The Economic Importance of Snowmobiling in Iowa

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Iowa State Snowmobile Association

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EXECUTIVE SUMMARY

Economic Importance of Snowmobiling in Iowa

- There were 28,265 registered snowmobiles in Iowa in 2009/10, or 9.4 machines per thousand residents of the state.
- There are an estimated 11,306 snowmobiling families in Iowa.
- The estimated current value of snowmobiles and related assets in Iowa is estimated at over $111.6 million.
- Iowa snowmobilers spend an estimated $76.3 million per year on snowmobile equipment and activities. $50.3 million is spent in Iowa. $26 million is spent on trips out of state.
- 604 trail permits were sold to nonresidents. Estimated spending associated with their usage is $556,600
- In-state snowmobiling expenditures ($50.85 million) generate an estimated $30.4 million in additional transactions within the Iowa economy, resulting in an estimated total of $81.3 million in transactions or sales, $27.9 million in personal income, and 1,101 jobs.
- Capturing the $26.2 million that Iowa snowmobilers spend out-of-state has the potential of providing an additional $41.9 million in total transactions, $14.5 million in additional household income, and 576 more jobs.
- Snowmobiling households average 1,340 miles per year, for a statewide total of nearly 15.2 million miles, annually. Over 85 percent of riders utilize public lands and multi-use trails.
- Iowa snowmobiling households purchased 1.65 million gallons of gas or about 60 gallons per machine. Grooming of trails consumes an additional 25,658 gallons of fuel.
- On average, Iowa snowmobile families report 27 outings during the 2009-10 season. About 40% indicate they visited Wisconsin for an average of 5.9 days with their snowmobiles and about 28% visited Minnesota for an average of 5 days. Michigan and Wyoming were also popular destinations.
- Nearly 90 percent of Iowa snowmobile riding households believe the trails and state parks available for snowmobile riding are inadequate.

Introduction

Riding snowmobiles is a favorite outdoor recreation activity for thousands of Iowans in all parts of the state and is another example of Iowans enjoying their state's natural resources. Previous studies have shown that natural resource-based recreation activities are a major economic engine (Otto et al. 2007). In 2009, there were 28,265 registered snowmobiles in Iowa in an estimated 11,306 households. This is about 2.5 machines per snowmobile-owning household and is equivalent to 9.4 registered snowmobiles for every 1,000 Iowa residents. Participating in this recreational sport requires considerable investment and results in a sizeable impact to the state's economy. Capturing more of these economic benefits within Iowa would require the state to provide amenities and resources that appeal to snowmobile owners. This report summarizes a survey and investigation into the magnitude and types of snowmobile usage in the state of Iowa. This report supplements and updates a study of snowmobiling in Iowa that was conducted in 2005.

Methodology

As part of this effort, the Iowa State Snowmobile Association (ISSA) has commissioned this study of recreational snowmobile activities by Iowa residents. This study was undertaken in two parts. First, a survey of registered snowmobile owners was completed. With information from the survey, a profile of Iowa snowmobile users was developed. This profile includes snowmobile owner and operator characteristics, snowmobile usage, investments in snowmobiles and related assets, and annual expenditures on snowmobile activities. Usage and expenditure information was designed to capture estimates of both instate and out-of-state operations/expenditures.

For the second part of the study, the survey-based profile information on spending was analyzed using IMPLAN, an economic input-output model, to estimate

- How much income and employment within Iowa is related to instate snowmobile activities by Iowa residents.
- How much income and employment would be retained within Iowa if the current out-of-state snowmobile activities took place within the state.

Survey Responses

Between Sept. 1, 2010 and Oct. 31, 2010, a web-based survey of a sample of Iowa snowmobile owners was conducted. An e-mail with an invitation to complete an on-line survey was sent to club members who had provided e-mail addresses. Additional survey participants were solicited to participate in the October newsletter and from notices on the DNR and ISSA website. The online survey data were collected by an independent data collection and survey research services firm, Marstat, L.C. of Ames, IA. In all, 545 completed surveys were received. This represents about 5 percent of the estimated 11,306 Iowa snowmobile-owning households. While some caution is advised in making generalizations from this sample, the relatively large number of completed responses improves the robustness and reliability of our survey results. Because of wide availability of internet access, reliance on a web-based survey no longer presents potential bias of missing households without internet capacity.

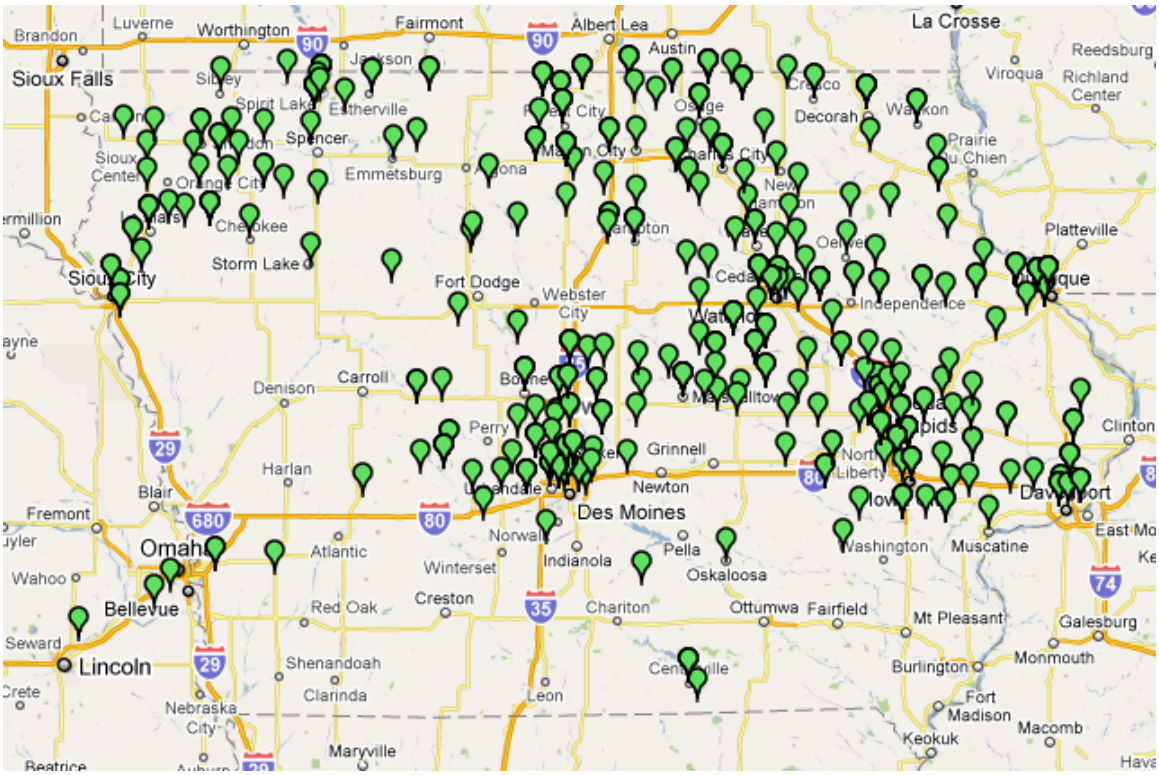
Survey participants were asked to identify all snowmobiles owned, personal characteristics, and snowmobile use, investment, and annual expense. The survey responses identified an estimated 1,352 snowmobiles, or 2.5 machines per responding family. The geographical distribution of households completing our survey is displayed in Map 1. The distributions show that survey respondents provide a good geographical representation of the registered population.

