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ECONOMIC IMPACT OF SNOWMOBILING IN UTAH

by

Ikuko Fujisaki

A thesis submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF SCIENCE

in

Forestry

Approved:

UTAH STATE UNIVERSITY
Logan, Utah

2001

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ABSTRACT

Economic Impact of Snowmobiling in Utah

by

Ikuko Fujisaki, Master of Science

Utah State University, 2001

Major Professor: Dr. Dale J. Blahna
Department: Forest Resources

The purpose of this study was to estimate statewide and local economic impact resulting from snowmobiling activities in Utah to gain a better understanding of preferences and opinions of Utah snowmobilers. The results will provide valuable information for snowmobiling management.

The survey instrument was designed to describe trip behavior, snowmobiling-related trip and annual expenditures, level of satisfaction with Utah snowmobiling opportunities, and demographics. A telephone survey was conducted with randomly selected households with registered snowmobiles during the period from April to June 2000. A 54.5% response rate yielded 373 usable completed questionnaires for data analysis.

For economic impact analysis, an input-output model was applied using IMPLAN™ software using the Utah Cross Industrial Matrix in 1999. From the survey, statewide trip and annual snowmobiling associated expenditures data were estimated. Then output, value added, employment, income, and tax impacts were estimated using IMPLAN. For trip characteristics, level of satisfaction, and demographics, analyses were made using descriptive statistics for quantitative data and content analysis for qualitative data. The results indicate that average household per trip and annual expenditures were $126 and $2,932, respectively. About $53 million of reported expenditures created $34 million in local output impact. Total output impact was

largest in the Wasatch Front and Mountain Lands planning districts and smallest in the Southeast and Uintah Basin. These results also indicate that the most popular snowmobiling area, Hardware Ranch, Monte Cristo, and Logan Canyon area in the Bear River planning district, had not necessarily received a large economic gain. The survey participants were moderately satisfied with snowmobiling facilities and services in Utah. However, there were still needed improvements in facilities and services, especially parking space availability and trail grooming.

(115 pages)

ACKNOWLEDGMENTS

There are many individuals to whom I wish to express appreciation for their contribution to complete this research work and thesis. First, I would like to thank my advisor, Dr. Dale Blahna, for being patient and giving me extra consideration. From the beginning, he was responsible for arranging the entire research project. I would also wish to thank the other members of my committee. Dr. Jonn Keith laid the groundwork for my understanding of an economic model and gave of his time in calculating economic analysis. Dr. Nichole Haynes was responsible for completing the report to the state.

In addition to my committee members, I wish to express appreciation to several individuals. Very special thanks go to Doug Reiter who coordinated this survey research from the beginning and gave me ideas and guidance. I am very grateful to interviewers Dave Jeppeson, Jesse Evans, Matthew Blahna, Sarah Nelson, and Todd Tibbets for their intensive work. I would like to express special thanks to Claudia Anderson for her extensive proofreading of my writing, which enabled me to complete this thesis.

This study was funded by the Utah Department of Natural Resources, Division of Parks and Recreation. I am grateful to Rosalind Bahr, Jamie Dalton, and Bill Townsend in providing references and information regarding my thesis work.

Ikuko Fujisaki

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CHAPTER I

INTRODUCTION

Study Purpose

Since the late 1960s, snowmobiling has been a rapid growth sport in the United States (Lund & Wiliams, 1974). The snowmobiling industry has developed nationwide, and facilities, rules, and education programs have been developed. Snowmobiling has also become a common winter recreation activity in the western U.S. According to the Utah Department of Natural Resources, Division of Parks and Recreation, more than 32,000 snowmobiles were registered for use in Utah during the 1999–2000 season. Snowmobiling may contribute significantly to the state's economy. Despite the economical importance, no economic analysis of snowmobiling has been conducted in Utah in recent years.

The fundamental purpose of this study was to investigate the economic impact of snowmobiling on the state of Utah. An input-output (I-O) model was used to estimate the state's economic impact from snowmobiling. This study also examined trip behavior and satisfaction levels of snowmobilers in Utah. This information could aid regional planners to address needs and demands of snowmobilers in Utah.

Objectives of the Study

This study addressed the following three objectives:

1. Estimate the statewide and regional economic impact of snowmobiling in Utah using an I-O model.

2. Examine levels of satisfaction with snowmobiling in Utah and opinions about snowmobile-related issues.

3. Examine demographic characteristics of snowmobilers in Utah.

CHAPTER II

LITERATURE REVIEW

Economics of Recreation

The economic impact resulting from outdoor recreation is a concern for communities and regional governments, as many regional economies rely on the business generated by tourists and vacationers (Clawson & Knetsch, 1966; Driver, Brown, & Peterson, 1999). Tourism and recreation development are considered attractive investments for a region. Previous recreation studies found evidence of significant regional economic benefits of recreation. At the same time, these studies developed theories and methodologies for assessing recreation economics.

According to Walsh (1986), two kinds of economic benefit, primary benefits to individual participants, and secondary regional economic impacts, should be clearly distinguished to avoid confusion. In the former case, the word "benefit" is defined as the economic value of the psychological satisfaction individual participants derived from recreation activities. One of the most commonly used measures of participant benefit is willingness to pay, which uses dollar values to measure psychological satisfaction. Willingness to pay could be used as a management tool to determine how to use non-market resources in an economically efficient way (Swanson, Thomas, & Donnelly, 1989). It measures economic benefits to society due to a particular use of a resource. This method is also used for benefit-cost analysis.

Regional economic impact, which can be categorized in expenditure values, addresses the monetary flow in a specific region due to a particular resource use (Swanson, Thomas, & Donnelly, 1989). It assesses gains in the area where the expenditures are made (Walsh, 1986). The method expresses the economic impact in terms of changes in final demand. Four common approaches for estimating regional economic impact are: (1) "expenditures or direct outlay" in recreational activities; (2) tax impacts obtained by the local area; (3) percentage increase in personal income, GNP or other economic attributes; and (4) direct and indirect impacts, which measure the total

effect of expenditures on a specific recreational activity (Kundson, 1984). The indicators that are commonly used for this method include changes in business output or sales, employment, net income, tax revenues, and government spending. Generally in recreational studies, these are estimated by expenditures paid by recreationists for travel, accommodations, and equipment. The underlying implication is that expenditures of individual recreationists become secondary gains to the regional economy. Because creating job opportunities, raising incomes, and tax revenues are common concerns of local communities, economic impact analysis has been used in various fields of resource management.

Three categories of economic models used for economic impact analysis are economic base models, econometric models, and I-O models (Pleeter, 1977). Base models examine export industries, which cause monetary flow in the local economy and local service industries. Econometric models attempt to describe the structure of a local economy by multiple-equation systems. These models also forecast income, employment, and output. I-O models focus on a framework of "regional accounts" describing economic transactions between the region and the outside world and within the region. It involves multiplier ratios that sum up the relation between an initial increase in demand and the ultimate effect on regional income or employment. The I-O model is a frequently used method for economic impact studies because of the relatively simple procedure and availability of data. There are two challenges to estimating economic impacts in recreation using an I-O model. One is collecting reliable expenditure and visitor data. The other is conducting an appropriate economic impact analyses.

In 1966, Clawson and Knetsch predicted that increases in population, leisure time, and income would increase the future demand in the variety and quality of recreation opportunities. Economic development in the U.S. has highly influenced recreational participation in the three ways: more discretionary time due to the increased productivity, expanded recreational options due to the increased discretionary income,

and increased production of equipment and facilities due to technological advances (Cordes & Ibrahim, 1999).

Presently, the importance of economic benefits is generally realized as well as psychological satisfaction. Cordell (1999) defined four kinds of benefits of outdoor recreation: "a sound environment, healthy rural economies, strengthened families, and better personal health." According to the U.S. Bureau of the Census, the estimated nationwide recreational expenditure was $116.3 billion in 1985 (Cordes & Ibrahim, 1999). This increased to $282.6 billion in 1990, and to $401.7 billion in 1995. They also reported that number of recreational travel days increased from 301.2 million in 1985 to 361.1 million in 1990, and to 413 million in 1995. Driver, Brown and Peterson (1991) postulated that the importance of outdoor recreation for Americans was changing dramatically. The growing importance of recreation as well as the number of recreationists will require more investment in maintenance and facility improvements (Cordell, 1999). Recreation economic studies are necessary for efficient regional planning and development.

Input-Output (I-O) Economics

The I-O model is a widely used economic model for regional economic analysis because it provides a detailed description of a regional economy. In I-O analysis, the economy is classified into sectors, and the flow of products (including goods and services) is registered into the related sectors (Yan, 1969). The relations between the products and sectors are called I-O relations. The transactions of I-O relations are summarized in an I-O table or interindustry transaction matrix. Leontief (1966) first constructed an I-O table in the early 1930s. The I-O table is a matrix consisting of the rows of figures that indicate the distribution of the output of each sector among the others; the columns indicate how the inputs are obtained from the other sectors. Leontief (1966, p. 5) expressed this matrix as "the fabric of our economy, woven together by the flow of trade which ultimately links each branch and industry to all others." The technical coefficient matrix ('A' matrix) is obtained from the table by

dividing each column entry by the column's total. It shows the additional purchase of inputs from each sector given for a dollar increase in output in a particular industry.

Suppose "i" is one local industrial sector while "j" is another. The demand for sector i's product from sector j is a_{ij}, which is the percentage of $1 of output of sector j purchased from sector i. Then suppose X_j is the total output of sector j, sector i's sales to all sectors is:

$$a_{i1}X_1 + a_{i2}X_2 + \cdots\cdots a_{in}X_n$$

Sector i also sells to final demand (FD_i). So sector i's total output (X_i) is:

$$a_{i1}X_1 + a_{i2}X_2 + \cdots\cdots a_{in}X_n + FD_i$$

Or,

$$\sum_j a_{ij}X_j + FD_i$$

For all sectors:

$$\sum_i \sum_j a_{ij}X_j + \sum_i FD_i = \sum_i X_i$$

This is expressed with the matrix equation:

$$AX + FD = X$$

Or,

$$FD = X\text{-}AX = X(I\text{-}A) = (I\text{-}A)^{\textcircled{T}}X$$

Therefore,

$$X=(I\text{-}A)^{T\text{-}1}FD$$

The $(I\text{-}A)^{T\text{-}1}$ matrix gives the total output in each sector for every $1 change in final demand, which is the sum of direct and indirect effects. The multiplier could be obtained by "$\Delta X/\Delta FD$" which is the sum of direct and indirect effect divided by change in final demand.

Use of IMPLAN™

In this study, IMPLAN™ was used as the analytical tool for the I-O economic model. IMPLAN™ is a microcomputer-based I-O system, which was developed by the U.S. Department of Agriculture Forest Service for economic analysis of states and

communities. IMPLAN™ can be used for either analytical or predictive estimates of economic impacts. It has been utilized to conduct various local area planning studies, project assessments, and budget analyses, as well as regional economic impact analysis (Kasal & Magleby, 1988).

Kasal and Magleby (1988) used IMPLAN™ for estimating economic impact evaluation of Resource Conservation and Development (RC&D) activity in the Nebraska Panhandle area during the 1971–1988 period. Economic impacts were indicated by changes in output calculated from public expenditures and private sector output effects. Specifically they are expressed by changes in income and earning, employment, and gross output in the region. The region has an agricultural-based economy and analysis with IMPLAN™ indicated that 133 out of 466 industrial sectors were within the region. Changes in output derived by the RC&D program ranged from $163,700 to $1.9 million, and the activity also created about 872 jobs during the study period. Kasal and Magleby (1988) described the effectiveness of using IMPLAN™ in deciding the extent or way the program or project generates income and jobs in the local economy.

IMPLAN™ has also been used extensively for the economic impact analysis of recreation. For example, a snowmobiling survey in Michigan (Stynes, Nelson, & Lynch, 1998) used IMPLAN™ as an analytical tool. Based on the expenditure data obtained by a mail survey to snowmobilers, the IMPLAN™ system provided the regional multipliers. In the study, the economic impacts of snowmobiling were estimated by multiplying the number of snowmobile days by average spending per snowmobile trip day by regional multipliers. The number of snowmobile days was indicated by the number of trail stickers sold during the season. The economic effects of snowmobiling were estimated for the state and five sub-state regions.

Using Surveys in Recreation Research

The sampling survey is a primary method for data collection in both natural and social sciences. It aims to estimate properties of a category of finite populations. In

social science studies, systematically selected people are used to represent a certain category of persons.

Sheskin (1985) described eight major steps of the survey sampling process: (1) selection of the survey method, (2) selection of the sample, (3) development of the questionnaire, (4) organization of a series of logistical issues, (5) development of procedures for computerizing the results, (6) implementation of a pilot study, (7) implementation of the main survey, and (8) data analysis and report writing.

Although mail and telephone surveys are the two most commonly used survey methods, it should be noted that both have some disadvantages (Dillman, 1978). Mail-in surveys typically result in a low response rate, especially for long questionnaires. Additionally, it is time consuming to mail surveys to all the sample subjects, and completed questionnaires may include unanswered questions. Telephone surveys are a more recent approach. One problem with the telephone survey is that not all of the potential sample subjects have a telephone. This method of survey may also produce low response rates because it is easy for respondents to hang up the phone and terminate the interviews. There are some limitations to telephone surveys such as long questions, questions with many response categories, and how to show diagrams and pictures.

Questionnaire length is also a factor in deciding between mail and telephone surveys. Compared to personal interviews, both mail and telephone surveys must be kept shorter. In a mail survey, if the questionnaire is more than 12 pages, it almost certainly affects the response rate. In telephone surveys, the average interviewing length recommended for leisure research study is 20 minutes. Dillman (1978) described a study, which used an approximately 20-minute telephone survey, and only 10 respondents out of 1,018 terminated before the completion of the interview. He suggested that the length does not seem to be a major problem in telephone surveys.

Warwick and Lininger (1975) said basic goals of questionnaire design is relevance and accuracy, which include obtaining relevant information for the survey purpose and collecting information with maximum reliability and validity. The exact

kinds of required data must be clearly defined to ensure relevance. There are four types of questions: fact questions, opinion and attitude questions, information questions, and self-perception questions (Backstrom & Zhursh, 1963). Considerations for developing a questionnaire include appropriateness of the sample, questions, and expression of questions. These considerations increase accuracy.

Backstrom and Zhursh (1963) defined a good sample as one that: (1) provides ways to determine the number of respondents needed, (2) specifies the chance (probability) than any person was included in the sample, (3) enables us to estimate how much error results from interviewing a sample of people instead of interviewing all of them, and (4) lets us determine the degree of confidence that can be placed in population estimates made from the sample. If the sample meets these criteria, it is called a probability sample. Although there are always money and time restrictions in conducting a survey, adequate sample size and the inclusion of people who are representative of the community are two important requirements of the sampling survey.

Fowler (1984) discussed the importance of consistent data collection because wording of the questions may influence the answers of respondents, especially in interviews. According to him, three things must be noted to provide consistent data. The first is to make sure the researcher's side of the question and answer process is fully scripted, which helps respondents to answer easily. The second is to insure that the question has the same meaning for every respondent. The third thing is to insure that the kinds of answers that constitute an appropriate response to the question are communicated consistently to all respondents.

Fowler (1984) also discussed ethical issues in conducting survey research. According to him, a basic guideline is to make sure that no individual suffers any adverse consequences as a result of the survey. The guideline includes considerations about informing respondents, protecting respondents' confidentiality, and providing benefits to respondents.

Economic Impact of Snowmobiling

The International Snowmobiling Manufacturing Association (ISMA, 2000, p. 1) reported that the economic benefit of snowmobiling includes "millions of dollars in tax revenues derived from snowmobile-related businesses; winter tourism spending which support local snowbelt economies; and local and provisional/state sales and gas tax revenues" as well as "jobs for tens of thousands of people to further stimulate the economy through additional expenditures on goods and services; and jobs which provide significant income tax revenues to provincial, state and federal treasuries and dramatically reduce unemployment and welfare payments." It was reported that 1.5 million snowmobiles were registered in the U.S. during the 1999–2000 season, and total expenditures by snowmobilers on the sport is over $6 billion each year. The number of snowmobile sales in the U.S. increased from 81,946 in 1997 to 170,325, although it was decreased about 15% from 1997 to 1999 (Figure 1). The 1999 sales were worth $882.7 million (Figure 2).

Bowker, English, and Cordell (1999, p. 328) projected future participation trends in recreational activities in the four regions in the U.S. They reported that snowmobiling accounted for "approximately 65.8 million days and 38.6 million primary-purpose trips in 1995." Number of days and primary-purpose snowmobiling trips were projected to increase by substantial amounts in all four regions (Table 1). As long as household income continues to increase, popularity of snowmobiling will also continue to increase. According to the projection, over 85% of participants were in the North and Rocky Mountain regions. Even though the projected increase in snowmobiling days, trips, and participation in the Rocky Mountain region was small (28% in days, 0.76% in trips, and 36% in participation) compared to the North, South, and Pacific regions, their projection suggests significant economic contribution of snowmobile activities during the next half century.

Several states including Maine, Michigan, New Hampshire, New York, Vermont and Wyoming conducted surveys of the economic impact of snowmobiling during 1990s.

