Economic Impact of Recreational Trail Use

IN DIFFERENT REGIONS OF MINNESOTA

PREPARED FOR:

University of Minnesota Tourism Center
Minnesota Department of Natural Resources
The Minnesota Recreational Trail Users Association

BY:

Ernesto C. Venegas, Ph.D.
Senior Economist
Communication, Analysis and Research Division
Minnesota Department of Employment
and Economic Development

November 2009

POSITIVELY Minnesota

ACKNOWLEDGEMENTS

The author would like to acknowledge Arthur Adiarte and Neal Young of the Communication, Analysis and Research Division (CARD) of the Minnesota Department of Employment and Economic Development (DEED) who were involved in the planning of the 2008 University of Minnesota's Survey of Recreational Trail Users and the development of the survey instrument. At the Minnesota Department of Natural Resources, Tim Kelly applied his expertise in the recreational trails field to bring in other sources of information on trail use and help verify findings from the 2008 University of Minnesota survey. Kelly reviewed the methods and results of the impact analysis to ensure conformance with methods and assumptions used by other investigators in the field. This is aimed at producing study results that can be compared directly with similar work in other state and federal parks. With great effort and diligence, Kelly analyzed the survey results to produce estimates of trip volumes, regions of origin and destination, and trail user spending on trips and equipments. These estimates were the primary inputs to the economic impact analysis part of the project.

Robert Isaacson, former director of CARD and Professor Ingrid Schneider, director of the University of Minnesota Tourism Center and principal investigator of the project, worked towards the participation of DEED in the study. Kirsten Morell, director of CARD arranged for copy editing of the draft and other publication services. Rhoda Mix at CARD patiently copy edited the draft of this report. Laura Winge, information director and staff created the cover page.

EXECUTIVE SUMMARY

In 2008, the Minnesota Recreational Trail Users Association (MRTUA) embarked on a survey of its members to create a profile of trail users, their expenditures and their economic impact on local economies. The association contracted with the University of Minnesota Tourism Center (UMN) to conduct the study. Financial support, technical assistance and review staff were provided by the Minnesota Department of Natural Resources (DNR). Additional funds came from the University of Minnesota Carlson Chair for Travel, Tourism and Hospitality. Under a subcontract with the University of Minnesota, the Department of Employment and Economic Development (DEED) provided staff to assist in the development of the survey instrument, and to conduct the economic impact portion of the project. The UMN conducted the survey of trail users during the summer and fall of 2008. The summer survey covered winter activities during the previous 12 months, while the fall survey covered summer activities during the previous 12 months.

There are two separate reports on the MRTUA project. The first report by UMN presents a profile of trail users- the demographics, trail experiences, motivations, conflicts, and interactions (Schneider, Schuweiler & Bipes, 2009). This report, the second report presents estimates of total trail-user spending in each of Minnesota's region's and the economic impact on the local economy.

Methods

In 1998, reacting to questions by the U.S. Congress and the General Accounting Office regarding the credibility of estimates of recreational visits, the U.S. Forest Service designed a statistically valid method for estimating visitor use of national forests. This method is called the National Visitor Use Monitoring (NVUM). Visitor surveys conducted under NVUM have produced a rich source of information on visitor spending profiles. Along with other investigators in the field, Kelly (2005) has implemented the NVUM definitions and procedures in several DNR studies including the 2008 UMN survey.

Since the late 1970's, the U.S. Forest Service has built and improved a system of software and databases under a project entitled "Impact Analysis for Planning" (IMPLAN). Work on databases and social accounting methods were collaborated with the Department of Agricultural and Applied Economics of the University of Minnesota. In 1993, the effort was privatized into the Minnesota IMPLAN Group, Inc (MIG, Inc), based in Stillwater. Presently, this is the model paired with NVUM to determine the economic impacts of visitor spending at the national forests.

Ten types of recreational trails in five Minnesota regions

In 2004, the UMN conducted a statewide survey of registered snowmobilers, snowmobile retailers and manufacturers to measure the economic importance of this recreational activity on the Minnesota economy. The Minnesota trail-use study updates the 2004 snowmobile study and adds nine other recreational activities: All terrain vehicle (ATV), bicycle riding,

cross-country skiing, four-by-four Off- Road Vehicle (ORV), horseback riding, Inline skating, Off-Highway Motorcycle (OHM), running/jogging outdoors, and walking/hiking outdoors.

The Minnesota regions in this trail-use study are the northwest, northeast, central, metro area and south regions. In 2007, the metro area had 54 percent of the state's population, 63 percent of total personal income and 61 percent of the jobs (MIG, Inc, 2008b). Numerous metro area residents travel to the northern and central regions of the state for certain summer and winter outdoor activities. In contrast, there are fewer visitors from other regions to the trails in the metro area and south region. Trail spending in these regions come mostly from these region's residents, using local trails on frequent daytrips.

Estimates of trail use and spending

For this study, Kelly at DNR estimated total person-days during visits by trail users and their spending on various consumer commodities, equipments and other items. The DNR "2004 Outdoor Participation Survey of Minnesotans: Report on Findings" (Kelly, 2005) provided information on trail use by residents of each region (total person-days). Using trip information from the 2008 UMN survey, Kelly allocated these resident trips to their destination regions.

Based on the 2008 UMN survey, supplemented by other DNR studies and NVUM estimates by the U.S. Forest Service, Kelly estimated average trail spending (dollars per person-day) by local residents, users from other Minnesota regions and visitors from out-of-state. Multiplied by the total person-days at the trails, the average spending produced estimates of total spending for the three groups of users.

Annual household spending on equipments

In addition, the 2008 UMN survey collected information on annual household spending for new and used equipment, storage, repair and maintenance, and other costs of upkeep of trail equipments. Kelly estimated total spending on these categories for each trail type in each region.

Measuring economic impacts

For this study, IMPLAN was used to build an economic model for each region and statewide. The models have economic multipliers based on the make-up and business interactions among local industries. Three types of impacts are estimated using these multipliers: direct, indirect and induced impacts. Direct impact comes from the production of commodities and services demanded by trail users, which is equal to total spending minus imports of commodities or services not produced locally. Also during production, the stimulated industries instigate indirect impacts or "spin-off" effects by their purchases of producer inputs from local suppliers. Salaries, wages and other compensation paid to employees of all affected businesses produce another round of consumer spending, which creates the induced impact.

Estimates of trail spending were applied to the IMPLAN regional models to derive the economic impacts on local output (total sales including the indirect and induced effects but excluding imports), gross regional product (GRP), employee compensation (wages, salaries and fringe benefits), total jobs (both full-time and part-time jobs) and state and local government revenues. Estimates of household spending on new equipment and costs of upkeep were applied separately to the IMPLAN regional models to derive their economic impacts.

Results

Trail use in each region

Statewide, some 208.2 million person-days were spent in the 10 trails. Walkers/hikers in outdoor trails had the highest total participation at 133.6 million person-days, or two of every three days of trail use. Local trail users (within 30 minutes from home) accounted for nearly three-fourths of the walker/hiker total days. Slightly more than one-half of these local users were in the metro area.

Total trail use in Minnesota, by activity and by region, 2008 UMN Survey
(thousand-person-days)

	Northwest	Northeast	Central	Metro area	South	State
Walking/hiking	16,003.6	22,521.0	15,461.8	53,157.5	26,417.0	133,560.9
Bicycle riding	2,163.8	3,614.8	4,045.3	13,793.2	6,475.5	30,092.8
Running	1,321.4	2,484.6	2,077.6	15,116.2	5,668.7	26,668.4
In-line skating	353.9	515.3	587.5	3,852.2	573.2	5,882.1
ATV	1,015.7	1,228.9	825.7	130.0	886.2	4,086.5
Snowmobile	1,053.7	1,440.5	497.2	306.7	696.6	3,994.6
Cross-country skiing	180.8	491.6	181.8	862.7	124.2	1,841.2
Horseback riding	156.9	142.5	621.2	280.3	507.6	1,708.4
OHM	59.6	78.6	62.3	30.2	42.8	273.7
ORV	32.0	42.2	12.0	6.3	20.4	112.9
Total	22,341.4	32,560.0	24,372.3	87,535.3	41,412.2	208,221.5

Bicycle riding and running in outdoor trails were the next largest user of trails, albeit each at less than one-fourth of the walking/hiking days (30.1 million and 26.7 million person-days, respectively). The next groups had sharper drops in person-days inline skating (5.9 million), ATV (4.1 million) and snowmobiling (4.0 million). The remainder of the trails categories had less than 2.0 million person-days: cross country skiing (1.8 million), horseback riding (1.7 million), OHM (0.3 million) and ORV (0.1 million).

In the metro area, a large population base and high average income contributed to the popularity of walking/hiking and other activities. Also important was the large number of metro area travelers to the northern and central region trails that boosted local businesses.

Consumer spending at the trails

An influx of metro area visitors to northeast regional trails helped produce the highest consumer spending in walking/hiking among the regions ($413.8 million). Although metro area residents led in total visits to local trails, these were daytrips that cost less than $5 per day. Hence, total spending in metro area trails ($289.6 million) was 30 percent smaller than in the northeast, where overnight stays were common. Walking/hiking in the northwest region was the third largest trail spending at $246.7 million, or about 15 percent lower than in the metro area.

Total spending at Minnesota trails, by activity and by region*, 2008 UMN Survey
(thousand $)

	Northwest	Northeast	Central	Metro area	South	State**
Walking/hiking	$246,709	$413,846	$135,040	$289,565	$184,844	$1,425,613
Bicycle riding	$31,193	$76,400	$51,839	$137,309	$88,156	$427,478
Snowmobile	$40,686	$53,624	$16,669	$12,902	$29,140	$172,816
ATV	$27,470	$30,142	$22,158	$3,419	$26,496	$137,860
Running	$11,291	$23,572	$7,635	$48,409	$20,734	$120,745
Horseback riding	$3,807	$3,673	$16,050	$7,173	$14,333	$49,853
Cross-country skiing	$5,291	$16,781	$3,646	$10,930	$1,931	$41,083
In-line skating	$3,151	$5,979	$2,434	$12,423	$2,678	$30,115
OHM	$2,032	$2,571	$2,030	$1,028	$1,407	$11,884
ORV	$889	$1,493	$385	$180	$642	$4,395
Total	$372,519	$628,081	$257,885	$523,338	$370,360	$2,421,842

* Estimates do not include at home expenses by travelers.

** Includes all expenses by Minnesota residents.

Among bicycle riders, most metro area residents used local trails, and incurred some $137.3 million in local spending. With few visitors, the northeast bicycle trails posted less than one-half ($76.4 million) of total spending compared to metro area trails. Snowmobiling was the next largest source of trail spending, mostly in the northeast ($53.6 million) and northwest regions ($40.7 million). ATV spending was also significant in all regions ($22.2 million to $30.1 million), except the metro area ($3.4 million). Running generated $48.4 million in spending in the metro area, and about one-half of this amount in the northeast and south regions. Horseback riding, cross-country skiing, inline skating, OHM and ORV each had less than $50 million in trail spending statewide.

Economic impacts of consumer spending at the trails

Statewide trail spending of $2,422 million was estimated to produce $2,953 million in gross output (total sales of local businesses including indirect and induced effects but subtracting imports). This contributed $1,542 million to gross state product (GSP). Some 30,900 full-time and part-time jobs were supported by trail spending in various regions. Employee

compensation from these jobs reached some $864 million. State and local revenues from all taxes, fees and other sources amounted to $206 million.

With the highest spending at the trails, the northeast region led in local economic impacts. This was followed by economic impacts in the metro area, northwest and south regions. The central region had the lowest trail spending and economic impacts.

Economic impacts of spending at Minnesota trails, and annual equipment purchases, by region, 2008 UMN Survey (thousand $)

	Northwest	Northeast	Central	Metro area	South	Statewide*
	Trail spending					
Trail spending	$372,519	$628,081	$257,885	$523,338	$370,360	$2,421,842
Gross Output	$368,759	$641,531	$258,984	$553,712	$357,178	$2,952,799
Gross Regional Product	$195,043	$347,324	$137,268	$289,624	$171,984	$1,541,648
Employee Compensation	$102,509	$192,400	$77,155	$169,772	$93,333	$864,412
State & Local Taxes	$28,034	$48,572	$19,121	$37,728	$23,906	$206,059
Total Jobs (no.)**	5,858	9,710	3,666	5,142	5,033	30,943
	Equipment purchases					
Equipment Purchases	$67,977	$77,247	$102,183	$424,303	$167,222	$838,933
Gross Output	$65,526	$54,684	$106,434	$381,571	$163,462	$1,003,850
Gross Regional Product	$34,391	$29,914	$57,261	$223,217	$86,486	$564,009
Employee Compensation	$14,498	$15,846	$25,330	$124,758	$35,814	$267,123
State & Local Taxes	$4,792	$4,610	$7,699	$31,113	$11,774	$74,725
Total Jobs (no.)**	1,004	942	1,734	5,023	2,024	11,963
	Trails spending and equipment purchases					
Total spending	$440,496	$705,328	$360,068	$947,641	$537,582	$3,260,775
Gross Output	$434,285	$696,215	$365,418	$935,283	$520,640	$3,956,649
GRP	$229,434	$377,238	$194,529	$512,841	$258,470	$2,105,657
Employee Comp	$117,007	$208,246	$102,485	$294,530	$129,147	$1,131,535
State & Local Taxes	$32,826	$53,182	$26,820	$68,841	$35,680	$280,784
Total Jobs (no.)**	6,862	10,652	5,400	10,165	7,057	42,906
	Size of the regional economy (thousand $)* **					
	Northwest	Northeast	Central	Metro area	South	Statewide*
Region Total Output	$25,575,000	$27,826,000	$58,729,000	$323,567,000	$58,683,000	$494,381,000
Gross Regional Product	$12,444,000	$14,245,000	$29,089,000	$179,453,000	$23,852,000	$259,085,000
Employee Compensation	$6,502,000	$8,063,000	$17,067,000	$105,868,000	$12,818,000	$150,318,000
Total Jobs (no.)**	243,863	227,717	485,769	2,133,144	428,251	3,518,744

* Statewide includes spending at the region of origin, and will be larger than the sum of regions.

** Full-time and part-time jobs

*** 2007 IMPLAN estimates.

Economic impacts of annual household spending on new equipment and upkeep

Annual household purchases of new equipment and costs of upkeep reached $839 million, or 35 percent of total spending at the trails. This produced $1,004 million in the state's gross output or total business sales, and $564 million in GSP or value added. Most of the spending occurred in the horseback riding activity, where purchases of new equipments and horses,

boarding of horses, feeds, veterinary fees and other maintenance costs reached $551 million, or 59 percent of all equipment spending in the state. Most of the horses were kept in the metro area, central and south regions. In 2004, a comparative study by the University of Minnesota, based on Peer State Statistical Studies of Equine, produced some $678 million in horse-related expenses (Buhr, 2004). With extraordinarily large purchases of horses and new equipments, the metro area ($948 million) surpassed the northeast region ($705 million) in total spending, and contributions to GRP, jobs and state and local government revenues. The south region ($538 million) also posted more trail- related spending than the northwest region ($440 million). The central region ($360 million) continued to lag behind the other regions, but spending increased 40 percent with purchases of horses and new equipments.

Spending on new snowmobile equipment was second highest at $105 million, followed by ATV ($75 million), bicycle riding ($54 million) and running ($37 million). Cross country skiing, OHM and ORV had less than $9 million in equipment spending.

Small impact on regional economies

Compared to measures of total business activity, trail-related spending (spending at the trails and equipment purchases) contributed only 0.8 percent to statewide gross output, GSP and employee compensation. This is consistent with similar trail studies in other states. Among the regions, this contribution ranged from 0.3 percent contribution to GRP in the metro area to 2.6 percent in the northeast. Although the trails are small income generators compared to manufacturing, health services and other large sectors of the local economy, their impacts are concentrated in communities dependent on trail activity, and spread to other businesses in population centers and commercial hubs of the region.

Impact of spending by visitors from other regions and out-of-state

Impact studies distinguish between new monies brought in by visitors and the spending of current income by local users. The NVUM and other trail studies limit the spending impacts to visitors bringing new monies into the local area. These are spending contributions at the margin and they are considered to have full, undiminished impacts on local economies.

In contrast, this study includes resident spending at local trails- which classifies it into a new but increasingly more common class of analysis that estimates the significance of an event or project on the overall economy. The purpose of this study is to show the total use of each trail, both by local users and visitors, and their associated total spending. This measures the contribution or “significance” of the trail to the local economy.

This study estimated some $439 million in spending by out-of-state visitors, equivalent to 20 percent of total trail spending. Another $492 million or 23 percent was spent by Minnesota residents traveling to other regions, particularly metro area residents bound for the northern and central regions. This spending by Minnesota travelers could have displacement effects on their home regions if the regions were competing among themselves for the same trail users. But trips to northern and central regions by metro area residents are for a different purpose-

involving multi-days and greater expense (mini-vacations), compared to their frequent but short visits to local trails. Visits to local trails also tend to be regular with a health enhancing purpose, such as walking or jogging around lakes and parks. Hence, the multi-day trips up-north would infringe mostly on their annual, out-of-state vacations. During the recent period of high gasoline prices and economic downturn, there were national reports of many residents substituting vacation at home states for longer-out-of-state trips. With attractive trails in northern Minnesota, it is conceivable that vacation monies that would have been spent out-of-state went to the northern trails.

Attractive recreational trails improve the quality of life in all regions, and this has been used as an important recruiting tool by local businesses, chambers of commerce and public agencies, which target people with special skills or talents, and encourage new and expanding businesses. The Economic Research Service, U.S. Department of Agriculture has advocated amenity-based development strategies that improve the socioeconomic well-being of rural communities. Some communities have engaged in advertising campaigns for tourists, while others have improved public access to their amenities or have provided business assistance to local hotels, restaurants and ski resorts. In fact, some amenity-rich communities in the nation have grown so rapidly that negative impacts began to appear, such as traffic congestion, crowding at the trails and degradation of the natural amenities.

Although the monetary benefits of traveler-spending in northern Minnesota are not felt in the metro area, access to developed trails and other amenities helps sustain the vitality of the metro population and the regional economy. Over the long term, the entire state benefits from amenity-based rural development.

TABLE OF CONTENTS

GENERAL PROJECT INTRODUCTION

In 2008, the Minnesota Recreational Trail Users Association (MRTUA) embarked on a survey of its members to create a profile of trail users, their expenditures and their economic impact on local economies. This was envisioned as a large study covering a variety of trail users in the state, identifying trail user interactions and economic impacts simultaneously (Schneider, Schuweiler & Bipes, 2009).

The association contracted with the University of Minnesota Tourism Center (UM) to conduct the study. Financial support, technical assistance and review staff were provided by the Minnesota Department of Natural Resources (DNR). Additional funds came from the University of Minnesota Carlson Chair for Travel, Tourism and Hospitality. Under a subcontract with the University of Minnesota, the Department of Employment and Economic Development (DEED) provided staff to assist in the development of the survey instrument, and to conduct the economic impact portion of the project. The UMN conducted the survey of trail users during the summer and fall of 2008. The summer survey covered winter activities during the previous 12 months, while the fall survey covered summer activities during the previous 12 months.

There are two separate reports on this project: the first report by UMN presents the profile of trail users- the demographics, trail experiences, motivations, conflicts, and interactions (Schneider, Schuweiler & Bipes, 2009). This second report presents estimates of total user spending in each of the region's trails and its economic impact on the local economy.

Objectives of this report

The main objective of this report is to present the local economic impacts of trail use in various regions of the state. These impacts are based on estimates by Kelly (2009a, 2009b, 2009c) on total person-days and user spending for each of 10 trails in five study regions of the state. Kelly's method and procedures using the "2004 Outdoor Participation Study of Minnesotans: Report on Findings" (Kelly, 2005), the 2008 UMN survey of Minnesota trail users and other DNR and federal studies to estimate person-days of use and spending are presented in this report.

