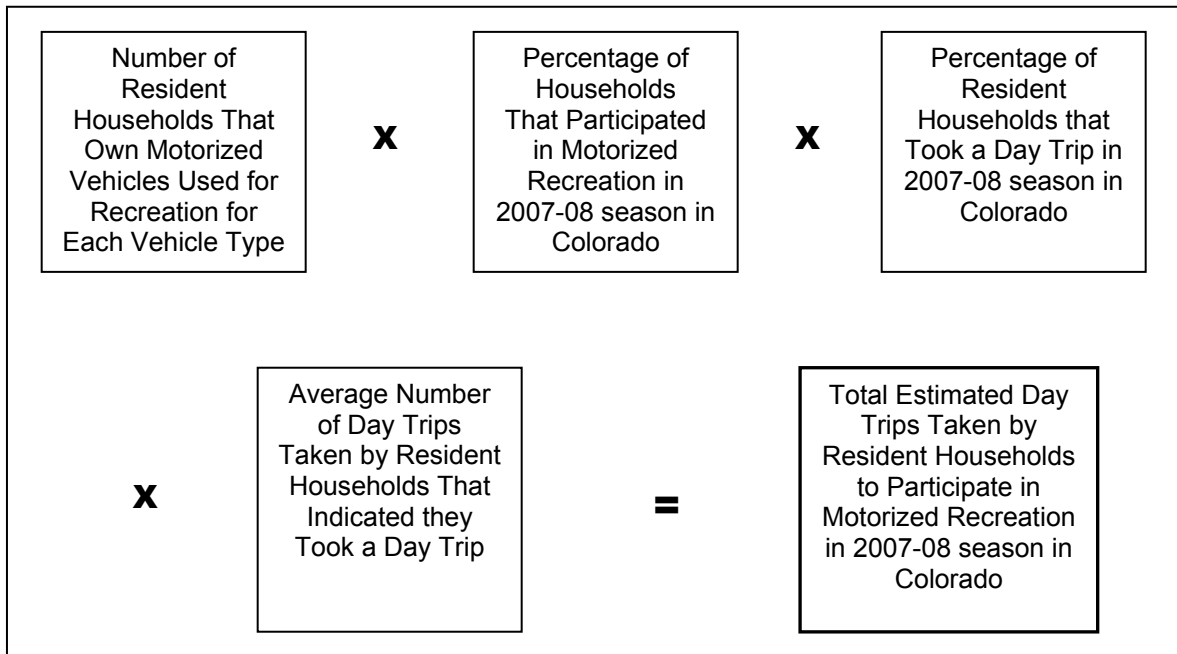
- **Trip expenditures** – expenditures made by motorized recreational enthusiasts while using their vehicles on day or overnight trips.
- **Annual expenditures** – expenditures on vehicles, maintenance, and other accessories that support motorized recreation.

Methods used to estimate these types of expenditures are discussed below.

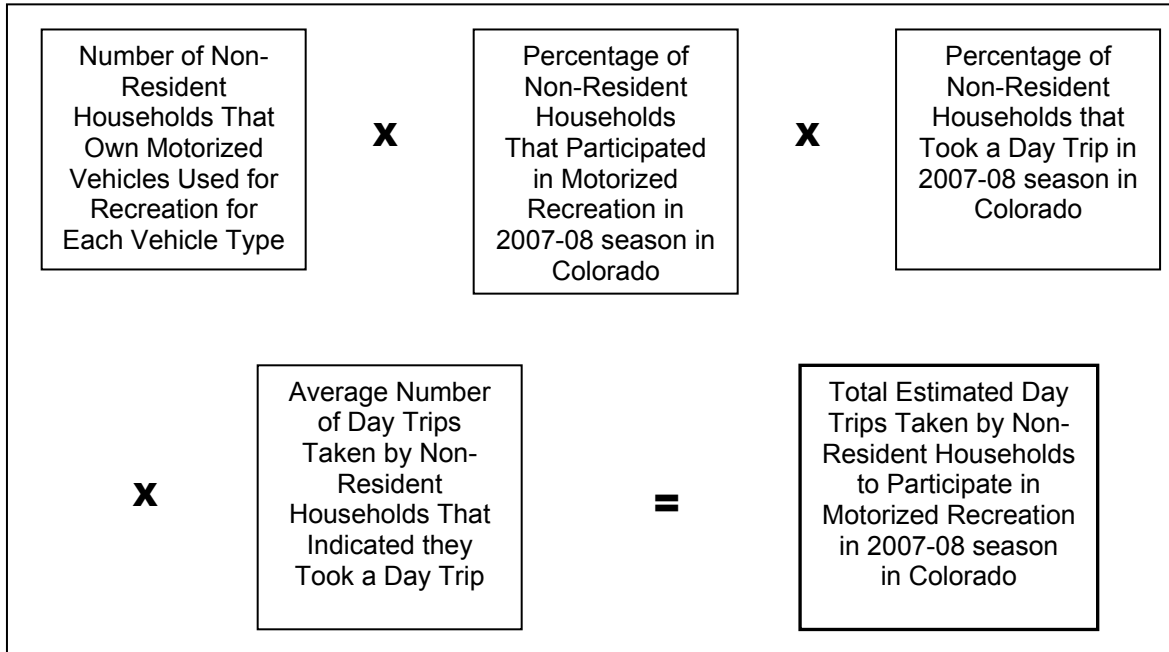
4.1 Trip Expenditures

The first step taken to estimate total trip expenditures required an estimate of the number of day and overnight trips taken by resident and non-resident households for recreational motorized vehicle use. The numbers of day and overnight trips were estimated for each vehicle type as follows.