Demographics

The 545 survey respondents identified about 1600 riders by age and sex, for an average of 3.0 riders per respondent family. The survey results indicated 2.5 machines per household which implies 1.2 riders per machine. Applying this 1.2 factor to the 28,265 registered snowmobile base in Iowa, results in an estimated 34,000 snowmobile riders in Iowa.

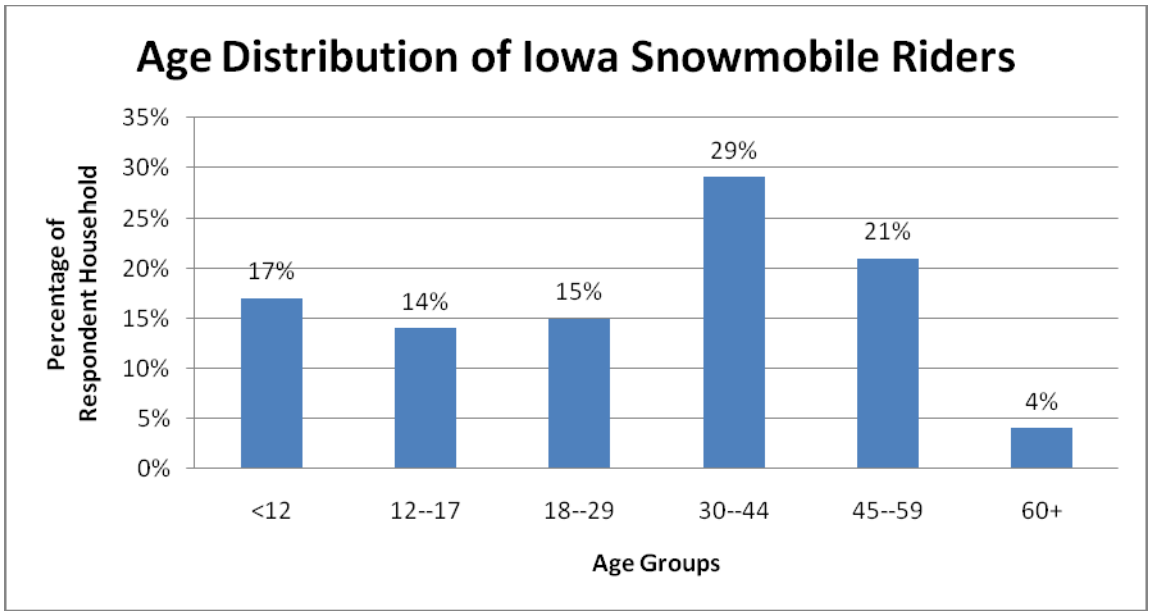
The 2010 version of the snowmobile survey did not collect personal demographic data on snowmobiling households. In the 2005 survey, respondents were identified as having income and education levels higher than statewide averages for households in Iowa. We assume this pattern still holds.

Map 1. Address of Iowa Snowmobile Survey Respondents, 2010



The percentage distribution of surveyed riders by age is shown in Figure 1. Approximately 46 percent of riders are under the age of 30 and another 29 percent are between the ages of 30 and 44. The age distributions of individual riders and the number of children identified indicate that snowmobile is predominantly a family sport for Iowa residents.

Figure 1. Distribution of Iowa Snowmobile Riders by Age, 2010



Snowmobile Use

Surveyed households indicated that snowmobiles are used for special outings an average of 28 times per year. Multiplying by the estimated 11,306 snowmobile households in the state gives an estimate of 316,568 trips per year by Iowa snowmobile users. Some significant facts about surveyed snowmobile-owning household usage include:

- Snowmobiling households averaged 1340 miles of riding in Iowa in 2009/10
- 65 percent of these households also rode out of state for an average of 848 miles
- Snowmobiling households purchased an average of 146 gallons for instate riding
- Households snowmobiling out of state purchased an average of 84 gallons for out-of-state riding

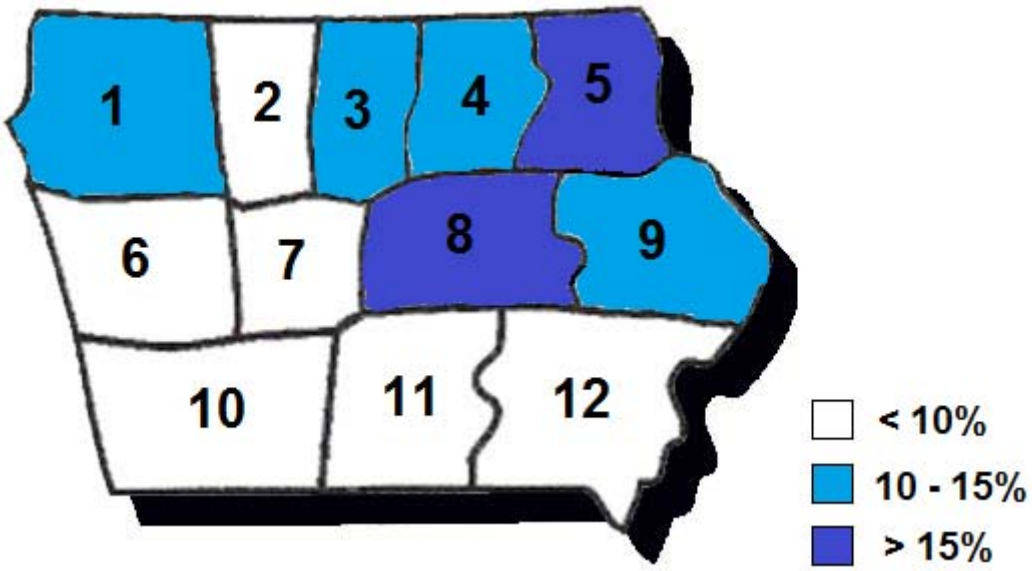
Using these responses to aggregate to statewide totals, it is estimated that

- Iowa snowmobile riders did 15.2 million miles of riding in Iowa and purchased 1.65 million gallons of gas, or about 60 gallons per machine.
- 65 percent of snowmobiling households, or 7,349 households rode a total of 6.23 million miles and purchased 619,521 gallons of gas for out-of-state snowmobile riding.

Preparing and grooming snowmobile trails for riding also uses resources. According to logs kept by DNR and local clubs, 25,658 gallons of fuel was used for 26,556 miles of trail grooming requiring 6,100 operator hours (DNR-program spreadsheet).