In contrast to NVUM and other trail studies that focus on spending by visitors from outside the area, this report includes trail use, spending and economic impact by local residents. This study belongs to a new but increasingly more common class of analysis—the contribution of an event or project on the overall economy (MIG, Inc, 2008a; Lindberg & Loomis, 2009). In addition to "new monies" brought into the region by the event or project in classic impact analysis, this new class of analysis includes all spending on the event or project. Hence, it indicates the "economic significance" of those events or projects to the local economy.

The economic impacts of trail user spending on each of the regions are estimated using IMPLAN regional models (MIG, Inc, 2004). The local impacts of annual new equipment purchases and upkeep are also given for each trail type and region.

Further, this report analyzes the data on the origin and destination of trail users and their average spending in various trails. It estimates the spending stimulus of out-of-state visitors and travelers from other Minnesota regions on local economies.

Organization of this report

The first section of this report presents a brief introduction of the overall project and the role of DEED in the study. The next section on methods describes the primary sources of data and estimation procedures of Kelly on person-days of trail use and user spending. The procedures to estimate the local economic impacts of trail- related spending are discussed next using IMPLAN. For each trail type, the results section presents estimates of trail use, average spending, total spending in the trails and on equipments, and the local economic impacts of the spending. The trails are discussed in the order of total trail spending, beginning with the dominant walking/hiking, followed by bicycle riding and snowmobile use. In the discussion section, information on separate trails are collected and summarized for each Minnesota region. It shows the prominence of certain trails in each region. The local and non-local sources of trail spending and their economic impacts are presented next for each destination region. Finally, this report highlights the importance of travelers from the metro area visiting trails in the northern and central regions of the state and stimulating their economies.

METHODS

In 2001, the DNR conducted a study on the contribution of the Minnesota State Park System to the state and regional economies (Minnesota Department of Natural Resources, 2002). This study was a precursor to the 2008 Trails Study in terms of using visitor surveys and IMPLAN to estimate the total economic contribution of recreational facilities to local economies. An exit-survey of visitors to Minnesota state parks gathered information on trip spending for major consumer items such as groceries, gasoline, lodging, entertainment and casinos, and meals at restaurants. From the samples, average trip spending on major consumer commodities and services was estimated for campers and day users. Park attendance data was applied to the average spending to project visitor spending statewide, and for each of six DNR study regions. In turn, visitor spending was applied to the regional IMPLAN model to determine its full impact on the local economy. Operational spending by the parks and their capital budgets were obtained and applied to IMPLAN for the local economic impact.

Further, the 2001 DNR study differentiated between the contribution of tourists- visitors from other regions and states, and local residents to spending at local parks. Tourists provided over two-thirds of spending and park use in the northwest, northeast and central regions. Most of these tourists came from the metro area. Hence, there was a general south to north flow of tourist dollars within the state.

In 2004, the UMN conducted a statewide survey of registered snowmobilers, snowmobile retailers and manufacturers to measure the economic importance of this activity to the Minnesota economy (Schneider, *et. al.*, 2005). The 2008 Trails Study updates the 2004 snowmobile study and includes nine other recreational activities in five study regions. The survey instrument for this study was based on the 2004 survey of snowmobiler spending at the trails, and added purchases of equipments. The present survey also collected information on trail users' demographics, trail experiences, motivations and conflicts to build a profile of users for each of the10 recreational activities. These are presented by the first report on the project, "The Profile of Minnesota Recreational Trail Users" (Schneider, Schuweiler & Bipes (2009). In this second report, the economic impact of trail spending is presented first, and the equipment impact is added for the combined impact of trail- related spending.

In another study, Davidson Peterson Associates (2009a, 2009b) conducted year-long surveys of travelers in four Minnesota regions between June 2005 and May 2006, and between June 2007 and May 2008. These were commissioned by the Minnesota Office of Tourism and the University of Minnesota Tourism Center. However, the surveys covered only visitors to the regions, such as nonresidents of the area that stayed overnight, or travelers from at least 50 miles from home. The surveys were designed to collect data for a traveler profile for each region and their economic impact. The study produced a profile of travelers in Minnesota by season and by region, summarizing information such as – state of origin, trip purpose, size of party, duration of stay, and recreational activities in the destination region.

The economic impact portion of the Davidson Peterson Associates study (2009c) involved surveys of accommodation managers, travelers and sample households to estimate the number of visitor days and expenditures. A completed study for northeast Minnesota had estimated

traveler expenditures in the region by season. But spending estimates were not available for the different trail types. Using economic multipliers similar to IMPLAN, the study produced estimates of the direct and indirect impacts of annual traveler expenditures on the number of jobs; wages, salaries and proprietary income; and state and local taxes in the region.

National Forest Studies as Model for This Project

In 1998, reacting from questions by the U.S. Congress and the General Accounting Office regarding the credibility of their estimates of recreational visits, the U.S. Forest Service designed a statistically valid method for estimating visitor use of national forests (English, *et. al*. 2002; Rezlaff & Taylor, 2006). This method is called the National Visitor Use Monitoring (NVUM). The first cycle of surveys were undertaken between 2000 and 2003 from over 19,000 visitors, and the project produced a rich source of information on spending profiles and survey procedures (U.S. Forest Service, 2009a, 2009b). Succeeding authors began to emulate the NVUM procedures and compare results from their own studies (Rezlaff & Taylor, 2006; Lindberg & Loomis, 2009; Starbuck, Berrens & Mckee, 2004). Similarly, Kelly implemented the NVUM definitions and procedures into several DNR studies (Kelly, 2005), including the 2008 UMN survey of trail users (Kelly, 2009a, 2009b, 2009c).

Since the late 1970's, the U.S. Forest Service has built and improved IMPLAN in collaboration with the Department of Agricultural and Applied Economics of the University of Minnesota. This model is intended as a tool to estimate the economic impact of visitors to the national forests (Aase, 2008; MIG, Inc, 2009a; U.S. Forest Service, 2009a). Presently, IMPLAN is paired with NVUM in economic impact studies at national forests (Rezlaff & Taylor, 2006). These are the most popular tools used in conducting impact analysis of visitor spending at national and local recreational trails. In April 2009, the Economic Research Service, U.S. Department of Agriculture (USDA) selected IMPLAN from among leading economic impact models in the nation to estimate the potential job creation impact of USDA programs under the American Recovery and Reinvestment Act (ARRA) of 2009 (Kort, 2009).

UM Survey of trail users

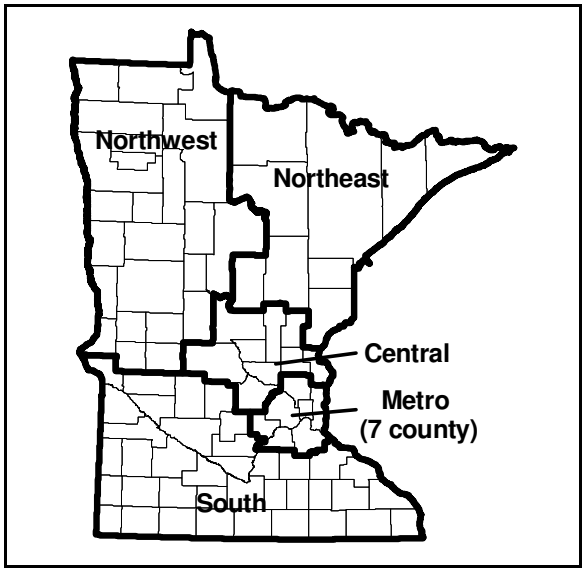
Beginning in the summer of 2008, the UMN conducted a mail survey of Minnesota trail users to gather information on the intensity of trail use, trail experiences and conflicts, demographics and expenditures for the trip party during the 2007 season. Purchases of new and used equipment, storage, maintenance and other upkeep costs of equipments were also collected as trail- related spending.

The survey covered nine types of trail users: All Terrain Vehicle (ATV), bicycle riders, cross country skiers, four-by-four Off- Road Vehicle riders (ORV), horseback riders, Off-Highway Motorcycle riders (OHM), runners/joggers outdoors, snowmobilers and walkers/hikers outdoors. For Inline skaters, survey results from the walkers/hikers' survey were used as proxy.

Minnesota study regions

The Minnesota regions in this study are the northwest, northeast, central, metro area and south regions.

Five Minnesota Study Regions



In 2007, the metro area had 54 percent of the state's population, 63 percent of total personal income and 61 percent of the jobs (MIG, Inc, 2008b). In contrast, the northeast region is a small, hilly area where iron mining has been a major industry. It has only 8 percent of the state's population, 6 percent of personal income and 6 percent of the jobs. But this region has the terrain, climate, and substantial private investments in resorts, lodging places, restaurants, amusements and casinos to attract 'weekend trips' by numerous metro area residents. Major public investments in highways and trails have added to the attractiveness and accessibility of the region to Minnesota travelers and visitors from outside the state.

The northwest region is similar in size to the northeast region with 8 percent of the state's population, 6 percent of personal income and 7 percent of the jobs. The central region is twice the size of these regions, with 17 percent of the state's population, 14 percent of personal income and jobs. The southern region is slightly smaller in size than the central region with 13 percent of the state's population, 11 percent of personal income and jobs. Both the northwest and central regions are important destinations of metro area residents for certain types of activities such as walking, bike riding and cross-country skiing. In contrast, there are few visitors from other regions that travel to trails in the metro area and southern regions. Most trail spending come from the region's residents, during their frequent but short duration trips to local trails.

Survey Samples

The 2008 UMN survey used two sampling universes:

(1) Pass holders, registrations, or licenses for recreational equipments and trail use,

(2) State driver's licenses from the Division of Motor Vehicles, Minnesota Department of Public Safety.

A DNR list of all pass holders, registrations or licenses specific to each recreational activity was used for ATV, cross-country skiers, horseback riders, OHM users, ORV users and snowmobilers. For example, a sample of 997 Minnesota residents was systematically drawn from the list of ATV registrations (Schneider, Schuweiler & Bipes, 2009, p.12). Mailed questionnaires elicited 417 returned responses, or a 43 percent response rate. Excluding 99 unusable surveys, 318 samples were used for analysis.

For mountain bikers, road bikers, and walkers/hikers, the list of motor vehicle driver registrations was used to select the samples. With a goal of obtaining 100 samples per activity for each DNR region, a total of 16,999 driver licenses were drawn from the entire list. A one page self-mailer was sent to each driver, inquiring about trail use during the last 12 months and their main recreational trail activity. There were 3,126 responses (19 percent), of which 2,542 were trail users. From this group, there were 794 bikers, 982 walkers and 306 runners. But there no samples for inline skaters so the walkers/hikers' sample was used as proxy.

Out-of-state visitors to Minnesota trails

In contrast to other studies, particularly those based on visitor surveys in parks and trails, lodging places and campgrounds (Davidson Peterson Associates, 2009a, 2009b, 2009c), the 2008 UMN survey did not have samples for visitors from other states. The samples were drawn exclusively from recreational equipment registrations and driver's licenses. Instead, the 2004 DNR survey data for Minnesota residents that visited out-of-state trails was used as proxy for out-of-state visitors to Minnesota trails.

Survey Instrument

Based on the 2004 Snowmobile Study and other trails research, the UMN team and staff from DNR and DEED developed an eight-page mail questionnaire for the entire sample (See Appendix B- Minnesota Recreational Trail User Survey Questionnaire). There were sections on trail experiences, number of trips and expenditures during the previous 12 months, and demographics of trail users. The questions included the respondent's region of origin and destination, and trip expenditures on 12 consumer items that corresponded to IMPLAN's sectoring scheme. There were separate questions on annual household purchases of recreational equipment and upkeep.

Survey period

The mail survey was conducted during the summer of 2008 for the winter activities (snowmobiling and cross country skiing), and during the fall of 2008 for the summer activities (ATV, bike riders, horseback riders, OHM users, ORV users, runners and walkers/hikers).

Estimates of Total Trip Days

For this study, Kelly (2009a, 2009b, 2009c) estimated total person-days by trail users and their spending on various consumer commodities, equipments and other items. The DNR "2004 Outdoor Participation Survey of Minnesotans: Report on findings" (Kelly, 2005)

provided information on trail use by residents of each region (total person-days). But information on their destination region was limited to proximity from home: trips to nearby trails (within 30 minutes from home), trips to distant trails (beyond 30 minutes), and trips to venues outside Minnesota. Using trip information from the 2008 UMN survey, Kelly allocated these resident trips to their destination regions.

For OHM and ORV, which were not included in the 2004 DNR survey, current vehicle registrations and average days of use from the 2008 UMN survey were used to estimate total person-days. Since ORV registrations were required only if used in DNR designated or grant-in aid ORV trails, the estimates of total ORV numbers and total use could be underestimated in this study.

Hence, for each trail type, destination region and proximity from home, Kelly estimated the total person-days by local residents and travelers from other regions. Due to non-coverage of Minnesota visitors by the survey, their trail use was assumed equal to visits by Minnesota residents to out-of-state trails during the 2004 DNR survey. Other adjustments were made for non-coverage of younger participants (below 20 years old) in the 2004 DNR study, allocation of out-of-state visitors to the regions, and non-recreational trail use of equipments. These are discussed in the next section on methods and results for each trail type.

Estimates of Consumer Spending for Each Recreational Activity

The 2008 UMN survey inquired on participant's consumer spending at home, as well as during travel and stay at the destination area. Spending was divided into several categories of trip- related expenses such as lodging, meals, entertainment, shopping for groceries, gasoline, licenses and fees, equipment purchases, rental and repair during the trip; and annual household purchases of equipment, repair and maintenance, and storage. These categories were taken from the IMPLAN model that was used in economic impact analysis.

For each of the spending categories, results from the 2008 UMN Survey were used to estimate average spending (spending per person- day) for local trips (within 30 minutes from home) and distant trips (beyond 30 minutes) by residents and nonresidents, and for out-of-state visitors. For each group of participants and for their local and distant trips, the product of total person- days and average consumer spending by category produced estimates of total spending for each category.

Traveler destination as impact region

Consistent with other economic impact studies at federal, state and local parks and trails, this study designated the destination region as the impact region. All expenses by residents at home and at the trails were included; but for travelers to the region, only destination expenses were tallied. This limited the impact to trail user spending within the region.

Annual equipment purchases and upkeep

Unlike estimates of trail use and spending, equipment purchases were not allocated to their destination regions. It was assumed that equipment spending occurred in the home region of the trail user. For example, the metro area economy benefited from residents' purchases of new equipment that were eventually used during visits to northern and central region trails. Statewide, equipment purchases were almost exclusively used in state trails.

Further, purchases of used equipment were excluded due to unreliability/wide variability of asset pricing in small local markets. But the spending amounts on new equipment and upkeep were applied to the regional economic models to estimate their impact on the local economy.

Economic Impacts of Consumer Spending

Spending by local trail users, travelers from other Minnesota regions and visitors from other states provide the revenues to tourist- serving businesses such as hotels, motels and campgrounds, restaurants and bars, amusement places including casinos, gasoline stations and transportation- related businesses, and retailers/suppliers of equipment and apparel. Licenses, entrance/user fees and other dues are also collected by local governments and state agencies. These are the direct impacts of recreation spending on specific sectors of the local economy. In turn, these local businesses and public agencies purchase production inputs and services from their local suppliers, such as manufacturers, brokers, wholesalers, transporters, banking and finance, and business services. These purchases of production inputs and services create the indirect or "spin-off" effect of consumer spending on the rest of the business sectors. The third effect— income-induced effect, arises when income earned by employees in all affected sectors results in another round of consumer spending.

Regional economic models from IMPLAN

MIG, Inc based in Stillwater, Minnesota leases to its clients a computer software and associated data base to build an IMPLAN Economic Model for any group of counties that comprise a region (Appendix B- Description of IMPLAN). Applying local demographic and economic data on a national input-output model, IMPLAN produces a smaller, regional input-output model that links local business sectors based on their purchases of production inputs, or exchanges of producer goods and services. Other linkages are built with household income and household demand for commodities and services, new capital investments, federal and state government purchases and tax receipts, and imports/exports of commodities and services. A regional economic model was built for each of the five study regions and for the entire state.

Similar to the national model, a regional model produces economic multipliers that embody the make-up and economic interaction among local business sectors, households and government. Based on estimates of trail user spending on consumer goods, services and equipments, three sources of economic impacts are estimated by the model:

Direct effect = impact of consumer spending for various commodities and services on gross sales of local businesses. IMPLAN deducts imports of commodities and services from gross sales to limit the impact to local

producers.

Indirect effect = impact on local suppliers of production inputs to all affected businesses.

Induced effect = impact of re-spending of incomes earned by employees of all affected businesses on local goods and services.

Estimating economic impacts with IMPLAN regional models

Except for commodities purchased from grocery stores and other retail establishments, the estimated trail-user spending on each commodity/service category is used as the stimulus amount to the corresponding IMPLAN sector. For commodities obtained from local retail establishments, IMPLAN uses the retail, wholesale and transportation margins as stimulus amounts for these industries. The remainder is allocated between local manufacturers and imports, depending on their competitiveness in local markets. This also converts the purchaser prices of commodities at retail into the producer prices of the IMPLAN model (MIG, Inc, 2004, pp. 109-111). The stimulus amounts constitute the direct impact of consumer spending on the output of various business sectors. Due to imports of consumer goods not produced locally, total industry output is usually smaller than total sales to consumers.

IMPLAN applies sector-specific economic multipliers to the direct impacts to estimate the indirect and induced effects on the rest of the business community. By their construction, a sector multiplier is large if there are strong linkages between the affected business sector and its local suppliers of production inputs.

The indirect and induced impacts from IMPLAN multipliers often offset the reducing effect of imports of certain consumer items. Gross output estimated by the model covers sales by local businesses that include the 'spin-off effects' on other businesses, but excludes the value of consumer items that are imported into the region. Other economic data in the regional models are used to derive the impacts on gross regional product (or value added), total employment- both full time and part time, employee compensation, and state and local taxes and fees.

The need to build a state model

Minnesota businesses outside a region's boundaries are assumed to be independent and foreign. This ignores any interactions between businesses located in neighboring regions. But at the state level, all businesses are assumed to interact, producing much larger impacts than the sum of regional impacts. Hence, a statewide model was built to independently determine the impacts of total trail user spending on the state's economy.

Similarly, all Minnesota trail users in the state model were assigned the local resident's average spending at the trails. But at the region level, only destination expenses of non-local users were included to limit the spending impacts to the location of the trails. This produced a total of regions' spending that was some 13 percent lower than the state estimate.

RESULTS

This section presents results from Kelly's analysis of the 2008 UMN survey and comparisons with other studies on trail use and spending. Estimates of spending and economic impacts are presented for each trail type at the state level, but with detail for each region and on the contribution of residents and visitors to the region's economy. Additional information is included in the methods discussion for each trail to highlight important assumptions and data unique to the trail type. The trails are discussed in the order of trail user spending, beginning with the dominant walkers/hikers in outdoor trails, followed by bicycle riders and snowmobilers.

WALKERS/HIKERS

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total spending by walkers and their local economic impact. Total person-days in the trails were apportioned among local walkers (or region residents) and non-local walkers (visitors from other regions and from out-of- state).

The DNR "2004 Outdoor Participation Survey of Minnesotans: Report on findings" (Kelly, 2005) provided information on trail use by residents of each region (total person-days). But information on their destination region was limited to proximity from home: trips to nearby trails (within 30 minutes from home), trips to distant trails (beyond 30 minutes), and trips to venues outside Minnesota. Using trip information from the 2008 UMN survey, Kelly allocated these resident trips to their destination regions. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were estimated at the destination regions.

Further, the 2004 DNR estimates covered only adult walkers-- those at least 20 years old. Kelly analyzed the 2008 UMN survey data regarding walker trip members and increased the DNR estimates by about 27 percent to include younger walkers.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails (11,182 thousand-person-days) in the 2004 DNR study were assumed equal and offsetting to trip days of visitors from out-of-state. These out-of-state visits were allocated among the regions based on their share of total person-days by walkers that traveled to distant trails (beyond 30 minutes).

Results-- estimates of total person-days by walkers/hikers in various regions

Table 1.1 shows estimates of total days of walking in each destination region. Short trips by region residents were most frequent, accounting for 74 percent (98,682 thousand-person-days)

of total days spent walking in the state (133,561 thousand-person-days). More than one-half of the local trips occurred in the metro area (51,373 thousand-person-days).