Figure 1
Snowmobile Sales by Units in the U.S. (Source: ISMA 2000)

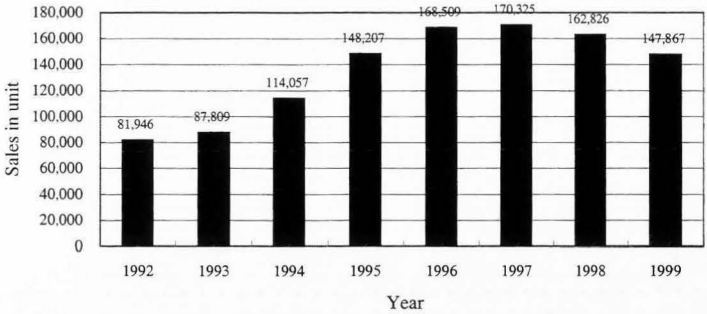

Figure 2
Snowmobile Sales in Nominal Dollars in the U.S. (Source: ISMA 2000)

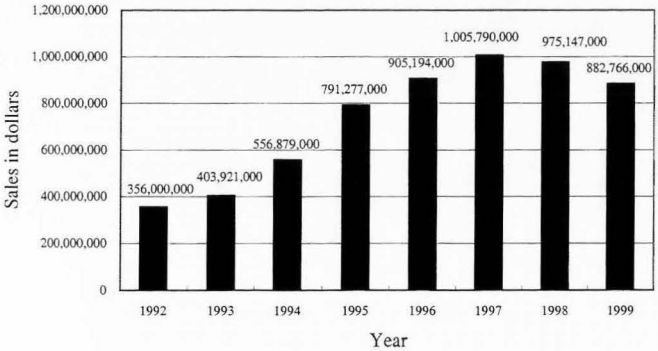

Table 1
Baseline Estimates and Projected Index of Change in Days, Trips, and Participation in Snowmobiling by Region and Decade

		Projection Index						
Unit	**Region**	**1995**	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**
Days	North	51.10	1.00	1.18	1.42	1.68	1.92	2.21
	South	2.30	1.04	1.13	1.22	1.37	1.61	1.98
	Rocky Mountain	6.70	0.49	1.06	1.02	1.08	1.15	1.28
	Pacific	5.40	1.02	1.36	1.77	2.20	2.54	2.82
	National	65.80	1.00	1.14	1.32	1.53	1.74	1.99
Trips	North	28.10	1.00	1.15	1.34	1.54	1.75	2.06
	South	1.20	1.07	1.17	1.31	1.52	1.84	2.36
	Rocky Mountain	4.30	1.04	1.11	1.23	1.37	1.54	1.76
	Pacific	4.90	1.16	1.58	2.31	3.21	3.47	4.86
	National	38.60	1.02	1.16	1.35	1.56	1.77	2.10
Participation	North	4.90	0.98	1.00	1.05	1.08	1.13	1.22
	South	0.80	1.03	1.13	1.25	1.40	1.58	1.82
	Rocky Mountain	0.80	1.02	1.06	1.10	1.16	1.25	1.36
	Pacific	0.70	1.09	1.42	1.54	2.33	2.91	3.60
	National	7.10	1.00	1.04	1.09	1.18	1.27	1.40

(Source: Bowker, English, & Cordell 1999)

1996 Maine Survey

The 1996 Maine survey (Reiling, 1996) addressed three goals: (1) to estimate economic impact of snowmobiling on the state economy, (2) to find riding habits, opinions, and preferences of current participants, and (3) to determine factors to attract people from out of the state to increase economic benefits. There was a total of 76,477 snowmobile registrations in Maine during the 1995–1996 season, including approximately 10% from out of the state. A mail survey was conducted based on a stratified sample of Maine residents and nonresidents. Use of Total Design Method (Dillman, 1978) resulted in a high response rate (68.7%) for their mail survey. Table 2 shows the summary of estimated economic impact from this study (Reiling, 1996). Nonresidents' registration was nearly 10% of the total number of the registration. However, nonresidents' trip expenses were more than twice the amount of residents on trip expenses.

The total expenditure (direct impact) in Maine during the 1995–1996 season was $152.5 million, and the estimated total direct and indirect economic impact associated with snowmobiling during the season was $226 million. The authors described that these were conservative estimates because the survey excluded some types of expenditures not necessarily specifically related to snowmobiling activities such as second homes and tow vehicles. The study was updated for the 1997–1998 season because it was believed that the impact on the economy had continued to grow. The updated total impact was $35 million higher than the 1996 survey result.

1998 Michigan Survey

Stynes, Nelson, and Lynch (1998) reported on a comprehensive snowmobiling survey including spending and economic impact in Michigan. Also, a descriptive survey including snowmobiler's attitudes about law enforcement and other policy issues was conducted simultaneously. The survey was conducted using households with one or more trail permits as the analysis unit. Spending patterns and flows of money in the

state of Michigan resulting from snowmobiling were estimated. Nonrecreational snowmobile usage was excluded. IMPLAN™ was used to determine multipliers.

The estimated equipment and trip-related economic impact was $321 million in sales, $187 million in income, and over 6,400 jobs. Snowmobiling associated spending was about 2% of total tourism related spending ($6.8 billion) in Michigan in the 1995–1996 season. Snowmobile days of use were broken down by origin of the snowmobilers and by three types of outings: "day trips of less than 100 miles, day trips of 100 miles or more, and overnight trips." They estimated origin-destination patterns of snowmobile activity in Michigan and regional analysis including estimates of activity, spending, and economic impacts using these breakdowns. The result showed that snowmobile travel patterns caused considerable income redistribution in the state.

Table 2
Maine Survey[1]

Characteristic	Resident	Nonresident	Total
Number of registered snowmobiles	69,853	6,620	76,473
Household trip expenses (per snowmobile)	424	877	-
Household annual expenses ($1,000)	135,495	12,088	147,583
Total impact (in $ million)	-	-	226
Total impact (in $ million) (97-98 survey)	-	-	261
Full time jobs created (97-98 survey)	-	-	3,100

(Source: Reiling, 1996 and 1998)

Table 3
Michigan Survey

Characteristic	Resident	Nonresident	Total
Snowmobile permits	133,057	78,943	212,000
Total snowmobile days	1,978,224	432,281	2,410,506
Total household trip related expenses ($)	1,780.00	1,340.00	1,642.00
Total household annual expenses ($)	3,787.00	4,547.00	4,075.00
Total effects in sales ($ millions)	-	-	321
Total effects in income ($ millions)	-	-	187
Total effects in jobs	-	-	6,455

(Source: Stynes, Nelson, & Lynch, 1998)

[1] The table shows the result of 1995-1996 survey unless otherwise mentioned.

1996 New Hampshire Survey

A New Hampshire survey was conducted for the 1995–1996 snowmobiling season (Robertson, 1996). The primary purpose of the survey was to allow the New Hampshire Snowmobile Association to assess the needs and concerns of snowmobilers. Specifically the survey proposed to estimate: (1) the economic impact of snowmobiling, (2) total state revenue due to snowmobiling, (3) total dollar value of volunteer activities and fiscal investment of snowmobile clubs in New Hampshire, and (4) the demographics, management, and development preferences of snowmobilers.

In New Hampshire nonresident registrations were more than 20% of the total registration (Table 4). The total trip and annual expenditure was $118.3 million. Of this, residents spent $95.7 million (81.0%), and $22.5 million (19.0%) was spent by nonresidents. To estimate total direct and secondary impact, the New Hampshire's Office of Travel and Tourism Development multiplier (1.97) and the Ski New Hampshire multiplier (2.38) were applied. To estimate the number of jobs created, an employment multiplier, 0.0000393 (39.3 jobs for every $1 million spent), was applied. One unique characteristic of the New Hampshire study was that volunteer activities were converted to dollar value by applying a value of $10 per hour. A total of 84,890 volunteer hours was regarded as equivalent to $848,900.

Table 4
New Hampshire Survey

Characteristic	Resident	Nonresident	Total
Number of registrants	-	-	38,385
Projected population	33,946	10,433	44,379
Total trip expenditures on non-durable goods ($ million)	26	15	41
Total annual expenditures on durable goods ($ million)	69	7	76
Total direct and secondary impact ($)	-	-	233-367
Employment impact	3764	886	4,650

(Source: Robertson, 1996)

1998 New York Survey

Merwin Rural Services Institute (1998) conducted a New York snowmobiling survey in 1998. The 3,000 sample subjects were selected from 59,000 households with registered snowmobiles, and 445 surveys were completed (15% response rate). Among the respondents, 88.7% were New York residents. A snowmobile dealer and snowmobile club survey were also conducted simultaneously. Table 5 shows the estimated impact from these surveys. A multiplier of 2.0 was applied and total economic impact was estimated at $476.2 million.

1995 Vermont Survey

McElvancy (1995) conducted a telephone survey with members of the Vermont Association of Snow Travelers Inc. (VAST) to estimate economic impact of snowmobiling in Vermont (Table 6). Vermont residents and nonresidents were stratified and 397 surveys were completed. In Vermont, a fairly large proportion of snowmobile registration was to nonresident snowmobilers (39.3%). The multiplier estimated by the International Tourism Council (2.0) was applied and the estimated economic impact was $165.3 million.

Wyoming Survey in 1995

A Wyoming survey was conducted for the 1993–1995 snowmobiling season (Taylor, 1995). In contrast to the other state results, the number of snowmobile days of nonresidents represents over 50% of total snowmobile days, even though lower percent of registered snowmobiles were owned by nonresidents. Both total trip and annual expenditure by nonresidents are larger than those of residents. This was probably because nonresidents take long trips on average. Multiplier effects were calculated only for nonresident expenditures to address only net gain by the state's economy. It was estimated that nonresident snowmobilers generated $189.4 million in economic activity, $4.0 million in personal income, 3,000 new jobs, and $4.7 million sales tax (Table 7).

Because each state applied different sampling and analysis procedures, the

Table 5
New York Survey

Characteristic	Result
Number of registration in 1996-97 season	103,000
Direct spenditng by snowmobile households (million $)	118.0
Total revenue of snowmobile dealers (million $)	117.0
Total revenue of snowmobile clubs (million $)	3.1
Total direct spending in the snowmobile industry (million $)	238.1
Total economic impact (million $)	476.2

(Source: Mervin Rural Service Institute, 1998)

Table 6
Vermont Survey

Characteristic	Result
Number of registrants	2,800
Direct economic impact factors ($)	80,089,821.00
Indirect economic impact factors ($)	2,536,563.00
Total estimated economic impact ($)	165,252,770.00

(Source: McElvancy, 1995)

Table 7
Wyoming Survey

Characteristic	Resident	Nonresident	Total
Number of snowmobile registration	6,722	1,078	7,800
Snowmobile days	687,809	766,332	1,454,141
Total trip expenditures ($)	37,691,933.00	70,104,051.00	107,795,984
Total fixed cost expenditures ($)	28,434,060.00	39,021,212.00	67,455,272
Total snowmobile expenditures ($)	66,125,993.00	109,125,263.00	175,251,256.00
Estimated total economic activity ($)	-	189,418,859.00	-
Estimated total personal income ($)	-	39,876,501.00	-
Estimated total employment	-	3,063	-
Estimated total sales tax ($)	-	4,720,385	-

(Source: Taylor, 1995)

results could not be compared directly. However, the results of these studies illustrated that snowmobiling activities have a large impact on state economies. The applied multipliers vary from 1.79 to 2.38.

Snowmobiling in Utah

A Utah snowmobiling study was completed in 1978 (Keith, Haws, Wenergren, & Fullerton, 1978). The study focused on the socioeconomic characteristics of snowmobilers, their reactions to snowmobiling sites and facilities, and important site characteristics for snowmobilers. Mail surveys were sent to 10% of the 25,484 registered snowmobile owners during the 1974–1975 season. The results showed that average age, years of schooling, and incomes of respondents exceeded Utah averages. The respondents used a total of 51 snowmobiling sites in Utah, and the average value of these sites was estimated to be $3 million. The two most significant factors that determined site quality were the size of snowmobiling area and slope of the terrain. Lack of parking and inadequate maintenance of facilities were the two most significant problems. Improved trail maintenance and more extensive mapping were other suggestions respondents made to improve site quality.

Recreation and the Economy of Utah

The Utah Division of Travel Development reported that tourism is one of Utah's top five economic activities (Utah Division of Travel Development, 2000). It was estimated that travelers spent $4.2 billion in Utah in 1999, which represents more than 7% of Utah's gross state product. Tourism and recreation activities generated $336 million in state and local tax revenues, and created 119,500 travel and tourism-related jobs (67,000 direct tourism and travel jobs and 52,500 indirect and induced tourism and travel jobs). This is equivalent to 11.4% of total nonagricultural employment in Utah.

According to Heaton, Hirsche, and Chadwick (1996), Utah's per capita expenditure on outdoor recreation was $11,029 in 1992, or 80 to 85% of the average for the U.S. However, the average expenditure for entertainment, 6% of total expenditure,

was higher than the national average of 5.6%. Therefore, it can be said that Utah residents spend a relatively high percentage of their total expenditure on entertainment, although this was not necessarily on recreational purposes.

Statistical studies showed that from 1981 to 1991, the number of visitors to national outdoor recreation areas in Utah increased from 6.6 million to 10.4 million, and the number of visitors to state recreation areas increased from 4.8 million to 5.4 million. Travel employment increased from 41,694, or 7.5% of total nonagricultural employment, in 1981 to 60,361, or 8.1%, in 1991 (Bureau of Economic and Business Research, 1993). Also, it was estimated that travel expenditures increased 80.9% from 1982 to 1990. These statistics indicated that recreation was a growing industry in Utah.

Attitudes and Opinions of Snowmobilers

Sociodemographic surveys, including attitudes and opinions of snowmobilers, were also conducted in the several states simultaneously with the economic surveys. Such information is important to help determine the need for financial and human resources needed for trail and facilities development, education programs, and other management needs.

The 1996 Maine survey (Reiling et al., 1998) examined demographics, riding habits of current snowmobilers, and their opinions and preferences. Resident and nonresident snowmobilers had higher education and income levels, and participate more actively in other outdoor activities, than non-snowmobilers. Good trail signage, courteous riders who obey rules, and well-groomed trails were the three most important factors for both resident and nonresident snowmobilers to help them in deciding where to snowmobile in Maine. It was concluded that grooming, signing activities, and publication of trail maps and brochures could be viewed as an investment to attract snowmobilers. The survey also included snowmobilers' opinions about registration fees, satisfaction with trail conditions, law enforcement, education programs, snowmobile clubs, and snowmobile safety.

According to Manning (1999), early descriptive studies often found a substantial

amount of conflict between recreation participants. The USDA Forest Service Intermountain Research Station (1998) described increased conflicts between snowmobilers and snowcat skiers as a problem in an environmental assessment (EA) for trail management. According to the EA, "the conflicts have been in the form of rude behaviors, and near misses between snowmobiles and snowcats, and snowmobiles and snowcat skiers." In general, cross-country versus snowmobiler conflicts are classical examples of asymmetrical conflict, because cross-country skiers recognize conflict while snowmobilers do not (Manning, 1999).

CHAPTER III

METHODS AND ANALYSIS

Study Site and Study Population

The study site for this survey included the entire state of Utah. Although the popularity of snowmobiling inevitably results in a gross benefit to the state, no recent economic impact study has been conducted in Utah. This study provides analysis of the total contribution of snowmobiling to the state economy.

This study targeted the population of registered snowmobile households during the 1998–1999 season (from November to early June). In order to use snowmobiles in Utah, snowmobile owners are required to register their machines. Unlike other studies, Utah resident and nonresident registrants were not stratified in this study, because there are only nine nonresident owners out of 13,163 registered owners (less than 1%).

Sample Selection and Survey Design

Expenditure information for the selected sample is required for implementing an I-O model. The majority of surveys conducted in the other states obtained the data by mail surveys to actual or potential participants. However, because of several considerations, a telephone survey was used for this study. Response rate was a primary concern in deciding to conduct a telephone survey. Generally lower response rates occur with a mail survey. In addition, snowmobiling is a seasonal sport, and there was a possibility that a registered address was a seasonal residence. However, it was difficult to identify seasonal residents. Because the survey was conducted after the snowmobiling season, seasonal residents may not have received the survey questionnaire. Time was another factor in deciding between a mail or telephone survey. However, there were also concerns with using a telephone interview for this study. For instance, interview questions regarding detailed snowmobiling-related expenditures were difficult to estimate, and sample subjects might be unable to answer such questions.

Although the population of this survey was registered snowmobile households,

there were three challenges in deciding the actual population size. First, Utah Tax Commission and the Division of Motor Vehicles (DMV), the information source for registrations, did not track annual registration. The only available data source was the mailing list of snowmobile owners once registered in Utah in 1998. This list was probably used to remind the snowmobile owners about snowmobile registrations in Utah before the snowmobiling season. It was possible that snowmobile owners remained on the list unless they asked to be removed from it. Second, registration was based on snowmobiles, not owners, and it had to be cleaned up to eliminate some duplications. Third, the supplied list did not include phone numbers, so phone numbers had to be found.

Because of these issues, it should be noted that this survey is based on an assumption that snowmobile owners register their machines every season; otherwise, they report to the state to eliminate their names from the list.

There were four potential biases. First, people in resort areas may be seasonal residents, so they may not have telephones. Second, people who do not list their phone number in the telephone directory could not be reached. Third, people who moved after the list was updated could not be reached. Fourth, there may be data entry mistakes by the DMV such as misspellings and incorrect data. The third and fourth factors should cause systematic bias for this study population, but the first and second factors may to some extent.

There were 14,257 owner's names on the original list, provided by Utah's Department of Natural Resources. The duplicated names were eliminated, and the full list of names became 13,163. This is the population used in this survey. The necessary sample size to achieve the 95% confidence level was 384. However, since the population size is relatively small, the sample size was adjusted using the equation (Sheskin, 1985):

$$n_a = n/(1+n/N)$$

where "n_a" is an adjusted sample size, "n" is the necessary sample size, and "N" is a

finite population. The adjusted sample size was:

$$n_a=384/(1+384/13163)=373$$

Therefore, 373 became the required number of completed surveys needed to achieve a 95% confidence level.

In the next stage, telephone numbers were found using the USWest web site. In anticipation of rejections and ineligible sample subjects, telephone numbers of 600 randomly selected snowmobile owners were identified. Because not all of the phone numbers were available, a random sampling process was repeated several times to obtain the required number of phone numbers. Table 8 shows the percent of phone numbers found among the selected sample subjects; an average of 60% of the phone numbers were found.

The proportion of selected sample subjects with an available phone number was lower in some cities. Table 9 lists cities in which multiple sample subjects were selected and the percent of selected subjects with available phone numbers was less than 50. One source of bias in the sample subjects may be an underrepresentation of seasonal residents, as Duck Creek Village, Beaver, Oakley, Kamas, and Woodland probably have a relatively high percent of seasonal homes. As noted above, other reasons for the low number of available phone numbers were unrelated to the study purpose, such as unlisted phone numbers, people moving, and errors in the registration form.

Table 8
Number and Percent of Phone Numbers Found

Trial	Number of Selected Samples	Number of Found	Percent Found
1	991	600	60.5%
2	250	135	54.0%
3	100	75	75.0%
4	50	30	60.0%
5	50	25	50.0%
Total	1441	865	60.0%

The survey instrument was developed based on the Maine, Michigan, and New Hampshire studies described in Chapter II. Two things were considered to obtain appropriate data for the research purpose. One was to obtain required information to use in the I-O analysis. This included itemized household trip and annual expenditures and household snowmobiling trip days. The other was to use concise and appropriate wording. The first draft, which included a broad set of possible questions, was reviewed by Utah's Department of Natural Resources and faculty at Utah State University (USU). The draft was revised nine times, and the final survey instrument included the following four sections (Appendix A):

1. Questions about general snowmobiling trip characteristics, including favorite area,[2] favorite riding style, people to travel with, number of household members who participating in snowmobiling activities, and number of household snowmobile trips.