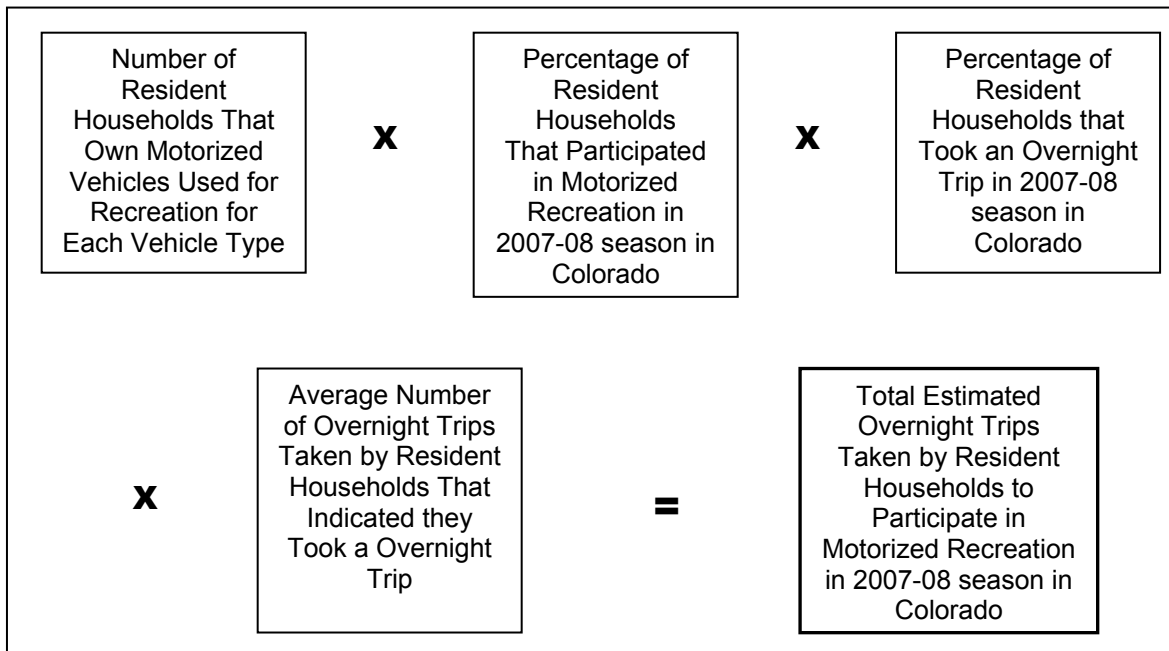
1) Day Trips Taken by Resident Households in Colorado during the 2007-08 Season



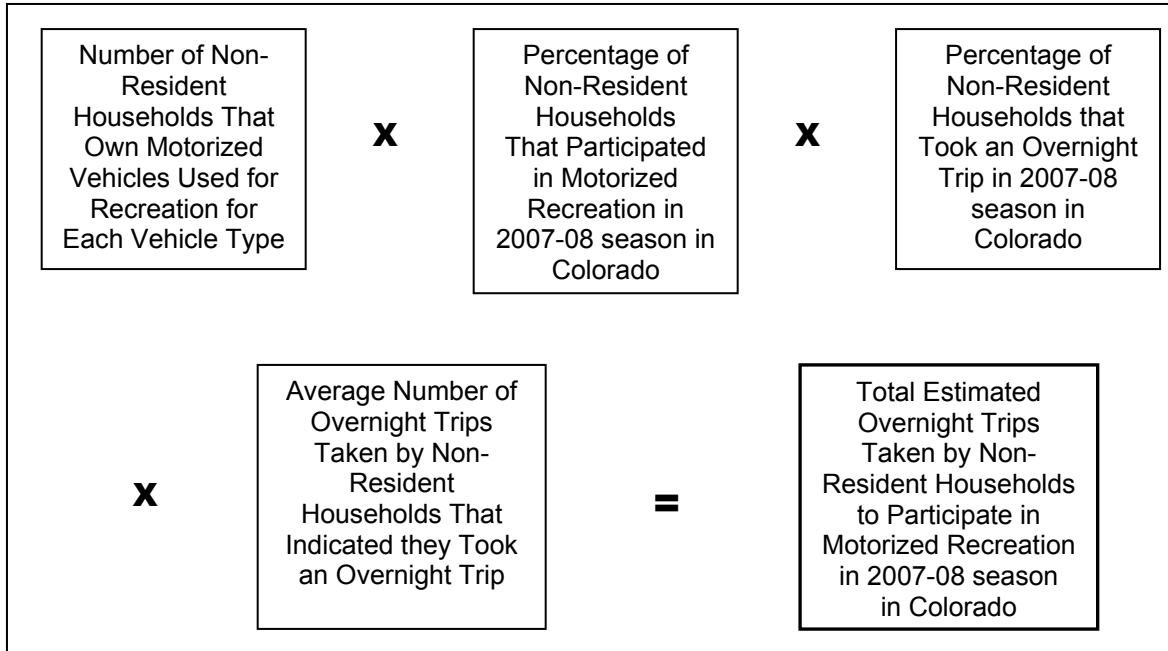
2) Day Trips Taken by Non-Resident Households in Colorado during the 2007-08 Season



3) Overnight trips taken by resident households in Colorado in 2007-08 Season



4) Overnight trips taken by non-resident households in Colorado in 2007-08 Season



Data needed to estimate day and overnight trips taken from the 2001 study includes:

- Percentage of households that use their vehicles for recreational purposes
- Percentage of households that take either day or overnight trips
- The average number of day and overnight trips taken by households for purposes of motorized recreation

These factors were applied to the estimated number of households per vehicle type for resident and non-resident households for the 2007-08 season discussed in Section 3.0. The results are estimates of the total number of day and overnight trips taken by resident and non-resident households to participate in motorized recreation in Colorado during the 2007-08 season for each of the four vehicle types. The results are summarized in Table 2 and Table 3.

