Economic Impact and Importance of Snowmobiling in Idaho

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Section 1: Executive Summary

Snowmobiling provides a major recreational opportunity in Idaho given the State's climatic conditions and mountainous terrain. In addition to the enjoyment provided by snowmobiling, it generates significant impacts in terms of employment and economic activity in many counties and for the State as a whole. In order to estimate the economic importance of snowmobiling in Idaho, the Idaho Department of Parks and Recreation (IDPR) contracted with the Department of Economics at Boise State University (BSU) to perform this study of snowmobiling on a county-by-county basis and statewide.

The economic impacts from snowmobiling stem from expenditures on items such as snowmobiles themselves, trailers, parts, and related equipment and as well as from spending that occurs when snowmobiling trips are made. We used the population of registrations that were in the IDPR system in July of 2015 to create a sample of households to be surveyed (see Appendix A). We also used the same population to extrapolate the findings of our surveys and estimate the annual economic significance and impact of snowmobiling. We find that:

- 35,564 snowmobiles were registered in Idaho (including those registered by businesses).
- We estimate that these snowmobiles were taken on 190,675 trips. Of these, 162,817 were day trips and 27,858 were overnight trips
- The 18,023 households that own one or more snowmobiles spent approximately $197.5 million on:
    - Snowmobiles and Related Equipment: $57.0 million
    - Maintenance and Repair: $4.8 million
    - Fuel: $42 million
    - Lodging (including camping): $17 million
    - Food and Beverages: $44 million
    - Storage $0.4 million
    - Other Retail: $31 million

As expected, snowmobile ownership and usage are concentrated in the most populated counties and those that have favorable terrain and winter conditions: Ada, Bannock, Bonneville, Canyon, Kootenai, Twin Falls, and Valley. Ada County ranks highest in terms of spending on

snowmobiles and related equipment but was not among the top counties in terms of trip related expenditures. Valley and Fremont counties do not rank among the top counties in terms of expenditures on snowmobiles and related equipment, but rank first and second respectively in the state in terms of total expenditures due to large trip related (fuel, lodging and food) expenditures. Valley, Fremont and Ada are the top 3 counties in terms of total spending on snowmobiling.

The primary purpose of the study is to estimate the economic impact of snowmobiling activity in the State. This is measured as the amount of employment, income, and output that is directly and indirectly related to the spending on snowmobiling. Snowmobile owners spent over $197.5 million on snowmobiles, related equipment, fuel, lodging, food, and other retail during the 12-month period of July 2015-June 2016. The sales of the retailers increased and, as a result, the employment, income, and sales of local output increased. Some of this spending became income to the retailers selling these goods and services. The retailers and their employees were then able to increase their spending, thereby generating additional economic activity. Thus, the total economic impact of the $197.5 million in spending by snowmobile users on employment, income, and output is greater than the impact of just the spending by snowmobile owners. The results for the State can be summarized as follows.

- The spending of $197.5 million:
    - Increases employment by 4,062.
    - Increases labor income[1] by $108.2 million.
    - Increases value added, which is the summation of labor income, interest, rent, and profit, by $160.7 million.
    - Increases output of locally produced goods and services by $157.3 million.

Finally, we repeat the above analysis (extrapolation of survey findings for estimating economic significance and impact of snowmobiling for the State) for the larger population of snowmobile registrations and households that were entered in the IDPR system by August 1st, 2016. This analysis has the advantage of capturing snowmobile registrations that occurred during the

[1] Defined by IMPLAN as "all forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income".

2015-16 season, after July of 2015. Since this is not the population that the sample of surveys was drawn from, the estimated numbers may have a larger margin of error.

Using this larger population of snowmobiling registrations to extrapolate the findings of our surveys and estimate the annual economic significance and impact of snowmobiling, we find that:

- 41,689 snowmobiles were registered in Idaho by August 1, 2016 (including those registered by businesses).
- The 20,752 households in this larger population that own one or more snowmobiles spent approximately a total of $223.4 million on:
    - Snowmobiles and Related Equipment: $61.6 million
    - Maintenance and Repair: $5.5 million
    - Fuel: $48.5 million
    - Lodging (including camping): $19.4 million
    - Food and Beverages: $51.2 million
    - Storage $0.46 million
    - Other Retail: $36.7 million

We find that the estimated household spending of $223.4 million:

- Increases employment by 4,521.
- Increases labor income by $118.3 million.
- Increases value added, which is the summation of labor income, interest, rent, and profit, by $175 million.
- Increases output of locally produced goods and services by $173.5 million.

Section 2: Introduction

This report provides estimates of the economic impact of snowmobiling on the Idaho economy. Economic impact analyses of programs for various parks and recreation departments across the country have been generated since the formulation of Input-Output methodology and cost-benefit analysis in economics[2,3]. The economic effects of these programs, in addition to the recreational opportunities provided, are of interest to policymakers. In this report, we estimate the economic role of snowmobiling in terms of its impact on the State and for each of the counties. The results of this study provide valuable information to state and local officials charged with making responsible decisions regarding the use of public funds.

This report is organized as follows. Sections 1 and 2 are the Executive Summary and Introduction, respectively. Section 3 reports estimates of the various types of spending that "trigger" the economic impacts on sales and employment. Section 4 describes the economic impact model used to estimate the impacts of snowmobiling for Idaho and each of its 44 counties. Section 5 presents the overall conclusions of this report.

Brief Description of Methodology

Economic impact analyses are data intensive endeavors. They require information on a wide range of consumption activities undertaken by a diverse set of economic actors. For this report, we devised and implemented a plan for data collection that relied on survey and secondary data sources. Our goal was to deliver the most accurate estimate of the economic impact of snowmobiling for the State of Idaho. The estimates for this report are based on estimates of expenditures made by registration holders for the purchase, use, and maintenance of their snowmobiles. We also include the activity of firms involved in snowmobile rentals. Data were collected via paper and electronic surveys as well as through the Bureau of Labor Statistics, the Census Bureau, and the Idaho Department of Transportation. The survey provided a large amount of data that were used to describe the patterns of snowmobiling activities as well as to estimate the economic impacts through the use of a standard economic model known as Input-

[2] Leontief, W. W. (1986).
[3] Weisbrod, G., Weisbrod, B. (1997).

Output Analysis. The procedures for obtaining survey data are described in the following section and the description of Input-Output Analysis is provided in Section 4.

Survey and Sampling

The data used for the analysis in this study were based on a survey of snowmobile owners. The IDPR provided the research team with snowmobiling registration information on all 35,564 snowmobiles registered in Idaho by the end of June 2015. Each registration included the name, address, and county of residence, as well as snowmobile information such as the type, year, make, model, description, and recreation/use areas (counties or locations). The survey itself and sampling techniques employed are described below.

Survey Description. The survey contained three major sections focused on the trips and expenditures relating to snowmobiling over the previous twelve months. The first section focused on the number, locations, and expenditures of day trips. For each outing, recipients were asked about the counties visited and the month of each outing. They were also asked about the location most frequently visited, the number of adults and children in the party, and their expenditures on food, beverages, fuel and other expenses. The second section focused on overnight trips. Most questions were similar to those in the day trip section of the survey. Survey recipients were asked the number, locations, and expenditures of overnight snowmobiling trips. Recipients were asked about the number of overnight outings, the month of these outings and the number of nights spent for each trip. They were also asked for information about the location most frequently visited, the length of stays, number of people in the party, and expenditures on lodging, food, fuel and other expenses related to the trip in both the home county and the destination county. Finally, the third section of the survey focused on the expenditures relating to snowmobile ownership and maintenance, including purchases of snowmobiles, trailers, snowmobile-related equipment, maintenance, modifications, storage, and other purchases. The same survey questions were asked in the mailed survey and the online survey. A sample survey and the associated cover letter are provided in Appendix A.

Sampling and Response Rates. Of the 35,564 entries for registered snowmobiles, the research team eliminated 3,146 registrants who did not reside in Idaho or the nearby states of Washington, Wyoming, Utah, Montana, Oregon, and California. This choice of nearby states occurred so that the present report is comparable to the one conducted for powerboating in Idaho by the same author group[4]. It is important to note that this decision has implications for our findings since registrations from Minnesota and North Dakota are not studied here. We elaborate on this point in the Conclusions section. For the remaining 32,418 registrations, the research team removed all businesses from the dataset, thereby reducing the registration population to 30,618. In order to make these registration data suitable for survey sampling, the research team corrected the dataset for inconsistencies in spelling and other minor typographical errors in the names of the towns, cities, and counties.

The research team then reduced the dataset from the level of individual snowmobile registrations to the level of households in order to obtain a sample of representative households. We did this by eliminating "duplicate registrants" on the basis of Last Name and Address. For example, if multiple entries appeared for people with the last name "Smith" at a specific address, we counted them as a single entry. This step reduces our dataset to 18,023 entries which we consider our household population (households owning at least one snowmobile). The research team then developed a random sample of 15,452 households with snowmobile registrations out of the household population of 18,023. Table 1 shows the distribution of these households across counties. Given the potential of errors in the addresses of the sampled households due to families moving etc., the research team maintained the remaining households in the population of snowmobile owners as a back-up sample (randomly ordered) in the case of a need for additional households to survey.