2. Questions about snowmobiling activities during the 1999–2000 season, including number of snowmobiling trips, riding styles, and characteristics of the most recent snowmobile trip.

3. Expenditure-related questions, including the most recent snowmobiling trip, annual purchases of snowmobiling related items, purchases through the Internet, and level of expenditure on snowmobile activities during the 1999–2000 season compared to a "typical" snowmobile season.

4. Opinions about snowmobiling in Utah, including the experience of conflict with other recreationists, knowledge of the "Know Before You Go" education program, and level of satisfaction about snowmobiling-related issues.[3]

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[2] The nine most popular snowmobiling areas in Utah are: (1) Hardware Ranch, Monte Cristo and Logan Canyon, (2) Wasatch Mountain, (3) Mirror Lake and Current Creek, (4) Uinta Basin, (5) Ephraim, Manti, Joe's Valley, and Ferron, (6) Scofield and Skyline Drive, (7) Fishlake, (8) Cedar Mountain, and East Fork, and (9) Strawberry Valley.

[3] This includes parking space, plowing, grooming, restrooms, garbage facilities, variety of trails, number of trails, availability of maps, information stands, and law enforcement.

Table 9
Number in Sample and Phone Numbers Found

City	Number of Selected Samples	Phone Numbers Found	Percent Found
Centerville	9	4	44.4
West Jordan	23	10	43.5
Clearfield	7	3	42.9
Huntsville	5	2	40.0
Draper	14	5	35.7
Magna	9	3	33.3
College	3	1	33.3
Millville	3	1	33.3
Salina	3	1	33.3
South Weber	3	1	33.3
Willard	3	1	33.3
Murray	18	5	27.8
Duck Creek Vlg.	11	3	27.3
Mapleton	11	3	27.3
Beaver	4	1	25.0
Manti	4	1	25.0
North Salt Lake	4	1	25.0
Oakley	4	1	25.0
Wallsburg	4	1	25.0
Kamas	9	2	22.2
Las Vegas	5	1	20.0
Mt Pleasant	6	1	16.7
South Jordan	19	2	10.5
Roosevelt	4	0	0.0
Ephraim	3	0	0.0
Helper	3	0	0.0
Manila	3	0	0.0
Duchesne	2	0	0.0
Farr West	2	0	0.0
Uintah	2	0	0.0
Wanship	2	0	0.0
Woodland	2	0	0.0

5. Demographic questions, including age, number of people in the household, years of education, and household income.

Surveys conducted in other states differ by including or excluding the purchase of secondary homes and tow vehicles associated with snowmobiling. Exclusion of these purchases may result in a conservative estimate of expenditures. In this survey, respondents were asked if they purchased trailers used for transporting snowmobiles, to determine if snowmobile activity is the primary purpose of purchase. Respondents were not asked if they purchased a secondary home because this may overestimate the economic impact of snowmobiling; it is a large expenditure and could be purchased for many reasons other than increasing snowmobiling opportunities. If the respondents answered that they spent money on trip expenditures, they were asked to specify the locations where they spent the money (the city where they live or en route to or their at destination).

It is important to note that actual economic values (net impact) of snowmobiling would be the difference between inputs on snowmobiling and alternative activities people would engage in if they did not snowmobile in Utah. This would measure possible marginal changes due to various factors including policy changes, snowmobiling facilities, and snowmobiling conditions of other states. However, due to time limitations and survey length, this study only focused on the measurement of current economic impact of snowmobiling and did not address these alternative activities. Additionally, this study might result in conservative estimates of economic impacts of snowmobiling, because it addressed only registered snowmobilers; snowmobiling activities with rental and unregistered machines are not addressed.

The purpose of the opinion questions was to identify important demand factors. This section helps managers meet the needs of snowmobilers by providing information gained directly from snowmobilers about snowmobiling as a recreational sport in Utah and criteria to help manage snowmobile areas.

A pilot survey of one USU student who registered a snowmobile during the

season, was conducted at the end of April 2000. Despite initial concerns about the expenditure-related questions, the student answered the questions smoothly. The test interview took 15 minutes, an appropriate and expected length. The other five pilot surveys were conducted with randomly selected, registered snowmobile owners following original pilot test. The telephone survey was conducted during the period of May 3 to July 20 by 5 undergraduate students who were trained by Doug Reiter, a research associate for the Institute for Outdoor Recreation and Tourism at USU (Appendix B).

Economic Impact Analysis Using IMPLAN™

The economic impact was estimated by first multiplying the number of households who registered snowmobiles by average household annual expenditures including all trip expenditures. These averages were then used as change in final demand in the I-O analysis. The total statewide annual and trip expenditures made by household with registered snowmobiles was estimated as follows:

$$P_tQNn_t/N + P_aN$$

where "P_t" is the average per trip household expenditures, "Q" is the average number of household snowmobile trips during the 1999–2000 season, "N" is the number of households with registered snowmobiles in Utah, "n_t" is the number of sample subjects who went on snowmobile trips during the 1999–2000 season, and "P_a" is the average annual household expenditures. Therefore, "P_tQNn_t" is the total trip expenditures of all households with registered snowmobiles, while "P_aN" is the total annual expenditures.

According to Alward et al. (1989), the I-O analysis using IMPLAN™ requires nine steps: (1) define the problem, (2) define the study area, (3) compile regional data, (4) develop regional I-O accounts, (5) derive transaction matrix, (6) derive multipliers, (7) describe the impact, (8) create impact reports, and (9) interpret results.

Before using the system, the problem addressed should be clearly defined. To define the problem, some considerations are required. The measurement to describe economic impact should be determined first. In this study IMPLAN™ was used for the

economic analysis, including employment, household income, and tax income derived by snowmobiling activities statewide, and within Utah planning regions. Because this study only addresses economic impact within Utah, it excludes any economic activity outside of Utah and isolates the study area. Affected industries were defined by coding the categories with the Standard Industry Code (SIC), based on the expenditure categories,

After compiling statewide data, the data were input in an I-O matrix to developed a regional account. From the I-O matrix, IMPLAN™ develops the Utah and regional I-O table from: (1) Regional Market Share Matrix, which shows the proportion of each industry's production in the region's total production, (2) Regional Absorption Matrix, which includes the proportion of each industry's spending in the region's total spending, and (3) the Regional Direct Coefficients Matrix. Multiplication of Regional Direct Coefficients Matrix and Total Industry Output drives the Regional Transactions Matrix.

Analysis of Satisfaction

Several questions were developed about satisfaction level of snowmobilers toward management and infrastructural aspects of their recreation activity. To obtain the information regarding their satisfaction, respondents were asked to indicate levels of satisfaction on a 4-point scale: very dissatisfied, dissatisfied, satisfied, and very satisfied. Then their answers were converted to numerical values (1=very dissatisfied, 2=dissatisfied, 3=satisfied, and 4=very satisfied) to find mean values of each question. The issues addressed included availability of parking space, plowing, availability of garbage facilities, availability of restrooms, trail grooming, availability of information stands, availability of trail maps, variety of trails, and law enforcement on trails. The respondents who answered "dissatisfied" and "very dissatisfied" were asked for reasons for their dissatisfaction.

In a separate section, the respondents were asked if they were familiar with the "Know Before You Go" educational program. In Utah, snowmobile operators between

8 and 15 years of age have to complete this program to operate a snowmobile. If the respondent answered that he or she was familiar with the program, level of satisfaction (very satisfied, satisfied, dissatisfied, and very dissatisfied) with the program was asked.

Additionally, respondents were asked if they had a conflict or problems with other snowmobilers or other recreation participants. Respondents who experienced a conflict were asked the type of recreation participants they had a conflict with, and the area and content of the conflict.

The questionnaire concluded with a free comment section about snowmobiling in Utah. These comments were also categorized and coded depending on the content of the comment.

Sociodemographic Analysis

Sociodemographic questions aimed to find characteristics of snowmobilers in Utah. The question included age, gender, number of people in the household, years of education completed, and household income. These data were described using descriptive statistics and compared with demographics of snowmobilers in other states.

CHAPTER IV

RESULTS

The results of this study were based on 373 completed survey questionnaires. Table 10 shows survey population, sample distribution, and response rate of this study.

Among 1,441 selected sample subjects, 52.5% were ineligible because of unavailable phone numbers at the USWest web site (n=586), disconnected phone lines or they had moved (68), wrong numbers (35), and those who do not snowmobile (33) or sold their snowmobiles (34). Because the sample subjects were taken from a 1998 list, people who do not snowmobile or who sold a snowmobile (8.9% of eligible samples) were also excluded as sample subjects. This may indicate a fluctuation in participant numbers of this sport. The response rate excluding ineligible subjects was 54.5%. Nonrespondents (45.5% of sample subjects) included rejections (n=115), answering machines (77), unavailable respondents (73), no answers (47), and "other" (1).

The following sections in this chapter describe the economic impact analysis of snowmobiling, trip behavior and opinions of snowmobilers, and demographics of snowmobilers in Utah. Summary tables of the open-ended and comment questions are included in Appendix C.

Table 10
Survey Population and Sample Distribution

Group	Number	Percentage of Group
Population of Utah registered snowmobile owners	13,163	100% of population
Selected sample	1,441	10.9% of population
Ineligible	756	52.5% of selected sample
Valid phone numbers	685	47.5% of selected sample
Respondents	373	54.5% of valid phone numbers
Non-respondents	312	45.5% of valid phone numbers

Economic Impact of Snowmobiling in Utah

Table 11 shows the average trip and annual expenditures, respectively. Average trip expenditure was $126.87 and annual expenditure on snowmobiling was $2,931.82. The average number of per household snowmobiling trips was 12.3 (Table 12). Therefore, the estimated total trip expenditure per household was $1,560.50 ($126.87 times 12.3).

The purchase of snowmobiles is the largest portion of the annual expenditures. Only 25% (91) of the sample subjects bought snowmobiles, yet snowmobile purchases comprised 27% of total expenditures on average (Figure 3), and 81% of the sample subjects own more than two registered snowmobiles during the 1999-2000 season. Trip expenditures were a relatively small portion of the total annual expenditures (26%) (Figure 3). One reason was that because overnight snowmobile trips were more rare, people did not spend much on lodging and food.

Overnight snowmobile trips made up 13% of all the snowmobile trips during the season and the average traveling distance to travel to snowmobile was short (50.1 miles) (Table 12).

To apply IMPLAN™, the average itemized per trip and annual expenditures were applied to the equation explained in Chapter II (Tables 13 and 14). Total statewide expenditures, including trip expenditures by registered snowmobile owners, were estimated at $58 million ($19.7 million on trip expenditures and $38.6 million on annual expenditures) during 1999–2000. The itemized expenditures were categorized using the 1987 Standard Industrial Code (SIC) (Table 15). Since both trip and annual expenditures on machine repair were asked, trip repair expenditures were subtracted from the annual repair expenditures to avoid counting the same expenditures twice.

Changes in total annual expenditures are not necessarily equal to the regional (state) final demand, because the entire expenditure amount is not retained in the local area. The IMPLAN™ model with Utah Regional Direct Coefficients Matrix 1999 was used to apply local purchase coefficients. The consumer prices (total expenditures

Table 11
Per Trip and Annual Expenditures of Sample Subjects (Dollars)

Expenditure Categories	Mean	Median	S.D.	Range
Per Trip Expenditures				
Gas and oil for snowmobiles	31.03	20.00	40.06	0-500
Gas and oil for tow vehicles	22.40	20.00	20.62	0-210
Lodging	6.39	0.00	61.37	0-1,020
Eating and drinking establishment	8.50	0.00	28.03	0-400
Food from grocery or convenience stores	13.28	5.00	25.80	0-200
Parking area fees	1.07	0.00	2.63	0-35
Other recreation activities	0.79	0.00	11.00	0-200
Snowmobile rentals, tour packages, or guide services	0.75	0.00	8.00	0-90
Repairs or maintenance on snowmobiles	36.86	0.00	188.08	0-2,200
Retail items	5.67	0.00	48.71	0-800
Other	0.13	0.00	-	0-50
Total	126.87			
Annual Expenditures				
Snowmobiles	1,623.00	0.00	3,478.32	0-20,000
Trailers used for transporting snowmobiles	316.53	0.00	1,311.76	0-15,000
Snowmobile repairs, parts, or accessories	542.27	200.00	954.33	0-6,000
Insurance for snowmobiles	125.70	0.00	187.27	0-1,550
Snowmobile clothing	115.98	0.00	232.83	0-1,000
Snowmobile club dues and other club expenses	12.31	0.00	48.50	0-750
Snowmobile registration, license taxes	168.92	140.00	138.50	0-800
Snowmobile storage	22.63	0.00	120.40	0-1,400
Other	4.48	0.00	-	0-100
Total	2,931.82			

Table 12
Snowmobile Trip Characteristics of Sample Subjects

Characteristic	Mean
Number of household snowmobile trips	12.3
Number of household overnight snowmobile trips	1.6
Number of snowmobile days of the most recent trip	1.3
Miles traveled to get to the trailhead	50.1

Figure 3
Proportion of Snowmobiling-Related Expenditures

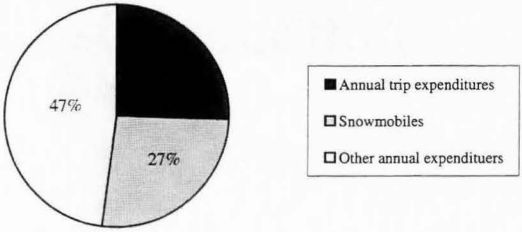

Table 13
Total Trip Expenditures of Registered Households in Utah

Expenditure Categories	(A) Average Expenditure	(B) (A) * Average Number of Trip (12.3)	(C) (B) * Number of Registered Household (13,163)	(D) Sample Household Who Went Snowmobile Trip (0.959)
Gasoline and oil for snowmobiles	31.03	381.67	5,023,909.05	4,817,928.78
Gas and oil for tow vehicles	22.40	275.52	3,626,669.76	3,477,976.30
Lodging	6.39	78.60	1,034,572.31	992,154.85
Eating and drinking establishments	8.50	104.55	1,376,191.65	1,319,767.79
Food from grocery or convenience stores	13.28	163.34	2,150,097.07	2,061,943.09
Parking area fees	1.07	13.16	173,238.24	166,135.48
Other recreation activities	0.79	9.72	127,904.87	122,660.77
Snowmobile rentals, tour package, or guide services	0.75	9.23	121,428.68	116,450.10
Repairs or maintenance on snowmobiles	36.86	453.38	5,967,814.61	5,723,134.21
Retail items	5.67	69.74	918,000.78	880,362.75
Miscellaneous personal services	0.13	1.60	21,047.64	20,184.68
Total trip expenditures	126.87	1,560.50	20,540,874.66	19,698,698.80

Table 14
Total Annual Expenditures of Registered Households in Utah

Expenditure Categories	(E) Average Expenditure	(F) (E) * Total Number of Registered Households (13,163)
Snowmobiles	1,623.45	21,369,472.35
Trailers used for transporting snowmobiles	316.53	4,166,484.39
Snowmobile repairs, parts, or accessories (belts, sparkplugs, oil, etc.)	542.27	7,137,900.01
Insurance for snowmobiles	125.70	1,654,589.10
Snowmobile clothing	115.98	1,526,644.74
Snowmobile club dues and other club expenses	12.31	162,036.53
Snowmobile registration, license taxes	168.92	2,223,493.96
Snowmobile storage	22.63	297,878.69
Other	4.03	53,046.89
Total annual expenditure	2,931.82	38,591,546.66

Table 15
Expenditure Categories and SIC–Per Trip and Annual Expenditures

Economic Activity	Code	IMPLAN Sector	Expenditures ($)
Per Trip Expenditures			
Food	450	Food stores	2,061,943.00
Gas and oil	451	Auto dealers and Service Stations	8,295,905.00
Eating	454	Eating and drinking establishments	1,319,768.00
Miscellaneous Retail	455	Miscellaneous retail	880,363.00
Lodging	463	Hotels and lodging	992,155.00
Repairs	482	Miscellaneous repair shops	5,723,134.00
Rentals, guides, other recreation	488	Amusement and recreation services	239,111.00
Parking fees	523	State and local government	166,135.00
Other	468	Miscellaneous personal services	20,184.00
Total			19,698,698.00
Annual Expenditures			
Storage	435	Motor freight transport and warehousing	297,879.00
Tools	448	Building materials and equipment	1,580.00
Snowmobile and trailer purchase	451	Automotive dealers and service stations	25,535,960.00
Clothing	452	Apparel and accessory stores	1,526,645.00
Miscellaneous retail	455	Miscellaneous retail	2,106.00
Insurance	459	Insurance carriers	1,654,589.00
Hotels	463	Hotels and lodging places	30,012.00
Repairs (excluding repairs on trips)	482	Miscellaneous repair shops	1,414,766.00
Rentals	488	Amusement and recreation services	53,026.00
Club dues	489	Membership sports and recreation clubs	162,037.00
Registration and taxes	523	State and local government	2,223,494.00
Total			32,902,094.00

made) were converted to producer prices using these coefficients (proportion of total expenditures received locally). This is the amount of total expenditures locally retained through the economic activities studied.

In the IMPLAN™ model, Regional Direct Coefficients Matrix (industry by industry matrix) is the cross product of the Regional Market Share Matrix (industry by commodity matrix), which represents a certain industry's production of a given region's total commodity production, and Regional Absorption Matrix (commodity by industry matrix), which establishes interindustry purchases (Alward et al., 1989) (Figure 4). The matrix has 531 rows as input sectors and columns as output sectors, including 528 industrial and governmental sectors, and three sectors of state/local government non-education, foreign trade, and domestic trade.

The matrix represents 281,961 transactions in total (531 times 531). Table 16 shows part of the matrix used for this study. The sum of the ith row is the total gross output for that industrial sector, while the sum of the jth column indicates total gross inputs.