Table 2. Estimated Number of Day and Overnight Trips Taken by Residential Households to Participate in Motorized Recreation in Colorado

Trip Type	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-WD	Total All Vehicles
Day Trips	504,078	463,322	204,151	267,620	1,439,171
Overnight Trips	283,455	152,362	32,503	255,572	723,894

Table 3. Estimated Number of Day and Overnight Trips Taken by Non-Resident Households to Participate in Motorized Recreation in Colorado

Trip Type	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-WD	Total All Vehicles
Day Trips	35,776	14,741	7,620	3,689	61,826
Overnight Trips	40,887	12,438	2,696	9,657	65,677

Berger estimated day and overnight trip expenditures (direct sales) by motorized recreational enthusiasts by multiplying the number of day and overnight trips taken by resident and non-resident households during the 2007-08 season, as estimated above, by the average trip expenditures incurred by households for day trips and overnight trips, respectively. Itemized expenditures for both day and overnight trips were grouped into the following categories:

- Gasoline/oil for motorized recreational vehicles and tow vehicles
- Restaurant/lounge purchases
- Food and beverages purchased at grocery and/or convenience stores
- User fees and donations
- Guides and tour packages
- Lodging (overnight trips only)
- Repairs
- Souvenirs, gifts, and entertainment
- Other trip-related expenses

The average for itemized expenditures was taken from the 2001 study and was adjusted for inflation in year 2007 dollars. A summary of the average itemized expenditures used for this analysis is provided in Appendix A.

Total trip expenditures for resident and non-resident households are summarized in Table 4. The trip expenditures were broken down by summer and winter use. Summer use includes all ATVs, dirt and dual purposes bikes, and 4-WD vehicles. Winter use includes recreational activities using snowmobiles. During the 2007-08 season, it was estimated that motorized recreational enthusiasts made over \$541 million in expenditures while taking trips to use their motorized vehicle for recreational purposes. Over 90 percent of these expenditures occurred during the summer recreational season.

Table 4. Total Itemized Trip Expenditures

Expenditure Category	Season of Use		Total
	Summer	Winter	
Gasoline/oil for motorized recreational vehicles	\$67,050,832	\$10,582,869	\$77,633,701
Gasoline/oil for tow vehicles	\$111,888,661	\$8,502,448	\$120,391,109
Restaurant/lounge purchases	\$87,222,084	\$11,437,475	\$98,659,559
Food and beverages purchased at grocery and/or convenience stores	\$100,487,868	\$5,952,107	\$106,439,975
Overnight accommodations	\$50,505,869	\$7,526,415	\$58,032,284
Guides and tour packages	\$2,658,673	\$543,699	\$3,202,372
Repairs	\$10,213,606	\$0	\$10,213,606
User fees and donations	\$8,478,832	\$491,882	\$8,970,714
Souvenirs, gifts, and entertainment	\$23,302,113	\$3,093,858	\$26,395,971
Other trip-related expenses	\$31,101,350	\$953,853	\$32,055,203
Total	\$492,909,887	\$49,084,606	\$541,994,493

4.2 Annual Expenditures

In addition to spending money on day and overnight trips, households participating in motorized recreation also spend money on maintenance, repairs, accessories, storage, and miscellaneous items associated with their vehicles. Itemized expenditures estimated for this study for both resident and non-resident households include the following items.

- Vehicle Sales
- Repairs and Parts
- Vehicle Storage
- Motorized Recreational Accessories (covers, saddle or tank bags, ski skins, studs, carbides, mirrors, etc.)
- Magazine Subscriptions
- Registration or Permit Fees
- Annual Insurance Payment
- Safety Equipment (helmets, tools, first aid, etc.)
- Club Memberships
- Clothing (suits, pants, gloves, etc.)
- Other Items

The 2001 study established the average annual expenditures for each category per household, for both resident and non-resident households. These estimates were adjusted for inflation and expressed in 2007 dollars. The averaged itemized expenditures for resident and non-resident households used for this analysis are discussed in more detail in Appendix B. Motorized recreational enthusiasts spent over \$241 million on various items to support and enhance their experience in Colorado.

Annual expenditures by all vehicles types for the 2007-08 season are summarized in Table 5.