In order to ensure that a significant number of households from small Idaho counties were included in the study, the research team devised the following sampling rule. For counties with more than 1,000 households, a random selection of 65% of the households was taken. For all other counties (with less than 1,000 households), we sampled 100% of the households. A total

[4] Black et al. 2016

of 15,452 paper surveys were mailed to households in May 2016 with the option to return the completed survey via mail or to take an online survey using the Qualtrics survey program.

The results of the sampling strategy and response rates by county can be seen in Table 1 on page 8. The average response rate was 16.4%, with rates ranging from 0.0% in Clark County to 27.9% in Benewah County. The data from the paper survey responses were entered in Excel, following the formatting of the electronic survey responses. The latter dataset was then appended to the former. Registration data, excluding personal identifiers, was then merged with the survey response data.

The results of the survey provide two major types of information. The first is the use patterns of snowmobiles on a county-by-county basis and the amounts that users spent, both in their home county and the destination counties, on snowmobiling recreational activities and equipment. This gives a clear picture of the locations most used across the state, the type of use, and the originating location of users for each destination. The second type of information garnered through the survey data pertains to the spending on snowmobiling activities both statewide and for each county. In order to estimate the economic impacts of these expenditures, the research team used a standard Input-Output Analysis methodology to calculate the impacts on incomes, employment, and output attributable to snowmobiling. The major findings about trips and expenditures on snowmobiling and the economic impacts are provided in the following section. A more detailed explanation of the methodology used to estimate the numbers used in the I-O analysis for in this study is provided in Appendix 2 of this report.

Table 1. Idaho Snowmobile Registrations and Survey Data by County or State of Registration

County of Origin	Snowmobile Count (Household-owned)	Total Idaho Snowmobile Households	Number of Sampled Households	Surveys Returned	Survey Response Rate
01-Ada	3315	1857	1208	226	18.7%
02-Adams	136	81	81	14	17.3%
03-Bannock	1094	647	647	118	18.2%
04-Bear Lake	384	236	236	38	16.1%
05-Benewah	207	122	122	34	27.9%
06-Bingham	1068	533	533	94	17.6%
07-Blaine	591	368	368	57	15.5%
08-Boise	200	123	123	31	25.2%
09-Bonner	763	511	510	86	16.9%
10-Bonneville	2268	1379	896	146	16.3%
11-Boundary	165	117	117	12	10.3%
12-Butte	61	43	43	9	20.9%
13-Camas	85	51	51	12	23.5%
14-Canyon	1321	733	731	106	14.5%
15-Caribou	246	137	137	18	13.1%
16-Cassia	579	279	279	43	15.4%
17-Clark	8	4	4	0	0.0%
18-Clearwater	150	92	92	21	22.8%
19-Custer	152	86	86	18	20.9%
20-Elmore	298	194	194	34	17.5%
21-Franklin	304	187	187	27	14.4%
22-Fremont	894	517	518	80	15.4%
23-Gem	161	94	94	20	21.3%
24-Gooding	301	163	163	26	16.0%
25-Idaho	456	299	299	44	14.7%
26-Jefferson	852	493	493	66	13.4%
27-Jerome	398	212	212	33	15.6%
28-Kootenai	1789	1137	739	127	17.2%
29-Latah	271	161	161	41	25.5%
30-Lemhi	133	88	88	13	14.8%
31-Lewis	100	59	59	11	18.6%
32-Lincoln	88	49	49	8	16.3%
33-Madison	653	385	385	50	13.0%
34-Minidoka	412	225	225	36	16.0%
35-Nez Perce	414	267	268	59	22.0%
36-Oneida	67	42	42	3	7.1%
37-Owyhee	87	50	50	5	10.0%
38-Payette	122	86	86	9	10.5%
39-Power	156	85	85	13	15.3%
40-Shoshone	295	201	201	30	14.9%
41-Teton	399	259	259	30	11.6%
42-Twin Falls	1162	628	628	88	14.0%
43-Valley	767	481	481	94	19.5%
44-Washington	99	62	62	17	27.4%
45-CA	330	191	191	14	7.3%
46-MT	930	563	563	104	18.5%
47-OR	456	276	276	39	14.1%
48-UT	2091	1150	748	106	14.2%
49-WA	3007	1823	1185	203	17.1%

50-WY	333	197	197	17	8.6%
Total	30618	18023	15452	2530	16.4%

Section 3: Description of Major Findings

This section describes the major findings of this study in terms of the usage patterns of snowmobiling at the county level, the expenditures associated with snowmobiling trips, and spending on snowmobiles and related equipment as well as maintenance and repair.

Types of Trips

This study focuses on two types of activities, day trips and overnight trips. Based on the estimated number of households and the response rates for each county, the research team estimates that a total of 190,675 snowmobiling trips were taken to Idaho destinations during the sample period.[5] The vast majority of trips, 162,817 were day trips and the remaining 27,858 were overnight trips. In general, the counties with the highest number of day trips were also those with the highest number of overnight trips. The top ten Idaho counties for estimated day trips were, in the order from highest: Fremont, Valley, Bonner, Shoshone, Franklin, Camas, Idaho, Boise, Elmore and Bonneville; with day trips to Fremont county being the most frequent (Table 2). For overnight trips, Fremont ranked first as well. The remaining Idaho counties in the top ten for overnight trips were Valley, Elmore, Custer, Idaho, Bonner, Shoshone, Bonneville, Clearwater, and Caribou (Table 5). The full distribution of the estimated day and overnight snowmobiling trips for each Idaho destination county are presented in Tables 2 and 5.

[5] The estimation process is explained in more detail in Appendix B.

Table 2. Idaho Snowmobiling Trips by Destination County

Destination County	Est. Number of Day Trips	Est. Number of Overnight Trips	Overnight Trips as a Percentage of All Trips
01-Ada	117	15	11.4%
02-Adams	3,410	391	10.3%
03-Bannock	2,769	171	5.8%
04-Bear Lake	4,149	160	3.7%
05-Benewah	690	29	4.0%
06-Bingham	1,117	62	5.2%
07-Blaine	3,508	416	10.6%
08-Boise	5,917	194	3.2%
09-Bonner	10,319	1,100	9.6%
10-Bonneville	5,529	602	9.8%
11-Boundary	2,721	87	3.1%
12-Butte	496	-	0.0%
13-Camas	6,248	283	4.3%
14-Canyon	19	26	57.3%
15-Caribou	3,410	431	11.2%
16-Cassia	3,916	209	5.1%
17-Clark	972	-	0.0%
18-Clearwater	3,410	592	14.8%
19-Custer	4,110	1,702	29.3%
20-Elmore	5,713	1,869	24.7%
21-Franklin	6,364	259	3.9%
22-Fremont	27,449	9,559	25.8%
23-Gem	185	-	0.0%
24-Gooding	29	-	0.0%
25-Idaho	6,209	1,529	19.8%
26-Jefferson	369	-	0.0%
27-Jerome	10	43	81.6%
28-Kootenai	5,237	212	3.9%
29-Latah	1,040	396	27.6%
30-Lemhi	972	10	1.0%
31-Lewis	10	-	0.0%
32-Lincoln	19	9	32.0%
33-Madison	2,050	10	0.5%
34-Minidoka	126	-	0.0%
35-Nez Perce	748	63	7.8%
36-Oneida	49	23	31.9%
37-Owyhee	447	64	12.5%
38-Payette	-	39	100.0%
39-Power	583	-	0.0%
40-Shoshone	7,822	963	11.0%
41-Teton	2,740	47	1.7%
42-Twin Falls	3,605	146	3.9%
43-Valley	27,342	6,139	18.3%
44-Washington	874	6	0.7%
Statewide Totals	162,817	27,858	14.6%

Expenditures by Type

When recreationists go on day or overnight snowmobiling trips, they have expenditures for a variety of goods and services. These trip-related expenditures plus the spending on equipment and maintenance generate increased economic activity and employment. These initial increases in spending are referred to as the Direct Effects. The spending on these categories creates increased demand for the goods and services provided by other sectors in the Idaho economy. These inter-industry sales are called the Indirect Effects of the increased spending. Every time industry sales increase, income generated by the industry increases and the recipients of these wages, salaries, interest, rent, and profit will increase their spending on a variety of products and services. This increased household spending is called the Induced Effects. The Total Effect is the Direct Effect plus Indirect Effect and plus Induced Effect.