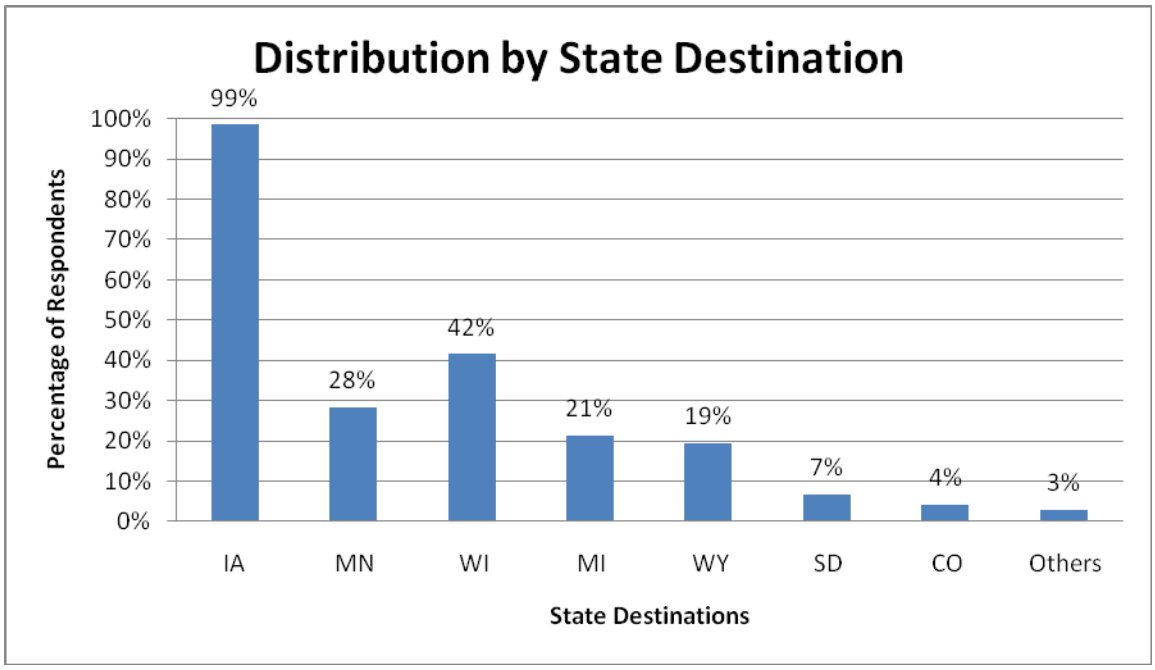
The survey asked owners to identify their favorite region for riding. Their responses are summarized in Map 2. Not surprisingly, these results mirror the density of owners identified in Map 1.

Map 2. Percentage Ranking of Favorite Snowmobile Riding Regions by Iowa Owners, 2010



The survey responses indicate that the majority of Iowa snowmobile owners also use their machines for out-of-state excursions. Figure 2 shows the percentage distribution of out-of-state destinations. The states bordering Iowa are the most popular destination for Iowa snowmobile owners with Wisconsin being the most frequently visited.

Figure 2. Distribution by State Destinations for Iowa Snowmobilers, 2010



Snowmobile-Related Assets and Expenditures

Survey responses indicate that snowmobile owners have significant investments in their equipment. The average respondent household had snowmobiles and snowmobile-related assets with an estimated current value of $9,871, or $3,949 on a per machine basis. This suggests that, statewide, snowmobiles and related assets have a current value of nearly $111.6 million. These assets include snowmobiles, trailers, covers and shelters specifically for machines and trailers, and special tools for snowmobile maintenance.

Operating and maintaining snowmobiles involves considerable expenditures for fuel, lubricants, parts and mechanical, registration and insurance. Figure 3a displays the pattern of operation expenditures in $2,000 increments. Using weighted means from these intervals, the annual average costs to own and operate is about $1,573 per machine, or about $3,933 per snowmobile owning household, based on our survey. On a statewide basis this would aggregate to about $44.5 million. Survey responses indicate 67.1 percent of these operating expenses occur within Iowa. Additional fees for licensing and insurance are other operating expenses of snowmobiling (Figure 3b). Our survey estimates the average expense in this category to be $157 per household or $1.78 million statewide.

Figure 3a. Operations and Maintenance Expenditures by Iowa Snowmobilers, 2010

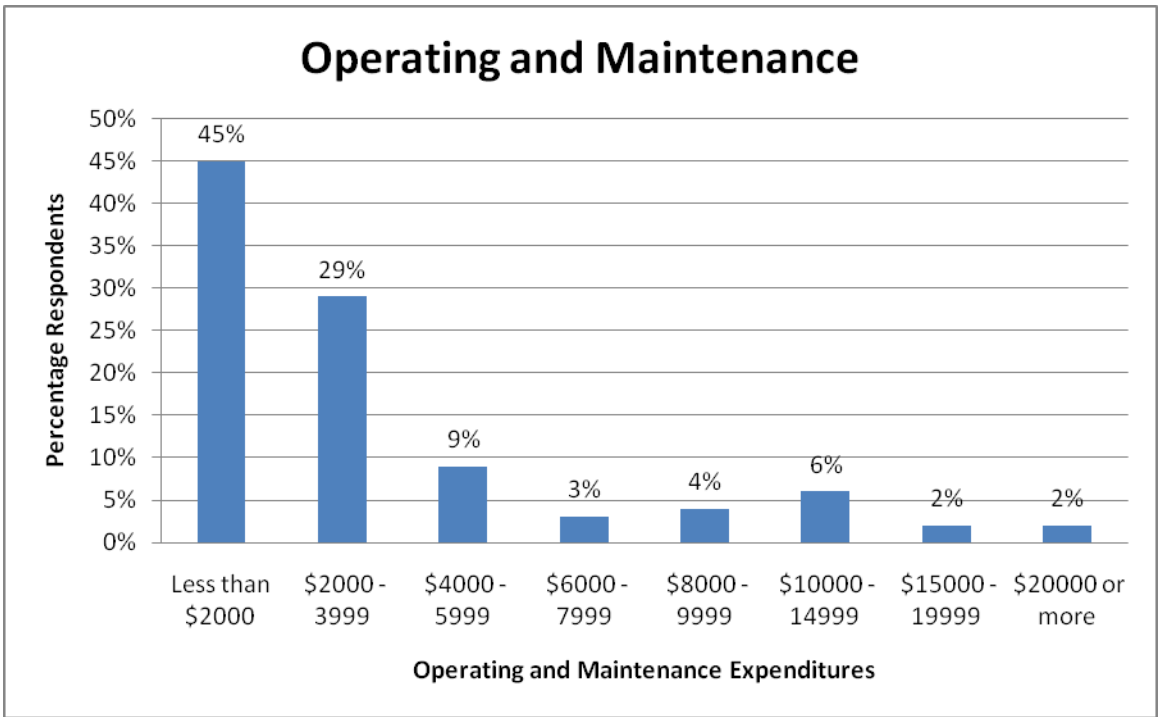
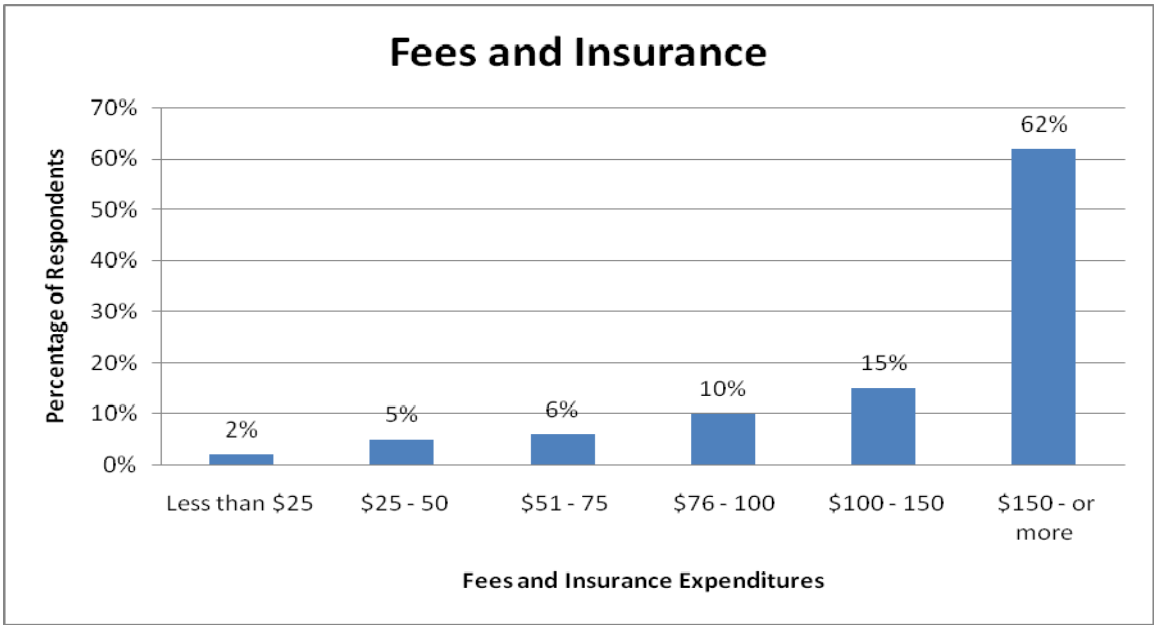