Among Minnesota travelers, the northeast, northwest and central region trails were visited more frequently than trails in the metro area and south regions. There were nearly twice as many nonresident person days (travelers) in these regions (over 4,000 thousand-person-days) compared to the other regions (below 2,000 thousand-person-days). Most of the travelers came from the metro area and they visited trails in the central region (3,324 thousand-person-days) and in the northeast region (4,593 thousand-person-days).

Table 1.1 Total user days at Minnesota trails by walkers/hikers, by destination region
(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	7,779.1	1,187.5	1,250.2	2,815.8	2,971.0	16,003.7
Northeast	7,675.5	1,520.5	1,964.2	5,873.5	5,487.3	22,521.0
Central	8,860.9	366.0	3,793.1	1,245.7	1,196.1	15,461.8
Metro area	51,373.0	412.9	570.0	284.2	517.3	53,157.5
South	22,993.8	430.3	1,052.5	930.5	1,009.9	26,416.9
Statewide	98,682.3	3,917.2	8,630.2	11,149.7	11,181.6	133,560.9

Method to Estimate Average Trip Spending

As shown in Table 1.1, the trip days in each destination region were grouped by proximity from home. With information on the origin and destination of walkers, the trip days were grouped further according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by non-local walkers, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local walkers. For both of these groups, trip cost increases with travel distance from home.

The 2008 UMN survey included questions on respondent's consumer spending at home, as well as during travel and stay at the destination area. Spending was divided into several categories such as lodging, meals, entertainment, shopping for groceries, gasoline and licenses and fees. For each of these categories, 2008 UMN survey results for walkers and other studies such as the DNR's 12 Trail Studies from 1996 to 2008 were used to estimate average spending (spending per person-day) during local trips and distant trips by residents and nonresidents, and by visitors from other states. Hence, these categories described a spending profile for different types of walkers in the state. When multiplied by estimates of total days by different types of walkers in each region, these spending profiles produced estimates of their total spending at local trails, and by consumption category.

Results-- average spending by residents and nonresidents on various commodities/services

Analysis of survey data, supplemented by results from DNR's State Trail Studies between 1996 and 2008 produced spending averages of less $5 per day during trips to nearby trails (within 30 minutes from home) and $27 to $39 per day in more distant venues (beyond 30 minutes travel). Lodging, meals and drinks, groceries, and gasoline were the major expenditure items during those longer trips.

Table 1.2. Average trip spending by walkers/hikers in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$0.60	$12.08	$0.60	$12.08	$11.14
Grocery or convenience store	$0.79	$6.32	$0.26	$2.79	$2.82
Restaurant/bar meals & drinks	$0.64	$4.62	$0.64	$4.62	$4.64
Gasoline or other fuels	$1.43	$8.19	$0.48	$2.63	$2.86
Other transportation costs	$0.03	$0.45	$0.01	$0.16	$2.22
Recreational equip purchases	$0.39	$1.82	$0.07	$0.60	$0.61
Recreational equip rentals	$0.00	$0.00	$0.00	$0.00	$0.00
Recreational equip repair	$0.00	$0.00	$0.00	$0.00	$0.00
Payments to public agencies	$0.49	$1.38	$0.40	$0.96	$1.46
Entertainment (casinos)	$0.13	$1.12	$0.12	$0.84	$1.21
Shopping	$0.32	$2.93	$0.20	$1.94	$1.24
Other	$0.03	$0.14	$0.03	$0.07	$0.00
Total	$4.86	$39.08	$2.82	$26.70	$28.20
Statewide*	$4.86	$39.08			$28.20

Note: * Statewide, all region walkers/hikers are Minnesota residents.

Results-- Total Spending by Walkers/hikers

Applying average spending estimates in Table 1. 2 to total person-days for each group of walkers in Table1.1 produced total spending estimates for each destination region.

Statewide spending estimates

At the state level, all Minnesota walkers are considered residents, incurring the average expenses of region residents at local trails ($4.86 per day in trails less than 30 minutes from home) and distant trails ($39.08 per day for trails beyond 30 minutes). Applying these average daily expenditures to total person-days of Minnesota residents resulted into some $1,110.2 million in consumer spending. Out-of-state visitors added $315.4 million in spending, which increased total spending in Minnesota trails to $1,425.6 million.

Numerous visitors to the North East region produced highest spending among the regions

With the popularity of the North East region to Metro Area walkers and visitors from out-of-state, total spending in the region was highest at $413.8 million. There were more than twice as many resident walker person-days in the Metro Area than in the North East, but the prevalence of travelers to the North East (with five times larger spending than residents at local trails) produced 43 percent higher total spending in the region. This highlights the importance of advertizing for travelers from distant locations, preferably visitors from other states that will bring in new monies into the region and the state.

Table 1.3. Total trip spending by walkers/hikers in Minnesota, by region

(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
Northwest	$84,207	$78,710	$83,793	$162,503	$246,709
Northeast	$96,717	$162,366	$154,763	$317,129	$413,846
Central	$57,362	$43,945	$33,733	$77,678	$135,040
Metro area	$265,779	$9,195	$14,591	$23,785	$289,565
South	$128,551	$27,811	$28,482	$56,293	$184,844
Statewide*	$1,110,251	0	$315,362	$315,362	$1,425,613

Note: * Statewide, all region walkers are Minnesota residents.
Sum of region expenditures is less than Statewide because at home expenditures by non-residents are not included in the regions.

Economic Impacts of Walker/hiker Trip Spending

The estimated walker spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business sectors and public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect- income induced effect, occurs when income earned by employees in all affected businesses results into another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total walkers' expenditure of $1,425.6 million produced $1,072.3 million in output of directly affected businesses. Excluded from this output were some $353.3 million in imported consumer goods such as groceries, gasoline, recreational equipment, apparel, memorabilia and gifts. However, indirect impacts or 'spin-off' effects on local suppliers and induced impacts from the re-spending of employee incomes produced another $719.8 million in total industry output.

When the total value of inputs (producer goods and services) was deducted from this output, the gross state product due to walkers' spending amounted to $939.4 million. This represents the value of all goods and services that can be attributed to walker spending. It does not include imports of consumer goods or producer items, and avoids double counting of sales between producers and their local suppliers.

Some 13,622 jobs were supported by the direct spending of walkers, plus 5,473 jobs from indirect and induced impacts. IMPLAN counted the total number of jobs in all sectors, without adjusting for part-time and full-time status. Total labor compensation (wages, salaries and fringe benefits) from these jobs amounted to $526.2 million, and state and local revenues reached $125.0 million.

Table 1.4. Economic impacts of trip spending by walkers/hikers in Minnesota, by region*
(thousand $)

	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by Walkers/hikers	$246,709	$413,846	$135,040	$289,565	$184,844	$1,425,613
Output (Net of Imports)						
Direct Effect	$171,642	$295,313	$93,139	$210,324	$124,611	$1,072,254
Indirect Effect	$46,441	$75,173	$27,736	$60,230	$33,944	$385,638
Induced Effect	$36,088	$64,745	$22,042	$54,757	$26,962	$334,161
Total	$254,171	$435,231	$142,917	$325,311	$185,517	$1,792,053
Gross Regional Product						
Direct Effect	$92,244	$161,320	$50,094	$105,225	$60,291	$550,774
Indirect Effect	$22,022	$37,439	$13,279	$32,140	$14,791	$200,109
Induced Effect	$19,807	$36,696	$12,374	$31,696	$14,211	$188,507
Total	$134,073	$235,455	$75,747	$169,061	$89,293	$939,390
Employment (no. of jobs)						
Direct Effect	3,236	5,248	1,594	2,201	2,141	13,622
Indirect Effect	421	659	227	381	259	2,621
Induced Effect	414	693	227	440	277	2,852
Total	4,071	6,600	2,048	3,022	2,677	19,094
Employee Compensation						
Direct Effect	$50,124	$90,850	$29,441	$64,367	$33,399	$319,493
Indirect Effect	$11,283	$21,061	$7,055	$18,126	$8,433	$110,733
Induced Effect	$9,035	$18,374	$6,115	$16,449	$6,831	$95,961
Total	$70,442	$130,285	$42,611	$98,942	$48,663	$526,187
State and Local Taxes	$19,220	$32,835	$10,457	$21,705	$12,313	$124,986

Notes: * For each region, the impacts are due to At Home and Trip Spending by residents, and Trip Spending by non-residents and visitors from out-of-state.
** Statewide Impacts are larger than sum of region impacts because they include At Home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

Regional economic impacts

The IMPLAN regional models estimated the economic impacts of walker spending in the destination regions. With the northeast attracting one-half of the travelers, total spending was the highest among the regions ($413.8 million), and manifested in the highest impact on

output of directly affected businesses ($295.3 million). Indirect and induced impacts raised total industry output to $435.2 million.

The metro area had the second highest impact on total output ($325.3 million) and gross regional product ($169.1 million). This was followed by the northwest at $254.2 million in total output and $134.1 million in gross regional product.

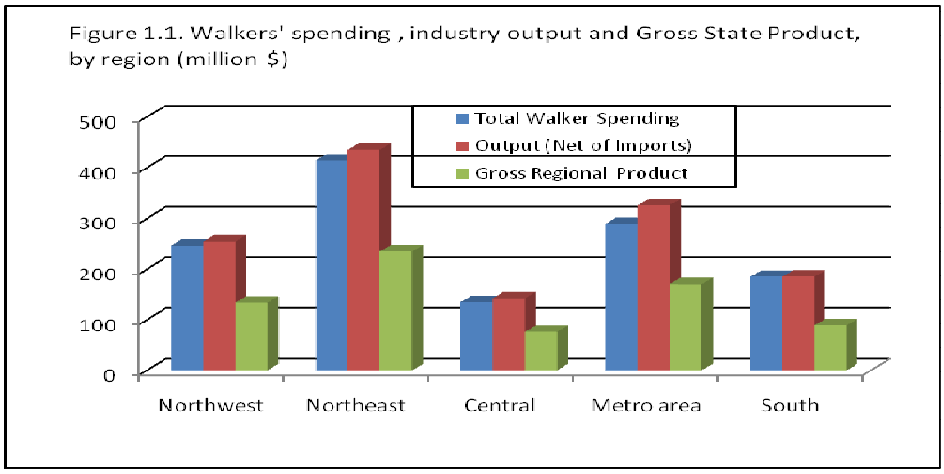
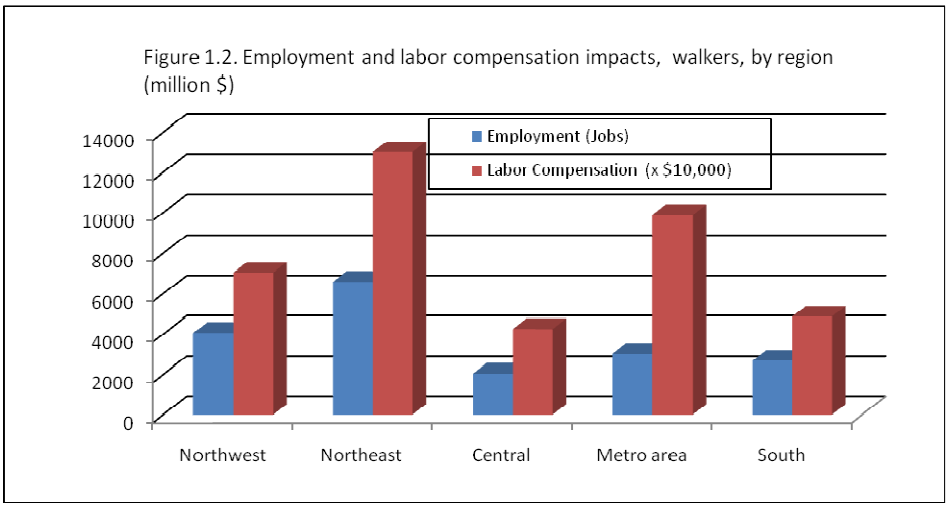
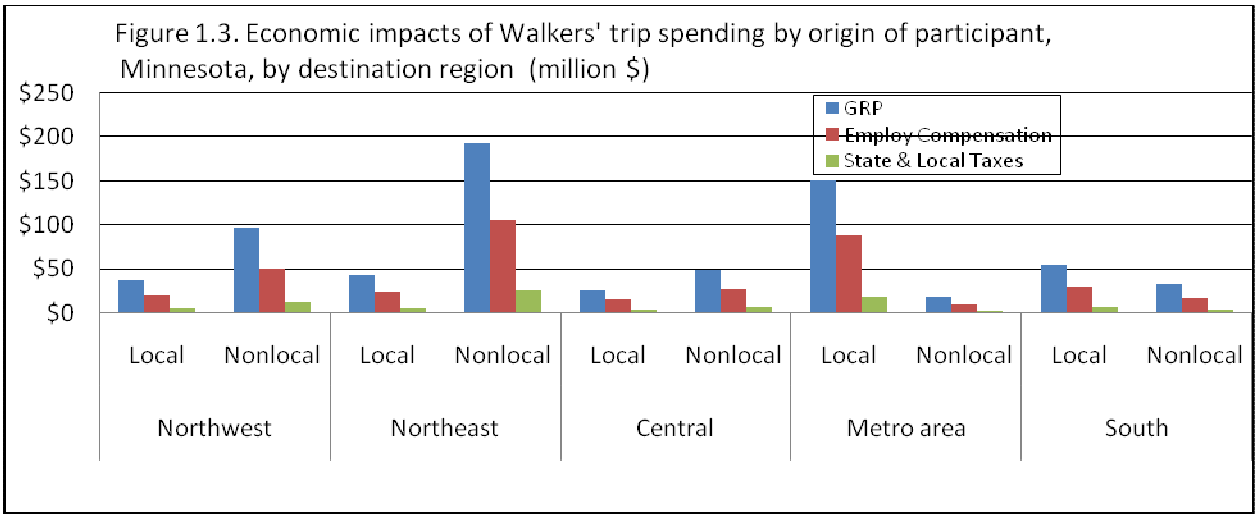


Figure 1.2 shows the walkers' spending impacts on jobs and labor compensation (wages, salaries and fringe benefits) in various regions. The northeast region led in job impacts, followed by the northwest. Higher wages in the metro area provided larger employment compensation from fewer jobs, compared to the northwest.



Relative importance of resident and nonresident spending in various regions

Figure 1.3 indicates the dominance of nonresident walker's spending in the northeast and northwest regions. Some 62 percent of travelers to the northeast came from the metro area. In the metro area, many parks and trails attracted a large number of resident walkers, but very few travelers from other regions.



Economic Impacts of Annual Equipment Spending

Method to estimate annual equipment spending

Based on the 2008 UMN survey, Kelly (2009) estimated annual equipment spending by walkers/hikers in various regions. Similar to trip spending, the equipment purchases were grouped according to IMPLAN sectors to facilitate impact measurements. Used equipments were excluded from these groups.

The annual spending estimates were entered into the regional IMPLAN models to determine their impacts on local economies. Statewide estimates were applied to the State IMPLAN model for estimates that included inter-region interactions among all Minnesota businesses.

Results-- estimates of annual equipment purchases and their economic impacts

Purchases of new equipment by walkers reached $21.7 million, or 93 percent of their $23.4 million total equipment spending in the state. About 57 percent of this spending occurred in the metro area ($13.3 million). The other regions had between $1.8 million and $4.3 million in equipment spending.

The equipment spending produced some $12.7 million in state GSP, $6.9 million in employee compensation and $2.2 million in state and local taxes.

Table 1. 5. Economic impacts of annual equipment spending, walkers/hikers, Minnesota, by region

(thousand $)

Equipment Spending	Northwest	Northeast	Central	Metro area	South	State*
New equipment	$1,713	$1,674	$2,018	$12,352	$3,980	$21,737
Repair maintenance	$0	$0	$0	$0	$0	$0
Insurance	$0	$0	$0	$0	$0	$0
Storage	$0	$0	$0	$0	$0	$0

Other	$129	$126	$152	$928	$299	$1,633
Total	$1,842	$1,800	$2,169	$13,281	$4,279	$23,371
Economic Impact of Equipment Spending						
Output (Local Sales)	$1,088	$1,145	$1,444	$10,672	$3,290	$20,632
Gross Regional Product	$674	$696	$880	$6,790	$1,909	$12,696
Employment (no. of jobs)	19	22	24	150	45	282
Employee Compensation	$323	$364	$469	$3,717	$1,064	$6,856
State and Local Taxes	$126	$129	$159	$1,167	$342	$2,166

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Summary-- Combined Economic Impacts from Walkers/hikers Trail-related Activities

When combined with trip expenditures, annual spending on equipments induced trail-related spending of some $1,449.0 million statewide. Gross sales by local businesses (net of imports) reached $1,812.7 million. The contribution of this spending to GSP amounted to $952.1 million. The job impacts were 19,376 jobs and $533.0 million in labor compensation (wages and salaries plus benefits). State and local tax revenues from all sources were estimated at $127.2 million.

The North East region had the highest walker related- trip spending and equipment purchases at $415.6 million, followed by the Metro Area at $302.8 million, and the North West region at $248.6 million. The Southern and Central regions had walker- related spending of $189.1 million and $137.2 million, respectively.

Table 1.6. Economic impacts of trail- related spending, walkers/hikers, Minnesota, by region (thousand $)

	Northwest	Northeast	Central	Metro area	South	State*
Spending on Walking Trips	$246,709	$413,846	$135,040	$289,565	$184,844	$1,425,613
Purchases of Equipments	$1,842	$1,800	$2,169	$13,281	$4,279	$23,371
Total	$248,551	$415,646	$137,209	$302,845	$189,123	$1,448,983
Economic Impacts						
Output (Local Sales Net of Imports)						
Trip Spending	$254,171	$435,231	$142,917	$325,311	$185,517	$1,792,053
Equipment Spending	$1,088	$1,145	$1,444	$10,672	$3,290	$20,632
Total	$255,259	$436,376	$144,361	$335,983	$188,807	$1,812,685
Gross Regional Product						
Trip Spending	$134,073	$235,455	$75,747	$169,061	$89,293	$939,390
Equipment Spending	$674	$696	$880	$6,790	$1,909	$12,696

Total	$134,747	$236,151	$76,627	$175,851	$91,202	$952,086
Employment (no. of jobs)						
Trip Spending	4,071	6,600	2,048	3,022	2,677	19,094
Equipment Spending	19	22	24	150	45	282
Total	4,090	6,622	2,072	3,171	2,722	19,376
Employee Compensation						
Trip Spending	$70,442	$130,285	$42,611	$98,942	$48,663	$526,187
Equipment Spending	$323	$364	$469	$3,717	$1,064	$6,856
Total	$70,765	$130,649	$43,080	$102,659	$49,727	$533,043
State and Local Taxes						
Trip Spending	$19,220	$32,835	$10,457	$21,705	$12,313	$124,986
Equipment Spending	$126	$129	$159	$1,167	$342	$2,166
Total	$19,346	$32,964	$10,616	$22,872	$12,655	$127,152

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

BICYCLE RIDERS

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total spending by bicycle riders and its local economic impact. Total trip days in the region were estimated for local bicycle riders (or region residents) and nonlocal bicycle riders (visitors from other regions and from out-of- state).

The DNR "2004 Outdoor Participation Survey of Minnesotans: Report on findings" (Kelly, 2005) provided information on trail use by residents of each region (total person days). But information on their destination region was limited to proximity from home: trips to nearby trails (within 30 minutes from home), trips to distant trails (beyond 30 minutes), and trips to venues outside Minnesota. Using trip information from the 2008 UMN survey, Kelly allocated these resident trips to their destination regions. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were estimated at the destination regions

Further, the 2004 DNR estimates covered only adult bicycle riders-- those at least 20 years old. Kelly analyzed the 2007 UMN Survey data regarding bicycle trip members and increased the DNR estimates by about 34 percent to include younger bicycle riders.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails (1,549 thousand-person-days) were assumed equal and offsetting to trip days of visitors from out-of-state. These out-of-state visits were allocated among the regions based on their share of total person-days by bicycle riders that traveled to distant trails (beyond 30 minutes from home).