For example, snowmobilers buy fuel, i.e. the Direct Effect, which requires purchases from suppliers to the retail fuel dealers, i.e. the Indirect Effect. The increased household income, wages, salaries, interest, rent and profit, causes households to buy more groceries and other goods and services, i.e. the Induced Effect. As described in greater detail in Section Four, the initial spending on equipment and trips are the inputs into the Input-Output Analysis that are used in this report to estimate the economic impacts of snowmobiling in Idaho. In Input-Output analysis expenditures related to snowmobiling were tracked in several categories relevant to snowmobiles and related equipment and maintenance as well as spending related to snowmobiling trips, including fuel, lodging, food and beverage spending at retails stores and restaurants, sporting goods, snowmobile rental, and other retail spending categories. Table 3 lists spending that occurred in each county by category. These spending amounts comprise the inputs entered into the Input-Output model. These are the expenditures that “trigger” the additional spending and employment known as the multiplier effects.

Table 3. Spending on Snowmobiling Related Products and Services by County in Which the Money was Spent (in dollars)

County	Snowmobiles, Trailers, Equipment, and Parts	Maintenance and Repair	Storage	Snowmobile and Vehicle Fuel	Campsites and Overnight Lodging	Food and Beverages Including Restaurants	Other Retail	Total
Ada	13,501,838	721,359	129,824	2,797,484	102,542	2,516,537	2,413,490	22,183,075
Adams	108,882	60,444	907	700,711	191,648	886,538	838,856	2,787,986
Bannock	2,701,679	267,793	19,250	1,006,265	236,694	816,429	2,006,965	7,055,075
Bear Lake	251,412	56,359	0	694,697	207,234	419,302	360,983	1,989,987
Benewah	280,544	44,380	0	553,912	57,715	530,698	648,491	2,115,740
Bingham	2,052,735	139,002	1,618	933,774	0	554,990	328,386	4,010,505
Blaine	1,838,613	150,554	2,714	838,369	180,024	1,215,141	2,257,270	6,482,685
Boise	94,309	35,241	4,444	454,852	93,264	489,599	199,051	1,370,761
Bonner	1,070,749	155,647	11,233	1,966,347	609,519	2,231,184	971,263	7,015,942
Bonneville	4,526,970	459,130	23,657	2,069,445	45,850	1,362,375	1,203,970	9,691,396
Boundary	135,044	24,338	0	442,378	15,885	410,771	130,031	1,158,446
Butte	34,098	5,719	0	112,388	0	98,739	20,521	271,465
Camas	79,872	24,928	0	315,097	53,092	506,068	203,182	1,182,237
Canyon	3,654,415	202,027	1,106	1,208,732	207,780	989,166	856,371	7,119,597
Caribou	193,912	66,420	0	724,861	23,607	547,299	181,609	1,737,708
Cassia	1,097,162	80,392	5,846	615,222	33,022	638,712	888,884	3,359,239
Clark	5,900	0	0	96,592	0	67,972	6,133	176,596
Clearwater	80,740	13,067	500	431,344	80,881	584,999	267,224	1,458,754
Custer	46,426	37,566	2,606	755,197	480,711	848,798	198,808	2,370,111
Elmore	414,994	106,432	9,300	1,295,494	788,383	998,746	621,453	4,234,801
Franklin	1,357,681	79,178	0	1,168,942	31,078	708,511	272,309	3,617,700
Fremont	1,259,669	164,240	15,460	6,018,604	6,222,984	8,188,340	3,553,899	25,423,195
Gem	71,234	15,152	0	96,430	0	55,481	20,539	258,837
Gooding	102,420	74,019	0	197,680	0	156,563	160,145	690,828
Idaho	1,005,884	131,328	9,120	535,676	66,769	1,176,825	512,922	3,438,524
Jefferson	1,072,214	154,604	14,926	511,911	14,242	322,626	268,994	2,359,517
Jerome	824,963	65,819	1,188	227,595	0	187,079	249,440	1,556,084
Kootenai	4,914,595	351,036	50,603	2,058,580	179,780	1,162,643	1,525,320	10,242,557
Latah	143,699	37,471	764	452,423	59,775	336,100	312,913	1,343,145
Lemhi	296,157	19,805	0	77,082	0	63,702	38,222	494,969
Lewis	38,341	8,447	0	75,943	0	57,217	54,744	234,693
Lincoln	60,850	15,012	776	65,231	0	20,975	38,057	200,901
Madison	3,728,550	148,984	22,460	631,088	28,498	467,136	366,927	5,393,643
Minidoka	604,513	65,181	2,113	427,243	94,737	425,341	140,063	1,759,190
Nez Perce	939,067	102,487	151	731,425	43,473	533,798	540,824	2,891,225
Oneida	133,920	0	0	12,036	0	28,332	4,883	179,172
Owyhee	27,344	5,438	0	10,494	0	8,869	57,362	109,505
Payette	1,126,838	32,533	12,200	263,920	5,053	216,710	208,559	1,865,813
Power	153,707	33,540	1,040	160,699	0	144,979	48,576	542,541
Shoshone	514,972	60,196	2,791	970,178	132,927	1,121,588	1,375,245	4,177,896
Teton	636,943	70,789	12,552	445,291	56,336	612,187	189,855	2,023,954
Twin Falls	4,383,813	337,487	14,491	1,134,121	66,353	853,047	909,583	7,698,895
Valley	1,306,643	194,472	28,194	7,701,530	6,448,314	10,822,232	6,395,556	32,896,941
Washington	160,399	10,127	0	92,098	0	88,590	8,472	359,687
Totals	57,034,710	4,828,140	401,834	42,079,379	16,858,172	44,472,933	31,856,349	197,531,518

As seen in Table 3, spending related to snowmobiling totals about 197.5 million dollars statewide. The top counties in terms of total spending are, in order, Valley (32.9mil.), Fremont (25.4 mil.), Ada (22.2mil.), Kootenai (10.2mil.), Bonneville (9.7mil.), Twin Falls (7.7 mil.), Bannock (7.05 mil.), Bonner (7.02 mil.), Blaine (6.48 mil.), and Madison (5.4 mil.). Total snowmobiling related expenditures are substantially higher in Fremont, Valley and Ada counties relative to the next county, Kootenai, in the list above. Of note is that the mix of spending for equipment, maintenance, and storage relative to trip-related expenditures varies significantly across these counties. For example, in Ada and Twin Falls, annual spending on snowmobiles, trailers, and related equipment and parts comprise the bulk of snowmobiling spending. In other counties, such as Valley and Fremont counties, trip related expenditures are more important than equipment expenditures.

Next, we look carefully at the day and overnight trip expenditures by destination county. Tables 4 and 5 in next two pages provide detailed summaries and a numerical description on how snowmobilers spend money while on snowmobiling trips. Table 4 shows the day trip expenditures by county and Table 5 shows the overnight trip expenditures by county. These expenditure numbers do not include the non-trip related expenses such as the purchases of new and used snowmobiles, trailers, modification, maintenance, and repair, and storage.

Table 4. Day Trip (DT) Snowmobiling Expenditures by Destination County for Residents and Non-Residents of that County

County	Estimated Number of Day Trips	DT Resident Expenditures ($)	DT Non-Resident Expenditures ($)	Total Spending ($)	Non-Resident Spending as a Total of Spending
01-Ada	117	4,613,057	39,921	4,652,978	0.86%
02-Adams	3,410	174,518	1,826,424	2,000,943	91.28%
03-Bannock	2,769	2,386,552	332,839	2,719,391	12.24%
04-Bear Lake	4,149	587,135	583,957	1,171,093	49.86%
05-Benewah	690	963,061	192,561	1,155,622	16.66%
06-Bingham	1,117	903,723	156,759	1,060,482	14.78%
07-Blaine	3,508	2,469,083	841,198	3,310,281	25.41%
08-Boise	5,917	403,201	542,595	945,796	57.37%
09-Bonner	10,319	1,896,147	2,045,382	3,941,529	51.89%
10-Bonneville	5,529	2,426,569	706,917	3,133,486	22.56%
11-Boundary	2,721	107,211	703,916	811,127	86.78%
12-Butte	496	189,748	15,105	204,852	7.37%
13-Camas	6,248	226,018	539,554	765,572	70.48%
14-Canyon	19	1,854,173	0	1,854,173	0.00%
15-Caribou	3,410	562,758	737,126	1,299,884	56.71%
16-Cassia	3,916	736,920	960,489	1,697,409	56.59%
17-Clark	972	0	170,696	170,696	100.00%
18-Clearwater	3,410	292,233	704,078	996,311	70.67%
19-Custer	4,110	305,868	821,216	1,127,084	72.86%
20-Elmore	5,713	490,210	752,434	1,242,644	60.55%
21-Franklin	6,364	355,776	1,599,118	1,954,894	81.80%
22-Fremont	27,449	1,949,482	7,434,262	9,383,743	79.22%
23-Gem	185	114,579	0	114,579	0.00%
24-Gooding	29	422,488	0	422,488	0.00%
25-Idaho	6,209	767,658	1,137,150	1,904,808	59.70%
26-Jefferson	369	741,627	37,306	778,932	4.79%
27-Jerome	10	558,638	0	558,638	0.00%
28-Kootenai	5,237	2,156,695	752,819	2,909,514	25.87%
29-Latah	1,040	588,955	94,717	683,672	13.85%
30-Lemhi	972	120,574	43,814	164,388	26.65%
31-Lewis	10	117,918	0	117,918	0.00%
32-Lincoln	19	109,963	194	110,157	0.18%
33-Madison	2,050	740,585	270,978	1,011,563	26.79%
34-Minidoka	126	622,031	0	622,031	0.00%
35-Nez Perce	748	673,406	16,567	689,974	2.40%
36-Oneida	49	20,081	21,151	41,232	51.30%
37-Owyhee	447	15,515	4,827	20,342	23.73%
38-Payette	-	640,048	0	640,048	0.00%
39-Power	583	131,956	0	131,956	0.00%
40-Shoshone	7,822	1,174,122	1,629,490	2,803,613	58.12%
41-Teton	2,740	536,252	513,229	1,049,482	48.90%
42-Twin Falls	3,605	1,344,946	241,158	1,586,104	15.20%
43-Valley	27,342	2,184,015	11,404,228	13,588,243	83.93%
44-Washington	874	146,979	29,384	176,363	16.66%
Statewide Totals	162,817	37,822,473	37,903,560	75,726,033	50.1%