Figure 4
Regional Coefficients Matrix Construction

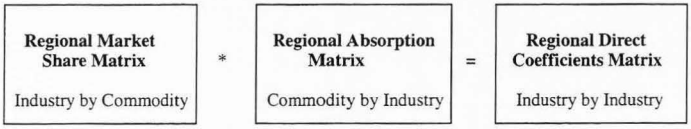

Table 16
Sample Portion of the Utah Regional Direct Coefficients Matrix in 1999

	Industry 1 Dairy Farm Products	Industry 2 Poultry and Eggs	Industry 3 Ranch Fed Cattle	Industry 4 Range Fed Cattle	Industry 5 Sheep-Lambs and Goats	Total
Industry 1 Dairy Farm Products	0.0798663	8.85E-02	0.1206604	0.1644193	9.73E-02	0.55078429
Industry 2 Poultry and Eggs	3.32E-02	3.68E-02	6.93E-03	9.44E-03	5.58E-03	0.09193246
Industry 3 Ranch Fed Cattle	1.26E-03	5.77E-02	11.75285	1.48E-02	8.76E-03	11.8353655
Industry 4 Range Fed Cattle	4.85E-03	0.110342	2.08E-02	51.48726	1.68E-02	51.6399981
Industry 5 Sheep-Lambs and Goats	0.0407403	4.52E-02	8.51E-03	1.16E-02	5.603299	5.70929697
Total	0.15991001	0.33850723	11.9097273	51.6875141	5.73171865	69.8273773

Economic activities such as recreation participation create indirect and induced effects as well as direct effects of related expenditures on an area. The indirect and induced effects are called the multiplier impact (Otto & Johnson, 1993). A regional multiplier is used to describe the total effect, including direct, indirect, and induced effect, and can be applied to estimate employment and other related economic variables.

The direct effects result from the local absorption of direct expenditure made in snowmobiling related enterprises. The results showed that the number of industries that received direct effect was 46 in output impact, 41 in total value added impact, 17 in employment impact, and 41 in labor income impact (Table 17). This indicates that snowmobiling activities have a direct economic effect in relatively few economic sectors. The indirect effect is additional local spending due to the direct effect. Indirect effects influence a greater number of industrial sectors than the direct effects. For example, 389 sectors are affected by output impact and 74 sectors by employment impact as a result of the indirect effects (Table 17). Induced effect accounts for the change in industrial output that might be generated by household expenditures due to added income. The number of sectors impacted by induced effects was also larger than those impacted by direct effects. For example, snowmobiling related direct expenditures caused $22.0 million in direct effects on 46 industrial sectors in state domestic product (output impact), and this generated an additional $7.1 million of induced effect in 406 industrial sectors (Table 17).

Tables 17 and 18 show the direct, indirect, and induced effects of output (state domestic product), value added, labor income, employment, and state and local tax revenue. The estimated impacts were $33.6 million in output impact and $20.0 million in value added impact. A total of 527 jobs was created, producing $12 million in income and an estimated $5.5 million in government tax revenue.

These values are also used to estimate state multipliers of snowmobiling activities. Table 19 shows the Type I and III multipliers derived from the estimated impact. The Type I multiplier is the direct effect plus the indirect effect divided by the

Table 17
Output, Value Added, Employment, and Labor Income Impact

Impact Category		Direct	Indirect	Induced	Total
Output impact					
Trip	Impact in dollar	10,410,677.0	2,613,540.0	2,988,053.0	16,012,270.0
	Number of industrial sectors[4]	36 (6.8%)	385 (72.5%)	397 (74.8%)	412 (77.6%)
Annual	Impact in dollar	11,603,934.0	1,872,190.0	4,124,814.0	17,600,938.0
	Number of industrial sectors	39 (7.3%)	366 (68.9%)	401 (75.5%)	411 (77.4%)
Total	Impact in dollar	22,014,611.0	4,485,730.0	7,112,867.0	**33,613,208.0**
	Number of industrial sectors	46 (7.7%)	389 (73.3%)	406 (76.6%)	412 (77.6%)
Value added impact					
Trip	Impact in dollar	4,822,736.0	1,481,495.0	1,795,575.0	8,099,806.0
	Number of industrial sectors	33 (6.2%)	366 (68.9%)	383 (72.1%)	398 (75.0%)
Annual	Impact in dollar	7,596,348.0	1,093,686.0	2,478,669.0	11,168,703.0
	Number of industrial sectors	33 (6.2%)	342 (64.4%)	388 (73.1%)	393 (74.0%)
Total	Impact in dollar	12,419,084.0	2,575,181.0	4,274,244.0	**19,268,509.0**
	Number of industrial sectors	41 (7.7%)	374 (70.4%)	395 (74.4%)	404 (76.1%)
Employment impact					
Trip	Impact in number of employment	170.7	34.8	45.6	251.2
	Number of industrial sectors	13 (2.4%)	63 (11.9%)	82 (15.4%)	110 (20.7%)
Annual	Impact in dollar	186.9	26.5	63.0	276.4
	Number of industrial sectors	11 (2.1%)	54 (10.2%)	87 (16.4%)	101 (19.0%)
Total	Impact in dollar	357.6	61.3	108.7	**527.6**
	Number of industrial sectors	17 (3.2%)	74 (13.9%)	108 (20.3%)	131 (24.7%)
Labor income impact					
Trip	Impact in number of employment	330,862.0	913,992.0	1,055,505.0	5,300,358.0
	Number of industrial sectors	33 (6.2%)	264 (49.7%)	272 (51.2%)	294 (55.4%)
Annual	Impact in dollar	5,176,100.0	691,792.0	1,457,263.0	7,325,155.0
	Number of industrial sectors	30 (5.6%)	329 (62.0%)	379 (71.4%)	390 (73.4%)
Total	Impact in dollar	8,506,962.0	1,605,784.0	2,512,768.0	**12,625,513.0**
	Number of industrial sectors	41 (7.7%)	366 (68.9%)	389 (73.3%)	400 (75.3%)

[4] This indicates the number of industrial sectors (among 531 sectors) in Utah affected by the snowmobiling activities.

Table 18
Tax Impact

Trip Type	Enterprises	Federal	State/Local	Total
Trip	3,647.0	1,264,753.0	1,025,153.0	2,293,553.0
Annual	5,246.0	1,769,258.0	1,457,030.0	3,231,534.0
Total	8,892.0	3,034,011.0	2,482,183.0	5,525,086.0

Table 19
Type I and Type III Multipliers of Snowmobiling Activities in Utah

Impact Name	Direct	Direct + Indirect	Total	Type I	Type III
Output Impact	22,014,611.00	26,500,341.00	33,613,208.00	1.20	1.53
Total value added impact	12,419,084.00	14,994,265.00	19,268,509.00	1.21	1.55
Employment impact	357.60	418.90	527.60	1.17	1.48
Labor income impact	8,506,962.00	10,112,746.00	12,625,513.00	1.19	1.48

direct effect. This multiplier is based on the assumption that increased final demand created by snowmobiling activities leads to increased employment and population with the average income level. The Type III multiplier is the sum of the direct, indirect, and induced effect divided by the direct effect. It is assumed that an increase in output will increase income levels and household consumption proportionately. It is considered that the Type III multiplier is the more realistic indicator as it takes all impacts into account.

Regional Economic Impact

This section describes the local economic impact of snowmobiling in aggregates of counties. Economic impact was not necessarily evenly distributed in the state; rather, some counties may receive larger economic benefits in specific industrial sectors.

Respondents' living locations were classified into the seven Utah planning regions shown in Figure 5. Nearly half of the respondents live in the Wasatch Front region and a large majority of the respondents (89.7%) were in the Wasatch Front, Mountain Lands, or Bear River region (Table 20). This indicates that the respondents' living location is not evenly distributed in the state, but rather is concentrated in the

Figure 5
Utah Planning Regions

Counties:

Bear River region: Box Elder, Cache, and Rich
Central Utah region: Juab, Millard, San Pete, Seiver, Piute, and Wayne
Mountain Lands region: Utah, Wasatch, and Summit
Southeast region: San Juan, Grand, Carbon, and Emery
Southwest region: Beaver, Iron, Washington, Garfield, and Kane
Uintah Basin region: Duchesne, Dagget, and Uintah
Wasatch Front region: Salt Lake, Weber, Morgan, Davis, and Tooele

northern part of the state. Expenditures were also coded into these seven regions according to the locations (cities) where respondents said they spent the money. The amount of expenditures of unspecified location reported was classified into the seven regions according to the proportion of total expenditures made in each region. Tables 21 and 22 show the total trip and annual expenditures in each region by industrial sectors.[5] Table 23 shows total trip and annual expenditures by planning regions. Both the trip and annual expenditures were the largest on the Wasatch Front (47.5% of the trip expenditure and 37.3% of the annual expenditure). The Mountain Lands region had the second largest change in final demand of trip expenditures (26.3%), while Bear River region was second in annual expenditures excluding trip expenditures (27.6%). Total snowmobiling-related expenditures were the largest in the Wasatch Front (41.4%) and Bear River regions (22.1%), while the Uintah Basin (1.5%) and Southwest (0.8%) regions were the smallest.

Table 20
Living Location of the Sample Subjects

Planning Region	n	Percent
Wasatch Front	168	45.0
Mountain Lands	102	27.3
Bear River	65	17.4
Central Utah	13	3.5
Southwest	10	2.7
Southeast	8	2.1
Uintah Basin	5	1.3
Out of the State	2	0.5
	373	100.0

[5] The expenditures on the following items were excluded from regional analysis because the locations where these expenditures were made were unknown. Miscellaneous personal expenses ($20,184.68), building materials and equipment ($1,579.56), insurance carriers ($1,654,589.10), hotels and lodging places for annual expenditures ($30,011.64), amusement and recreation services for annual expenditures ($53,025.83), and state and local government for annual expenditures ($2,223,493.96).

Using IMPLAN™, these trip and annual expenditures were used to estimate regional impacts, including output, value added, employment, income, and tax impacts (Tables 24 and 25). The results showed large variability of regional impact. The Wasatch Front ($12.2 million) and Mountain Lands ($5.6 million) regions received the largest impacts, while impacts were smallest in the Southeast ($0.1 million) and Uintah Basin ($0.3 million) regions. The regional multiplier varied from 1.28 in Bear River to 1.53 in Wasatch Front (Table 26).

Trip Behavior and Opinions of Utah Snowmobilers

This section provides an overview of trip behavior for snowmobile activities in Utah. The respondents were asked their favorite snowmobile area in Utah and the area they went for their most recent snowmobile trip. The results show that 35.1% of respondents identified the Hardware Ranch, Monte Cristo, and Logan Canyon areas as the most popular snowmobiling areas in the state (Figure 6). About half as many respondents identified the Strawberry Valley (16.1%), Wasatch Mountain (12.1%), Mirror Lake and Current Creek (11.3%), and Scofield and Skyline Drive (10.2%). The results also indicated that most people snowmobiled in their favorite areas. The least popular areas were Fish Lake (1.6%), and the Cedar Mountain and the East Fork areas (1.6%).

Of the respondents who snowmobiled during the 1999–2000 season (346 sample subjects), 69.9% chose their favorite snowmobiling area for their most recent trip. The main reasons that people did not snowmobile at their favorite area were snow conditions (20.2%) and closer distance to another area (14.4%). As for the types of groups respondents typically went with on a snowmobile trips, 68.4% were friends, and 61.7% were members of immediate family.[6]

The average number of household snowmobile trips per year was 12.3, though it ranged from 0 to 165 (Figure 7).[7] The number of trips taken in 1999–2000 was a

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[6] The respondents could answer more than one category for this question.

[7] This includes business purposes.

Table 21
Trip Expenditures by Planning Region

Planning Region	450: Food Stores (Q 4)	451: Auto Deales & Service Station (Q0 &1)	454: Eating & Drinking Establishments (Q3)	455: Miscellaneous Retails (Q9)	463: Hotels & Lodging Places (Q2)	482: Miscellaneous Repair Shops (Q8)	488: Amusement & Recreation Services (Q6 & 7)	523: State & Local Government (Q5)	Total
Bear River	229,137.05	1,208,099.96	345,701.46	12,469.73	150,326.49	717,922.45	82,240.97	27,795.94	2,773,694.04
Central Utah	221,096.28	395,442.07	67,940.66	0.00	225,489.74	26,099.74	38,921.91	1,052.88	976,043.27
Mountain Lands	583,246.57	1,945,733.74	529,906.90	231,936.93	16,911.73	1,684,937.89	92,654.17	87,523.51	5,172,851.45
Southeast	20,071.90	88,749.48	18,914.44	0.00	0.00	0.00	2,288.45	1,052.88	131,077.14
Southwest	46,061.72	419,154.65	14,526.29	498,789.10	0.00	55,475.83	0.00	0.00	1,034,007.59
Uintah Basin	22,530.19	90,703.72	6,052.62	0.00	0.00	83,755.44	2,434.91	36,918.06	242,394.94
Wasatch Front	939,799.37	4,148,021.47	336,725.42	137,167.00	599,426.89	3,154,942.85	20,570.47	11,792.22	9,348,445.68
Total	2,061,943.09	8,295,905.08	1,319,767.79	880,362.75	992,154.85	5,723,134.21	239,110.87	166,135.48	19,678,514.12

Note: Miscellaneous personal expenses ($20,184.68) is excluded because the location of expenditure is unknown.

Table 22
Annual Expenditures by Planning Region

Planning Region	435: Motor Freight Transport and Warehousing (Q7)	451: Automotive Dealers & Service Stations (Q0 & 1)	452: Apparel & Accessory Stores (Q4)	482: Miscellaneous Repair Shops (Q2-per trip repair)	489: Membership Sports & Recreation Clubs (Q5)	Total
Bear River	25,532.46	7,456,087.99	207,623.35	239,008.17	51,613.95	7,979,865.92
Central Utah	0.00	2,777,043.59	11,222.88	54,224.06	2,189.68	2,844,680.21
Mountain Lands	54,469.25	3,490,103.36	523,318.92	425,003.46	28,465.88	4,521,360.86
Southeast	0.00	224,782.46	0.00	398.41	0.00	225,180.88
Southwest	12,766.23	1,878,748.90	158,990.86	52,789.77	46,921.77	2,150,217.52
Uintah Basin	0.00	380,753.97	3,117.47	29,960.68	11,261.23	425,093.34
Wasatch Front	205,110.76	9,328,436.48	622,371.26	613,381.25	21,584.02	10,790,883.77
Total	297,878.69	25,535,956.74	1,526,644.74	1,414,765.80	162,036.53	28,937,282.50

Note: Building Materials and Equipment ($1,579.56), Insurance Carriers ($1,654,589.10), Hotels and Lodging Places ($30,011.64), Amusement and Recreation Services ($53,025.83), Miscellaneous Retail ($2,106.08), and State and Local Government ($2,223,493.96) are excluded because the locations of expenditure are unknown.

Table 23
Total Trip and Annual Expenditures by Planning Region

Planning Region	Trip Expenditures ($)	Annual Expenditures ($)	Total ($)
Wasatch Front	9,348,445.68 (47.5%)	10,790,883.77 (37.3%)	20,139,329.46 (41.4%)
Mountain Lands	5,172,851.45 (26.3%)	4,521,360.86 (15.6%)	9,694,212.31 (19.9%)
Bear River	2,773,694.04 (14.1%)	7,979,865.92 (27.6%)	10,753,559.96 (22.1%)
Southwest	1,034,007.59 (5.3%)	2,150,217.52 (7.4%)	3,184,225.11 (6.5%)
Central Utah	976,043.27 (5.0%)	2,844,680.21 (9.8%)	3,820,723.48 (7.9%)
Uintah Basin	242,394.94 (1.2%)	425,093.34 (1.5%)	667,488.28 (1.4%)
Southeast	131,077.14 (0.7%)	225,180.88 (0.8%)	356,258.02 (0.7%)
Total	19,678,514.12 (100.0%)	28,937,282.50 (100.0%)	48,615,796.62 (100.0%)

Table 24
Regional Output and Value Added Impact

		Output Impact				Value Added Impact			
		Direct	Indirect	Indirect	Total	Direct	Indirect	Indirect	Total
Bear River	Trip	1,556,121	136,121	233,369	1,925,610	496,668	73,679	127,777	698,124
	Annual	1,977,198	171,446	457,383	2,606,027	1,255,898	96,004	264,818	1,616,719
	Total	3,533,319	307,567	690,752	4,531,637	1,752,566	169,683	392,595	2,314,843
Central Utah	Trip	482,824	76,653	72,189	631,666	224,628	40,790	40,746	306,163
	Annual	651,896	61,784	130,488	844,168	458,153	33,631	73,646	565,431
	Total	1,134,720	138,437	202,677	1,475,834	682,781	74,421	114,392	871,594
Mountain Lands	Trip	2,873,065	383,216	444,729	3,701,010	1,003,616	224,532	278,191	1,506,339
	Annual	1,431,288	206,085	295,281	1,932,655	751,268	121,073	184,706	1,057,047
	Total	4,304,353	589,301	740,010	5,633,665	1,754,884	345,605	462,897	2,563,386
Southeast	Trip	45,743	7,663	8,562	61,968	27,428	4,243	5,145	36,816
	Annual	48,594	6,483	10,410	65,488	35,990	3,526	6,255	45,772
	Total	94,337	14,146	18,972	127,456	63,418	7,769	11,400	82,588
Southwest	Trip	321,823	47,442	79,814	449,080	206,809	26,606	48,660	282,074
	Annual	574,237	97,271	139,380	810,888	361,609	54,454	84,977	501,040
	Total	896,060	144,713	219,194	1,259,968	568,418	81,060	133,637	783,114
Uintah Basin	Trip	144,828	18,513	27,373	190,714	76,365	9,790	15,609	101,764
	Annual	121,045	15,906	21,477	158,428	69,188	8,288	12,246	89,721
	Total	265,873	34,419	48,850	349,142	145,553	18,078	27,855	191,485
Wasatch Front	Trip	4,966,083	1,209,620	1,312,507	7,488,210	2,240,516	704,258	807,615	3,752,389
	Annual	3,035,906	709,668	976,034	4,721,609	1,921,928	405,631	600,577	2,928,136
	Total	8,001,989	1,919,288	2,288,541	12,209,819	4,162,444	1,109,889	1,408,192	6,680,525

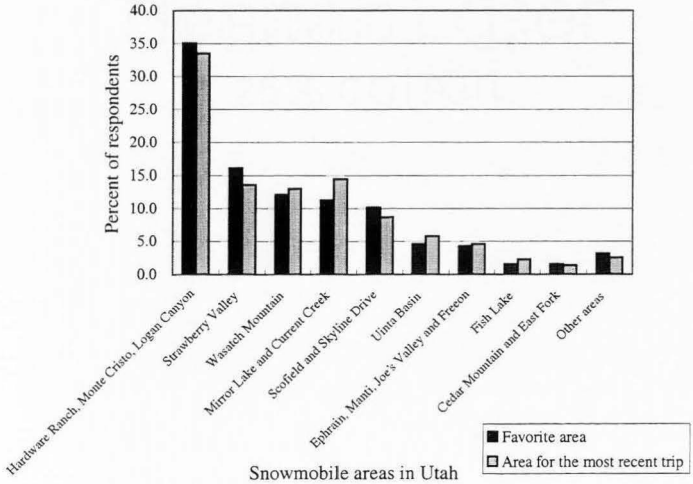
Table 25
Regional Employment, Income, and Tax Impact