Table 5. Total Estimated Itemized Expenditures for Maintenance, Repairs, Storage, and Miscellaneous Items in Colorado by Resident and Non-Resident Households that Participate in Motorized Recreation

Expenditure Category	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-WD	Total All Vehicles
Repairs and Parts	\$19,437,943	\$20,762,201	\$4,643,845	\$10,115,239	\$54,959,229
Vehicle Storage	\$120,266	\$105,659	\$36,093	\$3,807	\$265,824
Motorized Recreational Accessories (covers, saddle or tank bags, ski skins, studs, carbides, mirrors, etc.)	\$5,827,100	\$3,064,606	\$1,377,900	\$2,419,073	\$12,688,679
Clothing (suits, pants, gloves, etc.)	\$3,568,215	\$8,230,311	\$1,462,238	\$0	\$13,260,764
Safety Equipment (helmets, tools, first aid, etc.)	\$2,908,255	\$4,706,787	\$820,516	\$116,279	\$8,551,837
Annual Insurance Payment	\$2,240,774	\$1,852,267	\$717,301	\$3,729,094	\$8,539,437
Registration or Permit Fees	\$2,216,926	\$2,698,593	\$147,446	\$442,083	\$5,505,048
Club Memberships	\$5,211	\$190,545	\$24,941	\$110,679	\$331,375
Magazine Subscriptions	\$131,081	\$231,717	\$18,207	\$26,950	\$407,955
Other Items	\$2,439,427	\$1,063,722	\$205,089	\$355,322	\$4,063,561
Vehicle Sales	\$64,999,061	\$27,711,760	\$29,187,355	\$11,400,826	\$133,299,003
Total	\$103,894,261	\$70,618,167	\$38,640,932	\$28,719,352	\$241,872,712

5.0 Economic Contribution to the State of Colorado of Total Expenditures Made by OHV Enthusiasts

Berger estimated total economic contribution of motorized recreation in Colorado by applying the expenditures estimated and discussed in the previous sections to an Input-Output Model relevant to Colorado. Input-Output (I-O) Modeling is a systematic method to describe the flow of money between production and consumption sectors within a particular economy through a series of linkages among industries and households. The economic model, IMPLAN, provided I-O multipliers that were used to calculate the total direct, indirect, and induced sales, income, employment, indirect business taxes and other property type income resulting from the expenditures made by OHV enthusiasts.

Direct, indirect, and induced contributions are defined as follows.

- Direct – represents the response (e.g. employment) in the economy to the purchase of a good or service

- Indirect – represents responses of industries supporting direct industries that purchase inputs for final goods and services
- Induced – represents the response of increased household income (spending) resulting from direct and indirect effects

Income and taxes generated from motorized recreation include employee compensation, proprietor's income, other property type income, and indirect business taxes. The definitions of each income type estimated during this study are defined as follows.⁵

1. **Employee Compensation** is the total wages and salaries of workers who are paid by employers, as well as the value of benefits such as health care and life insurance, retirement payments, and non-cash compensation.
2. **Proprietor's Income** consists of payments received by self-employed individuals as income.
3. **Other Property Type Income** is payments in the form of rents, royalties, and dividends, including corporate profits.
4. **Indirect Business Taxes** include excise taxes, property taxes, fees, licensing, and sales taxes paid by businesses.

Employment estimated in this study includes the number of part-time and full-time jobs generated by activities associated with motorized recreation.

5.1 Expenditures Made by Motorized Recreational Enthusiasts

OHV enthusiasts contribute to the State's economy by purchasing vehicles, making expenditures while on recreational activity trips (day and overnight), spending money to operate and maintain vehicles, purchasing other accessories needed while riding (clothes, safety equipment), and making other expenditures for items that support their activities (food and fuel, etc.). Methods used to estimate total expenditures made by motorized recreational enthusiasts were discussed in earlier sections. According to this analysis, motorized recreational enthusiasts were responsible for \$784 million in direct expenditures related to motorized recreation in Colorado during the 2007-08 season.

5.2 Direct Labor, Income, and Tax Contributions

The expenditures made by motorized recreational enthusiasts have an economic contribution that supports businesses throughout the State, as estimated and summarized in Table 6. Total direct gross sales of \$784 million associated with motorized recreation generated over 10,000 direct jobs and \$294 million in labor income (employee compensation and proprietor income) during the 2007-08 season. Other components of

⁵ Minnesota IMPLAN Group, Inc., "IMPLAN Pro Professional, Version 2.0, User's Guide", 2nd Edition, Stillwater, Minnesota, June, 2000.

gross sales are other property type income and indirect business taxes, which were \$76 million and \$91 million respectively.

Table 6. Direct Economic Impact of Motorized Recreation in Colorado during the 2007-08 Season

Total Direct Gross Sales	\$783,867,285
Components of Gross Sales^a	
Jobs	10,009
Labor Income	\$294,626,608
Other Property Type Income	\$75,603,037
Indirect Business Taxes	\$90,913,882

^a Note: Figures for labor income, other property type income, and indirect business taxes are components of gross sales and thus cannot be added together. Adding all dollar figures in this table would constitute double counting of economic contribution.

5.3 Additional Economic Activity

The direct expenditures made by motorized recreational enthusiasts have an additional effect by generating indirect and induced (downstream) economic activity (often known as multiplier effects). The downstream economic effects of motorized recreation that come from the initial expenditures made by motorized recreational enthusiasts, which are basically the spending of indirect businesses (those that support the direct businesses, e.g. laundry services for hotels) and households (employees that earn their living either in the direct or indirect businesses) resulted in \$243 million in downstream gross sales, 2,039 additional jobs, and \$76 million in additional labor income (Table 7). Also, over \$54 million in other property type income and \$17 million in indirect business taxes were generated.

Table 7. Additional Economic Activity Resulting from Motorized Recreation in Colorado during the 2007-08 Season

Indirect and Induced (Downstream) Gross Sales	\$243,447,823
Components of Gross Sales^a	
Jobs	2,039
Labor Income	\$75,952,710
Other Property Type Income	\$53,969,538
Indirect Business Taxes	\$16,659,682

^a Note: Figures for labor income, other property type income, and indirect business taxes are components of gross sales and thus cannot be added together. Adding all dollar figures in this table would constitute double counting of economic contribution.