Table 5. Overnight Trip (OT) Snowmobiling Expenditures by Destination County for Residents and Non-Residents of that County

County	Estimated Number of Overnight Trips	OT Resident Total Expenditures ($)	OT Non-Resident Expenditures ($)	Total Spending ($)	Non-Resident Spending as a Total of Spending
01-Ada	15	2,501,539	2,569	2,504,108	0.10%
02-Adams	391	36,962	499,129	536,091	93.11%
03-Bannock	171	956,122	60,667	1,016,789	5.97%
04-Bear Lake	160	2,720	488,116	490,836	99.45%
05-Benewah	29	555,500	38,325	593,825	6.45%
06-Bingham	62	626,742	3,190	629,932	0.51%
07-Blaine	416	623,970	438,172	1,062,142	41.25%
08-Boise	194	5,330	272,140	277,470	98.08%
09-Bonner	1,100	147,263	1,536,514	1,683,776	91.25%
10-Bonneville	602	1,094,139	55,840	1,149,979	4.86%
11-Boundary	87	2,274	158,851	161,125	98.59%
12-Butte	-	13,642	0	13,642	0.00%
13-Camas	283	1,042	290,446	291,489	99.64%
14-Canyon	26	1,152,739	0	1,152,739	0.00%
15-Caribou	431	30,004	102,267	132,271	77.32%
16-Cassia	209	361,866	17,467	379,332	4.60%
17-Clark	-	0	0	0	0.00%
18-Clearwater	592	114,868	240,552	355,420	67.68%
19-Custer	1,702	27,315	1,108,096	1,135,410	97.59%
20-Elmore	1,869	1,524,028	855,403	2,379,430	35.95%
21-Franklin	259	41,770	128,840	170,610	75.52%
22-Fremont	9,559	1,392	14,467,637	14,469,030	99.99%
23-Gem	-	43,681	0	43,681	0.00%
24-Gooding	-	46,795	0	46,795	0.00%
25-Idaho	1,529	105,646	199,606	305,252	65.39%
26-Jefferson	-	204,698	0	204,698	0.00%
27-Jerome	43	0	0	0	0.00%
28-Kootenai	212	1,369,435	140,925	1,510,360	9.33%
29-Latah	396	413,185	22,592	435,777	5.18%
30-Lemhi	10	1,895	3,183	5,078	62.69%
31-Lewis	-	34,806	0	34,806	0.00%
32-Lincoln	9	0	0	0	0.00%
33-Madison	10	302,661	21,305	323,966	6.58%
34-Minidoka	-	412,295	0	412,295	0.00%
35-Nez Perce	63	1,054,947	0	1,054,947	0.00%
36-Oneida	23	0	0	0	0.00%
37-Owyhee	64	37,895	0	37,895	0.00%
38-Payette	39	10,579	0	10,579	0.00%
39-Power	-	209,116	0	209,116	0.00%
40-Shoshone	963	191,439	523,004	714,443	73.20%
41-Teton	47	1,053	197,067	198,120	99.47%
42-Twin Falls	146	1,076,707	61,292	1,137,999	5.39%
43-Valley	6,139	4,779	17,645,237	17,650,017	99.97%
44-Washington	6	7,629	0	7,629	0.00%
Statewide Totals	27,858	15,350,467	39,578,435	54,928,901	72.1%

For each county, spending on trips is allocated to either residents of a given county, "Resident Spending," or to non-residents of the county, "Non-Resident Spending". As seen in Table 4, for example, about 80% of recreational day trip spending in Fremont and Valley counties are by *non-residents*. This is particularly important because, in terms of economic impacts, these expenditures by non-county residents bring revenues into the local economy from elsewhere, thereby having a greater impact on that county's employment, income, and economic activity than spending by residents.

Tables 4 and 5 also show that the number of snowmobiling day trips greatly outnumber those of overnight trips, with day trips comprising approximately 85% of all snowmobiling trips statewide[6]. For the most part, spending on day trips is greater than spending on overnight snowmobiling trips. However, there are counties, e.g. Elmore and Fremont, where the expenditures on overnight trips is higher than spending on day trips. Although the number of overnight trips compared to day trips is relatively low overall, the spending is far from inconsequential.

Economic and Employment Effects of Snowmobiling Expenditures

The expenditures on equipment and activities related to snowmobiling also have a multiplier effect on economic activity. As shown in Table 3 above, these expenditures are substantial in many Idaho counties and total approximately an estimated $197.5 million statewide. These direct expenditures result in "indirect" economic impacts in industries that service the demands of snowmobiling activities and those sectors of the economy that supply inputs to industries related to snowmobiling. In addition, there are the "induced" impacts when employees of all these firms spend their income on groceries, car repair, movies, etc. Increased demand for food and beverages by snowmobiling recreationists, for example, leads to increased activity and employment for food and beverage wholesalers. The increase in direct and indirect economic activity will also generate additional effects due to increased demand and incomes in other sectors of the economy not directly related to snowmobiling. When it all plays out, there will be few areas of the local economy that have not been affected by the snowmobiling activity. This process is known as the multiplier effect and is described more fully in Section 4.

[6] We calculate this percentage from Tables 4 and 5 as follows: (162,817 / (162,817+27,858))*100 = (162,817/ 190,675)*100 = 85.39

Table 6 details the total economic impact of snowmobiling by county. Direct Employment is the number of jobs in industries directly involved in snowmobiling. Total Employment includes the direct employment plus the additional jobs created through the indirect and induced economic effects. Labor Income is the total amount of wages, salaries and benefits paid to workers directly employed in serving snowmobilers. Value Added is the value of incomes attributable to snowmobiling activities. It is the total of labor Income (including fringe benefits) plus interest, rent, and profit. Output is the value of the local industry's sales.

As presented in Table 6, in 2015 - 2016 snowmobiling season, snowmobiling in the State sustained an estimated 4,062 total jobs; generated $108.2 million in labor income; generated $160.7 million in value added (labor income, interest, rent, and profit); and generated $159.3 million in total sales of locally produced goods and services. The top ten Idaho counties in terms of employment due to snowmobiling are, in order, Valley, Fremont, Ada, Kootenai, Blaine, Bonneville, Bonner, Bannock, Twin Falls and Canyon. In fact, the first four counties in this list account for almost half of the economic impact of snowmobiling in Idaho, including 46.6% of all snowmobile-related employment, 48.7% of all snowmobile related labor income, 48.6% of all snowmobile related value added and 53.9% of all snowmobile related sales of locally produced goods and services.