Results-- estimates of total person-days of Bicycle riders in various regions

Table 2.1 shows estimates of total days of bicycle riding in each destination region. Trips to nearby trails by region residents were most frequent, accounting for 77 percent (23,166 thousand-person-days) of total days spent bicycle riding in the state (30,093 thousand-person-days). More than one-half of the local trips occurred in the metro area (13,360 thousand-person-days).

Among Minnesota travelers, the central and northeast regions trails were far more attractive than trails in the other regions. There were 68 percent more nonresident-person-days (Minnesota travelers) in these regions (3,067 thousand-person-days) compared to the other regions (1,746 thousand-person-days). Most of the travelers came from the metro area and frequented trails in the central region during short trips (948 thousand-person-days) and the northeast region during extended trips (972 thousand-person-days).

Table 2.1 Total user days at Minnesota trails by bicycle riders, by destination region

(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	1,180.9	82.6	469.7	251.5	179.1	2,163.8
Northeast	1,324.2	80.4	410.5	1,143.8	656.1	3,614.8
Central	2,185.7	81.0	1,096.1	416.1	266.4	4,045.4
Metro area	13,360.4	88.4	222.6	48.5	73.3	13,793.2
South	5,114.8	232.9	287.9	465.6	374.4	6,475.5
Statewide	23,166.0	565.2	2,486.7	2,325.6	1,549.3	30,092.8

Method to Estimate Average Trip Spending

As shown in Table 2.1, the trip days in each destination region were grouped by proximity from home. With information on the origin and destination of bicycle riders, the trip days were grouped farther according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by nonlocal bicycle riders, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local bicycle riders. For both of these groups, trip cost increases with travel distance from home.

Based on the 2008 UMN survey, Kelly estimated average spending by bicycle riders in local and distant trails, and distributed them among IMPLAN consumer commodities and services; licenses and fees; and equipment purchases, rental and repair costs. Kelly compared the spending averages with other DNR trail studies in 2007 and 2008 and federal NVUM studies (cite sources footnote). Spending by nonlocal bicycle riders was derived from estimates for local riders (footnote procedure). When multiplied by estimates of total days by different groups of bicycle riders in each region, these spending profiles produced estimates of their total spending at local trails, and by consumption category.

Results-- average spending by residents and nonresidents on various commodities/services

Kelly's analysis of the 2008 UMN Survey and other sources produced spending averages of $9.60 per day during short trips and $43.87 per day for trips to distant venues (beyond 30 minutes of travel). Lodging, gasoline, groceries and meals and drinks were the major expenditure items during those longer trips.

For nonresidents and visitors coming from distant places (beyond 30 minutes from home), their expenses averaged $30.82 per day and $35.03 per day, respectively. Largest expenses were lodging ($11.55 to $14.74 per day), meals and drinks at restaurants and bars ($4.47 to

$5.40 per day), gasoline and other fuels ($2.92 to $7.03 per day), shopping ($3.11 to $3.73 per day) and grocery or convenience store food ($2.74 to $3.19 per day).

Table 2.2. Average spending by bicycle riders in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$1.01	$14.74	$1.01	$14.74	$11.55
Grocery or convenience store	$2.08	$6.85	$0.68	$3.19	$2.74
Restaurant/bar meals & drinks	$1.09	$4.47	$1.09	$4.47	$5.40
Gasoline or other fuels	$1.54	$8.50	$0.41	$2.92	$7.03
Other transportation costs	$0.03	$0.47	$0.01	$0.18	$0.00
Recreational equip purchases	$1.55	$1.19	$0.48	$0.78	$0.26
Recreational equip rentals	$0.02	$0.17	$0.00	$0.09	$0.41
Recreational equip repair	$0.89	$1.08	$0.02	$0.03	$0.00
Payments to public agencies	$0.50	$1.34	$0.32	$0.75	$1.08
Entertainment (casinos)	$0.10	$0.80	$0.09	$0.54	$1.68
Shopping	$0.73	$4.10	$0.56	$3.11	$3.73
Other	$0.05	$0.18	$0.02	$0.04	$1.14
Total	$9.60	$43.87	$4.68	$30.82	$35.03
Statewide*	$9.60	$43.87	*	*	$35.03

Note: * Statewide, all region bicycle riders are Minnesota residents.

Results-- Total Spending by Bicycle Riders

Applying average spending estimates in Table 2.2 to total person-days for each group of bicycle riders in Table 2.1 produced total spending estimates for each destination region.

Statewide spending estimates

At the state level, all Minnesota bicycle riders are considered residents, incurring the average expenses of region residents at local trails ($9.60 per day in trails within 30 minutes from home) and distant trails ($43.87 per day for trails more than 30 minutes from home). Applying these average daily expenditures to total person-days bicycle riding by Minnesota residents resulted into some $373.2 million in consumer spending. Out-of-state visitors added $54.3 million in spending, which increased total spending in Minnesota trails to $427.5 million.

Metro area residents incurred highest spending at home

With over one-third of resident bicycle riding days in the state, the metro area led all regions in total spending ($137.3 million). Numerous metro area residents also traveled to the northeast, central and south regions and boosted spending in those regions.

Table 2.3. Total spending by bicycle riders in Minnesota, by region
(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
Northwest	$14,967	$9,953	$6,273	$16,226	$31,193
Northeast	$16,244	$37,176	$22,979	$60,156	$76,400
Central	$24,547	$17,960	$9,332	$27,292	$51,839
Metro area	$132,202	$2,538	$2,569	$5,107	$137,309
South	$59,343	$15,700	$13,112	$28,813	$88,156
Statewide*	$373,212	0	$54,266	$54,266	$427,478

Note: * Statewide, all region bicycle riders are Minnesota residents.
Sum of region expenditures is less than statewide because at home expenditures by nonresidents are not included in the regions.

Economic Impacts of Bicycle Rider Spending

The estimated bicycle rider spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business sectors and public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect, income induced effect, occurs when income earned by employees in all affected businesses results in another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total bicycle riders' expenditure of $427.5 million produced $298.3 million in output of directly affected businesses. Excluded from this output were some $129.2 million in imported consumer goods such as groceries, gasoline, recreational equipment, apparel, memorabilia and gifts. However, indirect impacts or 'spin-off' effects on local suppliers and induced impacts from re-spending of employee incomes produced another $200.6 million in industry output. This raised total output by all businesses above the initial spending.

When the total value of inputs (producer goods and services) was deducted from this output, the gross state product amounted to $261.2 million. This represents the value of all goods and services produced in the state that can be attributed to bicycle riders' spending. It does not include imports of consumer goods or producer items, and avoids double counting of sales between producers and their suppliers.

Some 3,736 jobs were supported by the direct spending, plus 1,528 jobs from indirect and induced impacts. Total labor compensation (wages, salaries and fringe benefits) from these jobs amounted to $145.1 million, and state and local revenues reached $35.8 million.

Table 2.4. Economic impacts of trip spending by bicycle riders in Minnesota, by region*
(thousand $)

	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by bicycle riders	$31,193	$76,400	$51,839	$137,309	$88,156	$427,478
Output (Net of Imports)						
Direct Effect	$19,274	$51,146	$34,162	$88,884	$56,609	$298,331
Indirect Effect	$5,158	$13,115	$10,250	$26,872	$15,864	$107,469
Induced Effect	$4,055	$11,074	$7,866	$24,595	$12,440	$93,128
Total	$28,487	$75,335	$52,278	$140,351	$84,913	$498,928
Gross Regional Product						
Direct Effect	$10,360	$27,730	$17,767	$46,661	$27,821	$152,418
Indirect Effect	$2,457	$6,543	$4,926	$14,738	$7,022	$56,289
Induced Effect	$2,226	$6,277	$4,416	$14,236	$6,557	$52,536
Total	$15,043	$40,550	$27,109	$75,635	$41,400	$261,243
Employment (no. of jobs)						
Direct Effect	357	913	566	1,001	977	3,736
Indirect Effect	47	115	84	175	124	733
Induced Effect	47	119	81	198	128	795
Total	450	1,146	731	1,374	1,228	5,263
Employee Compensation						
Direct Effect	$5,530	$15,315	$10,202	$28,275	$14,767	$87,468
Indirect Effect	$1,252	$3,674	$2,611	$8,231	$4,011	$30,931
Induced Effect	$1,015	$3,143	$2,182	$7,389	$3,151	$26,743
Total	$7,797	$22,132	$14,995	$43,895	$21,929	$145,142
State and Local Taxes	$2,215	$5,790	$3,864	$10,342	$5,981	$35,845

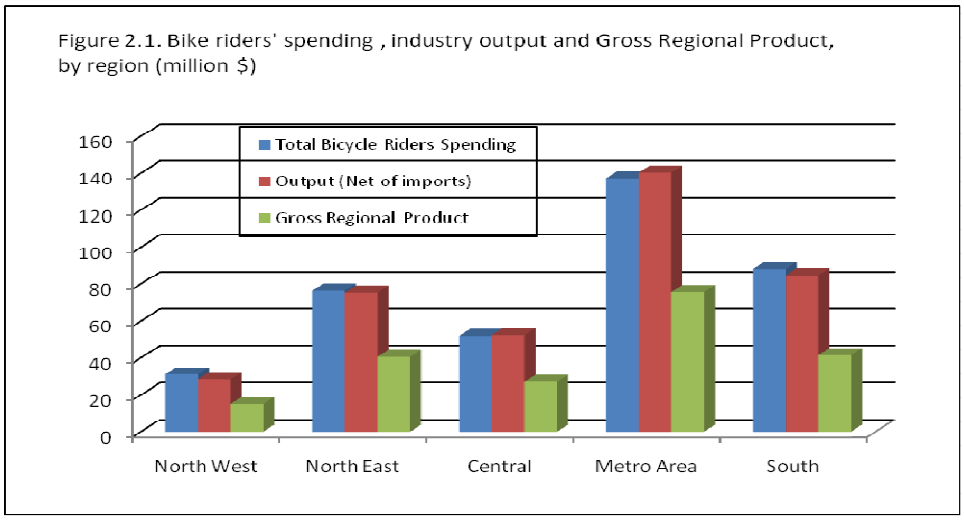
Notes: * For each region, the impacts are due to At Home and Trip Spending by residents, and Trip Spending by nonresidents and visitors from out-of-state.

** Statewide Impacts are larger than sum of region impacts because they include At Home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

Results-- regional economic impacts

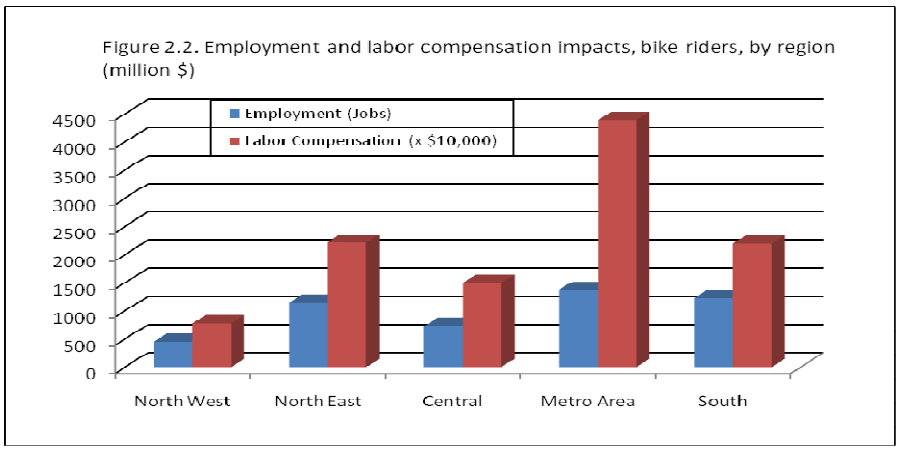
The IMPLAN regional models estimated the economic impacts of bicycle riders' spending in the destination regions. With metro area residents showing the largest spending ($137.3 million), the direct impact on local industry output reached $88.9 million. With the prevalence of short trips, about $48.4 million in bicycle riders' spending were paid for imports of consumer goods, which reduced the stimulus by one third. However, indirect and induced impacts raised total industry output slightly above the initial spending ($140.4 million). Similar patterns were observed for the other regions.

Figure 2.1 shows that the metro area had the highest total spending among the regions. Large economic multipliers from a diverse economy offset imports of consumer goods demanded by predominantly- day trippers to produce a total local output slightly greater than the initial pending.

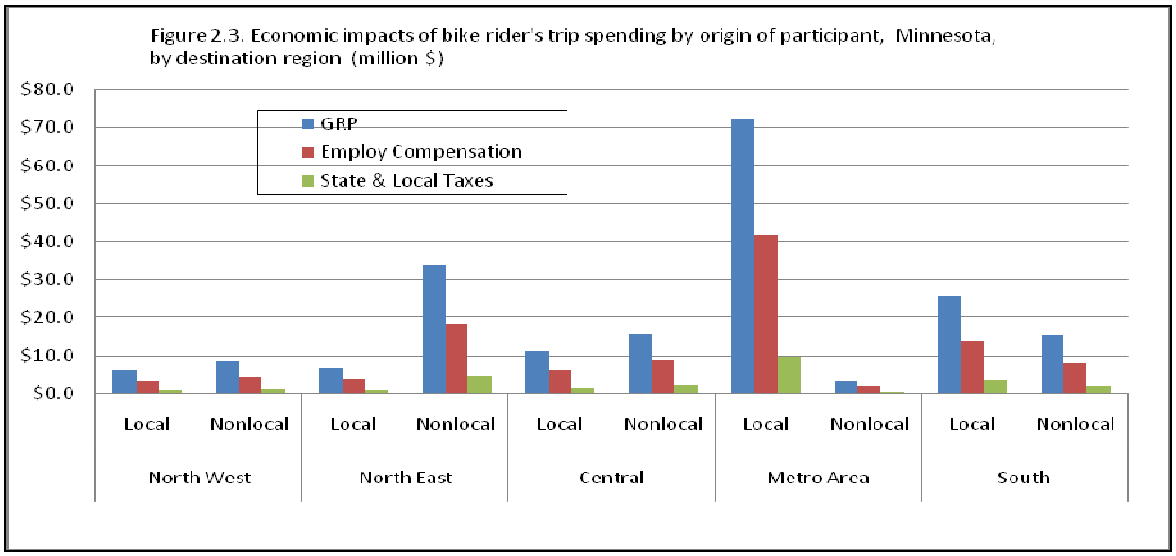


Large imports of producer inputs, however, such as crude oil for the oil refineries caused a large drop in GRP. In the northeast and central regions, a relatively lower demand for imported consumer items by travelers helped produce a total output close to the initial spending. But subtracting the value of production inputs also sharply reduced GRP in these regions.

Figure 2.2 shows the effect of regional differences in the mix of products and services demanded by bicycle riders from local businesses, the labor intensity in those industries and local wage rates-- on total labor demand and compensation. Due to high labor intensity in lodging, restaurants, bars, grocery stores, amusement places and other businesses frequented by distant travelers/vacationers, the employment impact in the northeast and south regions nearly equaled the metro area, which had twice the spending. However, high wages in affected industries in the metro area such as manufacturers and oil refineries produced the highest labor compensation (wages, salaries and fringe benefits) among the regions.



Relative importance of resident and nonresident spending in various regions
Figure 2.3 shows the overwhelming economic impacts of spending by local bicycle riders (residents) over nonlocal bicycle riders (nonresidents and visitors from out-of-state). Conversely, spending in the northeast and central regions by many visitors from other regions and states created more GRP, employment compensation and state and local revenues than spending by the region's residents.



Economic Impacts of Annual Equipment Spending

Method to estimate annual equipment spending

Based on the 2008 UMN survey, Kelly (2009) estimated annual equipment spending by bicycle riders in various regions. Similar to trip spending, the equipment purchases were grouped according to IMPLAN sectors to facilitate impact measurements. Used equipments were excluded from these groups.

The annual spending estimates were entered into the regional IMPLAN models to determine their impacts on local economies. Statewide spending totals were applied to the state IMPLAN model to include inter-region interactions among all Minnesota businesses.

Results-- estimates of annual equipment purchases and their economic impacts

Purchases of new equipment by bicycle riders reached $41.7 million, or 78 percent of their $53.6 million total equipment spending in the state. About 62 percent of this spending occurred in the metro area. The other regions had between $3.1 million and $9.3 million in equipment spending.

The equipment spending produced some $29.8 million in state GSP, $15.9 million in employee compensation and $4.7 million in state and local taxes.

Table 2.5. Economic impacts of annual equipment spending, bicycle riders, Minnesota, by region

(thousand $)

Equipment Spending	Northwest	Northeast	Central	Metro area	South	State*
New equipment	$2,462	$2,434	$3,693	$25,831	$7,249	$41,668
Repair maintenance	$495	$489	$743	$5,195	$1,458	$8,381
Insurance	$29	$29	$44	$305	$86	$492
Storage	$17	$16	$25	$173	$49	$280
Other	$162	$160	$242	$1,695	$476	$2,734
Total	$3,164	$3,128	$4,747	$33,200	$9,316	$53,555
Economic Impact of Equipment Spending						
Output (Local Sales)	$1,918	$1,965	$3,633	$29,113	$7,252	$50,131
Gross Regional Product	$1,106	$1,143	$2,085	$17,845	$4,031	$29,794
Employment (no. of jobs)	31	35	51	357	93	616
Employee Compensation	$525	$593	$1,090	$9,655	$2,205	$15,912
State and Local Taxes	$196	$201	$344	$2,822	$682	$4,737

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Summary-- Combined Economic Impacts from Bicycle Trail-Related Activities

When combined with trip expenditures, annual spending on equipment produced trail- related spending of some $481.0 million statewide. Gross sales by local businesses (net of imports) reached $549.1 million. The contribution of this spending to GSP amounted to $291.0 million. The job impacts were 5,880 jobs and $161.0 million in labor compensation (wages and salaries plus benefits). State and local tax revenues from all sources were estimated at $40.6 million.

Table 2.6. Economic impacts of trail- related spending, bicycle riders, Minnesota, by region

(thousand $)

	Northwest	Northeast	Central	Metro area	South	State*
Trip spending by bicycle riders	31,193	76,400	51,839	137,309	$88,156	$427,478
Purchases of Equipments	$3,164	$3,128	$4,747	$33,200	$9,316	$53,555
Total	$34,357	$79,528	$56,586	$170,508	$97,473	$481,032
Economic Impacts						
Output (Local Sales Net of Imports)						
Trip Spending	$28,487	$75,335	$52,278	$140,351	$84,913	$498,928
Equipment Spending	$1,918	$1,965	$3,633	$29,113	$7,252	$50,131
Total	$30,405	$77,300	$55,911	$169,464	$92,165	$549,059

Gross Regional Product						
Trip Spending	$15,043	$40,550	$27,109	$75,635	$41,400	$261,243
Equipment Spending	$1,106	$1,143	$2,085	$17,845	$4,031	$29,794
Total	$16,149	$41,693	$29,194	$93,480	$45,431	$291,037
Employment (no. of jobs)						
Trip Spending	450	1,146	731	1,374	1,228	5,263
Equipment Spending	31	35	51	357	93	616
Total	480	1,180	782	1,731	1,321	5,880
Employee Compensation						
Trip Spending	$7,797	$22,132	$14,995	$43,895	$21,929	$145,142
Equipment Spending	$525	$593	$1,090	$9,655	$2,205	$15,912
Total	$8,322	$22,725	$16,085	$53,550	$24,134	$161,054
State and Local Taxes						
Trip Spending	$2,215	$5,790	$3,864	$10,342	$5,981	$35,845
Equipment Spending	$196	$201	$344	$2,822	$682	$4,737
Total	$2,411	$5,991	$4,208	$13,164	$6,663	$40,582

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

The metro area had the highest bicycle related- trip spending and equipment purchases at $170.5 million, followed by the south region at $97.5 million, and the northeast region at $79.5 million. The central and northwest regions had bike-related spending at $56.6 million and $34.4 million, respectively.

SNOWMOBILERS

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total snowmobiler spending and its local economic impact. Total person-days in the region were estimated for local snowmobilers (or region residents) and nonlocal snowmobilers (visitors from other regions and from out-of-state).