5.4 Total Economic Contribution

The total economic contribution of motorized recreation for the 2007-08 season is summarized in Table 8. Motorized recreational enthusiasts were estimated to have generated over \$784 million in total direct gross sales for motorized recreation throughout the year. This direct spending generated an additional \$243 million in downstream gross sales due to additional economic activity, **or \$1,027 million in total gross sales.**

The economic contribution can be further described by evaluating the components of total gross sales. For instance, motorized recreation in Colorado is directly or indirectly responsible for over 12,000 jobs and \$370 million in labor income. Total gross sales also include \$129 million on other property type income and \$107 million in indirect business taxes.

The economic contribution was broken down by OHVs (ATVs, Dual Sport/dirt bikes, 4-WDs) and Snowmobiles, as shown in Table 8. According to gross sales, OHVs contribute 89 percent of economic contribution while snowmobiles contribute 11 percent.

Table 8. Total Economic Contribution of Motorized Recreation in Colorado during the 2007-08 Season (Direct, Indirect, and Induced)

Economic Contribution Category	OHVs	Snowmobiles	Total Economic Contribution
Total Gross Sales	\$914,310,446	\$113,004,662	\$1,027,315,108
Components of Gross Sales^a			
Jobs	10,838	1,210	12,048
Labor Income	\$329,386,161	\$41,193,157	\$370,579,318
Other Property Type Income	\$116,431,479	\$13,141,096	\$129,572,575
Indirect Business Taxes	\$93,981,967	\$11,894,459	\$107,573,564

^aNote: Figures for labor income, other property type income, and indirect business taxes are components of gross sales and thus cannot be added together. Adding all dollar figures in this table would constitute double counting of economic contribution.

6.0 Regional Analysis

Berger completed an additional analysis which was not part of the 2001 study. Berger's analysis evaluated the economic contribution of motorized recreation in different regions of the State. These contributions were estimated with data obtained in the 2001 study which asked participants where they typically utilized their vehicles for motorized recreation. This included one of six regions as summarized in Table 9. The percentage of households that indicated they recreated in each region was applied to the estimated number of day and overnight trips taken throughout the State and was discussed in Section 4.1.

An adjustment was made to the estimated number of day and overnight trips taken to the region identified as “Eastern Colorado” to account for a large number of households that live along the Front Range including the Denver Metropolitan Area, Colorado Springs, and Loveland-Fort Collins. The number of households in these counties was estimated with data from the DPOR, which reports the number of OHV and snowmobile registrations by county. The number of day and overnight trips taken by resident households for the “Eastern Colorado” region was redistributed to other regions which are more likely to be visited by households in the Front Range (e.g. snowmobiling in mountain areas). Berger feels this adjustment more accurately reflects motorized recreational visitation in these different regions.

Table 9. Regions in Colorado Used to Estimate Motorized Recreational Use

Region	Counties
Northwest	Garfield, Moffat, Rio Blanco, and Routt
Southwest	Mesa, Montezuma, Montrose, La Plata, Ouray, San Juan, and San Miguel
South-Central	Hinsdale, Saguache, Custer, Fremont, Huerfano, Costilla, Mineral, Alamosa, Conejos, and Archuleta
Central	Eagle, Summit, Park, Gunnison, Lake Pitkin, Chafee, and Teller
North-Central	Gilpin, Clear, Grand, and Jackson
Eastern Colorado	Adams, Arapahoe, Bent, Boulder, Crowley, Denver, Douglas, El Paso, Elbert, Jefferson, Kiowa, Kit, Larimer, Las Animas, Lincoln, Logan, Morgan, Otero, Prowers, Pueblo, Sedgwick, Washington, Weld, and Yuma

The economic contribution of motorized recreation for each region is summarized in Table 10. The region receiving the largest economic contribution from motorized recreation during the 2007-08 season was central Colorado. This region was followed in importance by Central and Southwest regions.

Table 11 and Table 12 show the breakdown of economic contribution by region and season of use. The estimated economic contribution of winter use during the 2007-08 season is summarized in Table 11, while Table 12 shows the contribution for summer use.

Table 10. Estimated Economic Contribution of Motorized Recreation by Region in Colorado for the 2007-2008 Season

Contribution	Region						Total
	NW CO	SW CO	SC CO	CTRL CO	NC CO	EAST CO	
Direct Impact							
Direct Sales	\$38,810,143	\$102,241,835	\$106,446,201	\$166,351,176	\$64,915,703	\$13,168,439	\$491,933,497
Number of Jobs	514	1,633	1,893	2,251	1,016	214	7,521
Labor Income	\$15,726,777	\$40,726,942	\$41,735,574	\$68,455,305	\$26,333,285	\$5,356,344	\$198,334,227
Other Property Type Income	\$5,046,453	\$13,111,387	\$13,418,481	\$22,151,341	\$8,773,845	\$1,548,574	\$64,050,081
Indirect Business Taxes	\$4,911,339	\$12,917,639	\$13,345,299	\$21,416,795	\$8,221,015	\$1,646,630	\$62,458,717
Other Economic Activity							
Indirect and Induced Sales	\$17,260,416	\$56,622,012	\$44,934,282	\$66,465,472	\$19,147,200	\$8,620,352	\$213,049,734
Number of Jobs	139	480	447	526	161	64	1,817
Labor Income	\$5,409,525	\$17,694,877	\$13,687,619	\$22,054,622	\$5,501,753	\$2,907,955	\$67,256,351
Other Property Type Income	\$3,829,771	\$11,383,096	\$9,581,338	\$14,775,035	\$4,845,064	\$1,629,877	\$46,044,181
Indirect Business Taxes	\$1,117,435	\$3,231,585	\$2,661,491	\$5,795,603	\$1,386,959	\$474,223	\$14,667,296

^a Note: Figures for labor income, other property type income, and indirect business taxes are components of gross sales and thus cannot be added together. Adding all dollar figures in this table would constitute double counting of economic contribution.