Table 6. Impacts of Snowmobiling Activities by Destination County

	Direct Employment	Total Employment	Total Labor Income	Total Value Added	Output of Locally Produced Goods and Services
Ada	274	369	15,989,815	23,790,661	19,867,047
Adams	59	65	1,356,018	1,887,588	1,866,200
Bannock	133	160	3,860,758	5,830,313	5,469,124
Bear Lake	37	42	879,121	1,315,457	1,182,095
Benewah	43	47	1,086,850	1,498,699	1,248,519
Bingham	60	67	1,911,428	2,964,009	1,830,232
Blaine	162	173	2,673,028	3,963,916	3,931,489
Boise	29	31	620,442	851,524	874,394
Bonner	144	172	4,196,287	6,193,926	7,215,757
Bonneville	136	173	6,336,076	9,251,785	7,626,183
Boundary	24	26	517,014	746,522	720,853
Butte	5	5	109,290	158,411	83,079
Camas	27	28	215,988	366,602	642,346
Canyon	99	121	3,995,305	6,110,942	4,568,318
Caribou	36	38	671,057	1,001,880	836,672
Cassia	60	68	1,856,839	2,598,810	2,155,181
Clark	2	2	32,805	47,157	48,143
Clearwater	31	35	765,315	1,038,081	1,187,062
Custer	46	53	1,082,163	1,610,615	2,182,867
Elmore	77	87	2,036,506	2,903,150	3,142,759
Franklin	68	75	1,423,145	2,315,068	1,789,096
Fremont	531	598	11,259,839	17,063,518	23,302,596
Gem	4	5	119,408	182,964	120,738
Gooding	14	15	296,603	453,396	359,175
Idaho	67	77	1,695,760	2,470,969	2,421,116
Jefferson	36	41	1,146,572	1,757,164	1,225,763
Jerome	20	23	880,375	1,267,600	785,746
Kootenai	145	180	6,260,158	9,415,622	7,442,705
Latah	25	29	701,535	1,005,540	946,182
Lemhi	7	8	239,650	376,696	246,738
Lewis	5	5	100,174	151,315	121,247
Lincoln	4	4	89,408	132,427	87,919
Madison	74	86	2,612,348	4,276,396	2,782,110
Minidoka	28	31	824,185	1,264,224	965,990
Nez Perce	45	53	1,682,931	2,436,243	1,922,987
Oneida	2	2	100,882	141,414	82,564
Owyhee	2	3	40,421	65,975	53,449
Payette	29	33	908,174	1,451,153	1,012,927
Power	9	10	245,045	366,324	232,107
Shoshone	87	98	2,169,622	3,069,534	3,117,143
Teton	40	46	1,325,318	1,951,810	2,019,492
Twin Falls	100	127	4,572,845	6,922,138	5,265,788
Valley	631	745	19,179,221	27,780,098	34,172,987
Washington	5	6	165,569	261,656	154,476
Statewide	3,463	4,062	108,231,294	160,709,290	157,309,357

In addition to increased employment and labor income, snowmobiling is important to the overall level of economic activity for Idaho and in many Idaho counties. For the State as a whole, this study estimates that over $157 million is generated in additional sales from snowmobiling related activities. At the county level, snowmobiling expenditures generate economic impacts important to local communities. The top Idaho counties in terms of added output and employment due to snowmobiling are Valley, Fremont and Ada counties – by a wide margin.

It is also important to note that these counties also benefit from added tax revenue. It is notable that much of the difference between the Value Added and Sales figures is attributable to some tax revenues such as sales and excise taxes. Because a significant portion of these tax revenues is local in nature, snowmobiling generates additional tax revenues for the counties in which these activities take place. Tax revenues will be directly related to the spending that occurs in each county.

The most common way of measuring the multiplier effect of snowmobiling related economic activity generated as the activity ripples across different sectors of the economy is to estimate the amount of increased employment, income, and value added stemming from each additional direct job in the snowmobiling industry. These are shown at the county level in Table 7. In Ada County, for example, the employment multiplier is reported as 1.35. This number indicates that spending on snowmobiling activities that is sufficient to directly sustain one job, indirectly creates enough spending to sustain an additional 0.35 jobs. In addition, the spending that sustains 1.35 jobs also creates an additional $58,380 in labor income and $86,861 in sales of locally produced goods and services.

Although the multipliers for snowmobiling are significant, they are smaller than the multipliers for some other Idaho industries. The main reason for this is that much of the spending is for retail purchases on goods that are produced outside the State. For example, snowmobiles, trailers, food, and fuel are generally produced elsewhere and local production is primarily in retail services. By contrast, the multipliers for the dairy industry are at least 2.5. Dairy requires locally produced feed, locally produced veterinarian services, and locally produced transportation.

In the next section of this report, a more detailed explanation is provided of the economic concepts and methodology used. A general description of Input-Output Analysis is provided first followed by an explanation of how the data on spending on snowmobiling equipment and activities gets translated into the estimates of the employment, income, and overall economic activity determined in this study.

Table 7. Multiplier Effects of Snowmobiling Activities by County

	Total Employment	Total Labor Income ($)	Total Value Added ($)	Output of Locally Produced Goods and Services ($)
Ada	1.35	58,380	86,861	72,535
Adams	1.10	22,860	31,821	31,460
Bannock	1.20	28,988	43,777	41,065
Bear Lake	1.11	23,460	35,104	31,545
Benewah	1.09	25,144	34,673	28,885
Bingham	1.12	31,701	49,158	30,354
Blaine	1.07	16,490	24,454	24,254
Boise	1.09	21,478	29,477	30,269
Bonner	1.19	29,141	43,014	50,110
Bonneville	1.27	46,543	67,961	56,019
Boundary	1.09	21,897	31,618	30,530
Butte	1.02	21,550	31,236	16,382
Camas	1.04	8,108	13,762	24,113
Canyon	1.22	40,429	61,837	46,227
Caribou	1.06	18,477	27,585	23,037
Cassia	1.14	30,875	43,212	35,835
Clark	1.06	18,400	26,449	27,002
Clearwater	1.13	24,898	33,772	38,619
Custer	1.15	23,483	34,951	47,369
Elmore	1.12	26,343	37,554	40,653
Franklin	1.10	20,884	33,973	26,255
Fremont	1.13	21,219	32,156	43,914
Gem	1.12	28,297	43,359	28,613
Gooding	1.05	21,315	32,583	25,812
Idaho	1.14	25,164	36,668	35,928
Jefferson	1.13	31,508	48,288	33,685
Jerome	1.13	43,443	62,551	38,774
Kootenai	1.24	43,193	64,965	51,352
Latah	1.16	28,129	40,319	37,939
Lemhi	1.15	32,989	51,854	33,965
Lewis	1.08	21,371	32,281	25,867
Lincoln	1.07	24,442	36,202	24,034
Madison	1.17	35,490	58,096	37,796
Minidoka	1.11	29,833	45,762	34,966
Nez Perce	1.18	37,649	54,502	43,020
Oneida	1.13	45,974	64,445	37,626
Owyhee	1.07	16,782	27,391	22,191
Payette	1.13	31,321	50,047	34,933
Power	1.05	26,961	40,304	25,537
Shoshone	1.12	24,907	35,238	35,785
Teton	1.16	33,140	48,805	50,498
Twin Falls	1.27	45,782	69,302	52,719
Valley	1.18	30,410	44,047	54,184
Washington	1.12	31,015	49,015	28,937
Statewide	1.17	31,253	46,406	45,424

Section 4: Methodology

Snowmobiling is an important source of spending on recreational activities in Idaho. As such, it generates significant economic impacts in many counties and for the state as a whole. In this section of the report, an overview of the methodology used in economic studies to determine these impacts is provided. Some key concepts and terminology important for an understanding of the results of this study are described. In addition, an explanation is given of the types of expenditures, their relevance to key economic sectors in Idaho, and their role in determining the economic impacts estimated here.

Overview of Input-Output Methodology

Economists have established a variety of measures for understanding the economic impact of activities across different parts of the economy. These avenues of economic impacts on jobs and overall economic output are well known and can be estimated by the use of a technique known as Input-Output (I-O) analysis. An underlying concept in I-O analysis is the notion that industries are closely linked and that economic activity in one industry ripples across other sectors of the economy, generating impacts both directly and indirectly.

The initial economic impacts from snowmobiling stem from the expenditures on the snowmobiles themselves, related equipment, and maintenance activities as well as expenditures each time a snowmobiling trip is made. The impacts from these expenditures are known as *direct effects*. For example, the immediate effects of snowmobiling trips often comprise expenditures on fuel, food, and lodging. These expenditures directly increase employment, income and output in the industries that support these activities at both the county and state levels. In this present study, the direct effects involve total spending that occurs due to snowmobiling in the 44 counties of the State of Idaho.

In addition to the direct effects of snowmobiling, we also measure the *indirect effects*. These are additional business and jobs that are created in non- related industries that support the direct effects of the snowmobiling recreation. These stem from purchases on the part of suppliers of goods and services to support the direct snowmobiling expenditures. These effects can be considered as supply-chain effects and stem from the fact that when purchases are

made from one industry, those input suppliers must purchase inputs from other industries. For example, when meals are purchased at a restaurant to support the demands of snowmobilers, that firm must then purchase its food, beverages and related inputs from others. These types of purchases from "backward linked" industries constitute the inter-industry indirect effects of the initial economic activity.

Finally, there are economic impacts caused by the direct and indirect dollars being re-spent in the economy. These subsequent economic impacts occur when purchases of goods and services from the direct and indirect economic activities related to snowmobiling increase incomes of households that are employed by these industries. The increases in household spending are termed the *induced effects* of snowmobiling in the state. For example, when employees in the affected industries spend their income on items such as food, clothing, entertainment and automobiles, these purchases will stimulate economic activity throughout the study area's economy.