		Employment				Labor Income				Tax Impact
		Direct	Indirect	Indirect	Total	Direct	Indirect	Indirect	Total	Total
Bear River	Trip	23.9	2.4	4.4	30.7	333,784	41,186	76,968	451,939	206,970
	Annual	30.9	3.2	9.1	43.1	788,749	54,706	155,759	999,214	572,516
	Total	54.8	5.6	13.5	73.8	1,122,533	95,892	232,727	1,451,153	779,486
Central Utah	Trip	12.8	1.4	1.5	15.8	146,423	24,060	24,937	195,420	92,392
	Annual	15.7	1.2	2.8	19.6	287,409	19,281	45,065	351,755	192,671
	Total	28.5	2.6	4.3	35.4	433,832	43,341	70,002	547,175	285,063
Mountain Lands	Trip	43.4	5.8	7.9	57.1	685,403	134,240	157,229	976,872	445,021
	Annual	23.1	3.1	5.2	31.5	471,766	72,329	104,387	648,482	344,791
	Total	66.5	8.9	13.1	88.6	1,157,169	206,569	261,616	1,625,354	789,812
Southeast	Trip	1.3	0.1	0.2	1.6	17,924	2,532	3,020	23,475	11,597
	Annual	1.2	0.1	0.2	1.6	22,446	2,116	3,671	28,233	15,282
	Total	2.5	0.2	0.4	3.2	40,370	4,648	6,691	51,708	26,879
Southwest	Trip	9.6	0.8	1.5	11.9	17,924	2,532	3,020	23,475	93,063
	Annual	10.7	1.6	2.6	15	228,687	31,284	49,963	309,934	166,946
	Total	20.3	2.4	4.1	26.9	246,611	33,816	52,983	333,409	260,009
Uintah Basin	Trip	2.7	0.3	0.5	3.5	57,094	5,611	8,790	71,495	27,851
	Annual	2	0.3	0.4	2.7	44,257	4,695	6,895	55,848	30,094
	Total	4.7	0.6	0.9	6.2	101,351	10,306	15,685	127,343	57,945
Wasatch Front	Trip	68.1	15.5	19.5	103	1,551,710	436,885	475,776	2,464,371	1,053,148
	Annual	44.2	8.9	14.5	67.6	1,227,720	251,520	353,818	1,833,057	916,314
	Total	112.3	24.4	34	170.6	2,779,430	688,405	829,594	4,297,428	1,969,462

Table 26
Regional Multipliers of Seven Planning Regions

	Trip	Annual	Total
Bear River	1.24	1.32	1.28
Central Utah	1.31	1.29	1.30
Mountain Lands	1.29	1.35	1.31
Southeast	1.35	1.35	1.35
Southwest	1.40	1.41	1.41
Uintah Basin	1.32	1.31	1.31
Wasatch Front	1.51	1.56	1.53

Figure 6
Favorite Snowmobile Areas and the Areas of the Most Recent Trip



typical number of trips for 51% of the sample subjects, but 49% of them answered this was not the typical number of snowmobiling trips. For those who answered these were not the typical number of trips, 93.9% answered that the number of snowmobiling trips during the season was less than a typical season, and an average number of trips per season was 19 times. Therefore, the total number of household snowmobiling trips made in Utah during the 1999–2000 season (12.3 times) was relatively small.

Table 27 shows the satisfaction level of snowmobilers with facilities and services in Utah. Respondents indicated the highest satisfaction level was, on average, with the variety of trails in the state and the lowest satisfaction was with parking space availability. Trail grooming had the second lowest mean level of satisfaction. Among the people who answered that they were dissatisfied with trail grooming, 50.6% requested officials improve the quality of trail grooming, and 46.8% requested more frequent trail grooming. The most respondents were in the "satisfied" range of the scale.

Figure 8 shows the distribution of satisfaction level for the individual averages for

Figure 7
Number of Household Snowmobile Trips During the 1999–2000 Season

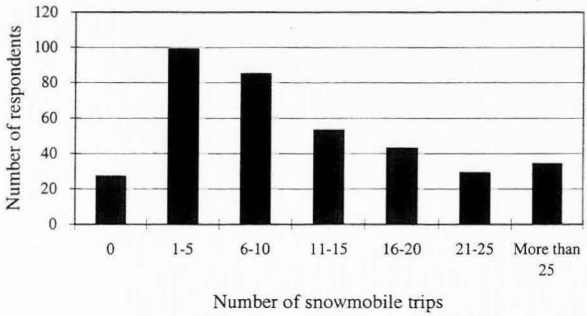


Table 27
Satisfaction Level with Snowmobiling in Utah

Issues	Mean	Std. Deviation	Variance	No Opinion
Variety of trails in the state	3.08	0.50	0.25	31
Plowing at trail heads	2.94	0.57	0.33	21
Number of trails	2.94	0.50	0.25	32
Law enforcement on trails	2.94	0.51	0.26	45
Availability of maps	2.76	0.65	0.43	75
Restrooms at trailheads	2.74	0.63	0.40	52
Information stands at trailheads	2.69	0.81	0.66	74
Garbage facilities at trailheads	2.64	0.63	0.40	81
Trail grooming	2.60	0.58	0.33	24
Parking space availability at trailheads	2.57	0.77	0.59	16

(Mean is based on a scale where 1=Very dissatisfied, 2=Dissatisfied, 3=Satisfied, and 4=Very dissatisfied)

all 10 items. The average individual level of satisfaction was 2.79 (Table 28). This score illustrates that snowmobilers in Utah were generally satisfied to dissatisfied with current snowmobiling conditions in the state. There were still some demands for facilities and service improvements. Additionally, a large proportion of the respondents had no opinion about some issues such as garbage facilities (21.7%), availability of maps (20.0%), and information stands at trailheads (20.0%). While these may not be a big concern for some snowmobilers, more than half of the respondents were not satisfied with these facilities (garbage facilities: 65.1%, availability of maps: 68.1%, and information stands at trailheads: 64.8%). In contrast, for the two lowest scored issues, trail grooming and parking space, few people answered "no opinion" (trail grooming 6.4% and parking space 4.2%). It appeared that trail grooming and parking space availability were the more common concerns of the Utah snowmobilers.

Individual level of satisfaction was compared with the number of annual snowmobiling trips of the respondents. The level of satisfaction and number of annual snowmobiling trips showed a weak positive correlation (r=0.12); thus the level of

Figure 8
Distribution of Satisfaction Level

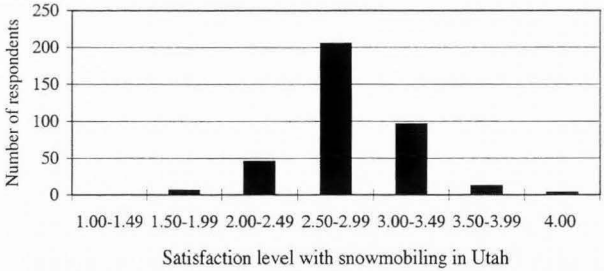


Table 28
Individual Satisfaction Level
of Snowmobiling in Utah

Mean	2.79
Median	2.80
Std. Deviation	0.35
Variance	0.12
Minimum	1.56
Maximum	4.00

satisfaction might not necessarily be the factor which directly influences the number of snowmobiling trips in Utah.

Only 12.7% of the sample subjects (46) answered that they experienced conflicts with other snowmobilers or other types of recreation participants. Conflicts with cross-country and back-country skiers were the most common (54.3%), and conflicts with other snowmobilers were the second largest (32.6%). The reasons for the conflicts with skiers were related to rudeness and attitudes of skiers toward snowmobilers. This includes response like "yelling" and "didn't move out of their way." Conflicts with other snowmobilers were more related to snowmobiling manners

of others. This included "going too fast on the trail" and drinking-related comments. (See Appendix C for all conflict comments.)

Over half (58.4%) of the respondents answered that they were not familiar with the "Know Before You Go" education program. Among those who were familiar with the program (41.6%), 19.3% answered that they had heard of the program but had no personal experience, 75.8% said that they were very satisfied or satisfied with the program, and 4.8% were dissatisfied or very dissatisfied with the program.

Finally, 210 respondents made 270 general comments (Table 29 and Appendix C). Regulation and restriction-related comments were the largest; 83 respondents (30.7% of those who answered) were concerned with closing of snowmobile areas. Comments relating to facilities and services were the second most common; trail grooming and parking space were the two most often mentioned facilities to improve.

Table 29
Open-Ended Comments [8]

Comments	Number	Percent
Regulation/restriction related	96	35.6
Facilities/services related	80	29.6
Snowmobiling area availability	24	8.9
Other recreationists related	10	3.7
Positive comments	10	3.7
Fee related	7	2.6
Interstate registration related	7	2.6
Want more snow	5	1.6
Education program related	4	1.5
Snowmobilers' image	4	1.5
Want public involvement	3	1.1
Environmentalists related	2	0.7
Environmental concern	2	0.7
Other	16	3.7

[8] See Appendix C for full table of comments.

Sociodemographic Characteristics

Table 30 reports selected socio-demographic characteristics of the sample subjects. The average age of the sample was 43.4 years. This average is very close to those of Maine (42.6) and New Hampshire (40.0). The sample subjects' age ranged widely from 16 to 84 years (Figure 9).

A large proportion of sample subjects was male (80.7%). This was also similar to Maine (73%), New York (89.1%), and Vermont (76.3%). However, the sample subjects included those whose names were on the registration list, and do not necessarily reflect the gender of all snowmobilers in Utah. This proportion reports the gender of registered snowmobile owners. The average family size (4.0) was slightly larger than those of Maine (3.1) (Reiling, 1996).

More than half of the respondents (55.3%) answered that their household income is within the range of $60,000–79,999 (Table 31). The mean income was estimated as follows:

$$(\Sigma m*n)/N$$

where m is the mid range of a category, n is the number of respondents that answered each category, and N is the number of respondents (274). The estimated meanhousehold income was $72,508. It was reported that the mean range of household incomes of New York snowmobilers was $40,000–50,000, and mean household income of Maine and New Hampshire snowmobilers was $49,286 and $61,667, respectively.

Table 30
Sociodemographic Characteristics of Sample Subjects

Characteristic	
Average age	43.4
Gender (percent male)	80.7
Family size	4.0
Education (median)	Some college or technical schools
Household income (Median)	$72,508

According the Utah's Division of Travel Development (2000), the average range of household income of recreation participants in Utah was $50,000 to $74,499. These results indicate that Utah snowmobilers are relatively economically well off.

Figure 9
Age Distribution of the Sample Subjects

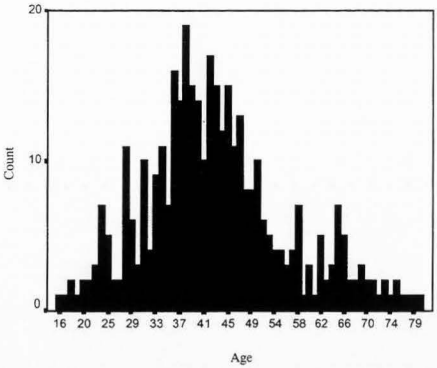


Table 31
Household Income Distribution of Sample Subjects

Income Range	(A) N	(B) Mid Range	(C) (A)*(B)	(C)/n
Less than $20,000	3	20,000	60,000	-
$20,000 to 39,000	26	30,000	780,000	-
$40,000 to 59,999	98	50,000	4,900,000	-
$60,000 to 79,999	74	70,000	5,180,000	-
$80,000 to 99,999	42	90,000	3,780,000	-
$100,000 to 119,999	31	110,000	3,410,000	-
$120,000 or more	37	120,000	4,440,000	-
	311	-	22,550,000	72,508

CHAPTER V

CONCLUSION AND DISCUSSION

Summary of Findings and Conclusions

This study investigated the economic impact of snowmobile trips and related expenditures by registered snowmobilers in Utah. The I-O model using IMPLAN™ with Utah Cross Industrial Matrix 1999 was applied to find direct, indirect, and induced effects in the state as well as aggregated county groups. Also, trip behavior and opinions about snowmobiling related issues were examined.

Economic Findings

Compared to the results of other states, which were described in Chapter II, the number of snowmobiles registered in Utah was relatively small, and the proportion of nonresident to resident registrations was the smallest among the states reviewed. Therefore the net gain from nonresident snowmobilers was probably small, even though the results showed that snowmobiling activities generated a substantial amount of economic impact in the state. Total trip and annual expenditures made in Utah during the 1999–2000 season were estimated to be at $20 million and $32.9 million, respectively. This generated $33.6 million in output impact, $19.2 million in value added impact, and $12.6 million in labor income impact, and created approximately 500 jobs. The estimated government tax revenue was about $5.5 million. This is roughly 1.6% of estimated state and local tax revenues from tourism-related spending in Utah in 1998. The employment impact was relatively small, probably because snowmobiles are not manufactured in Utah, and snowmobile purchases made up a large proportion (27%) of the total annual expenditures. This caused leakage of expenditures from the state. Also, food and drinking expenditures, which would increase Utah jobs and revenue, were small compared to other states. The regional multiplier (Type III multiplier) of snowmobiling for the state was an estimated to be 1.5.

In general, average snowmobiling trip-related expenditures were small in Utah,

probably because a one-day trip was the most common trip style for Utah snowmobilers, so people did not spend much at lodging and eating establishments. For instance, in the New York survey (Merwin Rural Service Institute, 1998), 47.5% of the respondents went on overnight snowmobiling trips, while only 35.7% of respondents of this study went on overnight trips. The results of the Maine survey showed that expenditures on lodging and eating establishments comprised 26.3% of trip-related expenses, while it was merely 8.5% of trip-related expenses for Utah snowmobilers. This may due to cultural differences between the states. In Utah, relatively large family sizes may make it difficult to go on overnight trips, and most people who snowmobile live relatively close to the opportunities (e.g. northern Utah). Also, due to Utah's mountain ranges, most snowmobile areas are relatively small compared to flatter and more continuous northern states. And finally, there is probably less alcohol consumed by Utah snowmobilers because of the strong influence of The Church of Jesus Christ of Latter-day Saints (LDS). Nearly 80% of Utah residents are LDS.

Economic impact was also analyzed at the local (multi-county planning region) level. The results showed large variability in local economic impact. Total trip expenditures were largest in the Wasatch Front and Mountain Lands regions. Despite the popularity of the Bear River region, specified by more than 35% as their favorite snowmobiling area, the region ranked third. This is because gasoline supply was on average the largest proportion of snowmobilers' expenditure; it is not necessarily reflective of the snowmobiling site. Additionally, in Utah there are not many local industries to gain from snowmobilers.

Total snowmobiling-related expenditure (trip and annual expenditures) was the largest in the Wasatch Front and Bear River regions, while it was the lowest in the Uintah Basin and Southeast regions. Total output impact was largest in the Wasatch Front, Mountain Lands, and Bear River regions and smallest in Southeast and Uintah Basin regions. This is no surprising because the majority of respondents live in the Wasatch Front (45%), Mountain Lands (27.3%), or Bear River (17.4%) regions, and people did

not take long trips overall. However, despite the fact that the Bear River region received the second largest proportion of direct expenditures made by snowmobilers, output impact for the Bear River region was smaller than the Mountain Lands region because of the very small multiplier in the Bear River region (1.28). Overall, the local multipliers were small (1.28-1.53). As described in Chapter II, the Michigan (Stynes, Nelson, & Lynch, 1998) surveyors also applied the IMPLAN™ model to their snowmobiling expenditure data. The estimated statewide snowmobiling multiplier in Michigan was 2.0 and local multiplier of five regions varied from 1.55 to 1.97. Several other states applied an estimated multiplier 2.0, supplied by the International Tourism Council. Compared to these multipliers, the estimated snowmobile multiplier for Utah was small. This indicates small local absorption, and probably reflects lack of local industries in Utah and low level of trip expenditures as discussed above.

There were several advantages to applying the I-O model. First, it was understandable because of the relatively simple underlying idea. Second, the detailed categories of industrial sectors (528 sectors) allowed accurate estimation. In this study, IMPLAN™ enabled us to conduct local impact analysis as well as statewide impact analysis. Software is currently available to apply the model, and as far as expenditure data are tractable with surveys, an I-O model is applicable to an economic impact survey of recreation.

Satisfaction and Demographic Findings

The average satisfaction level (2.79) indicates that snowmobilers in Utah range from generally satisfied to dissatisfied with snowmobiling-related services and facilities in the state. Two issues with the lowest level of satisfaction were trail grooming (2.60) and parking space (2.57). Vermont (McElvancy, 1995) and New York surveys also pointed out that trail grooming was an important issue to address, and the Maine survey (Reiling, 1996) identified that it as an important factor in deciding where to snowmobile. Parking space, however, was not a serious concern for snowmobilers of these states.

Additionally, closing of snowmobile areas was an important concern for Utah snowmobilers.

About 12.7% of the sample subjects experienced conflict with other recreation participants, especially skiers and other snowmobilers. This number is relatively low, but indicates a potential problem for conflicts on snowmobile trails in the state.

Over 80% of the sample subjects were male, though this gender proportion does not necessarily represent the real gender proportion of all participants because the survey was conducted with the person who registered the machine. The average age of the sample subjects was 43.4 years. This is very close to the average age of snowmobilers in other states. The estimated mean household income was $72,508. Compared to the average household incomes reported by other states and recreation participants in Utah, this average income was high. Also, average family size (4.0) was relatively large.

Limitations of the Study

There are three potential sources of bias in this study: (1) estimation of the population (number of households with registered snowmobiles during the 1999–2000 season), (2) representativeness of the population, and (3) accuracy of expenditure-related answers.