The DNR "2004 DNR Outdoor Participation Survey of Minnesotans: Report of Findings" (Kelly, 2005) provided estimates of total person-days snowmobiling by residents of each region, but their destinations were given only as nearby trails (within 30 minutes from home), distant trails (beyond 30 minutes), or outside Minnesota. Using trip information from the 2008 UMN survey, Kelly allocated these resident trips to their destination regions. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were estimated at the destination regions.

Further, the 2004 DNR estimates covered only adult snowmobilers- those at least 20 years old. Kelly analyzed the 2008 UMN Survey data regarding snowmobile trip members and increased the DNR estimates by about 32 percent to include younger snowmobilers.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails (455 thousand-person-days) were assumed equal and offsetting to trip days of visitors from out-of-state. These out-of-state visits were allocated among the regions based on their share of total person-days by snowmobilers that traveled to distant trails (beyond 30 minutes).

Results-- estimates of total person-days snowmobiling

Table 3.1 shows estimates of total person-days of snowmobiling in each destination region. Trips to nearby trails were most popular among snowmobilers in various regions, accounting for slightly over one-half (2,215-thousand-person-days) of total days spent snowmobiling in the state (3,995 thousand-person-days). Most of the local snowmobiling occurred in the northeast region (609 thousand-person-days), northwest region (585 thousand-person-days) and south region (507 thousand-person-days). Residents in the central region and metro area spent less than 300 thousand-person-days snowmobiling at home, or about one-half the person-days of residents in northern Minnesota.

Table 3.1 Total user days at Minnesota trails by snowmobilers, by destination region
(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	585.4	111.8	110.1	126.0	120.0	1,053.3

Northeast	609.0	131.9	143.6	324.8	231.0	1,440.3
Central	218.7	14.2	141.2	76.9	46.0	497.0
Metro area	294.8	5.8	3.2	0.0	3.0	306.8
South	507.4	100.7	27.1	6.9	55.0	697.1
Statewide	2,215.3	364.4	425.2	534.6	455.0	3,994.5

One-half of travelers visited the northeast trails

The northeast region was the choice destination for slightly more than one-half (556 thousand-person-days) of residents of other regions traveling over 30 minutes from home and Minnesota visitors (state total- 990-thousand-person-days). These snowmobilers incurred high expenses because of extended stays in the region. Travelers were not as prevalent in the northwest (246 thousand-person-days) and central region (123 thousand-person-days). Few travelers went to the south region (62 thousand-person-days) and the metro area (3 thousand-person-days).

Method to Estimate Average Trip Spending

As shown in Table 3.1, the trip days in each destination region were grouped by distance from home- either to nearby trails (within 30 minutes from home), or distant trails (beyond 30 minutes). With information on the origin and destination of snowmobilers, the trip days were grouped further according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by nonlocal snowmobilers, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local snowmobilers. For both of these groups, trip cost increases with travel distance from home.

Due to insufficient data for snowmobilers from the 2008 UMN Survey, Kelly used cross-country skier data to derive average spending at local and distant trails. This was supplemented by information from the 2004 NVUM (Kelly, 2009c). But snowmobiler data from the 2008 UMN Survey was used to distribute the average spending among IMPLAN consumer commodities and services; licenses and fees; and equipment purchases, rental and repair costs during the snowmobiling trips. Spending by nonlocal snowmobilers was derived from estimates for local snowmobilers.

Results-- average spending by residents and nonresidents on various commodities/services

Table 3.2 shows that local snowmobilers spent an average of $42.23 per person-day at nearby trails, mostly for gasoline or other fuels ($13.28 per day), payments to public agencies, licenses & fees ($6.08 per day) and restaurant/bar meals & drinks ($5.77 per day). With an overnight stay, resident's expenses increased slightly to $49.36 per person- day, mostly due to an increase in lodging including campgrounds (to $9.71 per day) and grocery or convenience store food and drink (to $5.81 per day).

For nonresidents and visitors coming from distant places (more than 30 minutes from home), their expenses averaged $31.19 per day and $37.25 per day, respectively. Largest expenses were lodging ($9.71 to $15.22 per day), meals and drinks at restaurants and bars ($6.90 per day), gasoline and other fuels ($4.77 to $5.37 per day) and grocery or convenience store food ($2.91 to $3.15 per day).

Table 3.2. Average spending by snowmobilers in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$3.01	$9.71	$3.01	$9.71	$15.22
Grocery or convenience store	$3.40	$5.81	$1.98	$3.15	$2.91
Restaurant/bar meals & drinks	$5.77	$6.85	$5.77	$6.85	$6.90
Gasoline or other fuels	$13.28	$12.71	$3.97	$4.77	$5.37
Other transportation costs	$1.23	$3.25	$0.25	$0.86	$0.29
Recreational equip purchases	$3.28	$1.02	$0.25	$0.52	$0.22
Recreational equip rentals	$0.09	$0.20	$0.00	$0.20	$0.75
Recreational equip repair	$3.77	$3.85	$0.86	$1.58	$0.44
Payments to public agencies	$6.08	$1.92	$1.10	$0.46	$1.93
Entertainment (casinos)	$0.96	$3.14	$0.71	$2.49	$2.15
Shopping	$0.79	$0.90	$0.59	$0.61	$1.08
Other	$0.56	$0.00	$0.03	$0.00	$0.00
Total	$42.23	$49.36	$18.51	$31.19	$37.25
Statewide*	$42.23	$49.36	*	*	$37.25

Note: * Statewide, all region snowmobilers are Minnesota residents.

Results- Total Spending by Snowmobilers

Applying average spending estimates in Table 3.2 to total person-days of snowmobiling for each group of snowmobilers in Table 3.1 produced total spending estimates for each destination region.

Statewide spending estimates

At the state level, all Minnesota snowmobilers are considered residents, incurring the average expenses of region residents at local trails ($42.23 per day in trails less than 30 minutes from home) and distant trails ($49.36 per day for trails 30 minutes and more from home). Applying these average daily expenditures to total person-days snowmobiling by Minnesota residents resulted into some $155.9 million in consumer spending. Out-of-state visitors added $16.9 million in spending, which increased total spending on Minnesota trails to $172.8 million.

Spending estimates for various regions

At the region level, resident spending included both at-home costs and travel-and-destination expenses. But for nonresidents and Minnesota visitors, only travel-and-destination expenses were applied at the destination region. Hence, the sum of regions' expenditures was smaller at $153.0 million, compared to the statewide total of $172.8 million. However, the individual region's expenditures were used in impact analysis because they represented actual spending by residents and nonresidents in the destination region. For statewide impacts, all expenses at-home, and travel-and-destination were applied to Minnesota snowmobilers.

Northeast and metro area dominated in snowmobile spending

The northeast region had the most person-days snowmobiling among the regions (1,440.3 million person-days), which produced the highest total spending ($53.6 million). The northwest and south regions followed in total spending at $40.7 million and $29.1 million, respectively. Spending in the central region was behind at $16.7 million, while the metro area had the lowest spending at $12.9 million.

Table 3.3. Total spending by snowmobilers in Minnesota, by region
(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
Northwest	$30,235	$5,967	$4,483	$10,451	$40,686
Northeast	$32,224	$12,788	$8,612	$21,400	$53,624
Central	$9,936	$5,013	$1,719	$6,732	$16,669
Metro area	$12,734	$59	$110	$169	$12,902
South	$26,395	$716	$2,028	$2,744	$29,140
Statewide*	$155,864	$0	$16,952	$16,952	$172,816

Note: * Statewide, all region snowmobilers are Minnesota residents.
Sum of region expenditures is less than statewide because at home expenditures by non-residents are not included in the regions.

Economic Impacts of Snowmobiler Spending

The estimated snowmobiler spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business sectors and public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect- income induced effect, occurs when income earned by employees in all affected businesses results in another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total snowmobiler spending of $172.8 million produced $136.8 million in total output or gross sales for directly affected businesses. Excluded from this output were some $36.0 million in consumer goods imported into the regions, such as groceries, gasoline, recreational equipment, apparel, souvenirs and gifts. However, indirect and induced effects on their local suppliers and their employees increased total output to $225.7 million, which was about one-third larger than the initial spending.

When the cost of all producer goods and services purchased by affected businesses were subtracted from these revenues, their contribution to gross regional product (GRP or value added) came to $70.2 million. Indirect effects (spin-off effects) on their local suppliers and induced effects from household re-spending of additional incomes increased the impact on GSP to $118.2 million.

Some 1,648 jobs were created on an annual basis, but equivalent to 3,296 jobs during the short snowmobiling season. Including indirect and induced jobs, the total job impact reached 2,324 annual jobs. Labor compensation from these jobs (wages and salaries including benefits) amounted to $67.9 million. State and local tax revenues were estimated at $15.3 million.

Table 3.4. Economic impacts of trip spending by snowmobilers in Minnesota, by region*

(thousand $)

	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by snowmobilers	$40,686	$53,624	$16,669	$12,902	$29,140	$172,816
Output (Net of Imports)						
Direct Effect	$26,197	$34,995	$11,029	$10,370	$20,982	$136,804
Indirect Effect	$6,602	$8,173	$3,169	$2,789	$5,271	$45,582
Induced Effect	$5,839	$8,059	$2,746	$2,775	$4,616	$43,358
Total	$38,638	$51,227	$16,944	$15,934	$30,869	$225,744
Gross Regional Product						
Direct Effect	$14,361	$19,530	$6,087	$5,217	$10,063	$70,184
Indirect Effect	$3,152	$4,087	$1,514	$1,486	$2,290	$23,593
Induced Effect	$3,205	$4,568	$1,541	$1,606	$2,433	$24,459
Total	$20,718	$28,185	$9,142	$8,309	$14,786	$118,236
Employment (no. of jobs)						
Direct Effect	475	616	190	104	324	1,648
Indirect Effect	59	71	26	18	40	306
Induced Effect	67	86	28	22	48	370
Total	601	773	244	144	411	2,324
Employee Compensation						
Direct Effect	$8,085	$11,591	$3,680	$3,353	$5,794	$42,601
Indirect Effect	$1,593	$2,270	$792	$829	$1,289	$12,855
Induced Effect	$1,462	$2,287	$762	$833	$1,169	$12,451
Total	$11,140	$16,148	$5,234	$5,015	$8,252	$67,907
State and Local Taxes	$2,889	$3,836	$1,239	$1,035	$1,990	$15,346

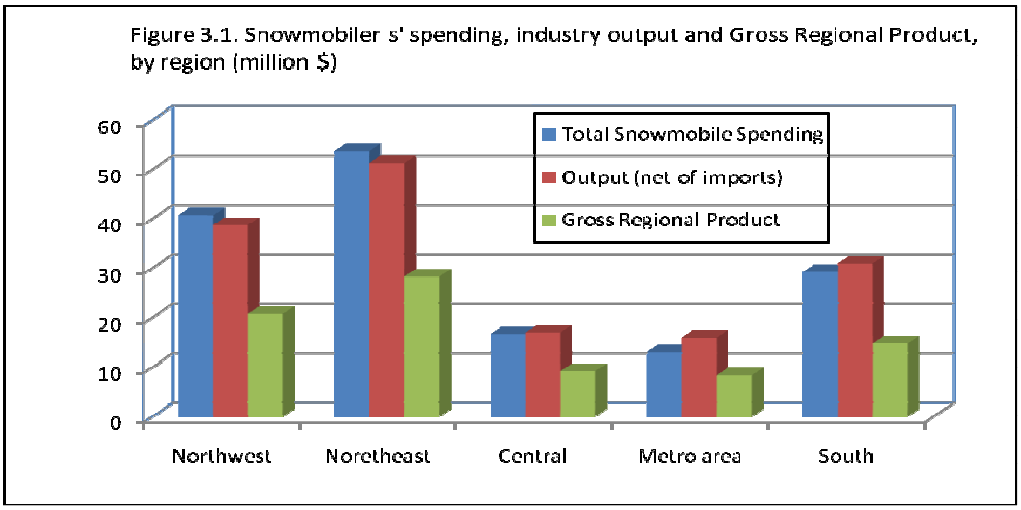
Notes: * For each region, the impacts are due to At Home and Trip Spending by residents, and Trip Spending by nonresidents and visitors from out-of-state.

** Statewide Impacts are larger than sum of region impacts because they include At Home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

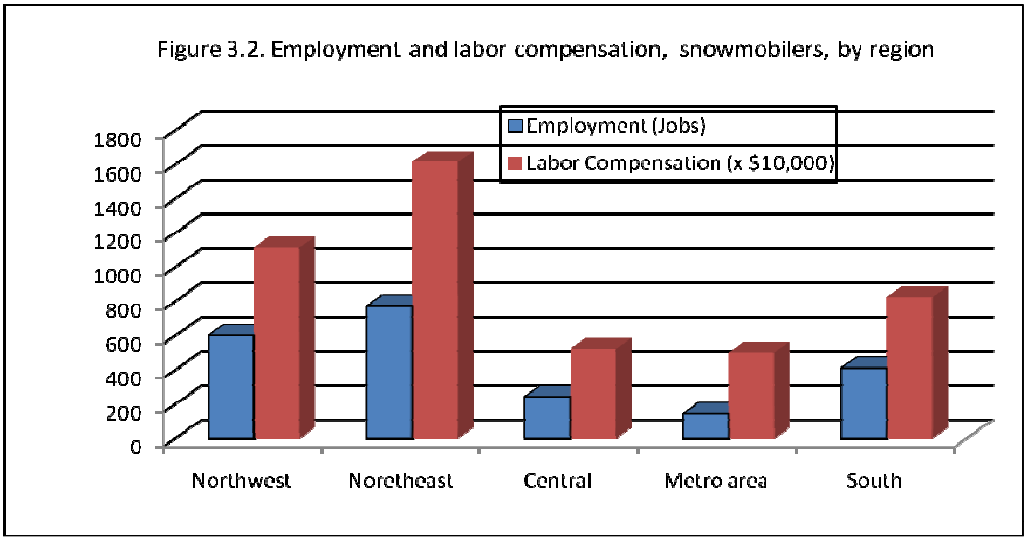
Regional economic impacts

The IMPLAN regional models estimated the economic impacts of snowmobiler spending in the destination regions. With the northeast region showing the highest spending at $53.6 million, the total impacts on GRP came to $28.2 million, followed closely by the northwest region at $20.7 million and the south region at $14.8 million (Figure 3.1).

Among the regions, the metro area had the lowest snowmobile participation (306.7 thousand-person-days) and spending at $12.9 million. This produced a GRP contribution of $8.3million, or about one-third of the GRP contribution in the northeast ($28.2 million).

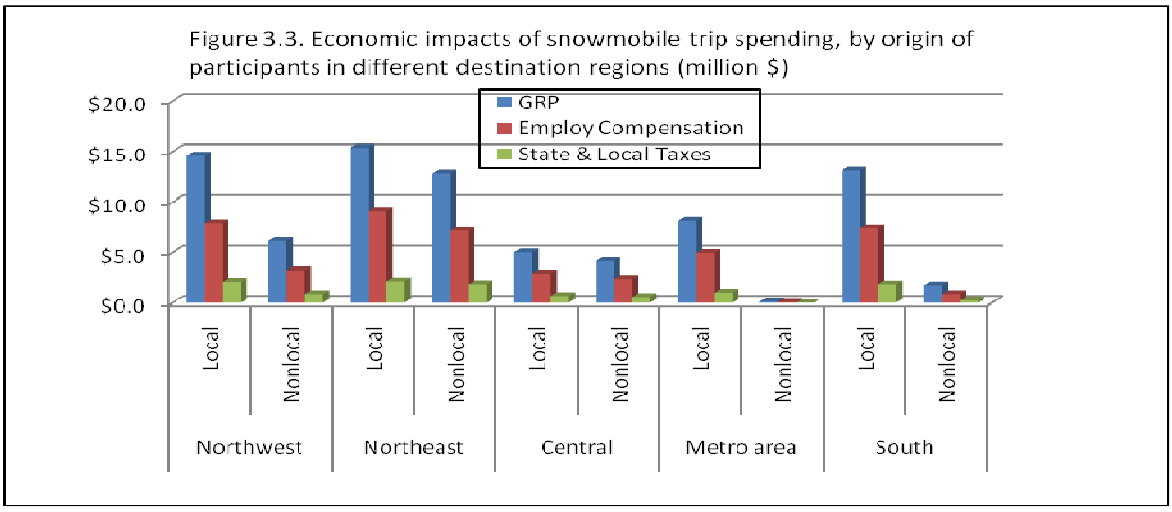


Similarly, the northeast region led in the number of jobs with 773 jobs and labor compensation at $16.1 million, followed by the northwest region with 601 jobs and $11.1 million in labor compensation (Figure 3.2).



Relative importance of resident and nonresident spending in various regions

Figure 3.3 shows the importance of attracting snowmobilers into the region. In the northeast region, a large number of visitors (nonresidents and out-of-state visitors) to local trails ($21.4 million in spending) increased total GRP to the highest among the regions ($28.2 million). In the northwest and central regions, visitors were also significant contributors to spending and GRP. In the metro area and south regions, most snowmobilers were residents on daytrips.



Economic Impacts of Annual Equipment Spending

Method to estimate annual equipment spending

Based on the 2008 UMN survey, Kelly (2009) estimated annual equipment spending by snowmobilers in various regions. Similar to trip spending, the equipment purchases were grouped according to IMPLAN sectors to facilitate impact measurements. Used equipments were excluded from these groups.

The annual spending estimates were entered into the regional IMPLAN models to determine their impacts on local economies. Statewide estimates were applied to the state IMPLAN model for estimates that included inter-region interactions among Minnesota businesses.

Results-- estimates of equipment purchases and their economic impacts

Purchases of new equipment by snowmobilers reached $50.0 million, or 48 percent of their $104.6 million total equipment spending in the state. About 35 percent of this spending occurred in the metro area. The other regions had between $15.3 million and $20.3 million in equipment spending.

The equipment spending produced some $58.5 million in state GSP, $33.8 million in employment compensation and $7.9 million in state and local taxes.

Table 3. 5. Economic impacts of annual equipment spending, snowmobilers, Minnesota, by region

(thousand $)

Equipment Spending	Northwest	Northeast	Central	Metro area	South	State*
New equipment	$7,315	$7,869	$7,363	$17,729	$9,684	$49,960
Repair maintenance	$4,595	$4,944	$4,626	$11,138	$6,084	$31,386
Insurance	$2,991	$3,218	$3,011	$7,250	$3,960	$20,430
Storage	$238	$256	$240	$578	$315	$1,627
Other	$182	$196	$183	$440	$241	$1,241
Total	$15,321	$16,483	$15,423	$37,135	$20,283	$104,645
Economic Impact of Equipment Spending						
Output (Local Sales)	$12,444	$12,149	$12,877	$33,059	$17,110	$103,044
Gross Regional Product	$6,221	$6,492	$6,700	$19,592	$8,693	$58,457
Employment (no. of jobs)	163	168	163	340	208	1,105
Employee Compensation	$2,939	$3,553	$3,599	$12,010	$4,686	$33,806
State and Local Taxes	$900	$989	$970	$2,604	$1,278	$7,917

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Summary-- Combined Economic Impacts from Snowmobile Trail-related Activities

When combined with trip expenditures, annual spending on equipments induced trail-related spending of some $277.5 million statewide. Gross sales by local businesses (net of imports) reached $328.8 million. The contribution of this spending to GSP amounted to $176.7 million. The job impacts were 3,429 jobs and $101.7 million in labor compensation (wages and salaries plus benefits). State and local tax revenues from all sources were estimated at $23.3 million.