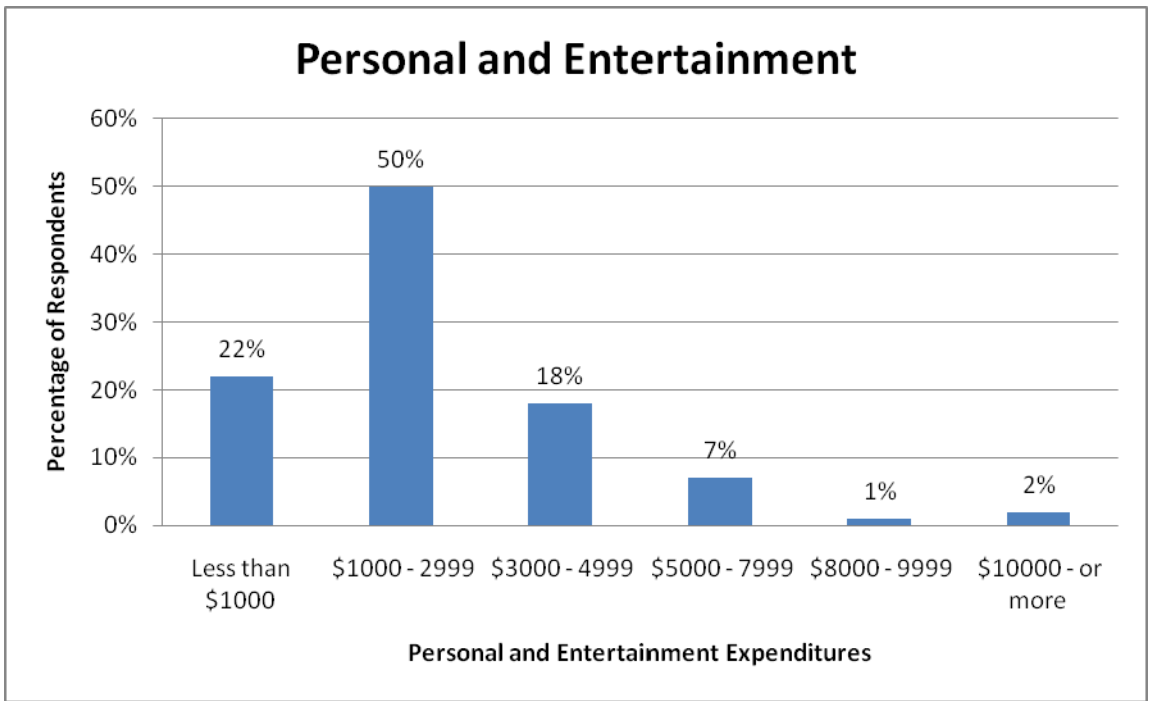
Figure 3b. Fees and Insurance Expenditures by Iowa Snowmobilers, 2010



Using snowmobile for recreational purposes involves another set of special expenditures and purchases such as driving to a recreation area and spending on meals and lodging. Of households reporting expenses for out of town excursions, the average household spent $2,657 per year on entertainment and recreation expenses (lodging, food and entertainment, and clothing and special purchases). An estimated 63 percent of these expenditures occurred in Iowa. These figures

aggregated to statewide totals suggest that $30 million is spent annually on recreational outings with snowmobiles with $19.05 million occurring in Iowa.

Figure 3c. Entertainment-Related Expenditures by Iowa Snowmobilers, 2010



Iowa is also a destination for out-of-state snowmobilers who use Iowa trails. One measure of visitation is in the number of trail permits purchased by nonresidents. These numbers have increased steadily over the past four years from 186 to 604 permits (DNR-licensing). If we view these trips into Iowa for snowmobiling by non residents as comparable to the out of state trips taken by Iowans, we can estimate an additional segment of economic impact for the Iowa snowmobile industry. If we assume the same demographics for these visitors, this implies 2.5 snowmobiles per visiting household and a total of 242 households visiting. Using the same rate of out-of-state spending observed in our survey ($26 million by 11,306 households for an average of $2,299 per household) suggests these 242 households spend an additional $556,600 on snowmobiling activities in Iowa. This estimate does not include spending by nonresidents snowmobiling in off-trail situations

The Bottom Line

The bottom line estimate indicates that Iowa snowmobile owners spent a total of $76.3 million in 2009/10. About $50.3 million, or 70 percent of the total is spent inside of the state. Estimated expenditures by out of state snowmobilers who bought Iowa trail permits added an additional $556,600 of spending for a total of $50.85 million. Iowans traveling out of state for snowmobiling spent more for lodging and entertainment than they did for purchases of snowmobiling assets. This at least partially reflects the fact that snowmobile activities that occur outside of the state are more expensive than the same snowmobile activities in-state because of the added cost of transportation, meals and lodging.

Estimated Economic Impacts

The estimation of general economic impacts was done on the basis of two scenarios. In scenario 1, the effects of expenditures made within Iowa were evaluated to provide an estimate of impacts associated with current spending, including spending by non-residents who snowmobile in Iowa. Scenario 2 considers what happens if snowmobile recreation opportunities in Iowa are improved to encourage more snowmobiling in Iowa. In this scenario, we assume that improvements attract all the out-of-state expenditure back to Iowa to generate economic impacts here. For both of these scenarios, three sets of results are presented:

a. The estimated effect of expenditures on the total value of economic transactions in the Iowa economy
b. The estimated effect of expenditures on the overall level of household income in the Iowa economy
c. The estimated effect of expenditures on the number of jobs in the Iowa economy

These estimates were derived with the help of the IMPLAN input-output (I-O) model described in Appendix C. The results in this model incorporate the full range of linkages to the snowmobile industry including input purchases and the multiplier effects associated with consumer related purchases by people involved with providing sales and service to snowmobile owners. The detailed tables for in-state, out-of-state and total effects are included in Appendix A for the within Iowa economic impacts and Appendix B for the overall impacts if all spending occurred within Iowa.