The estimation of the population was probably the most critical limitation of this study. Because the number of annual snowmobile registrations was not kept up-to-date in Utah, the population was estimated from the previous seasons' snowmobile registration list. This list might include people who previously registered their machines but did not register during the 1999–2000 season. Conversely, there must be people who did not register previously but registered this season. Therefore, it was assumed that these two groups of people were roughly equal in size, the number of the registrants on the list represented current registration, and there was no systematic bias due to this estimation

There were also limitations concerning the representativeness of the population. More than half (52.5%) of the subjects originally selected for the study was excluded

from the beginning of the survey because of unavailable phone numbers (details are described in Chapter IV). Although the response rate of this survey resulted in nearly 60%, the proportion of selected subjects with an unavailable phone number was large. It was unknown what types of people were excluded from the survey because of unavailable phone numbers, but it is likely that nonresident seasonal home owners are underrepresented in the sample.

In the phone interview, respondents were asked to itemize trip and annual expenditures during the season. Thus, these answers were based on their recall and estimation. Trip expenditures are probably more accurate than annual expenditures because the respondents were asked about their most recent snowmobile trip and it was assumed that across the entire sample, the most recent trip was representative of snowmobile trips in general. The annual expenditures, on the other hand, were more likely to be answered roughly.

It should also be noted that the economic impact results are conservative for four reasons. First, the results were based on the application of conservative multipliers using IMPLAN™. Second, purchases of secondary houses which may relate to snowmobiling activities were not included. Third, the survey was conducted at the end of the season, so people might tend to travel further to get to areas where there was still snow for their most resent trip, and the Bear River region, which is the most possible area having snow at the end of season, also has the lowest in regional multiplier. Fourth, because of poor snow conditions during the 1999-2000 season, half of the respondents answered that the number of their snowmobiling trips was not typical. For these people, the average number of snowmobiling trip per season was 19 times. This was more than 1.5 times the average number of trips taken during the 1999-200 season.

Recommendations for Management

Based on future predictions of snowmobiling activities in the Intermountain West (details are described in Chapter II), it is likely that participation in snowmobiling activities in Utah will continue to increase in the future. Further improvements of

registration management and services are necessary to attract snowmobilers. In Utah, the number of nonresident snowmobile registrations was very small compared to other states. Attracting nonresident snowmobilers to Utah will bring a net gain to the state's economy as will increasing the number of people who take overnight trips in general. For example, travel regions and local chambers of commerce could work with local business to provide and advertise overnight snowmobiler specials and special rates for families for group packages.

Also, it is strongly recommended that the state keep track of the number of annual snowmobile registrations as well as the number of registrants. This number could be a rough indicator of the popularity of snowmobiling in the state. Improvement of accessibility information for the registrants, such as trail grooming, snow conditions, and available facilities at snowmobile sites, is also recommended. The information availability could influence peoples' decisions about recreation participation. Additionally, satisfaction measures resulted in a low satisfaction level with parking space and trail grooming. Managers should make it a priority to specifically improve these services and facilities. Further research could provide information to address area-specific improvements of facilities.

Conflicts between winter sports participants were potential issues that need to be addressed on a site-by-site basis. Although a still relatively small proportion of people (12.7%) had personally experienced a conflict with other recreation participants, the intensification of the conflicts may be on the rise in certain areas. Conflicts with skiers will need to be addressed with more active management and interest group collaboration approaches. Manning (1999) proposed that educational programs might be an effective management approach to address conflicts between recreation participants. It can help establish etiquette and increased tolerance for other recreation participants and thus help to address interest-based conflict. Providing better information can also improve one's expectations and indirectly increase satisfaction.

Recommendations for Further Research

As previously described, this study addressed the current economic impact of snowmobiling activities and opinions of snowmobilers in Utah, but the elasticity of demand for snowmobiling activities in the state was not considered in this study. The demand of any goods that the consumer is willing to purchase is partly determined by the prices of the goods (snowmobiling participation in this case) and substitutes (other recreational activities) (Mankiw, 1998). For example, there are always alternatives to snowmobiling in Utah, such as choosing "not to snowmobile," "snowmobiling in other states," or "participating in other winter sports." Peoples' decision to participate in recreational activities is possibly influenced by the management of facilities and changes in government policies. The more close substitutes for snowmobiling that people have, the more elastic the demand for snowmobiling. By knowing demand elasticity and factors that could influence snowmobilers' decisions as to where to snowmobile, the results of policy changes would be more predictable, and economically efficient management would be possible.

Site-specific surveys and management cost surveys are also useful for snowmobiling site management and policy decisions. These will help managers identify specific management requirements as well as deciding management actions. A survey of snowmobiler trip behavior could also address some of the questions related to low trip expenditures and number of overnight stays. This would help explain the relatively low level of snowmobiling expenditures in Utah compared to other states.

Related to this, it is recommended to the state to conduct comprehensive and periodic economic impact surveys of recreational activities in the state. As mentioned in the literature review section, tourism and recreation, especially in winter sports, are economically vital in Utah. The I-O model is applicable with relatively simple procedures, and up-to-date cross-industrial coefficients can provide accurate results if consistent and accurate expenditure data are available.

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APPENDIXES

Appendix A. Survey Questionnaire

1999-2000 UTAH SNOWMOBILING SURVEY ID._____

1. What is your favorite area to snowmobile in Utah? _____
   [CHECK OFF THE FOLLOWNG REGIONS. ASK TO EXPLAIN IF THE AREA IS UNCLEAR. REFER TO ATTACHED MAPS.]
   - ❑ Hardware Ranch, Monte Cristo, and Logan Canyon, (Cache, Rich, and Weber)
   - ❑ Wasatch Mountain, (Salt Lake, Summit, Utah and Wasatch)
   - ❑ Mirror Lake, and Current Creek, (Summit, Wasatch, and Duchesne)
   - ❑ Uinta Basin, (Daggett, and Uinta)
   - ❑ Ephraim, Manti, Joe's Valley, and Ferron, (Sampete and Emery)
   - ❑ Scofield, and Skyline Drive (Utah, Sampete, Wasatach, and Emery)
   - ❑ Fishlake, (Seiver, Piute, and Wayne)
   - ❑ Cedar Mountain, and East Fork, (Iron, Garfield, and Kayne)
   - ❑ Strawberry Valley, (Wasatch and Utah)
   - ❑ Other areas (please specify county):_____

2. What is your *favorite* snowmobiling riding style? Would you say… **[CHECK ONE.]**
   - ❑ Trail Riding,
   - ❑ Off-trail Riding,
   - ❑ Side Hilling/High marking,
   - ❑ Hill Climbing,
   - ❑ Combination of above (please specify):_____
   - ❑ Other (please specify):_____

3. What types of groups do you usually go with on a typical snowmobile trip? Do you usually go… **[CHECK ALL THAT APPLY.]**
   - ❑ Alone,
   - ❑ With members of your immediate family,
   - ❑ With other relatives,
   - ❑ With snowmobile club members,
   - ❑ With friends,
   - ❑ With others (please specify):_____

4. How many registered snowmobiles did you have in your household during this season?_____

Now I have some questions about your snowmobiling trips in Utah this season. Since there are still a couple of weeks left in this snowmobiling season, please include any trips you have planned for the rest of the season to answer these questions.

5. Including yourself, how many members of your household went snowmobiling at least once in Utah during this season?_____

6. How often did you or the other people living in your household snowmobile during this season?
   _____times

7. How many overnight trips in Utah did you and other people living in your household take during this past season? _____trips **[BY OVERNIGHT TRIPS I MEAN**: Where you went snowmobiling more than one day but did not return to your own home.]

8. Did *you* snowmobile during this season?
   - ❑ Yes
   - ❑ No **[GO TO 18]**

   8a. How many times did you go snowmobiling during this season? _____times

   8b. Is this a typical number of snowmobiling trips for you during a season?
   - ❑ Yes **[GO TO 9]**
   - ❑ No **[GO TO 8c]**

   8c. If no, how many times do you go snowmobiling during a typical season? _____times

9. Which activities did you participate in during this season? Did you go... **[CHECK ALL THAT APPLY.]**
   - ❑ Trail Riding?
   - ❑ Off-trail Riding?
   - ❑ Side Hilling or High marking?
   - ❑ Hill Climbing?
   - ❑ Other (please specify):_____

10. When was your most recent snowmobiling trip in Utah? _____

11. Where did you go for your most recent snowmobiling trip in Utah?_____
    [CHECK OFF THE FOLLOWING REGION. ASK TO EXPLAIN IF THE AREA IS UNCLEAR REFER TO ATTACHED MAPS.]
    - ❑ Hardware Ranch, Monte Cristo, and Logan Canyon, (Cache, Rich, and Weber)
    - ❑ Wasatch Mountain, (Salt Lake, Summit, Utah and Wasatch)
    - ❑ Mirror Lake, and Current Creek, (Summit, Wasatch, and Duchesne)
    - ❑ Uinta Basin, (Daggett, and Uinta)
    - ❑ Ephraim, Manti, Joe's Valley, and Ferron, (Sampete and Emery)
    - ❑ Scofield, and Skyline Drive (Utah, Sampete, Wasatach, and Emery)
    - ❑ Fishlake, (Seiver, Piute, and Wayne)
    - ❑ Cedar Mountain, and East Fork, (Iron, Garfield, and Kayne)
    - ❑ Strawberry Valley, (Wasatch and Utah)
    - ❑ Other Areas (please specify county):_____

[NOTE!]

11a. **[IF THE REGION IS NOT SAME AS Q1]** Why did you go to_____ **[FROM Q11]** rather than_____**[FROM Q1]** ?

Now I would like to ask you a series of questions about this trip to_____ **[FROM Q11]**.

12. How long was this snowmobile trip? _____days

13. How many miles did you snowmobile on this trip? _____miles

14. How much gasoline did you use in your *snowmobiles*? _____gallons

15. How many miles, did you travel to get to the snowmobile trailhead for this trip? _____miles

16. Did you go alone on this trip or were there other members of your household with you?
    - ❑ Alone **[GO TO 17]**
    - ❑ With other members of my household **[GO TO 16a]**

    16a. How many other people from your household went with you? _____

17. Now I would like to get an estimate of how much your household spent on your most recent snowmobile trip and where you made those expenditures. Please give me your best estimate for each category of expense that I mention, but please only report expenses you made in Utah, and just report the proportional share of expenses for your household. Okay? **[IF REQUESTED TO EXPLAIN**: For example, if a member of your household shared a motel room with other riders, only report your share of the cost of the motel room.] How much did you spend on…

Items	Total dollars spent	In city you live	En route	At destination
Gasoline and oil for your snowmobiles	$_____	$_____	Where $_____	$_____
Gas and oil for tow vehicles	$_____	$_____	Where $_____	$_____
Lodging	$_____	$_____	Where $_____	$_____
Eating and drinking establishment	$_____	$_____	Where $_____	$_____
Food from grocery or convenience stores	$_____	$_____	Where $_____	$_____
Parking area fees	$_____	$_____	Where $_____	$_____
Other recreation activities (like movies, ski areas, etc.)	$_____	$_____	Where $_____	$_____
Snowmobile rentals, tour packages, or guide services	$_____	$_____	Where $_____	$_____
Repairs or maintenance on snowmobiles	$_____	$_____	Where $_____	$_____
Retail items	$_____	$_____	Where $_____	$_____

• Did you have any other expenses you can remember? If so, please specify the item(s) and the expenditure.

Item 1 _____ $ _____

Where were those expenses made?

❑ In the county you live, ❑ on route **[IF SO:** Which city?]_____, or

❑ at destination?

Item 2 _____ $ _____

❑ In the county you live, ❑ on route **[IF SO:** Which city?]_____, or

❑ at destination?

18. O.K., now I'm going to read a list of items that might be purchased by snowmobilers over the course of a year. Indicate the amount spent by your *household* during the last 12 months for each category of item. Did you buy any…

Items	Total dollars spent	In city you live	Other city
Snowmobiles	$_____	$_____	Where $_____
Trailers used for transporting snowmobiles	$_____	$_____	Where $_____
Snowmobile repairs, parts, or accessories (belts, sparkplugs, oil, etc.)	$_____	$_____	Where $_____
Insurance for snowmobiles	$_____		
Snowmobile clothing	$_____	$_____	Where $_____
Snowmobile club dues and other club expenses	$_____	$_____	Where $_____
Snowmobile registration, license, taxes	$_____		
Snowmobile storage	$_____	$_____	Where $_____

• Can you think of other expenditures that you made primarily to support snowmobiling activities? If so, please specify the item(s) and the expenditure.

Item 1 _____ $ _____

Was that spent in the county that you live in? ❑ Yes ❑ No **[IF SO**: Which city?]_____

Item 2 _____ $ _____

Was that spent in the county that you live in? ❑ Yes ❑ No **[IF SO:** Which city?]_____

• Did you make any of your purchases over internet? **[IF SO:** What? How much total?]

Item _____ $ _____

19. Thinking about the total amount you spent for snowmobiling this year, is it less, about the same, or more than a typical year?

❑ Less than (How much less?) $ _____

❑ About the same

❑ More than (How much more?) $ _____

20. Now I have some questions about your level of satisfaction with the available snowmobile sites and services in Utah. For each, please tell me if you are very satisfied, satisfied, dissatisfied, or very dissatisfied.

	Very satisfied	Satisfied	Dissatisfied	Very Dissatisfied	**[IF ANSWERED DISSATISFIED** : Why are you dissatisfied?]
Parking space available at trailheads					
Plowing at trailheads in Utah					
Restrooms at trailheads					
Garbage facilities at trailheads					
Information stands at trailheads					
Trail grooming in Utah					
Number of trails					
Variety of trails in the state					
Availability of maps					
Law enforcement on trails					

21. When you are snowmobiling, have you had any conflicts or problems with other snowmobilers or any other types of recreationists?

❑ No

❑ Yes **[IF SO]** Who?_____

What was the problem?_____

Where_____

22. Are you familiar with the "Know Before You Go" snowmobile education program?

❑ No

❑ Yes **[IF SO]** How satisfied are you with this program? Are you…

❑ Very satisfied ❑ Dissatisfied

❑ Satisfied ❑ Very dissatisfied

[IF DISSATISFIED: Why are you dissatisfied?]_____

Finally I have several demographic questions. **These are completely confidential and will only be used for statistical summaries of our results.**

23. What is your age? _____years

24. How many people, including yourself, live in your household? _____

25. What is the highest year or grade of school you have completed?

❑ Eight years or less,

❑ Some high school,

❑ High school graduate, or equivalent,

❑ Some college or technical school,

❑ Associate degree,

❑ Bachelors degree,

❑ Graduate or professional degree.

26. What is your household income?

❑ Less than $20,000 ❑ $20,000-39,999

❑ $40,000-59,999 ❑ $60,000-79,999

❑ $80,000-99,999 ❑ $100,000-119,999

❑ $120,000 or more

Do you have any additional comments or concerns about snowmobiling in Utah?

Would you like to receive a brief report of the survey results?

❑ No ❑ Yes **[IF YES, VERIFY CORRECT ADDRESS.]**_____

Thank you very much for your time and cooperation.

Appendix B. Interviewer Instruction

1999-2000 UTAH SNOWMOBILING SURVEY

Interviewer instructions

Study purpose

This study fundamentally proposes to estimate statewide economic impact of snowmobiling in Utah. The questions include itemized household expenditure of the most recent trip and itemized annual household expenditures. Also, the questions deal with their degree of satisfaction of snowmobiling in Utah, and snowmobiling education, conflicts, and demographics.

General Rules

1. Be personable and conversational, but read the questions *exactly as written*. The questions in upper/lower case are what you read to the respondents. Cap letters are instructions to the interviewer or possible responses that *you do not read*. Where there is a response format in the body of the question, read the responses clearly and hesitate a bit between potential responses.
2. If a respondent wants clarification, try to simply repeat the key part of the question with a little different emphasis. If you change some wording, even if by accident or to clarify a question, write and circle the wording you use in the margins.
3. If a respondent declines an interview, try to reschedule at a convenient time. Emphasize the value of results for helping decide how to manage snowmobiling trails in Utah.
4. If a respondent wants to quit in the middle of the survey, skip to questions 17 and 18 and ask them to just answer some expenditure questions.
5. For some questions, we want to "prompt" for follow up information. Use the prompts identified on the survey (like "anything else?" or "any other reasons?" and keep prompting until the respondent says "no." Write the prompts you use, even if they are the same as on the questionnaire, in the margins. Sometimes *silence* is a good prompt.
6. Write *everything* that is said by you or the respondent that is not already written on the survey including clarifications, prompts. And open-ended responses. Use abbreviations when possible, such as AE="anything else?" R=respondent, I-interview, I'R=interviewer, S=snowmobiles, etc. Be consistent with your abbreviations and write a key to your abbreviations that are not self-evident.
7. Practice the survey, and especially note the "skip patterns."
8. Complete a cover sheet for every potential contact person, even if you can't get them or if it is a business, etc. This information is important for calculating response rates.
9. Best contact times: 6:00 to 9:00 evenings and Saturday and Sunday afternoons and Sunday evenings.

Introduction: Encouraging Participation

1. Act friendly and familiar when you ask for the respondent. We *need to get a high response rate*, so ask for the respondent like you would ask for a friend or acquaintance. For example, "Hi, is Buzz McGillicutty there?" Use the first name if available, but not Mr. or Mrs. (but assume *Mr.* if the first name is not available). *Try to figure out the pronunciation of the person's before you dial.* Nothing is bigger turn off than having one's name mispronounced.
2. If the person who answers the phone asks "who is calling" before getting the R, say "This is Eric Toman and I'm calling from Utah State University." If they say R is not available, just leave your name, say you will call aback, and ask them for a good time to call.
3. If they ask "what's this survey about," or "how is this information going to be used?", say "We are conducting a survey for the Utah State Parks Division, and they used the results to estimate the economic impact of snowmobiling in Utah to help manage the snowmobiling trails in Utah.
4. If they want more information:"...it's about how you spent money to support snowmobiling activities, and your satisfaction of snowmobiling in Utah."
5. If you detect hesitancy, explain that we only call a small sample of snowmobilers and that is important to get their input so the results are an accurate picture of how Utah snowmobilers spent money to support snowmobiling activities.
6. Be very polite and encourage participation without being a nuisance. Try to gent an interview when you have them on the phone, but very sensitive to the fact that they may be in the middle of something and may want you to call back later.
7. Complete call record clearly; you may not be doing the follow up calls.
8. If you get an answering machine, don't leave the message, but try back several times. When you are getting desperate, leave a message with an encouragement to participate in the study and ask them to call you at their convenience and tell them you will call them right back so it won't cost them.
9. The general *call back rule* is a minimum of six attempts (more if you are just getting a machine or no answer), and at least three contacts when you actually speak to the R. If they put you off three times and seem to be very unwilling, call it a rejection.