Table 3.6. Economic impacts of trail- related spending, snowmobilers, Minnesota, by region

(thousand $)

	Northwest	Northeast	Central	Metro area	South	State*
Trip spending by bicycle riders	$40,686	$53,624	$16,669	$12,902	$29,140	$172,816
Purchases of Equipments	$15,321	$16,483	$15,423	$37,135	$20,283	$104,645
Total	$56,007	$70,107	$32,092	$50,037	$49,423	$277,461
Economic Impacts						
Output (Local Sales Net of Imports)						
Trip Spending	$38,638	$51,227	$16,944	$15,934	$30,869	$225,744

Equipment Spending	$12,444	$12,149	$12,877	$33,059	$17,110	$103,044
Total	$51,082	$63,376	$29,821	$48,993	$47,979	$328,788
Gross Regional Product						
Trip Spending	$20,718	$28,185	$9,142	$8,309	$14,786	$118,236
Equipment Spending	$6,221	$6,492	$6,700	$19,592	$8,693	$58,457
Total	$26,939	$34,677	$15,842	$27,901	$23,479	$176,693
Employment (no. of jobs)						
Trip Spending	601	773	244	144	411	2,324
Equipment Spending	163	168	163	340	208	1,105
Total	764	941	406	483	619	3,429
Employee Compensation						
Trip Spending	$11,140	$16,148	$5,234	$5,015	$8,252	$67,907
Equipment Spending	$2,939	$3,553	$3,599	$12,010	$4,686	$33,806
Total	$14,079	$19,701	$8,833	$17,025	$12,938	$101,713
State and Local Taxes						
Trip Spending	$2,889	$3,836	$1,239	$1,035	$1,990	$15,346
Equipment Spending	$900	$989	$970	$2,604	$1,278	$7,917
Total	$3,789	$4,825	$2,209	$3,639	$3,268	$23,263

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

With the highest trail spending, the northeast region maintained its lead in total spending ($70.1 million). However, metro area equipment purchases increased total spending three-fold to $50.0 million, or about the level of spending in the popular destinations of the northwest ($56.0 million) and the south regions ($49.4). The impact of this total spending on GRP was highest in the northeast region ($34.7 million), but similar among the metro area, northwest and southern regions ($23.5 million to $27.9 million).

ALL TERRAIN VEHICLES (ATV)

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total spending by ATV riders and its local economic impact. Total person-days in the region were estimated for local ATV riders (or region residents) and nonlocal riders (visitors from other regions and from out-of- state).

The DNR "2004 Outdoor Participation Survey of Minnesotans: Report on Findings" (Kelly, 2005) provided estimates of total-person-days of ATV riding by residents of each region, but their destinations were given only as nearby trails (within 30 minutes travel from home), distant trails (beyond 30 minutes), or outside Minnesota. In addition, the data included ATV use in other activities, such as hunting which was removed. Based on recent DNR forest area studies (DNR, 2009a), the ATV days were reduced by one-half to exclude these uses in other trails.

Using trip information from the 2008 UMN survey, Kelly allocated these resident trips to their destination regions. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were estimated at the destination regions. Further, the 2004 DNR estimates covered only adult ATV riders- those at least 20 years old. Kelly analyzed the 2008 UMN Survey data regarding ATV trip members and increased the DNR estimates by about 24 percent to include younger snowmobilers.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails (198 thousand-person-days) were assumed equal and offsetting to trip days of visitors from out-of-state. These out-of-state visits were allocated among the regions based on their share of total person-days for travel to distant trails (beyond 30 minutes from home).

Results--estimates of total person-days by ATV riders

Table 4.1 shows estimates of total person-days by ATV riders in each destination region. Trips to nearby trails by region residents were most frequent, accounting for nearly one-half (1,981 thousand-person-days) of total days spent in the state (4,087 thousand-person-days). Most of the local ATV riding occurred in the southern region (732 thousand person-days), followed by the central region (434 thousand-person-days), northwest region (401 thousand-person-days) and northeast region (308 thousand-person-days). In contrast, metro area residents spent the fewest ATV days at home (106 thousand-person-days), and chose instead to travel to the northeast and central regions.

In the northeast region, the large number of ATV riders from the northwest and metro area (each with over 230 thousand-person- days) boosted participation to the highest use of ATV trails (1,229 thousand-person-days). The northwest region followed with a total of 1,016

thousand-person-days, which was evenly contributed by local users and residents of other Minnesota regions. In the central region, residents of other regions contributed less than one-third of the total participation (826 thousand-person-days). Nonresidents and visitors from other states made very few trips to the metro area and southern regions.

Table 4.1 Total user days at Minnesota trails by ATV riders, by destination region

(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	401.3	155.8	189.3	211.1	58.3	1,015.80
Northeast	308	122.9	302.8	410.5	84.7	1,228.90
Central	433.9	93.9	140.9	122.6	34.4	825.7
Metro area	105.5	4.1	19.8	0	0.6	130.0
South	732.2	100.6	10.4	23.3	19.7	886.2
Statewide	1,980.90	477.3	663.2	767.5	197.7	4,086.60

One-half of travelers visited the northeast trails

The northeast region was the choice destination for slightly more than one-half (495 thousand-person days) of residents of other regions traveling more than 30 minutes from home and Minnesota visitors (965 thousand person- days). These ATV riders incurred high expenses because of extended stays in the region. Travelers were not as prevalent in the northwest (269 thousand-person-days) and central region (157 thousand-person-days). Few travelers went to the southern region (43 thousand-person-days) and the metro area (0.6 thousand-person-days).

Method to Estimate Average Trip Spending

As shown in Table 4.1, total person-days in each destination region were grouped by proximity from home- either to nearby trails (within 30 minutes from home), or distant trails (beyond 30 minutes). With information on the origin and destination of ATV riders, the trip days were grouped further according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by nonlocal ATV riders, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local ATV riders. For both of these groups, trip cost increases with travel distance from home.

The 2008 UMN Survey included questions on respondent's consumer spending at home, as well as during travel and stay at the destination area. Kelly estimated average spending from the sample of ATV riders in local and distant trails, and distributed them among IMPLAN consumer commodities and services. When multiplied by estimates of total days by different

types of ATV riders in each region, these spending profiles produced estimates of their total spending at local trails, and by consumption category.

Results-- average spending by residents and nonresidents on various commodities/services

From the survey, local ATV riders spent an average of $28.11 per person-day in nearby trails, mostly for gasoline or other fuels ($9.02 per day), grocery or convenience store food and drinks ($5.25 per day), recreational equipment purchases, including sporting goods ($3.25), lodging and campgrounds ($2.82 per day) and restaurant/bar meals and drinks ($2.35 per day). With at least an overnight stay, resident's expenses almost doubled ($45.97 per day), mostly due to an increase in gasoline expense (to $15.03 per day), grocery and convenience store food and drinks (to $8.70 per day), restaurant/bar meals and drinks (to $4.60 per day) and lodging including campgrounds (to $3.95 per day).

For nonresidents and visitors coming from distant places (more than 30 minutes from home), their expenses av8eraged $22.82 per day and $31.98 per day, respectively. Largest expenses were lodging ($3.95 to $9.42 per day), gasoline and other fuels ($4.26 to $7.99 per day), meals and drinks at restaurants and bars ($4.60 to $6.26 per day), and grocery or convenience store food ($3.60 to $4.20 per day).

Table 4.2. Average spending by ATV riders in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$2.82	$3.95	$2.82	$3.95	$9.42
Grocery or convenience store	$5.25	$8.70	$1.72	$3.60	$4.20
Restaurant/bar meals & drinks	$2.35	$4.60	$2.35	$4.60	$6.26
Gasoline or other fuels	$9.02	$15.03	$2.41	$4.26	$7.99
Other transportation costs	$0.34	$0.78	$0.05	$0.27	$0.00
Recreational equip purchases	$3.25	$0.80	$0.49	$0.43	$0.19
Recreational equip rentals	$0.00	$0.63	$0.00	$0.63	$0.39
Recreational equip repair	$1.11	$2.30	$0.55	$1.52	$0.12
Payments to public agencies	$1.20	$1.04	$0.25	$0.40	$1.11
Entertainment (casinos)	$0.57	$1.48	$0.57	$1.33	$0.97
Shopping	$1.02	$6.57	$0.61	$1.81	$1.32
Other	$1.16	$0.08	$0.60	$0.01	$0.00
Total	$28.11	$45.97	$12.41	$22.82	$31.98
Statewide*	$28.11	$45.97	*	*	$31.98

Note: * Statewide, all region ATV riders are Minnesota residents.

Results-- Total Spending by ATV Riders

Applying average spending estimates in Table 4.2 to total person-days for each group of ATV riders in Table 4.1 produced total spending estimates for each destination region.

Table 4.3. Total spending by ATV riders in Minnesota, by region
(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
Northwest	$18,441	$7,166	$1,863	$9,029	$27,470
Northeast	$14,307	$13,126	$2,709	$15,835	$30,142
Central	$16,511	$4,547	$1,099	$5,646	$22,158
Metro area	$3,152	$246	$21	$267	$3,419
South	$25,204	$662	$629	$1,291	$26,496
Statewide*	$131,539	$0	$6,321	$6,321	$137,860

Note: * Statewide, all region ATV riders are Minnesota residents.
Sum of region expenditures is less than statewide because at-home expenditures by non-residents are not included in the regions.

Statewide spending estimates

At the state level, all Minnesota ATV riders are considered residents, incurring the average expenses of region residents at local trails ($28.11 per day in trails within 30 minutes from home) and distant trails ($45.97 per day for trails beyond 30 minutes). Applying these average daily expenditures to total person-days. ATV riding by Minnesota residents resulted into some $131.5 million in consumer spending. Out-of-state visitors added $6.3 million in spending, which increased total spending in Minnesota trails to $137.9 million.

All regions, except Metro Area had over $20 million in spending

At the region level, resident spending included both at-home costs and travel-and-destination expenses. But for nonresidents and Minnesota visitors, only travel-and-destination expenses were applied at the destination region. This reduced the regions' spending to a total of $109.7 million, compared to the statewide total of $137.9 million. Each region's expenditures were used in impact analysis because they represented actual spending by residents, nonresidents and visitors from out-of-state in the destination region- the main area of interest.

The northeast region had the most person-days ATV riding (1,229 thousand-person-days), and led other regions in total spending ($30.1 million). The northwest, southern and central regions followed with total spending of $27.5 million, $26.5 million and $22.2 million, respectively. In contrast, total person-days (130 thousand) and *s*pending ($3.4 million) in the metro area were comparatively insignificant because most of the ATV riders traveled to the northern and central regions.

Economic Impacts of ATV Riding in Various Regions

The estimated ATV rider spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business

sectors and public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect, income induced effect, occurs when income earned by employees in all affected businesses results in another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total ATV rider spending of $137.9 million produced $92.9 million in total output or gross sales for directly affected businesses. Excluded from this output were some $45.0 million in consumer goods imported into the regions, such as groceries, gasoline, recreational equipment, apparel, souvenirs and gifts. However, indirect and induced impacts of this spending on other businesses and their employees increased total output to $150.8 million.

When the total value of inputs (producer goods and services) was deducted from this output, the gross state product (or value added) due to ATV riders' spending amounted to$74.9 million. This represents the value of all goods and services that can be attributed to ATV spending. It does not include imports of consumer goods or producer inputs, and avoids double counting of sales between producers and their local suppliers.

Some 1,002 jobs were supported by direct spending of ATV riders, plus 432 jobs from indirect and induced impacts. Total labor compensation (wages, salaries and fringe benefits) from these jobs amounted to $41.3 million. State and local tax revenues from all sources were estimated at $10.5 million.

Table 4.4. Economic impacts of trip spending by ATV riders in Minnesota, by region*

(thousand $)

	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by ATV riders	$27,470	$30,142	$22,158	$3,419	$26,496	$137,860
Output (Net of Imports)						
Direct Effect	$14,539	$16,629	$12,005	$2,379	$15,699	$92,883
Indirect Effect	$3,737	$3,994	$3,435	$673	$3,841	$31,284
Induced Effect	$3,124	$3,674	$2,842	$580	$3,171	$26,597
Total	$21,400	$24,297	$18,282	$3,632	$22,711	$150,764
Gross Regional Product						
Direct Effect	$7,904	$9,018	$6,427	$1,125	$7,199	$43,787
Indirect Effect	$1,798	$2,005	$1,666	$358	$1,673	$16,146
Induced Effect	$1,716	$2,083	$1,595	$336	$1,671	$15,003
Total	$11,418	$13,106	$9,688	$1,819	$10,543	$74,936
Employment (no. of jobs)						
Direct Effect	262	293	198	23	227	1,002
Indirect Effect	34	35	28	4	29	205
Induced Effect	36	39	29	5	33	227
Total	$332	367	256	32	289	$1,435
Employee Compensation						
Direct Effect	$4,204	$5,120	$3,696	$660	$3,876	$24,874
Indirect Effect	$906	$1,110	$873	$201	$939	$8,773
Induced Effect	$782	$1,042	$788	$175	$804	$7,638

Total	$5,892	$7,272	$5,357	$1,036	$5,619	$41,285
State and Local Taxes	$1,732	$1,905	$1,430	$253	$1,580	$10,511

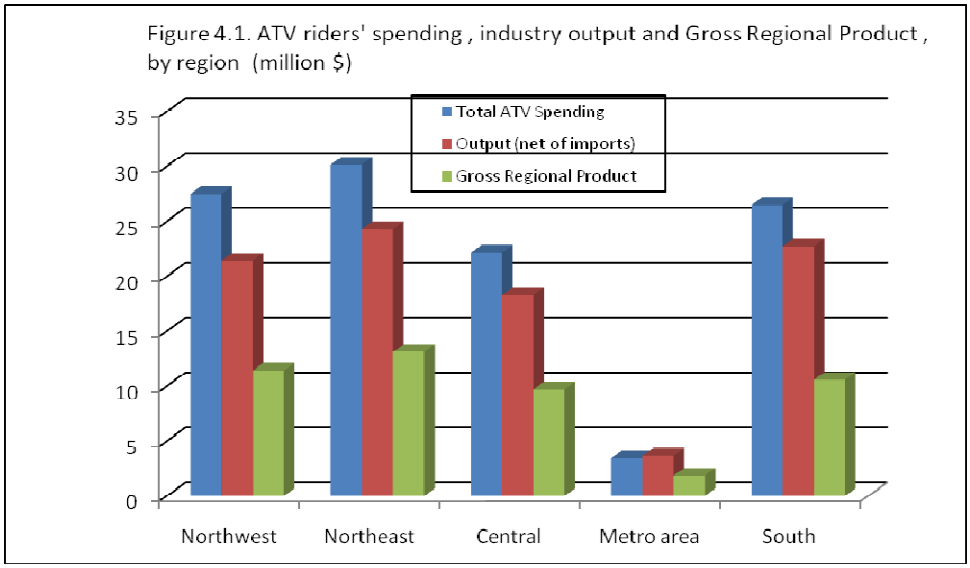
Notes: * For each region, the impacts are due to At-Home and Trip Spending by residents, and Trip Spending by nonresidents and visitors from out-of-state.

** Statewide Impacts are larger than sum of region impacts because they include At-Home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

Regional economic impacts

The IMPLAN regional models estimated the economic impacts of ATV rider spending in the destination regions. With the northeast region showing the highest spending at $30.1 million, the direct impact on gross output (total sales net of imports) of local businesses amounted to $16.6 million (Figure 4.1). Indirect and induced impacts on all businesses in the region raised the total industry output to $24.3 million. Subtracting the value of all producer goods and services used by industry in production, the gross regional product from this output amounted to $13.1 million.

The northwest and south regions followed closely the northeast region in impacts on total output ($21.4 million and $22.7 million) and gross regional product ($11.4 million and $10.5 million).



Similarly, the northeast region led in the number of jobs (367 total jobs) and labor compensation ($7.3 million), followed by the northwest region with 332 jobs and $5.9 million in labor compensation (Figure 4.2).

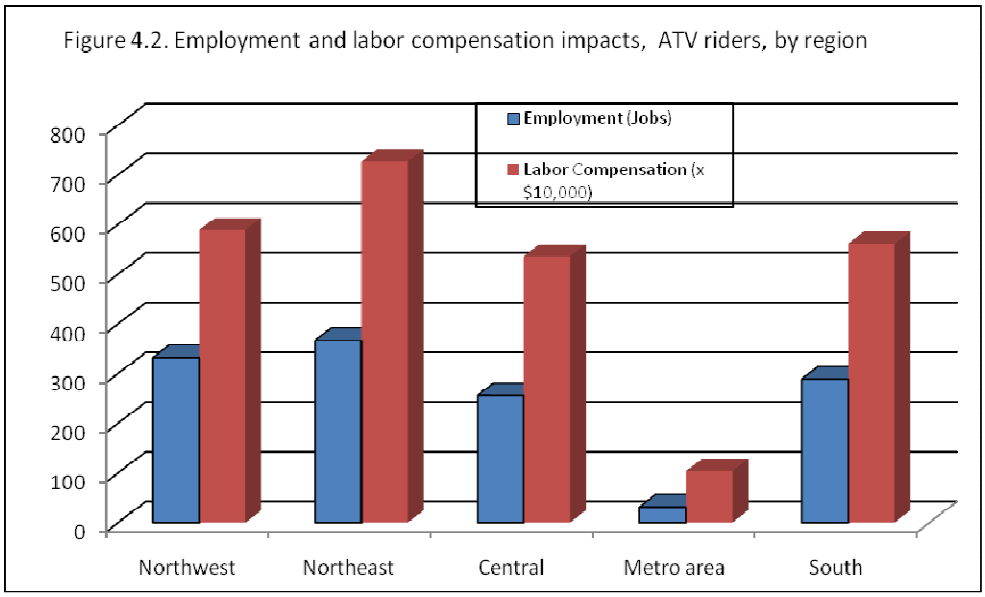
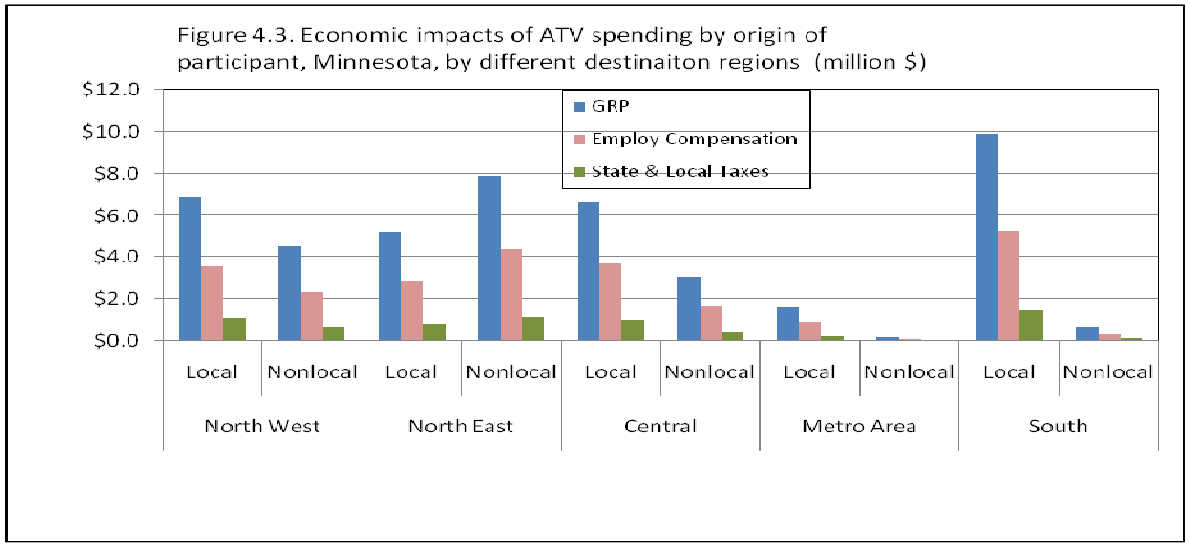


Figure 4.3 shows the importance of attracting ATV riders into the region. In the northeast region, resident spending had smaller contribution to local GRP than in the northwest and central regions. But the contribution from nonlocal sources- nonresidents and visitors from out-of-state that went to northeast trails was much larger. This produced the largest economic impact of ATV riding among the regions. In contrast, the south region had the highest contribution of local residents to GRP, but travelers were scarce. Hence, the south region ranked behind the northern regions in total economic impact.



Economic Impacts of Annual Equipment Spending

Method to estimate annual equipment spending

Based on the 2008 UMN survey, Kelly (2009) estimated annual equipment spending by ATV riders in various regions. Similar to trip spending, the equipment purchases were grouped

according to IMPLAN sectors to facilitate impact measurements. Used equipments were excluded from these groups.