Overall, an estimated $50.85 million of direct spending effects and $81.3 million of total gross sales transactions in Iowa for 2010 are directly or indirectly related to the Iowa snowmobile industry. This implies an output or gross sales multiplier of 1.6 ($81.3 million/$50.85 million). These are shown in Tables 1a, 2a and 3a of Appendix A. $15.8 million of these effects are “Indirect,” meaning that they

represent the wholesale or supply transactions that support the businesses directly patronized by snowmobile operators. Over $14.6 million of these effects are “Induced,” meaning that they are the result of personal purchases (the payroll-retail loop) made by the workers (payroll recipients) in the businesses that directly serve snowmobilers or support and supply those businesses.

Table 1b translates these effects from snowmobile purchases into personal or household income. The dollar values in Table 1b are substantially smaller than those in Table 1a, because personal income is only one of the components supported by the sales transactions. Even so, Table 1b shows that the personal income component is $18.15 million of the $50.85 million in “Direct” snowmobile expenditures (Table 1b Column 1). Added to $5.2 million in “Indirect” and $4.56 million “Induced” personal income, this gives a total personal income component effect of over $27.9 million in the form of payrolls resulting from snowmobile expenditures and the back-office transactions that support these expenditures. This implies an income multiplier of 1.53.

Similarly, Table 1c translates these expenditure and income effects into an estimate of the number of jobs in the Iowa economy that are tied to snowmobile expenditures that are made within the state. This estimates a total of 1,101 jobs (811 direct and 290 secondary jobs implying a 1.4 multiplier).

The tables show that while the “Direct” expenditure effects are concentrated in the service and trade sectors, the subsequent secondary impacts estimated by the model show effects that are widely distributed across all sectors of the economy. This reflects the interdependence of all sectors in the industrial supply chain that serves the snowmobile operator.

The results of scenario 2 are presented in Tables 2a, 2b and 2c of Appendix B. These results represent the potential economic effects to the Iowa economy if all the reported expenditures by Iowa snowmobile users were to occur in Iowa. Under the assumptions of this scenario, the economic impacts are larger. The initial direct spending of $77.1 million generates total spending of $123.2 million in Table 2a. If this level of spending would occur in Iowa, a total of almost $42.3 million in personal income (Table 2b) and 1,677 jobs (Table 2c) are supported by snowmobile expenditures.

The difference between estimates generated in scenarios 1 and 2 are rooted in the $26.2 million that Iowa snowmobile users spend outside of Iowa. Adding this to transactions made within the state results in increases of an estimated $41.9 million in total sales, $14.5 million in personal income, and 576 jobs in the Iowa economy. Capturing the full extent of these changes would require convincing Iowa snowmobile users not only to stay in state, but also to increase their riding activities. The

increased riding is necessary because riding near home is certainly less expensive than out-of-state excursions. Even if recreational snowmobile riding did not increase, the savings from being able to do more riding locally would improve their economic well being. This would also have an effect upon the economy. In short, while fully capturing this spending in Iowa is unlikely, it represents a target of economic development and tourism potential for improved snowmobile amenities in Iowa.

Policy Responses

Our survey also provided an opportunity to ask snowmobile owners for their opinion on a number of policy issues. It appears that the ISSA has a fairly visible profile among snowmobile owners in this survey as 31% of the respondents are members. A majority of households, 56 percent indicated they had participated in at least one safety course.

The previous survey in 2005 asked owners where they used snowmobiles within Iowa and discovered that nearly 90% used public lands or multi-use trails. In the 2010 survey we asked how important different types of snowmobiling trails were to their experience. In a parallel question, we followed up with a question of how snowmobile owners rated the availability of these resources in Iowa. These results are presented in Figures 4a-4c and Figures 5a-5c.

Figure 4a. Assessment of Importance of Public Lands to Iowa Snowmobilers, 2010

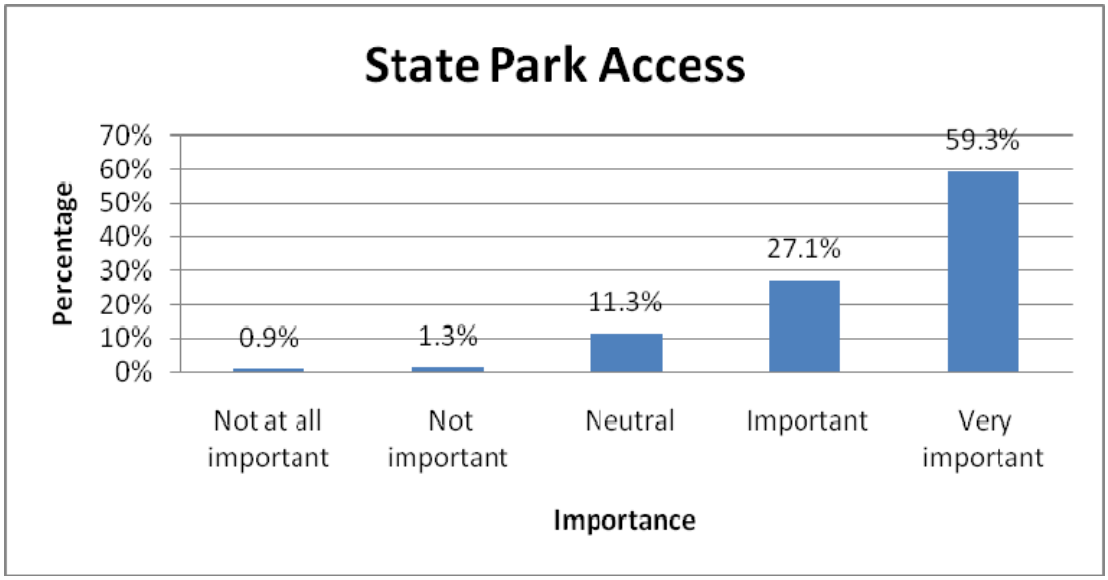


Figure 4b. Assessment of Importance of Multi-use Trails to Iowa Snowmobilers, 2010