The direct, indirect and induced effects are well known to economists and cumulatively constitute the total impacts of snowmobiling on employment, personal income and total output. The presence of indirect and induced economic effects means that an initial increase in demand for a given industry's output will get multiplied in the economy. The size of the multiplier effects is of primary concern in I-O analysis and is an important component in determining the overall economic impacts of industry changes. In essence, multipliers determine how the direct change in final demand of a single industry ripples throughout all the other industries in an economy. In order to capture the overall impacts, I-O models use the concept of a multiplier. Multipliers signify that the extent to which jobs in a specific industry generate economic activity in other industries. Multipliers are estimated on the basis of historical data across a multitude of industrial sectors of the economy. Two basic types of multipliers are recognized in standard I-O analysis. Type I multipliers measure the direct changes and the indirect effects of an industry's backward linkages. Type II multipliers, also known as SAM multipliers, are larger in magnitude and more broad-based by virtue of the fact that they include the direct, indirect, and induced effects. It assumes wage, salaries and other income circulate through the economy along with backward linkages of business purchases. Type II multipliers measure the direct, indirect, and induced impacts from a change in final

demands as measured by sales (i.e. the value of local output). Because the sum of the direct, indirect, and induced measures the total impact of an industry to an economy, this study employs Type II multipliers. Once the Type II multipliers for the snowmobiling industry are calculated, they can be used to estimate the changes in overall economic activity. For this study, we employ data that examine inter-industry linkages in Idaho to estimate the impacts of snowmobiling on each county and for the state as a whole.

There are a variety of I-O modeling software programs and data systems that are available for economic impact modeling. They include programs from REMI *Economic Modeling Inc*, EMSI - *Economic Modeling Specialists, Inc.*, RIMS II- *Regional Input-Output Modeling System*, and IMPLAN-*Impact Analysis for Planning.* IMPLAN is one of the most tested and most widely used modeling software, being originally developed for the United States Department of Agriculture Forest Service in the late 1970s and early 1980s. IMPLAN has been refined and used for a wide variety of economic activity assessment by both the private and public sectors, including food and lodging operations, capital expenditures on equipment related to recreational activities, and resulting tax revenues generated by these activities. In addition, the IMPLAN model has great flexibility, robustness, and transparency and, unlike some I-O models, the IMPLAN model itself and the economic data used are updated frequently. For these reasons, IMPLAN was chosen as the software platform and data system for this analysis.

For this study, output and employment multipliers for various IMPLAN sectors relevant to the snowmobiling industry are used. These include sectors such as food, beverages, fuel, accommodations, trailers and related equipment, and real estate. For snowmobiles, as for powerboats, the impact in the real estate industry is for storage. The IMPLAN analysis used here employs a model of inter-industry linkages from 2013 and economic data from 2015. This is the most recent model for the 44 counties in Idaho in order to obtain multipliers for economic output and employment. The model provides multipliers for 536 different industrial sectors, each with an industry-specific indirect multiplier for itself and each of the other 535 industries. IMPLAN provides a comprehensive set of disaggregated multipliers that can be used to estimate the indirect and induced impacts separately from the total impact at the regional level. Further, data is available at the county level. This enables the I-O model employed here to

be able to separately analyze the effects on the overall economy of the state as well as the impacts on the economy of each Idaho county.

Translating Expenditures into Economic Effects

As described above, the IMPLAN model used in this study contains 536 different economic sectors. The data generated by the survey to snowmobile registrants enabled the research team to allocate expenditures across a number of industrial sectors. The expenditure categories shown in Table 3 in the previous section are each aggregated from a number of economic sectors. For example, expenditures aggregated into the Food and Beverages category are aggregated across several different economic sectors including food and beverage stores, food service and drinking places, and others. The disaggregated expenditure data were allocated into the relevant industrial sectors of the IMPLAN model of the Idaho economy in order to determine the direct, indirect, and induced impacts from snowmobiling on each of the 44 counties in the state and the state as a whole.

In terms of the economic impacts of the snowmobiling industry, the direct effects stem from the actual expenditures across the relevant industrial sectors related to snowmobiling. An increase in the demand for snowmobiling services, for example, will create additional employment and salaries within the snowmobiling industry. This study uses the expenditure data received by the survey respondents as inputs into the relevant expenditure categories described above. The indirect effects stem from the purchases of goods and services by the snowmobiling industry from suppliers in other industries. In effect, the snowmobiling industry's backward linkages, as its purchases from other firms ripple through the economy in a chain-like manner, constitute the indirect effects of snowmobiling. The induced effects stem from the increase in wage and salary earnings and other household income that ripples through the economy as direct and indirect dollars are spent and re-spent in the national economy. The IMPLAN model of the Idaho economy estimates these indirect effects using multiplier analysis for each Idaho county. Table 7 in the previous section shows the calculated multiplier effects for all 44 Idaho counties.

Section 5: Summary

This study uses the expenditure data received by the survey respondents as inputs in estimating how much is spent in each county on snowmobiles and the activities in which they are used. We estimate that during the 2015-2016 snowmobiling season, over 197.5 million was spent on snowmobiling activities in the state. More than $57 million was spent on snowmobiles and related equipment, about 4.8 million on maintenance and repair, less than half a million on storage, over 42 million on fuel, nearly 17 million for lodging, over 44 million for food and over 31 million for miscellaneous retail purchases.

Our survey results showed that snowmobile ownership is concentrated in the most populated counties: Ada, Bonneville, Latah, Caribou, Bannock, Bingham, Oneida and Gem counties, and snowmobile usage is concentrated in those counties that have access to snowmobile terrain: Fremont, Valley, Bonner, and Shoshone. The top counties in terms of trips and trip-related expenditures are Valley, Fremont, Ada, Bonner and Kootenai counties.

Further, we estimate that Statewide, 4,062 jobs are attributed to snowmobiling; $108.2 million in labor income; $160.7 million in interest income, rental income, and profit; and $157.3 million in sales.

Finally, given that registrations from Minnesota and North Dakota are not sampled in this study, we are not capturing the economic significance and impact of spending from those States. Our estimates reflect the economic significance and impact of snowmobiling from Idaho and neighboring States residents and thus, constitute a lower bound of economic significance and impact of snowmobiling.

Section 6: References

Black, G. et al. (2016) Economic impact of powerboating in Idaho. Boise, ID: Idaho Department of Parks and Recreation.

Leontief, W. W. (1986). *Input-Output Economics.* 2nd ed., New York: Oxford University Press.

Weisbrod, G., Weisbrod, B. (1997). Measuring economic impacts of projects and programs, Economic Development Research Group, Boston, MA.

Appendix A: Economic Impacts Survey and Cover Letter -- Recreational Snowmobiling in Idaho

<<INDIVIDUAL SURVEY IDENTIFIER HERE, e.g. 45001>>

Economic Impact Survey: Recreational Snowmobiling in Idaho

Please answer the following questions considering only the period of the last 12 months
Note: You can also answer these questions online at http://tinyurl.com/ID-Snowmobiling by entering the Survey Identifier Number found at the top of this survey

For any / all snowmobiles you own, please answer the following questions:

1. Did you use any of your snowmobiles for recreation in Idaho in the last 12 months? ☐ Yes ☐ No ***If NO please skip to Section III (question #15).***

SECTION I: DAY TRIPS OVER THE LAST 12 MONTHS

2. What is the total number of **day trips** (daily outings) that you have taken with your snowmobile(s) in Idaho during the **last twelve months?** _____ (An individual **daily** outing with your snowmobile is defined as some amount of time -- without spending a night-- that you spend using your snowmobile within a day.)
3. For the **day trips** (outings) you made with your snowmobile(s) during the last 12 months, please list the Idaho counties in which you recreated with your snowmobile, and the month the outing took place.

Outings	***County or Counties Visited (city or town if county unknown)***	***Month of Outing***
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

4. For the day trips (outings) identified above, what was the percent of the trips for which snowmobiling was the primary purpose? _____ Percent

From your list of recreational day trip outings with a snowmobile, please select a **single location** that you visited most frequently on a day trip (daily outing), and answer questions 5-7 below:

5. Identify the county, the nearest town, and the recreation site name of this location.

   County: _____ Town: _____ Site: _____

6. For most typical day trips with a snowmobile at this location, how many adults and children, including yourself, participated? _____Adults _____ Children (17 and under)

7. Please estimate the total amount you spent during your typical recreational snowmobile outing identified above using the following categories. If you have not made any purchases for the specified categories, please enter zero ($0).

Item	*Amount Spent in Home County*	*Amount Spent in Destination County (city or town if county unknown)*
Food and beverage in restaurants	$	$
Food and beverage in stores	$	$
Round trip fuel for vehicle / fuel for snowmobile	$	$
All other purchases	$	$

SECTION II: OVERNIGHT TRIPS OVER THE LAST 12 MONTHS

8. What is the total number of **overnight trips** (overnight outings) that you have taken with your snowmobile(s) in Idaho during the **last twelve months?** _____ (A single overnight outing with your snowmobile is defined as some amount of time – from at least one night to a number of days – that you use your snowmobile.)
9. For the **overnight trips** (outings) you made with your snowmobile(s) during the last 12 months, please list the Idaho counties in which you recreated with your snowmobile, the month the outing took place, and the number of nights spent on each outing.