Table 11. Estimated Economic Contribution of Motorized Recreation by Region in Colorado for the 2007-2008 Season – Winter Use

Contribution	Region						Total
	NW CO	SW CO	SC CO	CTRL CO	NC CO	EAST CO	
Direct Impact							
Direct Sales	\$6,544,655	\$6,824,337	\$6,380,454	\$16,933,770	\$7,340,867	\$48,689	\$44,072,772
Number of Jobs	83	107	111	225	109	0.8	636
Labor Income	\$2,583,417	\$2,621,066	\$2,372,592	\$6,807,872	\$2,896,229	\$19,033	\$17,300,209
Other Property Type Income	\$907,774	\$942,045	\$854,002	\$2,427,502	\$1,083,197	\$6,399	\$6,220,919
Indirect Business Taxes	\$795,720	\$813,130	\$729,734	\$2,108,243	\$875,202	\$5,737	\$5,327,766
Other Economic Activity							
Indirect and Induced Sales	\$2,895,545	\$3,775,035	\$2,706,420	\$6,710,028	\$2,149,286	\$31,902	\$18,268,216
Number of Jobs	23	32	27	53	18	0.2	153
Labor Income	\$905,845	\$1,179,357	\$826,868	\$2,228,069	\$620,827	\$10,733	\$5,771,699
Other Property Type Income	\$638,584	\$751,153	\$564,540	\$1,480,955	\$536,574	\$5,962	\$3,977,768
Indirect Business Taxes	\$186,667	\$213,495	\$157,331	\$411,105	\$154,236	\$1,734	\$1,124,568

Note: Figures for labor income, other property type income, and indirect business taxes are components of gross sales and thus cannot be added together. Adding all dollar figures in this table would constitute double counting of economic contribution.

Table 12. Estimated Economic Contribution of Motorized Recreation by Region in Colorado for the 2007-2008 Season – Summer Use

Contribution	Region						Total
	NW CO	SW CO	SC CO	CTRL CO	NC CO	EAST CO	
Direct Impact							
Direct Sales	\$32,265,488	\$95,417,498	\$100,065,747	\$149,417,406	\$57,574,836	\$13,119,750	\$447,860,725
Number of Jobs	431	1,526	1,782	2,026	907	213	6,885
Labor Income	\$13,143,360	\$38,105,876	\$39,362,982	\$61,647,433	\$23,437,056	\$5,337,311	\$181,034,018
Other Property Type Income	\$4,138,679	\$12,169,342	\$12,564,479	\$19,723,839	\$7,690,648	\$1,542,175	\$57,829,162
Indirect Business Taxes	\$4,115,619	\$12,104,509	\$12,615,565	\$19,308,552	\$7,345,813	\$1,640,893	\$57,130,951
Other Economic Activity							
Indirect and Induced Sales	\$14,364,871	\$52,846,977	\$42,227,862	\$59,755,444	\$16,997,914	\$8,588,450	\$194,781,518
Number of Jobs	116	448	420	473	143	64	1,664
Labor Income	\$4,503,680	\$16,515,520	\$12,860,751	\$19,826,553	\$4,880,926	\$2,897,222	\$61,484,652
Other Property Type Income	\$3,191,187	\$10,631,943	\$9,016,798	\$13,294,080	\$4,308,490	\$1,623,915	\$42,066,413
Indirect Business Taxes	\$930,768	\$3,018,090	\$2,504,160	\$3,687,360	\$1,232,723	\$472,489	\$11,845,590

Note: Figures for labor income, other property type income, and indirect business taxes are components of gross sales and thus cannot be added together. Adding all dollar figures in this table would constitute double counting of economic contribution.

APPENDIX A

ITEMIZED TRIP EXPENDITURES FOR DAY AND OVERNIGHT TRIPS ASSOCIATED WITH MOTORIZED RECREATION IN COLORADO DURING THE 2007-08 SEASON

The following tables show the estimated itemized expenditures that were used by Louis Berger to estimate total trip expenditures made by motorized recreational enthusiasts during the 2007-08 season. Itemized expenditures were estimated separately for day and overnight trips for both resident and non-resident households. Louis Berger derived the itemized expenditures from the 2001 study completed by Hazen and Sawyer and adjusted these values for inflation (2001 dollars).