The annual spending estimates were entered into the regional IMPLAN models to determine their impacts on local economies. Statewide estimates were applied to the state IMPLAN model for estimates that included inter-region interactions among all Minnesota businesses.

Results-- estimates of equipment purchases and their economic impacts

Purchases of new equipment by ATV riders reached $30.9 million, or 41 percent of their $74.6 million total equipment spending in the state. About 37 percent of this spending occurred in the metro area. The other regions had between $10.9 million and $12.7 million in equipment spending.

The equipment spending produced some $43.6 million in state GSP, $25.4 million in employee compensation and $5.8 million in state and local taxes.

Table 4. 5. Economic impacts of annual equipment spending, ATV riders, Minnesota, by region

(thousand $)

Equipment Spending	Northwest	Northeast	Central	Metro area	South	State*
New equipment	$4,532	$4,898	$4,825	$11,416	$5,251	$30,922
Repair maintenance	$3,609	$3,901	$3,843	$9,092	$4,182	$24,628
Insurance	$2,400	$2,594	$2,555	$6,046	$2,781	$16,376
Storage	$192	$208	$205	$485	$223	$1,313
Other	$204	$221	$217	$514	$237	$1,393
Total	$10,937	$11,823	$11,646	$27,553	$12,674	$74,633
Economic Impact of Equipment Spending						
Output (Local Sales)	$9,391	$9,164	$10,298	$25,819	$11,297	$77,362
Gross Regional Product	$4,639	$4,835	$5,297	$15,216	$5,664	$43,611
Employment (no. of jobs)	120	122	127	256	135	807
Employee Compensation	$2,197	$2,659	$2,852	$9,400	$3,052	$25,383
State and Local Taxes	$659	$722	$751	$1,977	$814	$5,790

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Summary-- Combined Economic Impacts from ATV Trail-related Activities

When combined with trip expenditures, annual spending on equipments induced trail-related spending of some $212.5 million statewide. Gross sales by local businesses (net of imports)

reached $228.1 million. The contribution of this spending to GSP amounted to $118.5 million. The job impacts were 2,242 jobs and $66.7 million in labor compensation (wages and salaries plus benefits). State and local tax revenues from all sources were estimated at $16.3 million.

Table 4.6. Economic impacts of trail- related spending, ATV riders, Minnesota, by region

(thousand $)

	Northwest	Northeast	Central	Metro area	South	State*
Trip spending by bicycle riders	$27,470	$30,142	$22,158	$3,419	$26,496	$137,860
Purchases of Equipments	$10,937	$11,823	$11,646	$27,553	$12,674	$74,633
Total	$38,407	$41,965	$33,804	$30,972	$39,170	$212,493
Economic Impacts						
Output (Local Sales Net of Imports)						
Trip Spending	$21,400	$24,297	$18,282	$3,632	$22,711	$150,764
Equipment Spending	$9,391	$9,164	$10,298	$25,819	$11,297	$77,362
Total	$30,791	$33,461	$28,580	$29,451	$34,008	$228,126
Gross Regional Product						
Trip Spending	$11,418	$13,106	$9,688	$1,819	$10,543	$74,936
Equipment Spending	$4,639	$4,835	$5,297	$15,216	$5,664	$43,611
Total	$16,057	$17,941	$14,985	$17,035	$16,207	$118,547
Employment (no. of jobs)						
Trip Spending	332	367	256	32	289	1,435
Equipment Spending	120	122	127	256	135	807
Total	452	489	382	287	424	2,242
Employee Compensation						
Trip Spending	$5,892	$7,272	$5,357	$1,036	$5,619	$41,285
Equipment Spending	$2,197	$2,659	$2,852	$9,400	$3,052	$25,383
Total	$8,089	$9,931	$8,209	$10,436	$8,671	$66,668
State and Local Taxes						
Trip Spending	$1,732	$1,905	$1,430	$253	$1,580	$10,511
Equipment Spending	$659	$722	$751	$1,977	$814	$5,790
Total	$2,391	$2,627	$2,181	$2,230	$2,394	$16,301

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

With trip spending and equipment spending similar among regions in Greater Minnesota, there were small differences in economic impacts on local economies. In the metro area, ATV trips and spending were fewer than 15 percent of the other regions, but equipment purchases

were three times larger. This resulted into total impacts comparable to the other regions. Purchasers of these equipments were predominantly metro area travelers to the other regions.

RUNNING

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total spending by runners and its local economic impact. Total person-days in the region were estimated for local runners (or region residents) and nonlocal runners (visitors from other regions and from out-of- state).

The DNR "2004 Outdoor Participation Survey of Minnesotans: Report on findings" (Kelly, 2005a) provided information on trail use by residents of each region (total person-days). But information on their destination region was limited to proximity from home: trips to nearby trails (within 30 minutes from home), trips to distant trails (beyond 30 minutes), and trips to venues outside Minnesota.

Due to very few runner samples in the 2008 UMN Survey, the distribution of walker/hiker trip days was used as proxy for runners. Kelly used the distribution of walker/hiker trip days to nearby trails (within 30 minutes from home) and distant trails (beyond 30 minutes), and by region of origin and destination to allocate the resident runner days among the five regions of the state and to out-of-state destinations. This procedure derived runner days at the destination regions from the 2004 DNR estimates of total runner days at the regions of origin. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were estimated at the destination regions.

Further, the 2004 DNR estimates covered only adult runners- those at least 20 years old. Kelly analyzed the 2008 UMN Survey data on trip members and increased the estimates by about 24 percent for younger runners.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails (1,131 thousand-person-days) were assumed equal and offsetting to trip days of visitors from out-of-state. These out-of-state visits were allocated among the regions based on their share of total person-days by walkers that traveled to distant trails (beyond 30 minutes from home).

Results—Estimates of total person-days of Runners

Table 5.1 shows estimates of total days of running in each destination region based on the 2008 UMN Survey and the 2004 DNR Participation Survey. Running trips by residents to local venues dominated all running trips in the state (85 percent of the total). Two-thirds of the local trips occurred in the metro area (14,952 thousand-person-days).

Among Minnesota inter-region travelers, the central region trails were favorite destinations, with 40 percent (1,100 thousand-person-days) of the total running days for this group in the

state (2,739 thousand-person-days). Almost all travelers to the central region (93 percent) came from the Metro Area and frequented trails during short trips (967 thousand days).

Table 5.1 Total user days at Minnesota trails by runners, by destination region

(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	564.0	30.2	259.8	194.9	272.5	1,321.4
Northeast	1,047.9	101.6	379.3	376.7	579.1	2,484.6
Central	869.4	4.7	1,020.0	80.4	103.0	2,077.5
Metro area	14,951.9	27.8	64.3	17.4	54.8	15,116.2
South	5,158.9	41.7	286.9	59.1	122.0	5,668.7
Statewide	22,592.2	205.9	2,010.3	728.6	1,131.4	26,668.4

Method to estimate average trip spending

As shown in Table 5.1, the trip days in each destination region were grouped by proximity from home- either to nearby trails (less than 30 minutes from home), or distant trails (beyond 30 minutes). With information on the origin and destination of walkers/hikers, the trip days of runners were grouped further according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by nonlocal runners, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local runners. For both of these groups, trip cost increases with travel distance from home.

The 2008 UMN Survey included questions on respondent's consumer spending at home, as well as during travel and stay at the destination area. Kelly estimated average spending from the sample of runners in local and distant trails, and distributed them among IMPLAN consumer commodities and services. When multiplied by estimates of total days by different groups of runners in each region, these spending profiles produced estimates of their total spending at local trails and by consumption category.

Results-- average spending by residents and non-residents on various commodities/services

Analysis of survey data produced spending averages of slightly more than $3 per person-day during short trips (within 30 minutes from home) and $18 to $26 per person-day in more distant venues (more than 30 minutes travel). Lodging, meals and drinks, groceries and gasoline were major expenditure items during those distant trips.

Table 5.2. Average spending by runners in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$0.00	$7.70	$0.00	$7.70	$7.70
Grocery or convenience store	$0.73	$5.71	$0.63	$2.25	$2.25
Restaurant/bar meals & drinks	$0.26	$3.46	$0.26	$3.46	$3.46
Gasoline or other fuels	$0.87	$3.40	$0.27	$1.31	$1.31
Other transportation costs	$0.02	$2.57	$0.01	$0.47	$0.47
Recreational equip purchases	$0.00	$0.28	$0.00	$0.23	$0.23
Recreational equip rentals	$0.00	$0.00	$0.00	$0.00	$0.00
Recreational equip repair	$0.00	$0.00	$0.00	$0.00	$0.00
Payments to public agencies	$0.22	$0.57	$0.22	$0.57	$0.57
Entertainment (casinos)	$0.00	$0.42	$0.00	$0.42	$0.42
Shopping	$1.00	$1.89	$0.11	$1.47	$1.47
Other	$0.00	$0.00	$0.00	$0.00	$0.00
Total	$3.10	$26.02	$1.51	$17.90	$17.90
Statewide*	$3.10	$26.02	*	*	$17.90

Note: * Statewide, all region runners are Minnesota residents.

Total Spending by Runners

Applying average spending estimates in Table 5.2 to total person-days for each group of runners in Table 5.1 produced total spending estimates for each destination region.

Statewide spending estimates

At the statewide level, all Minnesota runners are considered residents, incurring the average expenses of region residents at local trails ($3.10 per day for trails within 30 minutes from home) and distant trails ($26.02 per day for trails beyond 30 minutes from home). Applying these average daily expenditures to total person-days of Minnesota residents resulted into some $120.7 million in consumer spending. With very few visitors estimated for running, Minnesota residents accounted for 83 percent of total spending ($100.5 million).

Table 5.3. Total spending by runners in Minnesota, by region

(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
North West	$2,531	$3,881	$4,878	$8,760	$11,291
North East	$5,888	$7,316	$10,367	$17,683	$23,572
Central	$2,814	$2,977	$1,844	$4,822	$7,635
Metro Area	$47,019	$409	$980	$1,389	$48,409

South	$17,058	$1,491	$2,185	$3,676	$20,734
Statewide*	$100,490	0	$20,255	$20,255	$120,745

Note: * Statewide, all region runners are Minnesota residents.
Sum of region expenditures is less than Statewide because at-home expenditures by nonresidents are not included in the regions.

Metro area residents incurred highest spending at home

Large numbers of metro area residents jogging around lakes, parks and trails produced some $47.0 million in spending, or nearly one-half of statewide estimates for local runners. On the other hand, the northeast region attracted about one-half of Minnesota travelers destined for venues more than 30 minutes away. These travelers spent more ($17.90 per person-day) than travelers on shorter trips ($1.51 per person-day), which helped produce the second highest total spending ($23.6 million) among the regions. The central region had the highest number of travelers on short trips, but their low average spending ($1.51 per day) resulted into the lowest regional spending in the state ($7.6 million).

Economic Impacts of Runner Spending

The estimated runner spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business sectors and public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect- income induced effect, occurs when income earned by employees in all affected businesses results into another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total runners' expenditure of $120.7 produced $74.0 million in output of directly affected businesses. Excluded from this output were some $46.7 million in imported consumer goods such as groceries, gasoline, recreational equipment, apparel, memorabilia and gifts. However, indirect impacts or 'spin-off" effects on local suppliers and induced impacts from the re-spending of employee incomes in the region produced another $48.1 million in industry output. This raised total output by all businesses ($122.0 million) above the initial spending.

When the total value of inputs (producer goods and services) purchased from local suppliers was deducted from total output, the gross state product amounted to $61.2 million. This represents the value of all goods and services produced in the state that can be attributed to runners' spending. It does not include imports of consumer goods or producer items, and avoids double counting of sales between producers and their local suppliers.

Some 834 jobs were supported by the direct spending of runners, and another 359 jobs from indirect and induced impacts. Total labor compensation (wages, salaries and fringe benefits) from these jobs amounted to $34.5 million, and state and local revenues reached $8.2 million.

Table 5.4. Economic impacts of trip spending by runners in Minnesota, by region*

(thousand $)

	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by runners	$11,291	$23,572	$7,635	$48,409	$20,734	$120,745
Output (Net of Imports)						
Direct Effect	$7,525	$15,964	$4,698	$24,489	$9,683	$73,956
Indirect Effect	$2,086	$4,083	$1,402	$6,375	$2,425	$26,165
Induced Effect	$1,558	$3,434	$1,059	$5,737	$1,995	$21,897
Total	$11,169	$23,481	$7,159	$36,601	$14,103	$122,018
Gross Regional Product						
Direct Effect	$3,967	$8,518	$2,323	$11,039	$4,471	$35,378
Indirect Effect	$986	$2,032	$667	$3,320	$1,039	$13,506
Induced Effect	$855	$1,946	$595	$3,321	$1,052	$12,353
Total	$5,808	$12,496	$3,585	$17,680	$6,562	$61,237
Employment (no. of jobs)						
Direct Effect	142	280	74	207	145	834
Indirect Effect	19	36	11	38	18	172
Induced Effect	18	37	11	46	21	187
Total	178	352	96	291	183	1,193
Employee Compensation						
Direct Effect	$2,160	$4,807	$1,412	$6,803	$2,577	$20,800
Indirect Effect	$503	$1,140	$352	$1,835	$579	$7,376
Induced Effect	$389	$974	$293	$1,724	$506	$6,288
Total	$3,052	$6,921	$2,057	$10,362	$3,662	$34,464
State and Local Taxes	$838	$1,755	$492	$2,348	$755	$8,241

Notes: * For each region, the impacts are due to at-home and trip spending by residents, and trip spending by nonresidents and visitors from out-of-state.

** Statewide impacts are larger than sum of region impacts because they include at-home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

Regional economic impacts

The IMPLAN regional models estimated the local economic impacts of runner spending in the destination regions. With a large population in the metro area and the popularity of jogging around lakes, parks and trails, total spending was estimated at more than double those in the other regions. The prevalence of resident runners on daytrips in the metro area also meant a high proportion of consumer goods that were imported into the region, such as bottled water and energy drinks, snacks and apparel. Thus, only about one-half of the spending stimulated local producers of consumer goods. In the northern regions where

travelers spent longer stays at hotels, motels and resorts, consumed meals and drinks at local restaurants and bars, and visited amusement places and casinos in the area, up to two-thirds of the spending translated into local output. Indirect and induced impacts augmented output to reach the level of the initial spending.

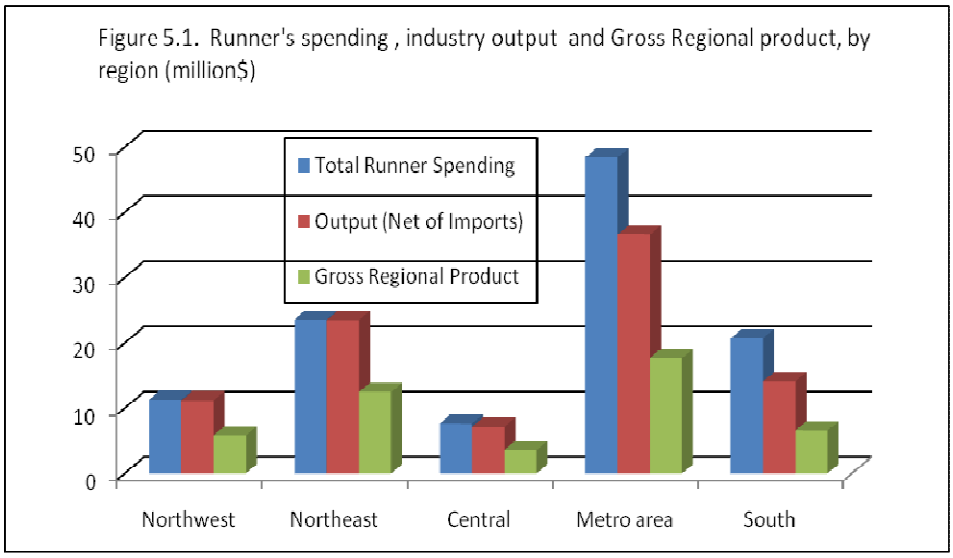
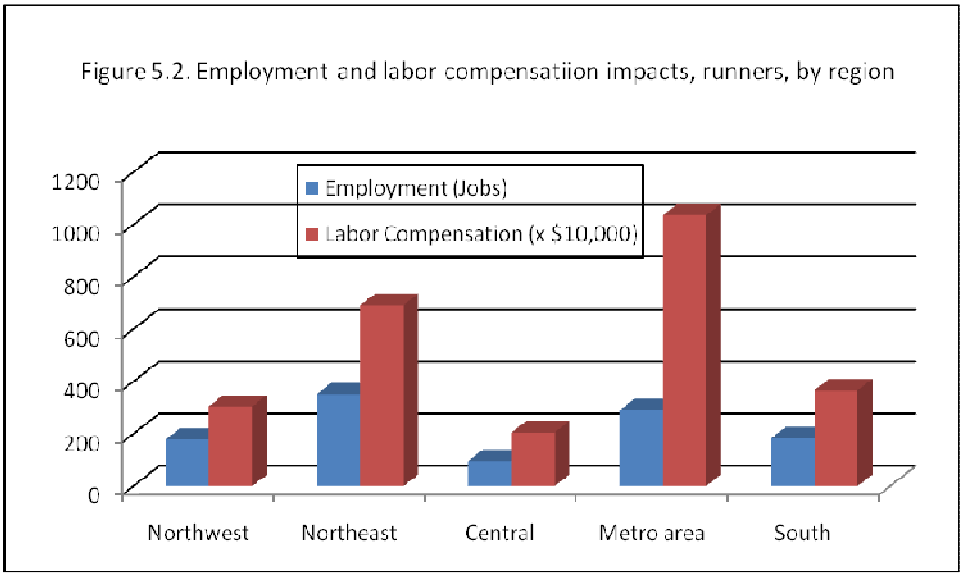
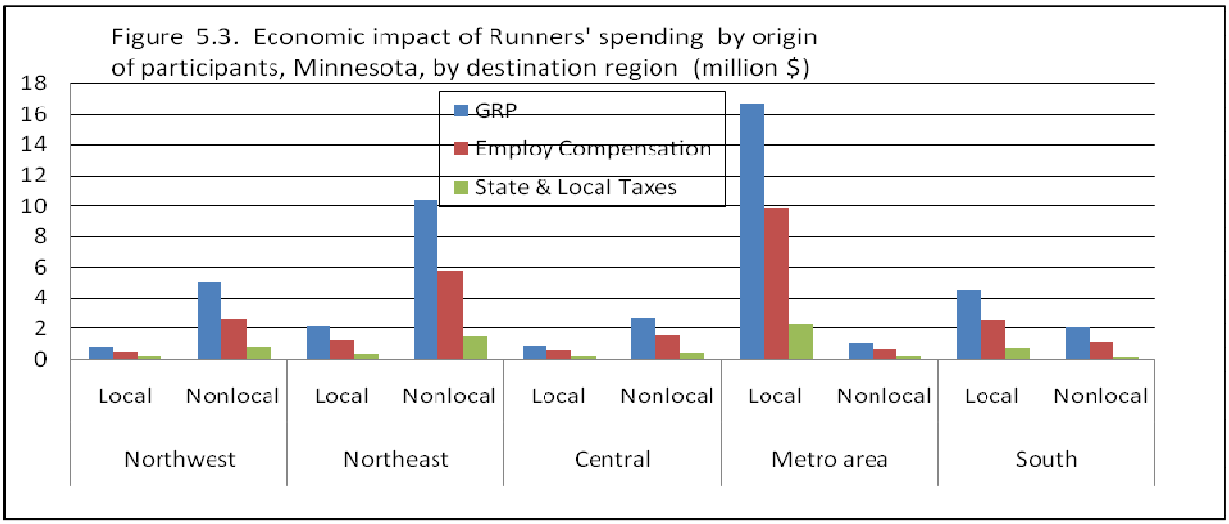


Figure 5.2 shows the effect of regional differences on the mix of products and services demanded from local businesses, the labor intensity in those industries, and local wage rates on total labor demand and compensation. Due to high labor intensity in lodging, restaurants, bars, grocery stores and amusement places frequented by distant travelers/vacationers, employment impacts were the largest in the northeast region. However, higher wages by affected industries in the metro area such as manufacturers and oil refineries produced the largest employment compensation (wages, salaries and fringe benefits).