Outings	*County or Counties Visited (city or town if county unknown)*	*Month of Outing*	*Number of Nights*
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

10. For the overnight trips (outings) identified in question #9, what was the percent of the trips for which snowmobiling was the primary purpose? _____ Percent

From your list of overnight recreational outings with a snowmobile in question #9, please select a **single location** that you visited most frequently (or spent the greatest amount of time away from your primary place of residence) on an overnight trip (outing), and answer questions 11-14 below:

11. Identify the county, the nearest town, and the recreation site name of this location

County: _____ Town: _____ Site: _____

12. How many nights did you typically spend during an overnight recreational snowmobile outing at this location? _____

13. How many adults and children, including yourself, participated in the recreational overnight trip with a snowmobile at this location? _____Adults _____ Children (17 and under)

14. Please estimate the total amount of money you spent during your recreational snowmobile outing identified above using the following categories. If you have not made any purchases for the specified categories, please enter zero ($0).

Item	*Amount Spent in Home County*	*Amount Spent in Destination County (city or town if county unknown)*
Lodging (hotel, motel, cabin rental etc.)	$	$
Lodging campgrounds (private or public)	$	$
Food and beverage in restaurants	$	$
Food and beverage in stores	$	$
Round trip fuel for vehicle and fuel for snowmobile	$	$
Other retail purchases of equipment & supplies	$	$
All other purchases	$	$

SECTION III: HOUSEHOLD EXPENDITURES OVER THE LAST 12 MONTHS

15. How much did your household spend on the following items related to owning a snowmobile during the **last twelve months?** Please estimate to the best of your ability. If you have not made any purchases for the specified categories, please enter zero ($0).

Item	*Total Expenditures last 12 months*	*County, City or Town where purchased*
New or used snowmobile	$	
Tow vehicle and trailer	$	
Equipment (e.g. tools, electronics, helmet etc.)	$	
Maintenance & Repair (e.g. servicing, parts etc.)	$	
Modifications and upgrades (e.g. new motor)	$	
Storage dues	$	
All other purchases	$	

Idaho Department of Parks and Recreation

PO Box 83720
5657 Warm Springs Avenue
Boise, Idaho 83720-0065

Date

«First_Name» «Middle_Initial» «Last_Name»
«Address»
«City» «State» «Zipcode»

Dear Snowmobile Registration Holder:

The Idaho Department of Parks and Recreation in conjunction with the Economics Department at Boise State University is conducting a survey of registered snowmobile users. This survey is for research purposes only and your participation is voluntary. Fully completed surveys will be eligible to enter to a drawing for ***five gift cards of $500 each at the outdoor sporting goods store, Cabela's*** at the completion of the surveying process. The drawing for gift cards will take place on July 21, 2016. Your participation in this survey will give us a better picture of snowmobile recreation activity and annual economic impact of snowmobile recreation in the state and in each county. As a registered Idaho snowmobile owner, you were randomly selected to participate in this survey.

Please take a few minutes to answer the questions in the attached survey questionnaire. After completing the questionnaire, return it by mail in the enclosed prepaid envelope. If you did not use your snowmobile for recreation in the last twelve months in Idaho, please complete only the applicable questions and return the survey.

The questionnaire has an identification number for the purposes of sorting responses and to identify the winners of the drawing for gift cards. After the gift cards are sent to winners of the drawing, all identifying information will be removed. All your responses will remain strictly confidential and will only be used for statistical purposes. Neither your name nor any other identifying information will be used with the data.

This survey has been approved by the Institutional Review Board at Boise State University. If you have questions about your rights as a survey participant, you may contact the Boise State University Institutional Review Board (IRB), which is concerned with the protection of volunteers in research projects. You may reach the board office between 8:00 AM and 5:00 PM, Monday through Friday, by calling (208) 426-5401 or by writing: Institutional Review Board, Office of Research Compliance, Boise State University, 1910 University Dr., Boise, ID 83725-1138.

Thank you for participating in this important survey. If any questions should arise regarding this survey, please contact the Zeynep Hansen at the Economics Department at Boise State University at 208-426-3314 or at zeynephansen@boisestate.edu.

Sincerely,

Troy Elmore

OHV Program Manager
Idaho Department of Parks and Recreation

(In conjunction with Boise State University Economics Department Research Team for the snowmobile study)
Enclosures: Survey, Return Envelope

Appendix B: An Explanation of How Estimates Were Made Using Data from the Survey

Day Trips

The objective is to calculate the total amount of spending on day trips in each spending category in each county. The final calculation is to multiply the average amount spent per trip by the total number of trips taken.

1. Tally the number of registered snowmobile owners by county
2. Tally the number of registered snowmobile owners that responded to the survey by county
3. Tally the number of survey respondents in each county that went on at least one-day trip from the home county to a destination county
4. Tally the total number of day trips taken by survey respondents from the home county to a destination county
5. Calculate the average number of day trips per survey respondent by dividing #4 by #2
6. Estimate the total number of day trips taken by the population of registered snowmobile owners for each county by multiplying the average number of day trips taken by each survey respondent, #5, by the number of registered snowmobile owners, #1.
7. From the survey, calculate the average amount spent on the "typical day trip" in each spending category
8. For each spending category, calculate the total amount spent by multiplying the average amount spent on a typical day trip by the total number of day trips taken. This is distributed across all counties from the home county to the destination county.

Overnight Trips

The objective is to calculate the total amount of spending on overnight trips in each spending category in each county. The final calculation is to multiply the average amount spent per night by the total number of nights spent on overnight trips.

Much the same way as with day trips, but not exactly:

1. Estimate the total number of nights spent on overnight trips. This is number of nights not the number of trips.
2. The average amount spent per night in each spending category is calculated
3. The two are multiplied to get the total amount spent by the population of snowmobile registrants in each spending category in each county.

Appendix C: Expanded analysis based on the August 1st 2016 population of registered snowmobiles

Our research team processed the 41,689 entries for registered snowmobiles existing in the IDPR database by August 1st, 2016. The team eliminated 4,488 registrations with addresses not in Idaho or the nearby states of Washington, Wyoming, Utah, Montana, Oregon, and California, arriving at 37,201 registrations. Then, the research team removed all businesses from the dataset, thereby reducing the registered snowmobile population to 35,203. Similarly to the process we followed for the original population of registrations, we reduced the dataset to the household level, arriving at a total of 20,752 households. In order to make these registration data suitable for analysis, the research team corrected the dataset for inconsistencies in spelling and other minor typographical errors in the names of the towns, cities, and counties.

We repeated the analysis of this report for the larger registration dataset and present the main results below. For comparison purposes with our main analysis, we recreate Tables 3, 6 and 7 with the August 2016 population of registrations. Table 3A shows that the 20,752 households that own one or more snowmobiles spent approximately a total of $223.4 million. The specific categories of spending include snowmobiles and related equipment ($61.6 million); maintenance and repair ($5.5 million); fuel ($48.5 million); lodging (including camping ($19.4 million); food and Beverages ($51.2 million); storage ($0.46 million); and other retail ($36.7 million).

Table 6A shows that, due to snowmobiling, the State sustained an estimated 4,521 total jobs; generated $118.3 million in labor income; generated $175 million in value added (labor income, interest, rent, and profit); and generated $173.5 million in total sales of locally produced goods and services. Table 7A shows the county-specific estimates of the amount of increased employment, income, and value added stemming from each additional direct job in the snowmobiling industry.

Table 3A. Spending on Snowmobiling Related Products and Services by County in Which the Money was Spent (in dollars) [August 1 2016 registration data]