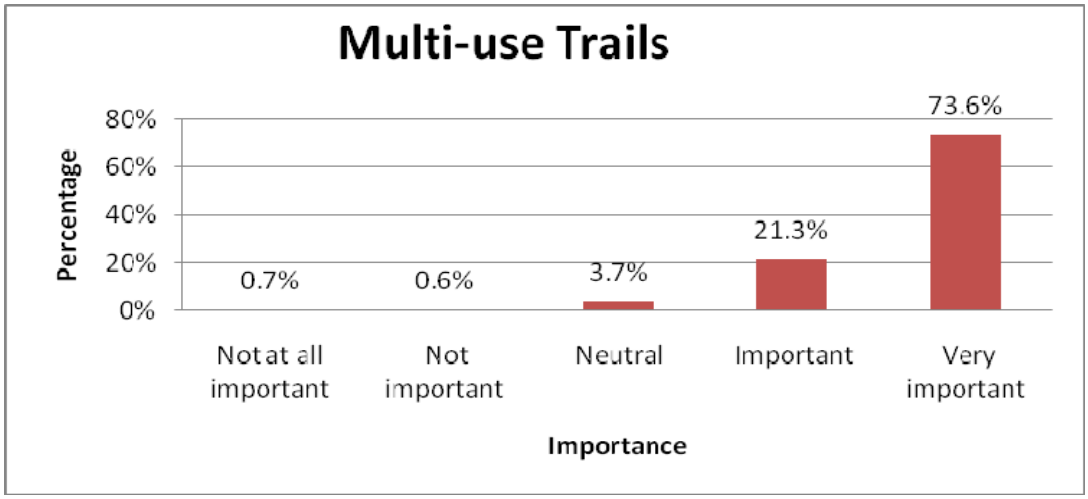
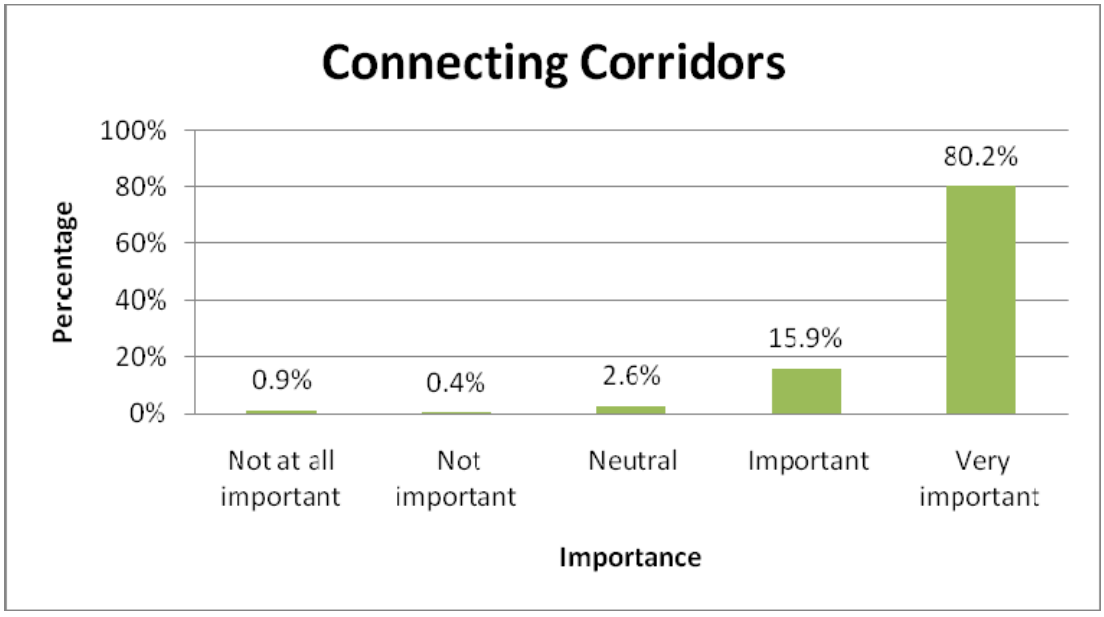


Figure 4c. Assessment of Importance of Connecting Corridors to Iowa Snowmobilers, 2010



A parallel set of questions then asked snowmobile owners for their assessment of how these snowmobiling resources stacked up in terms of adequacy or quality on a five-point scale. A summary of their assessment is presented in Figures 5a-5c.

Figure 5a. Assessment of Quality of Public Lands Access to Iowa Snowmobilers, 2010

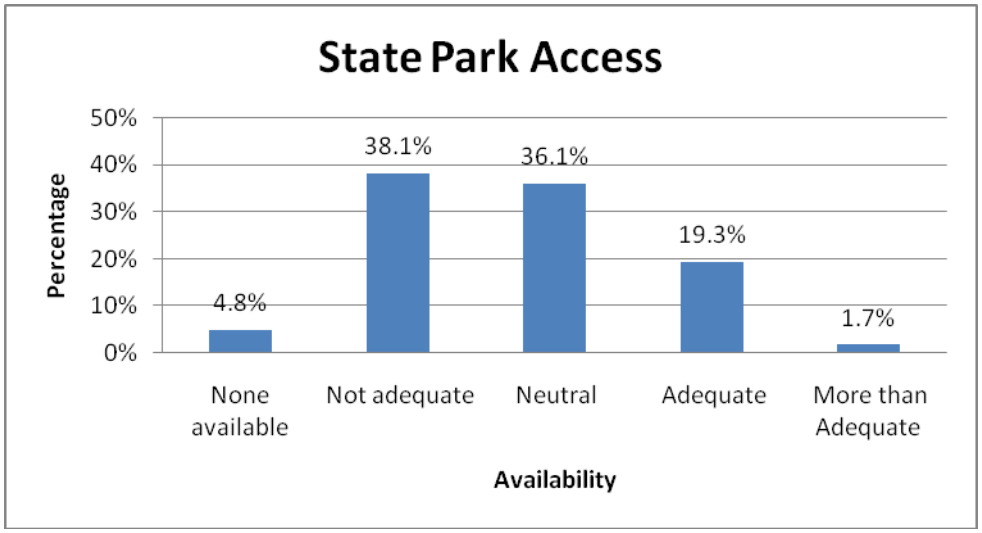


Figure 5b. Assessment of Quality of Multi-Use Trail Access to Iowa Snowmobilers, 2010