Specific Questions

1. **Question 1 and 11.** If unclear, ask to explain the areas and try to get them to pin down the specific areas (see internet maps of areas) or write down local towns.
2. **Question 4.** Purpose is to find out number of registered snowmobiles in their households. Household means the other people in their family or people live with and share household expenses on a regular base.

3. **Question 8.** Be very careful with the skip pattern.
4. **Question 8c.** Purpose is to find out approximate frequency of snowmobiling in a typical season.
5. **Question 11.** When they are answering, quickly check the response against question 1. If the respondent answer the different regions from question 1, ask, the reason they did not go to their favorite region they answered in question 1. For example, if the respondent answered Wasatch Mountain in question 1, and Fishlake in question 11, ask, "Why did you go to Fishlake rather than the Wasatch Mountain area?"
6. **Question 17, 18.** Household means the other people in their family or people live with and share household expenses on a regular base.
7. **Question 20.** Repeat the scale as needed.
8. **Question 20 and 22.** If the respondent answers "dissatisfied" or "very dissatisfied", ask the reason.
9. **Question 22.** "Know Before You Go" is a snowmobile education program for children.
10. **Question 23-26.** Emphasize that these questions are confidential and will only be used in summary form to help us describe who registered snowmobile owners are as a group in Utah.
11. **Question 25.** Read the potential responses if necessary.
12. **Last page.** Take notes on other comments as verbatim a you can, and probe, "Is there anything else?" Write debriefing notes here but be sure to circle or identify your comments so they are not confused with those of the respondents. Be sure to Rs ask if they want a summary of results, and to THANK THEM PROFUSELY for their time and help.
13. If they answer, "don't know" to a question without that category, write "DK" out to side question.
14. For purchases made from out of state suppliers, write down city and /or state including mail order companies.
15. If they had heard of "Know before you go" but haven't gone through the program, write "heard of /not participated" out to side.

Appendix C. Summary Tables

Utah Registered Snowmobile Owner's Population and Sample Distribution

Group			Number	Percentage of Group
Population of Utah registered snowmobile owners [1]			13,163	100% of population
	Selected sample		1,441	10.9% of population
		Ineligible [2]	756	52.5% of Selected sample
		Valid phone numbers	685	47.5% of Selected Sample
		Respondents	**373**	**54.5% of valid phone numbers [3]**
		Non-respondents [4]	312	45.5% of valid phone numbers

[1] Taken from State of Utah, registered snowmobile owners lists, 1998, supplied by Tax Commission and the Division of Motor Vehicles.

[2] This includes no phone numbers (586), disconnected or moved (68), wrong numbers (35), not snowmobile (33), and sold snowmobiles (34). For much of the data provided by Tax Commission and the Division of Motor Vehicles no phone number was listed for many snowmobile owners. Therefore, a large porting of the selected sample was eliminated from the sampling process from the start.

[3] This is also the response rate for the survey.

[4] This includes rejection (114), answering machine (77), unavailable respondent (73), no answer (47), and other (1).

Q1: Favorite Snowmobile Areas

Areas	Number	Percent
Hardware Ranch, Monte Cristo, and Logan Canyon	131	35.1
Strawberry Valley	60	16.1
Wasatch Mountain	45	12.1
Mirror Lake and Current Creek	42	11.3
Scofield, and Skyline Drive	38	10.2
Uinta Basin	17	4.6
Ephraim, Manti, Joe's Valley, and Ferron	16	4.3
Fish Lake	6	1.6
Cedar Mountain and East Fork	6	1.6
Other areas [1]	12	3.2

[1] This includes Timber Lake (2), Anywhere at all in northern Utah (1), Around Garland (1), Duck Creek in King County (1), His dry farm in Box Elder County (1), Manti-La Sal National Forest (1), Tooele (1), Wasatch County (1), Washington County (1), and Willand Park in Box Elder County (1).

Q2: Favorite Snowmobile Riding Style

Riding Styles		Number	Percent
Trail Riding		63	16.9
Off-trail Riding		150	40.2
Side Hilling/High Marking		11	2.9
Hill Climbing		19	5.1
Other		8	2.1
Combination of Above		122	32.7
	All	31	25.4% of respondents who answered "combination of above"
	Trail Riding & Off-trail Riding	21	17.2
	Off-trail Riding & Hill Climbing	17	13.9
	Off-trail Riding, Side Hilling/High Marking & Hill Climbing	13	10.7
	Did not specify the combination	13	10.7
	Trail Riding & Hill Climbing	7	5.7
	Off-trail Riding & Side Hilling/High Marking	7	5.7
	Side Hilling/High Marking & Hill Climbing	7	5.7
	Trail Riding, Off-trail Riding & Hill Climbing	4	3.3
	Trail Riding, Off-trail Riding & Side Hilling/High Marking	1	0.8
	Trail Riding & Side Hilling/High Marking	1	0.8

Q3: Types of Groups Respondents Go with on a Typical Snowmobile Trip

Types of Groups	Number [1]	Percent
With friends	255	68.4
With members of immediate family	230	61.7
With other relatives	44	11.8
With snowmobile club members	8	2.1
With others	7	1.9
Alone	5	1.3

[1] Respondents could select multiple categories. The 373 respondents.

Q4: Number of Registered Snowmobiles in a Household During 1999-2000 Season

Number of Registered Snowmobiles *(Mean=2.6)*	Number	Percent
0	1	0.3
1	69	18.5
2	154	41.3
3	57	15.3
4	66	17.7
More than 5	26	6.9

Q5: Number of Household Members Who Went on Snowmobile Trips in Utah During 1999-2000 Season

Number of Household Members *(Mean=3.2)*	Number	Percent
0	18	4.8
1	58	15.5
2	95	25.5
3	46	12.3
4	66	17.7
5	34	9.1
6	35	9.4
7	10	2.7
8	7	1.9
9	1	0.3
10	3	0.8

Q6: Number of Household Snowmobile Trips During 1999-2000 Season

Number of Household Snowmobile Trip *(Mean=12.3)*	Number	Percent
None	15	4.2
1 to 5	116	32.1
6 to 10	80	22.2
11 to 15	54	15.0
16 to 20	35	9.7
More than 21	61	16.9

Q7: Number of Overnight Snowmobile Trips

Number of Overnight Trips *(Mean=1.6)*	Number	Percent
None	232	64.3
1 to 5	100	27.7
6 to 10	15	4.2
More than 11	14	3.9

Q8: Snowmobile Trip During 1999-2000 Season

Characteristic		Number	Percent
Went snowmobile trip this season	Yes	346	92.8
	No	27	7.2
Number of snowmobile trips during this season *(Mean=12.5)*	None	27	7.3
	1 to 5	99	26.8
	6 to 10	85	23.0
	11 to 15	53	14.3
	16 to 20	43	11.6
	21 to 25	29	7.8
	More than 25	34	9.2
If went to snowmobile trip, is this a typical number of snowmobile trips in a season?	Yes	174	51.0
	No	167	49.0
If no, typical number of snowmobile trip. *(Mean=19.0)*	1 to 5	13	7.8
	6 to 10	28	16.9
	11 to 15	42	25.3
	16 to 20	34	20.5
	21 to 25	18	10.8
	25 to 30	11	6.6
	More than 30	20	12.0

Q9: Snowmobile Activities Participated in During the 1999-2000 Season

Activities	Number [1]	Percent
Off-trail Riding	271	32.4
Trail Riding	259	30.9
Side Hilling/High Marking	150	17.9
Hill Climbing	149	17.8
Other	8	1.0

[1] Respondents could answer multiple categories.

Q10-16:The Most Recent Snowmobile Trip Characteristic

Went on the trip with household members	Yes	186	54.1
	No	158	45.9
If yes, number of people from household went with *(Mean=2.5)*	1	78	43.3
	2	32	17.8
	3	24	13.3
	4	26	14.4
	More than 5	20	11.1
Month of the most recent snowmobiling trip	November	2	0.6
	December	8	2.4
	January	14	4.2
	February	71	21.3
	March	115	34.4
	April	91	27.2
	May	32	9.6
	June	1	0.3

Snowmobile area	Hardware Ranch, Monte Cristo, and Logan Canyon	116	33.5
	Mirror Lake and Current Creek	50	14.5
	Strawberry Valley	47	13.6
	Wasatch Mountain	45	13.0
	Scofield, and Skyline Drive	30	8.7
	Uinta Basin	20	5.8
	Ephraim, Manti, Joe's Valley, and Ferron	16	4.6
	Fish Lake	8	2.3
	Cedar Mountain and East Fork	5	1.4
	Other areas [1]	9	2.6
Number of days on this trip *(Mean=1.3)*	1	284	82.1
	2	41	11.8
	3	15	4.3
	More than 3	6	1.7
Miles snowmobiled *(Mean=57.0)*	None	1	0.3
	1 to 20	45	13.3
	21 to 40	85	25.1
	41 to 60	121	35.7
	61 to 80	42	12.4
	81 to 100	19	5.6
	More than 100	26	7.7

Gasoline used in their snowmobiles (gallons) *(Mean=13.7)*	None	1	0.3
	1 to 5	83	25.6
	6 to 10	141	43.5
	10 to 15	49	15.1
	16 to 20	13	0.4
	More than 20	37	11.6
Miles traveled to get to the trail head *(Mean=50.1)*	None	5	1.5
	1 to 20	72	21.7
	21 to 40	89	26.8
	41 to 60	83	25.0
	62 to 80	38	11.4
	81 to 100	23	6.9
	More than 100	22	6.6
Went on the trip with household members	Yes	186	54.1
	No	158	45.9
If yes, number of people from household went with *(Mean=2.5)*	1	78	43.3
	2	32	17.8
	3	24	13.3
	4	26	14.4
	More than 5	20	11.1

[1] This includes Bench Creek (1), Grantsville (1), Hickman Canyon (1), Southern Utah (1), Swan Park (1), Timber Lake (1) and Twelve Miles Canyon (1).

Q17: Expenditures for Most Recent Snowmobile Trip

Expenditure Categories	Dollars Spent	Number	Percent
Gasoline and oil for snowmobiles *(Mean=31.03)*	None	5	1.5
	1 to 20	189	56.4
	21 to 40	84	25.1
	41 to 60	33	9.9
	More than 60	24	7.2
Gas and oil for tow vehicles *(Mean=22.40)*	None	19	5.7
	1 to 20	196	58.7
	21 to 40	91	27.2
	41 to 60	18	5.3
	More than 60	10	3.0
Lodging *(Mean=6.39)*	None	330	97.3
	More than 1	9	2.7
Eating and drinking establishments *(Mean=8.50)*	None	227	67.2
	1 to 25	83	24.6
	25 to 50	20	5.9
	More than 50	8	2.4
Food from grocery or convenience stores *(Mean=13.28)*	None	115	33.9
	1 to 25	184	54.3
	25 to 50	23	6.8
	More than 50	17	5.0
Parking area fees *(Mean=1.07)*	None	265	78.4
	1 to 5	64	18.9
	More than 5	9	2.7
Other recreation activities *(Mean=0.79)*	None	329	97.6
	More than 1	8	2.4

Snowmobile rentals, tour packages, or guide services *(Mean=0.75)*	None	336	99.1
	More than 1	3	0.9
Repairs or maintenance on snowmobiles *(Mean=36.86)*	None	288	84.7
	1 to 100	32	9.4
	More than 100	20	5.9
Retail items *(Mean=5.67)*	None	325	95.9
	More than 1	14	4.1

Note: Mean of "other expenditure (Miscellaneous personal service)" is $0.13.

Q18: Snowmobiling Related Annual Expenditures

Expenditure Categories	Dollars Spent	Number	Percent
Snowmobiles *(Mean=1623.45)*	None	273	74.2
	1 to 5000	36	9.8
	5001 to 10000	47	12.8
	More than 10000	12	3.3
Trailers used for transporting snowmobiles *(Mean=316.53)*	None	319	86.7
	1 to 1000	21	5.7
	More than 1000	28	7.6
Snowmobile repairs, parts, or accessories (belts, sparkplugs, oil, etc.) *(Mean=542.27)*	None	62	16.9
	1 to 500	207	56.6
	501 to 1000	51	13.9
	1001 to 1500	15	4.1
	1501 to 2000	8	2.2
	2001 to 2500	8	2.2
	More than 2500	15	4.1

Insurance for snowmobiles *(Mean=125.70)*	None	184	51.7
	1 to 100	32	9.0
	101 to 200	58	16.3
	201 to 300	41	11.5
	More than 300	41	11.5
Snowmobile clothing *(Mean=115.98)*	None	222	60.2
	1 to 100	41	11.1
	101 to 200	46	12.5
	201 to 300	22	6.0
	301 to 400	10	2.7
	401 to 500	10	2.7
	More than 500	18	4.9
Snowmobile club dues and other club expenses *(Mean=12.31)*	None	325	88.3
	1 to 100	29	7.9
	More than 100	14	3.8
Snowmobile registration, license taxes *(Mean=168.92)*	None	16	4.6
	1 to 100	119	34.5
	101 to 200	121	35.1
	201 to 300	52	15.1
	301 to 400	18	5.2
	More than 400	19	5.5
Snowmobile storage *(Mean=22.63)*	None	346	93.8
	More than 1	23	6.2

Note: Mean of "other expenditure" is $6.59. This includes rentals ($4.03), miscellaneous retail ($0.16), tools ($0.12), and hotels ($2.28).

Q19: Level of Total Expenditure of This Season

Characteristic			Number	Percent
Less than typical year			146	40.0
About the same			144	39.5
More than typical year			75	20.5
	If less than typical year, how much less? *(Mean=887.78)*	1 to 500	84	65.1
		501 to 1000	19	14.7
		More than 1000	26	20.2
	If more than typical year, how much more? *(Mean=3705.52)*	1 to 500	15	21.1
		501 to 1000	16	22.5
		More than 1000	40	56.3

Q20: Level of Satisfaction with Snowmobile in Utah

Characteristic	Very dissatisfied	Dissatisfied	Satisfied	Very satisfied	Mean [1]
Variety of trails in the state	0.0% (0)	8.8% (30)	74.3% (254)	17.0% (58)	3.08
Plowing at trailheads in Utah	2.6% (9)	11.9% (42)	74.4% (262)	11.1% (39)	2.94
Number of trails	1.2% (4)	16.1% (55)	70.1% (239)	12.6% (43)	2.94
Law enforcement on trails	0.9% (3)	13.4% (44)	76.2% (250)	9.5% (31)	2.94
Availability of maps	2.3% (7)	29.5% (88)	58.4% (174)	9.7% (29)	2.76
Restrooms at trailheads	2.8% (9)	25.2% (81)	66.4% (213)	5.6% (18)	2.74
Information stands at trailheads	2.3% (7)	32.9% (98)	58.1% (173)	6.7% (20)	2.69
Garbage facilities at trailheads	4.8% (14)	30.1% (88)	61.3% (179)	3.8% (11)	2.64
Trail grooming in Utah	11.5% (40)	30.7% (107)	49.0% (171)	8.9% (31)	2.60
Parking space available at trailheads	9.5% (34)	31.4% (112)	51.5% (184)	7.6% (27)	2.57

[1] Mean is based on a scale where 1=Very dissatisfied, 2=Dissatisfied, 3=Satisfied, and 4=Very satisfied.

Reasons for Dissatisfaction

Parking space available at trailheads

Reasons	Number	Percent
Not enough space [1]	122	82.4
Not maintained [2]	5	3.4
Not near enough [3]	5	3.4
Charging is a bad idea [4]	4	2.7
Other [5]	12	8.1

[1] This includes "No space", "No parking area", and "Crowded". Specific areas mentioned are Strawberry (7), Mirror Lake (3), Wood Land (3), Beaver Mountain (1), Cozy Dam (1), Davis County (1), Fairview (1), Farmington (1), Franklin Basin (1), Kamas (1), Mantua (1), Monte Cristo (1), Sinks (1), Smith More House (1), Soap Stone (1), Timpanogas (1) and Utah County (1).
[2] This includes "Need improvement". Specific area mentioned is Mirror Lake (2).
[3] This includes "Not high enough". Specific area mentioned is Heber (1).
[4] This includes "Not worth charging". Specific areas mentioned are Farmington (2), Fairview (1), Soap Stone (1), Strawberry (1), Tony Grove (1) and Wood Land (1).
[5] This includes "bad" and "Could be better".

Other comments

Comments for "Not enough space"

No space if you get there late. (5)
Not enough space during weekend (5)
Need different spaces for motor homes (3)
Not enough space especially when show is good (1)
In sufficient parking area is one of the worst thing in Utah. (1)
Fishermen get the space in Strawberry (1)
Need something near Lake Creek near Heber (1)

Comments for "Other"

Forest Service bothers us for parking in some places. (1)
Private guy charges, but the place got smaller than when the public utility handled it. (1)

Plowing at trailheads in Utah

Reasons	Number	Percent
Could be better [1]	21	43.8
Not often enough	18	37.5
More area	6	12.5
Other [2]	3	6.3

[1] This includes "Poor", "Rough", "Don't do anything" and "Do a better job". Specific areas mentioned are Black Smith Fork (1), Clear land (1), Cozy Dam (1), Kelly Canyon (1), Neeble (1) and Temple Fork (1).
[2] This includes "Bad". Specific area mentioned is Monte Cristo (1).

Other comments
Comments for "Other"

Don't do it properly for size of trailers. (1)
Some days are good, others aren't so good. (1)

Restrooms at trailheads

Reasons	Number	Percent
Not enough [1]	61	70.9
Not maintained well [2]	18	20.9
Other [3]	7	8.1

[1] This includes "None", "Need more" and "Not available". Specific areas mentioned are Scofield (2), Soap Stone (2), Strawberry (1), Tony Grove (2), Clear Land (1), Fairview (1), Guardsman Pass (1), Mantua (1), Monte Cristo (1), Payson Canyon (1), Wolf Creek (1) and Wood Land (1).
[2] This includes "Not clean" and "Lack of facilities". Specific area mentioned is Wolf Creek (1).
[3] This includes "Bad". Specific area mentioned is Franklin Basin (3).