Destination County	Snowmobiles, Trailers, Equip. & Parts	Maintenance and Repair	Storage	Snowmobile and Vehicle Fuel	Campsites / Overnight Lodging	Food, Beverages, Restaurants	Other Retail	Total
Ada	14,095,635	811,012	145,959	3,221,072	118,069	2,897,586	2,760,675	24,050,007
Adams	120,895	72,000	1,080	807,388	220,666	1,020,846	969,146	3,212,021
Bannock	3,125,617	323,114	23,227	1,158,959	272,798	940,377	2,329,326	8,173,418
Bear Lake	255,932	63,404	0	799,890	238,613	482,793	415,107	2,255,740
Benewah	298,871	52,955	0	637,785	66,454	611,057	748,415	2,415,538
Bingham	2,275,135	154,880	1,803	1,076,106	0	639,658	373,980	4,521,562
Blaine	1,953,438	163,801	2,953	967,250	208,880	1,402,677	2,612,914	7,311,913
Boise	93,072	34,712	4,378	523,778	107,386	563,741	226,968	1,554,035
Bonner	1,154,795	183,390	13,235	2,264,960	703,086	2,569,858	1,122,615	8,011,938
Bonneville	4,905,587	508,727	26,212	2,387,753	53,652	1,573,445	1,376,685	10,832,061
Boundary	134,844	24,043	0	509,364	18,290	472,971	145,335	1,304,847
Butte	36,183	7,875	0	129,406	0	113,690	26,596	313,750
Camas	105,766	34,605	0	362,808	61,131	582,697	238,773	1,385,781
Canyon	4,006,638	226,955	1,242	1,392,276	239,480	1,139,366	979,032	7,984,988
Caribou	219,740	83,970	0	835,023	27,204	630,172	214,210	2,010,319
Cassia	1,112,205	83,030	6,038	708,953	38,204	736,086	1,012,305	3,696,820
Clark	5,900	0	0	111,218	0	78,264	7,061	202,444
Clearwater	96,210	16,464	630	497,186	93,128	673,836	309,124	1,686,577
Custer	49,791	42,261	2,931	869,776	553,673	977,454	228,399	2,724,286
Elmore	515,049	139,648	12,202	1,492,882	909,486	1,152,191	729,968	4,951,425
Franklin	1,461,739	95,065	0	1,346,913	36,626	816,336	316,338	4,073,017
Fremont	1,323,480	181,141	17,051	6,931,317	7,165,856	9,429,215	4,086,083	29,134,144
Gem	79,509	18,635	0	111,032	0	63,882	24,762	297,819
Gooding	113,195	84,347	0	227,612	0	180,270	183,858	789,282
Idaho	1,056,485	143,712	9,980	619,667	79,729	1,356,620	589,571	3,855,765
Jefferson	1,247,353	185,271	17,886	589,423	16,399	371,478	316,021	2,743,831
Jerome	862,801	68,961	1,245	262,057	0	215,406	276,274	1,686,744
Kootenai	5,572,702	412,649	59,485	2,375,955	207,977	1,340,659	1,771,203	11,740,629
Latah	156,166	44,661	911	521,718	69,220	387,413	363,098	1,543,187
Lemhi	324,331	22,039	0	88,754	0	73,348	43,642	552,114
Lewis	46,852	12,164	0	87,442	0	65,881	66,709	279,048
Lincoln	71,050	17,912	926	75,108	0	24,151	44,408	233,556
Madison	3,772,966	154,688	23,320	726,647	32,813	537,870	404,598	5,652,902
Minidoka	669,123	72,616	2,354	491,935	109,082	489,745	159,290	1,994,145
Nez Perce	1,044,973	123,281	182	843,763	50,236	615,708	629,526	3,307,669
Oneida	187,040	0	0	13,859	0	32,623	6,934	240,455
Owyhee	27,506	7,063	0	12,083	0	10,212	68,773	125,636
Payette	1,383,288	40,533	15,200	303,882	5,818	249,524	244,259	2,242,505
Power	161,507	39,990	1,240	185,032	0	166,931	56,470	611,170
Shoshone	514,972	60,196	2,791	1,118,002	153,508	1,292,770	1,572,008	4,714,247
Teton	690,501	79,660	14,125	512,717	64,866	704,886	217,139	2,283,894
Twin Falls	4,623,189	365,659	15,701	1,306,418	76,481	982,669	1,031,618	8,401,735
Valley	1,471,826	221,602	32,128	8,868,242	7,424,854	12,461,186	7,362,619	37,842,457
Washington	191,822	12,377	0	106,044	0	102,004	10,121	422,369
Totals	61,615,678	5,491,069	456,414	48,479,455	19,423,666	51,229,551	36,671,957	223,367,790

Table 6A. Impacts of Snowmobiling Activities by Destination County [August 1 2016 registration data]

	Direct Employment	Total Employment	Total Labor Income	Total Value Added	Output of Locally Produced Goods and Services
Ada	292	392	$16,786,979	$24,862,522	$20,913,213
Adams	68	74	$1,546,051	$2,146,017	$2,125,744
Bannock	147	176	$4,187,638	$6,276,840	$5,975,815
Bear Lake	43	47	$988,341	$1,475,401	$1,335,100
Benewah	49	54	$1,226,897	$1,682,887	$1,410,524
Bingham	65	73	$2,033,667	$3,134,695	$1,954,464
Blaine	181	194	$2,973,867	$4,368,298	$4,380,507
Boise	33	36	$706,554	$966,581	$994,378
Bonner	161	192	$4,641,027	$6,829,992	$7,962,234
Bonneville	147	187	$6,787,294	$9,846,547	$8,148,427
Boundary	27	29	$582,100	$838,052	$815,580
Butte	6	6	$122,255	$176,973	$92,209
Camas	30	32	$246,333	$415,073	$735,081
Canyon	108	131	$4,239,764	$6,460,957	$4,910,783
Caribou	41	44	$750,431	$1,118,028	$939,537
Cassia	67	76	$2,038,962	$2,832,256	$2,384,841
Clark	2	2	$37,738	$53,942	$55,217
Clearwater	35	40	$873,804	$1,182,876	$1,357,850
Custer	53	61	$1,239,283	$1,842,469	$2,500,756
Elmore	88	99	$2,300,769	$3,272,851	$3,571,184
Franklin	76	84	$1,533,306	$2,486,509	$1,962,768
Fremont	605	681	$12,755,044	$19,322,292	$26,441,393
Gem	5	5	$130,229	$198,952	$130,612
Gooding	16	16	$326,487	$496,090	$393,013
Idaho	76	86	$1,866,557	$2,703,531	$2,697,441
Jefferson	39	44	$1,226,074	$1,864,259	$1,304,512
Jerome	22	25	$934,203	$1,334,462	$836,342
Kootenai	157	195	$6,660,755	$9,971,335	$7,949,533
Latah	28	33	$790,942	$1,131,012	$1,069,455
Lemhi	8	9	$252,422	$394,190	$261,956
Lewis	5	6	$111,558	$167,509	$134,982
Lincoln	4	4	$96,607	$142,412	$94,544
Madison	78	91	$2,705,103	$4,410,792	$2,911,458
Minidoka	30	34	$896,694	$1,368,131	$1,060,937
Nez Perce	50	58	$1,843,857	$2,653,085	$2,114,218
Oneida	2	3	$103,759	$145,163	$87,288
Owyhee	3	3	$43,267	$70,581	$57,866
Payette	31	35	$957,323	$1,520,574	$1,079,287
Power	10	11	$269,306	$399,484	$254,005
Shoshone	99	111	$2,442,749	$3,446,420	$3,536,576
Teton	44	51	$1,416,454	$2,082,703	$2,157,583
Twin Falls	107	135	$4,834,473	$7,274,616	$5,593,425
Valley	721	851	$21,673,366	$31,425,354	$38,706,952
Washington	6	7	$177,717	$279,836	$166,503
Statewide	3,864	4,521	$118,358,007	$175,072,547	$173,566,091

Table 7A. Multiplier Effects of Snowmobiling Activities by County [August 1 2016 registration data]

	Total Employment	Total Labor Income	Total Value Added	Output of Locally Produced Goods and Services
Ada	1.34	$57,456	$85,095	$71,578
Adams	1.10	$22,843	$31,707	$31,407
Bannock	1.20	$28,514	$42,740	$40,690
Bear Lake	1.11	$23,229	$34,677	$31,379
Benewah	1.09	$25,019	$34,318	$28,764
Bingham	1.12	$31,139	$47,998	$29,926
Blaine	1.07	$16,422	$24,122	$24,189
Boise	1.09	$21,501	$29,413	$30,259
Bonner	1.19	$28,810	$42,398	$49,427
Bonneville	1.27	$46,160	$66,965	$55,417
Boundary	1.09	$21,723	$31,275	$30,436
Butte	1.02	$21,407	$30,988	$16,146
Camas	1.04	$8,120	$13,682	$24,230
Canyon	1.22	$39,328	$59,932	$45,553
Caribou	1.05	$18,188	$27,098	$22,772
Cassia	1.14	$30,410	$42,242	$35,569
Clark	1.06	$18,565	$26,536	$27,163
Clearwater	1.13	$24,836	$33,621	$38,594
Custer	1.15	$23,469	$34,892	$47,358
Elmore	1.12	$26,157	$37,209	$40,600
Franklin	1.10	$20,190	$32,741	$25,845
Fremont	1.13	$21,091	$31,951	$43,722
Gem	1.11	$28,061	$42,869	$28,144
Gooding	1.05	$20,948	$31,830	$25,217
Idaho	1.14	$24,722	$35,807	$35,726
Jefferson	1.13	$31,420	$47,774	$33,430
Jerome	1.13	$43,047	$61,490	$38,537
Kootenai	1.24	$42,321	$63,355	$50,509
Latah	1.16	$27,927	$39,934	$37,760
Lemhi	1.15	$32,370	$50,550	$33,593
Lewis	1.08	$21,178	$31,799	$25,624
Lincoln	1.07	$24,043	$35,443	$23,530
Madison	1.17	$34,738	$56,642	$37,388
Minidoka	1.11	$29,431	$44,904	$34,822
Nez Perce	1.18	$37,159	$53,468	$42,608
Oneida	1.13	$44,477	$62,225	$37,417
Owyhee	1.07	$16,324	$26,630	$21,833
Payette	1.13	$30,652	$48,687	$34,558
Power	1.05	$26,745	$39,674	$25,226
Shoshone	1.12	$24,563	$34,655	$35,561
Teton	1.16	$32,293	$47,483	$49,190
Twin Falls	1.26	$45,085	$67,841	$52,162
Valley	1.18	$30,054	$43,577	$53,674
Washington	1.11	$30,374	$47,828	$28,458
Statewide	1.17	$30,628	$45,304	$44,914