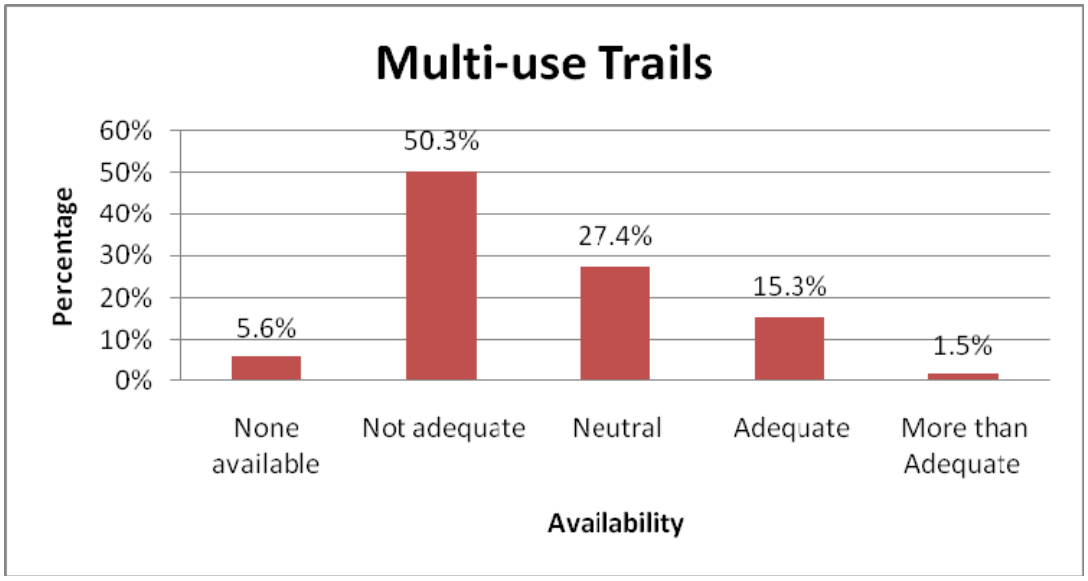
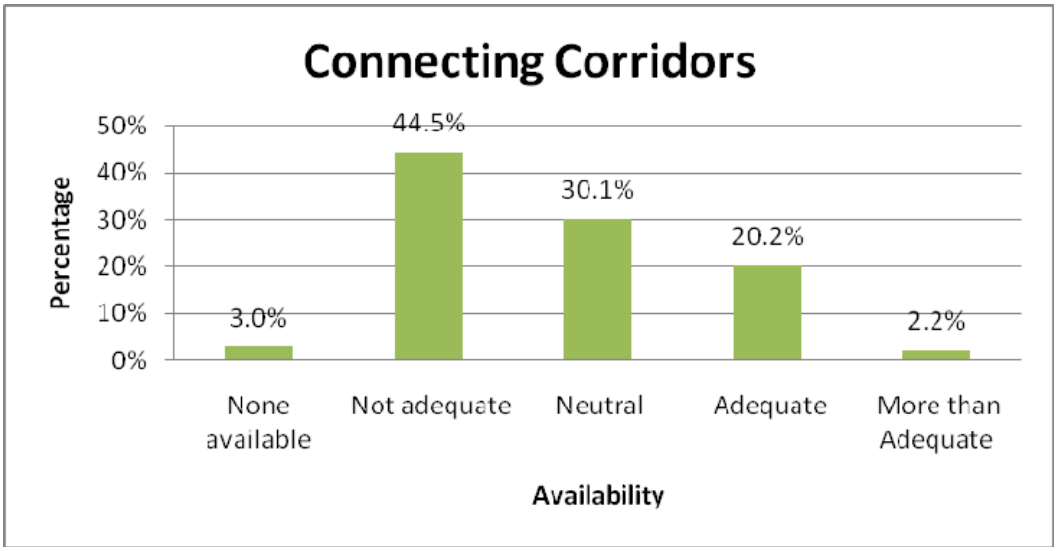
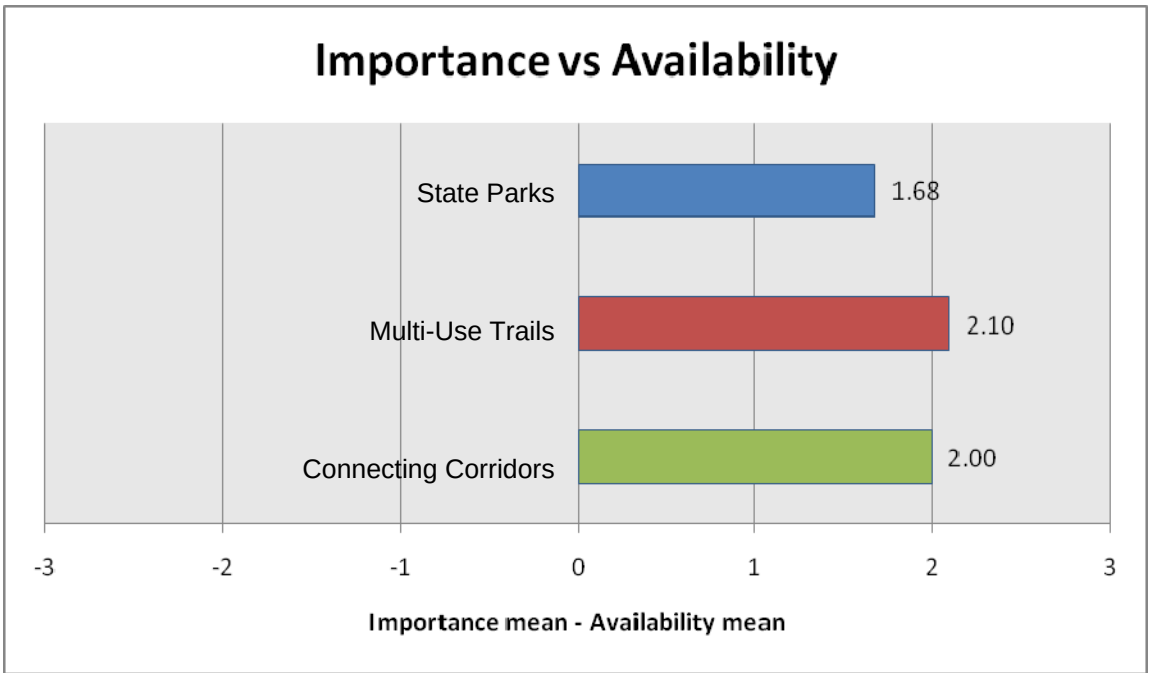


Figure 5c. Assessment of Quality of Connecting Corridor Access to Iowa Snowmobilers, 2010



A high percentage of snowmobile owners (about 90%) indicated that state parks, multi-use trails and connecting trails were important or very important to their snowmobiling experience. Yet only about 20% believed that there were adequate resources of this type available within Iowa. Wide gaps indicate areas of potential unmet needs and a potential role for public investment. Figure 6 summarizes the difference in scores for importance versus adequacy that respondents gave each type of snowmobile riding opportunity. The smallest relative gap appears to be for state parks and public land areas while the greatest deficiency is for the availability of multi-use trails.

Figure 6. Differences in Perceived Importance and Adequacy in Snowmobile Riding Resources, 2010



Summary

We conducted a survey of snowmobile owners in September and October 2010 to identify owner's snowmobile usage, investments in snowmobiles and related assets, and annual expenditures on snowmobile activities. In 2010, there were 28,265 registered snowmobiles in 11,306 households in Iowa or about 9.4 registered snowmobiles for every 1,000 Iowa residents. This represents about 2.5 machines per snowmobile-owning household in Iowa.

On average, Iowa snowmobile families in our survey report 27 special outings a year. About 65% of the surveyed snowmobile owners report making an out-of-state trip for recreation purposes.

Currently, the estimated value of snowmobiles and related assets in Iowa is over $111.6 million. In 2010, Iowa snowmobile users spend an estimated $76.3 million per year on snowmobile equipment and activities. An estimated $50.3 million is spent in Iowa with an additional estimated $26 million spent on trips out of state.

These direct snowmobile expenditures generate significant economic benefits in Iowa. In-state snowmobile expenditures ($50.3 million) generate an estimated $30.1 million in additional transactions

within the Iowa economy, resulting in an estimated total of $80.4 million in transactions or sales, $27.6 million in personal income, and 1,089 jobs.

Iowa snowmobile owners also spend about $26 million on recreation outside of Iowa. Capturing that $26 million within Iowa would provide an additional $41 million in total sales, $14.5 million in personal income, and 570 jobs to the Iowa economy.

References

Otto, Daniel, Dan Monchuk, Kanlaya Jintanakul, and Catherine Kling, *The Economic Value of Iowa's Natural Resources*, Department of Economics, ISU Extension, Center for Agricultural and Rural Development Report, Iowa State University, Dec 2007.
http://www.card.iastate.edu/environment/items/DNR-Amenity.pdf

Otto, Daniel and Mark Imerman, *The Economic Importance of Snowmobiling in Iowa*, 2005

Iowa DNR, Electronic License System 2010

Iowa DNR, Snowmobile Program Log Spreadsheet, 2010

Appendix A – Detailed Impact Tables, Scenario 1

Table 1a. Output Impact of Snowmobile Spending in Iowa, 2010 ($1,000s)

Sectors	Direct Impact	Business-Related Impact	Consumer-Related Impact	Total Impact
Agriculture & Mining	-	189.3	207.4	396.7
Transportation & Utilities	-	1,722.2	662.3	2,384.6
Construction & Misc.	-	902.8	410.2	1,313.1
Manufacturing	-	3,396.2	1,321.7	4,717.9
Trade	10,593.5	2,033.2	2,764.1	15,390.8
Professional Services	38,846.9	4,872.5	7,348.7	51,068.1
Finance, Insurance & Real Estate	1,408.6	2,713.1	1,921.9	6,043.6
Total	50,849.0	15,829.4	14,636.3	81,314.7