Table A-1. Average Itemized Expenditures for Latest Day Trip for Resident Households (2007\$)

Expenditure Type	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-Wheel Drives
Gasoline/Oil for Motorized Recreational Vehicles	\$18.29	\$17.93	\$36.85	\$32.64
Gasoline/Oil for tow vehicles	\$40.19	\$29.41	\$26.97	\$9.17
Restaurant/lounge purchases	\$31.41	\$26.78	\$30.20	\$20.19
Food and Beverage purchased at grocery, convenience stores	\$23.47	\$20.08	\$18.42	\$18.06
Guides and tour packages	\$0.61	\$1.20	\$1.20	\$1.12
Repairs	Na	na	na	\$9.88
User Fees and donations	\$2.41	\$4.30	\$1.85	\$2.34
Souvenirs, gifts and entertainment	\$3.32	\$2.39	\$8.19	\$4.03
Other trip related expenses	\$2.63	\$9.21	\$2.91	\$3.72
Total	\$122.34	\$111.30	\$126.58	\$101.16

Table A-2. Average Itemized Expenditures for Latest Overnight Trip for Resident Households (2007\$)

Expenditure Type	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-Wheel Drives
Gasoline/Oil for Recreational Vehicle	\$41.24	\$34.79	\$77.43	\$80.25
Gasoline/Oil for tow vehicles	\$99.47	\$58.94	\$73.48	\$30.82
Restaurant/lounge purchases	\$56.31	\$54.51	\$144.00	\$72.39
Food and Beverage purchased at grocery, convenience stores	\$112.74	\$84.28	\$54.46	\$76.85
Overnight Accommodations	\$54.28	\$38.26	\$216.10	\$65.11
Guides and tour packages	\$0.48	\$1.67	\$8.01	\$1.78
Repairs while 4-wheeling	na	na	na	\$25.74
User Fees and donations	\$3.83	\$8.25	\$2.03	\$5.42
Souvenirs, gifts and entertainment	\$15.54	\$11.12	\$38.63	\$25.44
Other trip related expenses	\$29.29	\$23.91	\$9.60	\$21.77
Total	\$413.16	\$315.73	\$623.73	\$405.56

Table A-3. Average Itemized Expenditures for Latest Day Trip for Non-Resident Households (2007\$)

Expenditure Type	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-Wheel Drives
Gasoline/Oil for Motorized Recreational Vehicles	\$15.73	\$14.47	\$41.66	\$43.16
Gasoline/Oil for tow vehicles	\$33.26	\$49.02	\$29.76	\$23.74
Restaurant/lounge purchases	\$27.72	\$33.95	\$26.56	\$40.28
Food and Beverage purchased at grocery, convenience stores	\$25.42	\$19.25	\$29.28	\$21.22
Guides and tour packages	\$0.81	\$0.60	\$1.94	\$0.82
Repairs	\$0.00	\$0.00	\$0.00	\$26.07
User Fees and donations	\$2.59	\$0.60	\$1.84	\$7.21
Souvenirs, gifts and entertainment	\$11.96	\$13.63	\$9.28	\$17.00
Other trip related expenses	\$2.93	\$11.36	\$0.33	\$1.57
Total	\$120.42	\$142.86	\$140.65	\$181.07

Table A-4. Average Itemized Expenditures for Latest Overnight Trip for Non-Resident Households (2007\$)

Expenditure Type	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-Wheel Drives
Gasoline/Oil for Recreational Vehicle	\$48.91	\$59.31	\$103.64	\$140.57
Gasoline/Oil for tow vehicles	\$646.14	\$229.30	\$159.59	\$154.46
Restaurant/lounge purchases	\$175.83	\$183.94	\$178.56	\$189.76
Food and Beverage purchased at grocery, convenience stores	\$175.36	\$176.69	\$86.77	\$114.47
Overnight Accommodations	\$200.39	\$178.08	\$234.63	\$232.17
Guides and tour packages	\$9.04	\$5.03	\$10.96	\$26.37
Repairs while 4-wheeling	\$0.00	\$0.00	\$0.00	\$114.00
User Fees and donations	\$15.10	\$28.19	\$13.00	\$7.34
Souvenirs, gifts and entertainment	\$105.46	\$100.60	\$44.69	\$92.28
Other trip related expenses	\$148.80	\$60.38	\$19.46	\$31.48
Total	\$1,525.03	\$1,021.53	\$851.29	\$1,102.90

APPENDIX B

ANNUAL EXPENDITURES ON MAINTENANCE, STORAGE, AND MISCELLANEOUS ITEMS RELATED TO OFF-HIGHWAY VEHICLE RECREATION IN COLORADO

The estimated annual expenditures by resident and non-resident households for vehicle maintenance, repairs, storage, and miscellaneous items made during the 2007-08 season were estimated with information from the 2001 Hazen and Sawyer study and adjusted for inflation to 2007 dollars. Tables B-1 and B-2 summarize the average itemized expenditures for various items by resident and non-resident households and the percentage of each expenditure that was made in Colorado. This information was reported in the 2001 study. The information in this table was used to estimate the average itemized expenditure that was made in Colorado by resident and non-resident households as summarized in Tables B-1 and B-2. This calculation consisted of multiplying the average value per household per expenditure category by the estimated average percent of the expenditure spent in Colorado.

The total itemized expenditures on maintenance, repairs, storage, and miscellaneous items were then estimated by multiplying the number of households that own motorized vehicles used for recreation in Colorado by the average itemized expenditures per category per household. For resident households, the total population of households that own motorize vehicles was used in the calculation. It was assumed that these expenditures would occur whether or not households participated in OHV recreation in any given year (e.g. maintenance). For non-resident households, the total expenditure calculation only considered those households that participated in OHV recreation in Colorado in 2000.

These assumptions were used except for residential households owning 4-WD vehicles. For this vehicle type, the number of resident households used in the calculation was a lower-end estimate (5,000). This is because the survey was administered to households considered to be “enthusiasts” and who would likely have higher annual expenditures on these items. Expenditures for these items may or may not be relevant to the general population in Colorado who own and use their 4-WD vehicles for recreation. This may underestimate the total expenditures of households that use 4-WDs for recreation.