Other comments
Comment for "Not enough"

Need restrooms 20-30 miles in. (1)

Comments for "Other"

No heat. (1)
Snowed in and hard to use. (1)
Stock with toilet paper more often. (1)
Need to shovel around restrooms in Franklin Basin. (1)
Often damaged from vandalism in Franklin Basin. (1)

Garbage facilities at trailheads

Reasons	Number	Percent
Need more [1]	94	92.2
Not maintained [2]	7	6.9
Other [3]	7	1.0

[1] This includes "None" and "Not available". Specific areas mentioned are Beaver Mountain (2), Franklin Baisn (2), Bear Lake (1), Guardsman Pass (1), Logan (1), Monte Cristo (1), Neeble (1), Payson Canyon (1), Providence (1), Scofield (1), Sinks (1), Soap Stone (1), Tony Grove (1), Twelve Miles Canyon (1), Wolf Creek (1) and Wood Land (1).
[2] This includes "Always full".
[3] This includes "No better" and other.

Information stands at trailheads

Reasons	Number	Percent
No information [1]	76	74.5
Need better maps [2]	17	16.7
Other [3]	9	8.8

[1] This includes "No map", "Not available". Specific areas mentioned are Beaver Mountain (2), Franklin Baisn (2), Mirror Lake (2), Monte Cristo (2), Neeble (2), Sinks (2), Tony Grove (2), Alpine Loop (1), Daniel Summit (1), Kamas (1), Millers Flat (1), Mule Hollow (1), Payson Canyon (1), Twelve Miles Canyon (1), Vernal (1), Wolf Creek (1) and Tony Grove (1).
[2] This includes "More information".
[3] This includes "No better" and other.

Other comments

Comments for "No information"

Could have more on the groomed trails. (1)
Poor information in northern Utah. (1)
Lot of people get lost. (1)

Comments for "Need better maps"

They don't post laws and don't provide detailed information on trails. (1)
Need more information on grooming and on area in general. (1)
Post conditions, better information and keep updated on closures. (1)
Do better designating wilderness in Tony Grove. (1)

Comments for "Other"

Couldn't get to it - too much snow. (1)
Need a packet of information on trail sent out. (1)
Need to show side routes, not just main area. (1)
Other states have be better information such as trail markings. (1)

Trail grooming in Utah

Reasons	Number	Percent
Not often enough [1]	80	50.6
Could be better [2]	74	46.8
Other	4	2.5

[1] This includes "Seldom done" and "Not done". Specific areas mentioned are Franklin Basin (1), Kamas (1), Monte Cristo (1), Payson Canyon (1), Southern Utah (1), Strawberry (1) and Twelve Miles Canyon (1).
[2] This includes "Poor", "No good job" and "Rough". Lake Creek (2), Alpine Loop (1), Beaver Mountain (1), Ceader Mountain (1), Monte Cristo (1), Payson Canyon (1), Strawberry (1), Tony Grove (1), Uintah Basin (1), Vernal (1) and Wood Land (1).

Other comments

Comments for "Not often enough"

Charge more if you need to. (1)
Pay lots of money and it's never groomed. (1)
Do it Thursday night. (1)
Groom at least by daily.
Need more often 3 times per week. (1)
Once a week is not enough (1)
Idaho is great. (1)
Need to be groomed more often to maintain trails . (1)
One day kills trails. (1)

Comments for "Could be better"

Compared other states (Idaho or Wyoming) poor. (6)
For money spent, money isn't put back into maintaining trails. (1)
They quit early and don't do it enough for the use the areas get. (1)

Comments for "Other"

Don't start early enough. (1)
Extend miles. (1)
Needs schedule posted or otherwise available somewhere. (1)
Trails aren't worth riding. (1)

Number of trails

Reasons	Number	Percent
Need more trails [1]	46	83.6
Closing some trails	8	14.5
Other	1	1.8

[1] This includes "More marked trails", "More groomed trails" and "More loop trails". Specific area mentioned is Payson Canyon (1).

Other comments

Comment for "Other"

Number of trails is good, but there is no place to park except on the road which breaks the law. (1)

Variety of trails in the state

Reasons	Number	Percent
Need more variety [1]	19	73.1
Other	7	26.9

[1] This includes "Not enough". Specific areas mentioned are Uintah Basin (1) and Southern Utah (1).

Comments

Comments for "Other"

Need trails to remote areas. (1)
Off road trails. (1)
Shrinking because of conservation efforts. (1)
Some trails don't go anywhere. (1)
Too many closures going on. (1)
Wider range. (1)

Availability of maps

Reasons	Number	Percent
Hard to find [1]	41	48.2
Need more maps [2]	32	37.6
Not good	7	8.2
Other	5	5.9

[1] This includes "Don't know where to find".
[2] This includes "More access to maps" and "More availability".

Other comments

Comments for "Hard to find"

Can't buy locally. (1)
Can't even get them at dealerships. (1)
Tried to reorder for the state in September, but have not yet received any. (1)

Comments for "Need more maps"

Lot of people get lost because it's not there. (2)
More accessible maps at snowmobile shops. (1)

Comments for "No good".

More details. (3)
Forestry Service maps are bad-way under detailed, trail markings are not clear. (1)

Comments for "Other"

Maps need to have GPS. (1)
Need some parking facilities. (1)
Not easily come by if you're beginner. (1)
Used to be free. With amount paid should be free. (1)

Law enforcement on trails

Reasons	Number	Percent
Need more	12	30.8
Never seen	11	28.2
Need less	5	12.8
Rude	5	12.8
Other [1]	6	15.4

[1] Specific area mentioned is Cedar City (1).

Other comments

Comment for "Need more"

Need more to take care of drunks. (2)

Comments for "Rude"

They just harass people. (1)

They pull people over. (1)

Comments for "Other"

The officers should be more friendly and approachable. (1)

They are unhelpful and only check license and registration. Drive new snow machine and new snow gear. (1)

Don't inform us new rules and regulations. (1)

Waste of money. (1)

Wants police get out on sleds instead of just sifting at trail heads checking fogs. (1)

Q21: Experience of Conflict with Other Snowmobilers or Recreationists

Characteristic		Number	Percent
Had conflicts with other snowmobilers or any other types of recreationists	Yes	46	12.7
	No	316	87.3
If yes, who?			
X-country skiers [1]		20	43.5
Snowmobilers [2]		15	32.6
Skiers [3]		4	8.7
Drinkers [4]		2	4.3
Back-country skiers		1	2.2
Four-wheelers [5]		1	2.2
Tour guides [6]		1	2.2
Land owners [7]		1	2.2
Rental machines [8]		1	2.2

[1] Specific areas mentioned are Strawberry (3), Franklin Basin (2), Tony Grove (2), Guardsman Pass (1), Beaver Creek (1), Fairview (1), Mirror Lake Highway (1), Monte Cristo (1), Sinks (1), Snake Creek (1), Soap Stone (1), Uintah (1), Whitney (1) and everywhere (1).
[2] Specific areas mentioned are Monte Cristo (3), Cascade Springs (1), Cozy Dam (1), Uintah (1), Mirror Lake (1) and Soap Stone (1).
[3] Specific area mentioned is Providence (1).
[4] Specific areas mentioned are Monte Cristo (1) and Soap Stone (1).
[5] Specific area mentioned is Alpine Loop (1).
[6] Specific are mentioned is Guardsman Pass to Homestead (1).
[7] Specific areas mentioned are Guardsman Pass (1) and Lake Creek (1).
[8] Specific area mentioned is everywhere (1).

Conflicts mentioned

Conflicts with x-country skiers

X-country skiers didn't move out of their way. (6)
Skiers mad or irate when snowmobilers go by. (3)
They yelled at. (2)
They are rude and don't respect rights of snowmobilers. (1)
They drove by on the trail and swung their poles at us. (1)
They didn't get along. (1)
They got angry and pulled out a hand-gun. Then they got arrested. (1)
They don't like snowmobilers. (1)
Bad attitude. (1)
They told them that they shouldn't tearing up the snow. (1)

Conflicts with snowmobilers

Going too fast on the trail. (3)
Drunk and harassed them. (2)
Littering and asked to pick it up. (2)
Disrespectful attitude. (1)
Another snowmobiler thought he had run into his sled. (1)
People throwing trash. (1)
Didn't like him having 4-wheeler on the snow. (1)
Old man not minding own business. (1)
Drink and drive recklessly. (1)
Stopping in bad places (big group). (1)
People who are showing off which could create dangerous problems. (1)

Conflicts with skiers

In their way on a hill. (1)
They ruin trails. (1)

Conflict with back-country skiers

People are in back-country and don't know what they are doing and get in trouble. (1)

Conflict with four-wheelers

Tearing up trails, drinking alcohol and rude. (1)

Conflict with tour guides

Bad etiquette by people renting. (1)

Conflict with land owners

No marked private property. (1)

Conflict with rental machines

They don't know what they are doing. (1)

Q22: Know Before You Go Program

Characteristic		Number	Percent
Familiar with "Know Before You Go" program	Yes	153	41.6
	No	215	58.4
If yes, level of satisfaction *(Mean=3.09)* [1]	Very satisfied	19	13.1
	Satisfied	91	62.8
	Dissatisfied	6	4.1
	Very dissatisfied	1	0.7
	Heard of but no personal experience	28	19.3

[1] Mean is based on a scale where 1=Very dissatisfied, 2=Dissatisfied, 3=Satisfied, 4=Very Satisfied.

The reason if dissatisfied or very dissatisfied with the program

An adult could teach the same stuff. Also friends kids can't snowmobile it if they haven't taken the class. (1)

Can't get out of state grandchildren through a safty program in a short amount of time to make them safe and law abiding in Utah. (1)

It isn't in hands of those who need it. (1)

Too much money spent on this program to teach common sense stuff. (1)

Took 2 years to get thorough program so she was 16 by the time she completed. They are not very accommodating about setting up convenient test times. (1)

Wants one system license to cover all these sports. (1)

Comments about Snowmobiling in Utah [1]

Comments		Number	Percent
Regulation/restriction related		96	35.6% of total comments
	Closing of snowmobile areas [2]	(83)	-
	Regulation	(13)	-
Facilities/services related		80	29.6
	Trail grooming [3]	(22)	-
	Parking space [4]	(17)	-
	Facilities [5]	(16)	-
	Information [6]	(9)	-
	Law enforcement [7]	(6)	-
	Garbage facilities	(3)	-
	Plowing [8]	(3)	-
	Availability of cell phone	(2)	-
	Trail management 9	(1)	-
	Trail marking	(1)	-
Snowmobile areas related		24	8.9
	Getting crowded [10]	(12)	-
	Need more areas [11]	(11)	-
	Better access [12]	(1)	-
Fee related		7	2.6
	Don't like parking fee [13]	(4)	-
	Don't like trailhead fee [14]	(3)	-
Other recreationists related		10	3.7
	Skiers [15]	(7)	-
	ATV	(1)	-
	Four-wheelers	(1)	-
	Snowmobilers	(1)	-

Positive comments	10	3.7
Don't like interstate registration [16]	7	2.6
Want more snow	5	1.6
Education program	4	1.5
Want better image of snowmobilers	4	1.5
Want public involvement	3	1.1
Environmentalist related	2	0.7
Environmental concern	2	0.7
Other	16	5.9

[1] Respondents could make multiple comments. Total 270 comments.
[2] This includes "Don't close trails", "Keep parks open" and "Open more BLM land". Specific areas mentioned are Yellowstone (11), Franklin Basin (4), Tony Grove (2), Brian Head (1), Cedar Breaks (1), Logan Canyon (1) and Uintah (1).
[3] This includes "Trail grooming is not enough" and "Trails are rough". Specific areas mentioned are Monte Cristo (1), Strawberry (1) and Vernal (1).
[4] This includes "Not enough parking". Specific areas mentioned are Strawberry (2), Farmington (1) and Southern Utah (1).
[5] This includes "Snowmobilers pay a lot, so want better facilities". Specific areas mentioned are Monte Cristo (1), Payson Canyon (1) and Southern Utah (1).
[6] This includes "Need information for maps (grooming, plowing and other)".
[7] Specific raw enforcement mentioned are drinking (2), Helmet and safety (1) and speeders at Monte Cristo (1).
[8] Specific area mentioned is Beaver to Puffer Lake (1).
[9] Specific areas mentioned is Monte Cristo (1).
[10] This includes "More people snowmobile". Specific areas mentioned are Monte Cristo (1) and Wasatch Front (1).
[11] This includes "Develop more areas". Specific areas mentioned are Davis County (1) and Guardsman Pass (1).
[12] Specific area mentioned is Wolf Creek (1).
[13] Specific area mentioned is Monte Cristo (1).
[14] Specific area mentioned is Monte Cristo (1).
[15] This includes "Skiers should pay to use trails."
[16] Specific area mentioned is Franklin Basin (1).

Unique comments

Comments about closure

Don't give all the land to "tree huggers". Lose revenue to areas when snowmobile is closed down. (1)

Educate people say about safety etc. and there would be fewer problems. (1)

Forest Service (F.S.) is unfair. They close areas without voting. Meeting to decide boundaries are thrown out and skiers end up deciding boundaries and F.S. personnel are skier so go figure. (1)

Problem with F.S. roads for no reason and don't explain why. Aren't intelligent about their recreation planning done there. Aren't very approachable to work with public in the Vernal F.S. office. (1)

Heard rumors of shutting down Uintah because of linx habitat-this is silly-believe that this is just another excuse for environmentalists to shut them down. (1)

Comments about regulation

Snowmobiles don't have as much impact on forests etc. as other motorized machines and so shouldn't be lumped into same categories ATV's, and shouldn't be as restricted. (1)

Don't let "roadless initiative" affect snowmobiling. New nationwide proposal by president. (1)

Comments about trail grooming

Willing to pay more for a good job. (1)

Groomers cater to places with wealthy cabin owners. (1)

Comments about parking space

Want to see parking space right next to snowmobiling playgrounds. (1)

Comments about facilities

Would like to see a loading/off loading ramp at trailheads.(1)

Comments about information

Want numbers to call to get information on grooming. (2)

Want a packet of trail information with registration. (1)

Need GPS coordinate on maps. (1)

Phone message isn't accurate. (1)

Want to be kept aware of any possible national forest closures to snowmobilers. (1)

Post survey results on Utah State Parks and recreation web page. (1)

Want information on joining clubs. (1)

Comments for "Getting crowded"

Registering in other states. (1)

Comments about snowmobile areas

Need more variety of trails (2)

In Wolf Creek ranch, put fences and trenches across the trailheads, thus denying the access to the public forest land. (1)

Want better access. (1)

Comments about law enforcement

A little too ridged with some of the law enforcement. (1)

Cops need to be nicer. (1)

Comments about garbage facilities

Don't put garbage cans out. Encourage people to carry their garbage out with them. (1)

Comments about plowing

Don't plow road 154 from Beaver to Puffer Lake. Snowmobiles don't many it plowed and there is no reason to plow it. (1)

Comment about cell phone

Mirror Lake and Strawberry areas in case of emergency. (1)

Comment about trail management

Monte Cristo trailhead is muddy in the spring, needs garvel. (1)

Comments about fees

Have to go outside my county to ride, but had to pay. (1)

Comments about skiers

Comment about trail management (1)
Why do x-country skiers have more access to sq. acres than snowmobilers? (1)
Close areas for back-country riding entirely inaccessible of areas. (1)
More control x-country skiers, especially on weekends. (1)
Why can't x-country skiers leave the snowmobilers alone? (1)

Comments about ATV

ATV's are bigger problem the snowmobilers especially the kids. (1)

Comments about four-wheelers

Need to do some surveying of four-wheelers. (1)

Comments about other snowmobilers

People go fast, surprised not more accidents. (1)

Positive comments

Enjoy the sport. (2)
Have been fairly satisfied. (1)
Been pretty good. (1)
Trail system is great, we have more than can be maintained, so don't increase. (1)
When we have snow, Utah is one of the best places to go in the country. (1)
Daniel Summit is better riding than a trip to Yellowstone. (1)
Head groomer out of Wasatch State Park is the best. (1)
Joe Donnel, a groomer for Mirror Lake, is wonderful. (1)
Glad to see the state support the sport. (1)

Comments about education program

Children need safety class. Information on these classes should be mailed with registration. Classes need to be made more. (1)
Like to see unlicenced kids able to drive with a licenced adult riding with him. (1)
Send him stuff on "Know before you go" program. (1)
Should have all adults go through "Know before you go" program as well as kids. (1)

Comments for "Want better image of snowmobilers"

Too much red type to be able to snowmobile in Utah compared to Wyoming or Idaho. This discourages people from joining the sport. (1)
All one sees is how dangerous and reckless snowmobile users are. In reality, snowmobiling is primarily a family sport in Utah. (1)

Comments about public involvement

Want to give opinion if further more survey would be conducted. (1)

Want a number to voice. (1)

People need to be involved in clubs and organizations to help support their sport on a political level. (1)

Comments about environmentalist

Keep wilderness people out, we would be fine. (1)

Snowmobiling is a trace sport so I don't understand why the environmentalists are so opposed to snowmobilers. (1)

Comments about environmental concern

Concerned about pollution. Directed to people who have money are destroying hand and wildlife. (1)

Start worrying about pollution on freeway, not recreation vehicles. (1)

Other comments

Hauled off snow Wolf Creek for skiing Olympic x-country skiing venue-really made him angry that they got put on back burner. (1)

Oxygenated gas is more expensive and really hard on the snowmobiles. (1)

Put a noise ordinance on snowmobile to keep them quiet. (1)

State park pass should work in winter too for snowmobiling. (1)

State should manage all areas and get rid of F.S. (1)

Understand why restrictions are being put on so many areas for snowmobilers. It was the snowmobilers fault for all these problems. It is because of their carelessness. (1)

Usually snowmobile on private land but public land is good when use it. (1)

Want snowmobile in Antelope island. (1)

Demographics

Characteristics		Number	Percent
Age *(Mean=43.41)*	18 to 29	45	12.2
	30 to 39	109	29.6
	40 to 49	123	33.4
	50 to 59	44	11.9
	60 to 69	33	9.0
	70 and older (84)	14	3.8
Gender	Male	292	80.7
	Female	70	19.3
Number of people in household *(Mean=3.97)*	1	15	4.1
	2	76	20.7
	3	66	17.9
	4	80	21.7
	5	60	16.3
	6	40	10.9
	7 or over	31	8.4
Education	Eight years or less	0	0.0
	Some high school	9	2.5
	High school graduate, or equivalent	109	29.9
	Some college or technical school	112	30.7
	Associate degree	24	6.6
	Bachelors degree	76	20.8
	Graduate or professional degree	35	9.6

Income	Less than $20,000	3	1.0
	$20,000 to 39,999	26	8.4
	$40,000 to 59,999	98	31.5
	$60,000 to 79,999	74	23.8
	$80,000 to 99,999	42	13.5
	$100,000 to 119,999	31	10.0
	$120,000 or more	37	11.9