Table 1b. Income Impact of Snowmobile Spending in Iowa, 2010 ($1,000s)

Sectors	Direct Impact	Business-Related Impact	Consumer-Related Impact	Total Impact
Agriculture & Mining	-	11.6	14.8	26.5
Transportation & Utilities	-	580.5	180.2	760.7
Construction & Misc.	-	512.4	167.7	680.1
Manufacturing	-	680.6	212.2	892.8
Trade	4,613.3	821.9	1,146.1	6,581.3
Professional Services	12,970.8	1,834.1	2,285.4	17,090.3
Finance, Insurance & Real Estate	568.2	728.8	552.3	1,849.3
Total	18,152.3	5,169.9	4,558.7	27,880.8

Table 1c. Job Impact of Snowmobile Spending in Iowa, 2010

Sectors	Direct Impact	Business-Related Impact	Consumer-Related Impact	Total Impact
Agriculture & Mining	-	1	1	2
Transportation & Utilities	-	12	3	15
Construction & Misc.	-	8	3	11
Manufacturing	-	12	4	16
Trade	222	24	42	288
Professional Services	578	60	85	723
Finance, Insurance & Real Estate	11	22	14	46
Total	811	138	152	1,101

Appendix B – Detailed Impact Tables, Scenario 2

Table 2a. Output Impact of Snowmobile Capturing all Spending in Iowa, 2010 ($1,000s)

Sectors	Direct Impact	Business-Related Impact	Consumer-Related Impact	Total Impact
Agriculture & Mining	-	296.1	314.4	610.5
Transportation & Utilities	-	2,621.9	1,004.1	3,626.0
Construction & Misc.	-	1,380.7	622.0	2,002.6
Manufacturing	-	5,130.0	2,003.8	7,133.8
Trade	16,703.7	3,059.7	4,190.7	23,954.1
Professional Services	58,622.8	7,380.6	11,141.3	77,144.8
Finance, Insurance & Real Estate	1,799.1	4,072.0	2,913.8	8,784.9
Total	77,125.7	23,941.0	22,190.1	123,256.7

Table 2b. Output Impact of Snowmobile Capturing all Spending in Iowa, 2010 ($1,000s)

Sectors	Direct Impact	Business-Related Impact	Consumer-Related Impact	Total Impact
Agriculture & Mining	-	18.2	22.5	40.7
Transportation & Utilities	-	881.9	273.2	1,155.2
Construction & Misc.	-	783.6	254.2	1,037.8
Manufacturing	-	1,024.8	321.7	1,346.5
Trade	7,274.2	1,236.4	1,737.6	10,248.2
Professional Services	19,555.7	2,772.0	3,464.9	25,792.6
Finance, Insurance & Real Estate	725.7	1,089.8	837.3	2,652.8
Total	27,555.6	7,806.7	6,911.4	42,273.7

Table 2c. Jobs Impact of Snowmobile Capturing all Spending in Iowa, 2010

Sectors	Direct Impact	Business-Related Impact	Consumer-Related Impact	Total Impact
Agriculture & Mining	-	1	1	3
Transportation & Utilities	-	18	5	23
Construction & Misc.	-	13	4	17
Manufacturing	-	18	6	24
Trade	350	35	64	450
Professional Services	875	91	129	1,095
Finance, Insurance & Real Estate	14	33	21	68
Total	1,239	209	230	1,677

Appendix C - Documentation

About the IMPLAN Input-Output Model

The traditional indicators which economists use for measuring the economic importance of an activity include the size of its workforce and payroll, its capital investment and its local purchase of goods and services. Economists call these the 'direct expenditures' or 'direct effects'.

Direct effects refer to the operational characteristics (employment, payroll, sales) of the sectors that we studied. Indirect effects measure the value of supplies and services that were purchased directly by the sector from businesses and firms within the region. Induced effects occurred when workers in the direct and indirect industries spent their earnings on goods and services from other vendors within the region. Induced effects are also often called 'household effects'. The total economic impact effect is the aggregate of the direct, indirect, and induced effects. It is the total effect on the economy of transactions that are attributable to the direct economic activity of the sectors.

But the workers and the vendors who receive those direct expenditures don't bury them in a mattress. They will spend some of the money, save some of it and thus begins the journey by which the dollars travel through many hands before they finally leave the economic region. Economists call this phenomenon the 'multiplier effect'. The multiplier factor is calculated by dividing the sum of the direct, indirect and induced effects by the direct effect.

The multiplier effect for any economy or industry is examined using an 'input-output analysis'. The tool was devised by the 1973 Nobel Prize winning economist Wassily Leontief. It uses a matrix that measures inter-industry relations in an economy, and shows how the output of one industry becomes the input for another. The most widely used regional input-output economic impact tool is the IMPLAN model developed and distributed by Minnesota IMPLAN Group, Inc. (MIG). According to MIG, the model is currently in use by more than 1,000 public and private institutions.

Mechanics of the Input-Output Model

An input-output model is essentially a generalized accounting system of a regional economy that tracks the purchases and sales of commodities between industries, businesses, and final consumers. Successive rounds of transactions stemming from the initial economic stimulus (such as a new plant or community business) are summed to provide an estimate of direct, indirect, induced (or consumer-related) and total effects of the event. The impacts are calculated using the IMPLAN Input Output modeling system, originally developed by the US Forest system and currently maintained by the Minnesota IMPLAN Group.

The model is capable of providing many types of reports on regional data and interactions among sectors. For economic studies, several of the more important indicators are: 1) total output, 2) personal income, 3) value added, and 4) jobs.

- Total output for most industries is simply gross sales. For public institutions we normally include all public and private spending, all direct sales and subsidies received in order to isolate the economic value of their output.

- Personal income includes the wages and salaries of employees, along with normal proprietor profits.

- Value added or contribution to state gross domestic product is the measure of the economic product that an industry or collection of industries produce. It is simply the payments that are made to labor (wages and salaries), business owners (proprietors or simple partnerships), investors (paid as interest, dividends, or rents), and the indirect tax payments made to government that are part of production activity.

- Jobs, the fourth measure, represent the number of positions in the economy, not the number of employed persons.

We also get detailed breakdown of this data into direct, indirect, induced, and total economic effects. Direct effects refer to the operational characteristics of the firm that we are studying. Indirect effects measure the value of supplies and services that are provided to the direct firm by industries in the region. Induced effects accrue when workers in the direct and indirect industries spend their earnings on goods and services in the region. Induced effects are also often called household effects. Total effects are the sum of direct, indirect, and induced effects. They are the total of transactions attributable to the direct activity that we are measuring.

The term multiplier is also often used when referring to economic effects or economic impacts. A multiplier is simply the total effects divided by the direct effects. It tells how much the overall economy changes per unit change in the direct effects (a dollar of output, a dollar of personal income, a dollar of value added, or a job). Multipliers help us to anticipate the potential change in the regional economy attributable to a change in direct activity in a particular industry. Firms with strong linkages to area supplying businesses or that pay relatively high earnings may yield high multipliers. Firms that are otherwise not connected strongly locally or that pay lower than average wages will have lower multipliers. Urban areas with their more developed economies have, on the average, much higher multipliers than rural areas.