Table B-1. Average Itemized Expenditures Made by Resident Households Associated With Maintenance, Repairs, Storage, and Miscellaneous Items for Vehicles Used for Motorized Recreation in Colorado

Expenditure Category	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-Wheel Drives
Repairs and Parts	\$265.64	\$621.04	\$290.75	\$213.97
Vehicle Storage	\$1.67	\$3.24	\$1.72	\$0.06
Motorized Recreational Accessories (covers, saddle or tank bags, ski skins, studs, carbides, mirrors, etc.)	\$80.75	\$91.42	\$91.17	\$51.16
Clothing (suits, pants, gloves, etc.)	\$43.13	\$247.15	\$91.33	\$0.00
Safety Equipment (helmets, tools, first aid, etc.)	\$40.60	\$141.64	\$52.54	\$2.75
Annual Insurance Payment	\$30.82	\$56.57	\$46.88	\$90.13
Registration or Permit Fees	\$28.52	\$82.74	\$7.98	\$10.53
Club Memberships	\$0.07	\$5.71	\$1.54	\$2.47
Magazine Subscriptions	\$1.82	\$6.93	\$1.14	\$0.63
Other Items	\$34.17	\$32.12	\$10.36	\$6.29
Total	\$527.20	\$1,288.57	\$595.40	\$378.00

Table B-2. Average Itemized Expenditures Made by Non-Resident Households Associated With Maintenance, Repairs, Storage, and Miscellaneous Items for Vehicles Used for Motorized Recreation in Colorado

Expenditure Category	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-Wheel Drives
Repairs and Parts	\$41.74	\$67.95	\$268.51	\$434.92
Vehicle Storage	\$0.13	\$0.04	\$8.28	\$0.42
Motorized Recreational Accessories (covers, saddle or tank bags, ski skins, studs, carbides, mirrors, etc.)	\$7.70	\$10.94	\$23.81	\$104.13
Clothing (suits, pants, gloves, etc.)	\$31.93	\$23.35	\$87.06	\$0.00
Safety Equipment (helmets, tools, first aid, etc.)	\$2.54	\$12.26	\$34.17	\$1.71
Annual Insurance Payment	\$3.98	\$1.75	\$19.05	\$31.27
Registration or Permit Fees	\$12.41	\$1.35	\$22.74	\$5.47
Club Memberships	\$0.02	\$0.59	\$1.74	\$3.24
Magazine Subscriptions	\$0.15	\$0.75	\$1.10	\$0.42
Other Items	\$1.66	\$2.36	\$40.13	\$29.33
Total	\$102.26	\$121.34	\$506.59	\$610.92

Vehicle Sales

Information from the 2001 study was used to estimate sales of vehicles used for motorized recreation in Colorado during the 2007-08 season. Survey questions for the 2001 study asked households to estimate the number of vehicles purchased in the last twelve months, the average price of each vehicle, and whether or not those vehicles were new or used. For the current study, average values reported in the year 2000 were adjusted for inflation and used in combination with the average number of vehicles purchased in a year to estimate motor vehicles sales used for motorized recreation in Colorado during 2007-08 season. The estimated sales are summarized in Table B-3.

Table B-3. Estimated Annual Motorized Vehicle Sales by Residential Household

	ATVs	Dirt or Dual Purpose Bikes	Snowmobiles	4-Wheel Drives	Total All Vehicles
Total Estimated Resident Households	70,599	32,473	14,774	3,500	
Average Number of Vehicles Purchased Per Household	0.33	0.51	0.78	0.47	
Average Price Per Vehicle (Year 2007 dollars)	\$4,864	\$3,584	\$5,572	\$14,593	
Estimated Value of All Vehicle Sales in Colorado	\$113,331,416	\$59,356,888	\$64,213,983	\$24,006,256	\$260,908,543
Percentage of Households that buy New Vehicles	13.0%	13.0%	26.2%	11.0%	
Average Price of New Vehicles Purchased	\$7,082	\$6,564	\$7,532	\$29,613	
Estimated Value of New Vehicles Sales in Colorado	\$64,999,061	\$27,711,760	\$29,187,355	\$11,400,826	\$133,299,003

The first row of Table B-3 shows the estimated number of households in Colorado that own motorized vehicles used for recreation during the 2007-08 season by vehicle type. Next the average number of vehicles purchased by households as taken from the 2001 study is summarized in Row 2. Row 3 provides an estimate of the average price paid by households for each vehicle type, also taken from the 2001 study but adjusted for inflation in year 2007 dollars (2007\$). Sales of motorized vehicles used for recreation in Colorado were then calculated by multiplying the values in rows 1, 2, and 3. This represents the value of all vehicles sales (new and used) in Colorado during the 2007-08 season. The estimated value of all motorized vehicle sales, used for recreation, exceeded \$260 million during the 2007-08 season.

Sales of used vehicles do not represent an injection of new money into the economy but rather a transfer of funds. Therefore, the total value of new sales was used as a proxy for the contribution of motor vehicle sales to the economy. The value of new sales is calculated in the bottom half of Table B-3. Here the percentage of households who purchased new vehicles during a 12-month period was estimated with information from

the 2001 study and ranged from 11 percent for 4-WDs to 26 percent for snowmobiles. The average price paid for new vehicles was also estimated with information from the 2001 study and adjusted for inflation as shown in the next row. Finally the total value of new vehicles was estimated by multiplying the number of households by the percentage that would likely purchase a new vehicle by the average price.

The results are shown in the last row in Table B-3. The value of new sales for all vehicles ranges from \$11.4 million for 4-WDs to \$65 million for ATVs. Total vehicle sales were estimated to be \$133 million.