Relative importance of resident and nonresident spending in various regions

With more than the of state runners' person-days, the metro area dominated in runners' expenditures and local economic impacts, except employment. The region's residents accounted for almost all of the spending and economic impacts. In the northeast, northwest and central regions, the influx of travelers made them relatively more important in bringing in new monies and stimulating the local economy.



Economic Impacts of Annual Equipment Spending

Method to estimate annual equipment spending

Based on the 2008 UMN survey, Kelly (2009) estimated annual equipment spending by runners in various regions. Similar to trip spending, the equipment purchases were grouped according to IMPLAN sectors to facilitate impact measurement. Used equipments were excluded from these groups.

The annual spending estimates were entered into the regional IMPLAN models to determine their impacts on local economies. Statewide estimates were applied to the state IMPLAN model for estimates that included inter-region interactions among all Minnesota businesses.

Results-- estimates of equipment purchases and their economic impacts

Purchases of new equipment by runners reached $36.0 million, or almost all of the $37.1 million total equipment spending in the state. About 67 percent of this spending occurred in the metro area ($25.0 million). The other regions had between $1.5 million and $6.7 million in equipment spending.

The equipment spending produced some $20.2 million in state GSP, $10.9 million in employee compensation and $3.4 million in state and local taxes.

Table 5. 5. Economic impacts of annual equipment spending, runners, Minnesota, by region

(thousand $)

Equipment Spending	Northwest	Northeast	Central	Metro area	South	State*
New equipment	$1,442	$2,008	$1,826	$24,233	$6,480	$35,990
Repair maintenance	$0	$0	$0	$0	$0	$0
Insurance	$0	$0	$0	$0	$0	$0
Storage	$0	$0	$0	$0	$0	$0
Other	$46	$64	$58	$771	$206	$1,146
Total	$1,488	$2,072	$1,884	$25,005	$6,686	$37,136
Economic Impact of Equipment Spending						
Output (Local Sales)	$879	$1,318	$1,254	$20,091	$5,140	$32,781
Gross Regional Product	$545	$801	$764	$12,784	$2,982	$20,174
Employment (no. of jobs)	15	25	21	281	70	448
Employee Compensation	$261	$419	$407	$6,998	$1,663	$10,894
State and Local Taxes	$102	$148	$138	$2,197	$534	$3,442

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Summary-- Combined Economic Impacts from Runners Trail-Related Activities

When combined with trip expenditures, annual spending on equipments produced trail-related spending of some $157.9 million statewide. Gross sales by local businesses (net of imports) reached $154.8 million. The contribution of this spending to GSP amounted to $81.4 million. The job impacts were 1,641jobs and $45.4 million in labor compensation (wages and salaries plus benefits). State and local tax revenues from all sources were estimated at $11.7 million.

Table 5.6. Economic impacts of trail- related spending, runners, Minnesota, by region

(thousand $)

	Northwest	Northeast	Central	Metro area	South	State*
Trip spending by runners	$11,291	$23,572	$7,635	$48,409	$20,734	$120,745
Purchases of Equipments	$1,488	$2,072	$1,884	$25,005	$6,686	$37,136
Total	$12,779	$25,644	$9,519	$73,413	$27,420	$157,881
Economic Impacts						
Output (Local Sales Net of Imports)						
Trip Spending	$11,169	$23,481	$7,159	$36,601	$14,103	$122,018
Equipment Spending	$879	$1,318	$1,254	$20,091	$5,140	$32,781

Total	$12,048	$24,799	$8,413	$56,692	$19,243	$154,799
Gross Regional Product						
Trip Spending	$5,808	$12,496	$3,585	$17,680	$6,562	$61,237
Equipment Spending	$545	$801	$764	$12,784	$2,982	$20,174
Total	$6,353	$13,297	$4,349	$30,464	$9,544	$81,411
Employment (no. of jobs)						
Trip Spending	178	352	96	291	183	1,193
Equipment Spending	15	25	21	281	70	448
Total	194	377	117	572	253	1,641
Employee Compensation						
Trip Spending	$3,052	$6,921	$2,057	$10,362	$3,662	$34,464
Equipment Spending	$261	$419	$407	$6,998	$1,663	$10,894
Total	$3,313	$7,340	$2,464	$17,360	$5,325	$45,358
State and Local Taxes						
Trip Spending	$838	$1,755	$492	$2,348	$755	$8,241
Equipment Spending	$102	$148	$138	$2,197	$534	$3,442
Total	$940	$1,903	$630	$4,545	$1,289	$11,683

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

The metro area had the highest runner related-trip spending and equipment purchases at $73.4 million, followed by the south and northeast regions, at $27.4 million and $25.6 million, respectively. The northwest and central regions each had less than $13 million in runner-related spending.

HORSEBACK RIDERS

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total spending by horseback riders and its local economic impact. Total person-days in the region were estimated for local horseback riders (or region residents) and nonlocal bike riders (visitors from other regions and from out-of- state).

The DNR "2004 Outdoor Participation Survey of Minnesotans: Report on findings" (Kelly, 2005) provided estimates of total person-days of horseback riding by residents of each region. But information on their destination region was limited to proximity from home: trips to nearby trails (within 30 minutes from home), trips to distant trails (beyond 30 minutes), and trips to venues outside Minnesota. Using trip information from the 2008 UMN survey on horseback riding, Kelly allocated these resident trips to their destination regions. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were estimated at the destination regions

Further, the 2004 DNR estimates covered only adult horseback riders- those at least 20 years old. Kelly analyzed the 2008 UMN Survey data regarding trip members and increased the DNR estimates by about 24 percent to include younger horseback riders.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails (180 thousand-person-days) were assumed equal and offsetting to trip days of visitors from out-of-state. These out-of-state visits were allocated among the regions based on their share of total person-days by horseback riders that traveled to distant trails (beyond 30 minutes from home).

Results-- estimates of total person-days of horseback riders in various regions

Table 6.1 shows estimates of total person-days of horseback riding in each destination region. Trips to nearby trails by residents were most frequent, accounting for 72 percent (1,222 thousand-person-days) of total days spent in horseback riding in the state (1,709 thousand-person-days). Most of local horseback riding occurred in the central region (506 thousand-person-days). This was followed by riders in the south region (373 thousand-person-days) and in the metro area (203 thousand-person-days). Horseback riding was not popular among residents of the northern regions (less than 100 thousand-person-days).

Table 6.1 Total user days at Minnesota trails by horseback riders, by destination region

(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	82.1	1.3	37.2	13.6	22.7	156.9
Northeast	58.6	3.9	29.3	17.7	33	142.5
Central	505.5	3.3	59.7	18.8	33.8	621.1
Metro area	202.5	11.5	47.3	0.6	18.4	280.3
South	372.7	20.1	16	26.9	71.8	507.6
Statewide	1221.5	40.1	189.6	77.6	179.8	1708.5

Method to Estimate Average Trip Spending

As shown in Table 6.1, the trip days in each destination region were grouped by proximity from home- either to nearby trails (within 30 minutes from home), or distant trails (beyond 30 minutes). With information on the origin and destination of horseback riders, the trip days were grouped further according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by nonlocal horseback riders, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local horseback riders. For both of these groups, trip cost increases with travel distance from home.

The 2008 UMN Survey included questions on respondent's consumer spending at home, as well as during travel and stay at the destination area. Kelly estimated average spending from the sample of horseback riders in local and distant trails, and distributed them among IMPLAN consumer commodities and services. When multiplied by estimates of total days by different groups of horseback riders in each region, these spending profiles produced estimates of their total spending at local trails, and by consumption category.

Results-- average spending by residents and nonresidents on various commodities/services

From the survey, resident horseback riders spent an average of $26.88 per person-day at nearby trails, mostly for gasoline or other fuels ($7.78 per day), grocery or convenience store food and drinks ($6.03 per day) and payments to public agencies for licenses and fees ($4.43 per day). Traveling to venues more than 30 minutes from home, resident's expenses increased 60 percent (to $43.03 per day) mostly from gasoline ($15.81 per day), groceries ($10.79 per day) and lodging ($6.21 per day).

With lower gasoline and grocery expenses among nonresidents in the destination area, average expenditures were less than one-half the expenditures by residents. At home spending by nonresidents was not included in the spending estimates for the destination regions.

Table 6.2. Average spending by horseback riders in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$3.04	$6.21	$3.04	$6.21	$8.85
Grocery or convenience store	$6.03	$10.79	$1.25	$2.54	$4.29
Restaurant/bar meals & drinks	$1.01	$1.67	$1.01	$1.67	$3.93
Gasoline or other fuels	$7.78	$15.81	$2.54	$5.18	$12.75
Other transportation costs	$0.53	$0.81	$0.14	$0.12	$0.65
Recreational equip purchases	$1.61	$1.05	$0.39	$0.28	$0.88
Recreational equip rentals	$0.04	$0.04	$0.03	$0.04	$0.00
Recreational equip repair	$1.30	$0.69	$0.14	$0.17	$0.52
Payments to public agencies	$4.43	$3.49	$1.91	$2.05	$1.21
Entertainment (casinos)	$0.00	$0.38	$0.00	$0.33	$0.70
Shopping	$0.92	$1.58	$0.48	$0.71	$3.92
Other	$0.20	$0.50	$0.09	$0.38	$0.44
Total	$26.88	$43.03	$11.02	$19.69	$38.14
Statewide*	$26.88	$43.03	*	*	$38.14

Note: * Statewide, all region horseback riders are Minnesota residents.

Results-- total spending by horseback riders

Applying average spending estimates in Table 6.2 to total person-days for each group of horseback riders in Table 6.1 produced total spending estimates for each destination region.

Statewide spending estimates

At the state level, all horseback riders are considered residents, incurring the average expenses of region residents at local trails ($26.88 per day in trails less than 30 minutes from home) and distant trails ($43.03 per day for trails more than 30 minutes away). Applying these average daily expenditures to total person-days horseback riding by Minnesota residents resulted in some $43.0 million in consumer spending. Out-of-state visitors added $6.9 million in spending, which increased total spending in Minnesota trails to $49.9 million.

Central and south regions led all regions in horseback riding participation and spending

With the highest resident use of trails among the regions, the central region posted the largest consumer spending ($16.1 million). For the south region, more visits by higher spending out-of-state riders raised total spending to a close second ($14.3 million) among the regions.

Table 6.3. Total spending by horseback riders in Minnesota, by region
(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
North West	$2,262	$678	$867	$1,545	$3,807
North East	$1,742	$672	$1,258	$1,931	$3,673
Central	$13,734	$1,027	$1,289	$2,316	$16,050
Metro Area	$5,937	$534	$703	$1,236	$7,173
South	$10,887	$706	$2,740	$3,446	$14,333
Statewide*	$42,996	$0	$6,857	$6,857	$49,853

Note: * Statewide, all region horseback riders are Minnesota residents.
Sum of region expenditures is less than statewide because at-home expenditures by nonresidents are not included in the regions.

Economic Impacts of Horseback Riding in Various Regions

The estimated horseback rider spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business sectors and public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect- income induced effect, occurs when income earned by employees in all affected businesses results in another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total horseback riders' expenditure of $49.9 million produced $34.7 million in output of directly affected businesses. Excluded from this output were some $15.2 million in imported consumer goods such as groceries, gasoline, recreational equipment, apparel, souvenirs and gifts. However, indirect impacts or "spin-off" effects on local suppliers and induced impacts from re-spending of larger incomes produced another $21.3 million in industry output. This raised total output by all businesses above the initial spending.

When the total value of inputs (producer goods and services) was deducted from this output, the gross state product amounted to $29.4 million. This represents the value of all goods and services produced in the state that can be attributed to horseback riders' spending. It does not include imports of consumer goods or producer items, and avoids double counting of sales between producers and their local suppliers.

Some 359 jobs were supported by the direct spending, plus another 163 jobs from indirect and induced impacts. Total labor compensation (wages, salaries and fringe benefits) was estimated at $16.9 million, and state and local revenues at $3.7 million.

Table 6.4. Economic impacts of trip spending by horseback riders in Minnesota, by region*

(thousand $)

	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by runners	$3,807	$3,673	$16,050	$7,173	$14,333	$49,853
Output (Net of Imports)						
Direct Effect	$2,004	$1,878	$8,328	$5,256	$8,768	$34,747
Indirect Effect	$457	$413	$2,005	$1,387	$1,990	$10,649
Induced Effect	$466	$449	$2,209	$1,384	$1,926	$10,737
Total	$2,927	$2,740	$12,542	$8,027	$12,684	$56,134
Gross Regional Product						
Direct Effect	$1,185	$1,117	$5,018	$2,664	$4,343	$17,789
Indirect Effect	$222	$208	$993	$735	$873	$5,517
Induced Effect	$256	$255	$1,241	$801	$1,015	$6,057
Total	$1,663	$1,580	$7,252	$4,200	$6,231	$29,363
Employment (no. of jobs)						
Direct Effect	34	31	129	47	124	359
Indirect Effect	4	4	17	9	15	71
Induced Effect	5	5	23	11	20	92
Total	43	40	168	67	159	522
Employee Compensation						
Direct Effect	$678	$664	$3,106	$1,664	$2,487	$10,777
Indirect Effect	$113	$115	$524	$417	$493	$3,017
Induced Effect	$117	$127	$613	$416	$487	$3,083
Total	$908	$906	$4,243	$2,497	$3,467	$16,877
State and Local Taxes	$236	$220	$985	$531	$858	$3,686

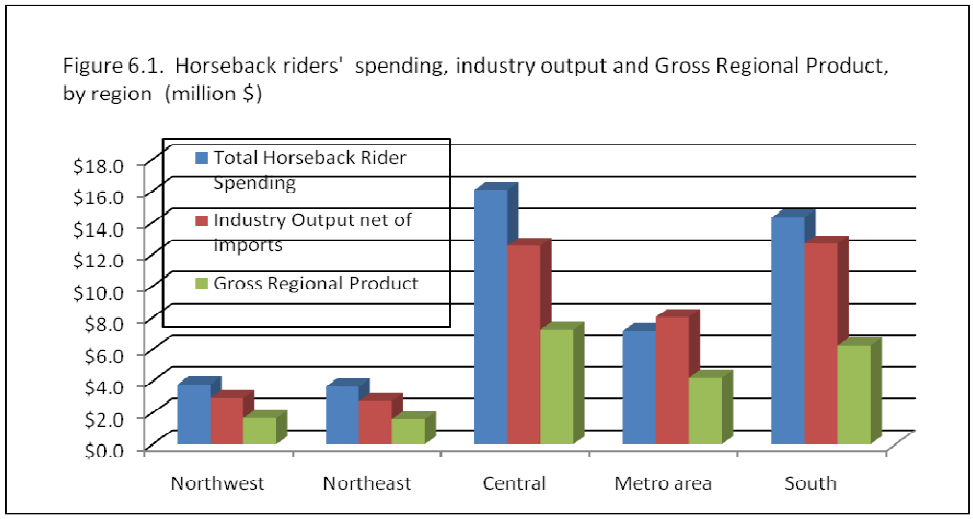
Notes: * For each region, the impacts are due to at-home and trip spending by residents, and trip spending by nonresidents and visitors from out-of-state.

** Statewide impacts are larger than sum of region impacts because they include at-home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

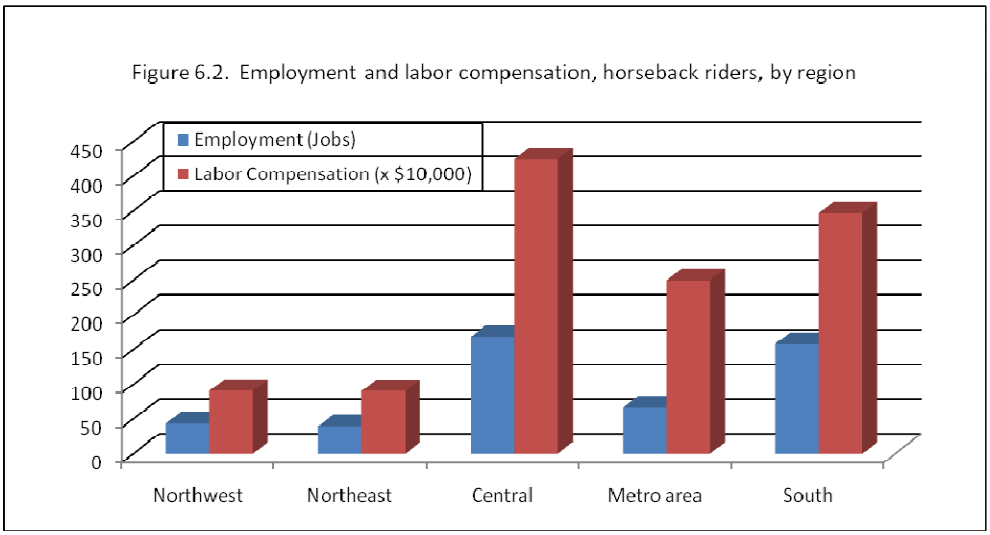
Results-- regional economic impacts

The IMPLAN regional models estimated the economic impacts of horseback riders' spending in the destination regions. With the central region showing the highest spending at $16.1 million, the total impacts on the region's industry output and GRP came to $12.5 million and $7.3 million, respectively. In the south region, a larger proportion of long distance travelers (more than 30 minutes travel) meant higher spending on lodging, meals and drinks at restaurants and bars and smaller imports of consumer goods sold at retail. This helped produce a similar impact on total output ($12.7 million) as in the central region. In the metro

area, large multipliers from a diverse economy produced a total output greater than the initial spending. Similarly, larger economic multipliers in the central region produced a slightly larger gross regional product than in the south region.

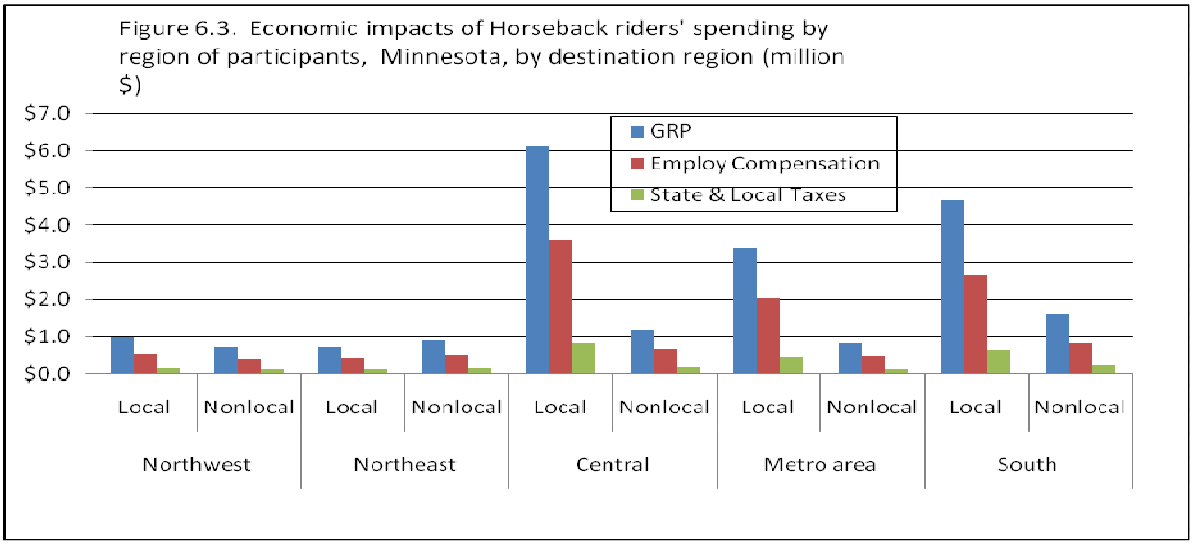


In addition, higher wages in affected businesses in the central region produced larger labor compensation ($4.2 million in wages, salaries and benefits) with practically equal number of jobs as in the southern region ($3.5 million in labor compensation).



Results-- relative importance of resident and nonresident spending in various regions

Figure 6.3 indicates the prevalence of resident horseback riders at local trails. With few travelers/visitors going to various regions, residents were the largest source of spending and economic impacts in the central region, southern region and the metro area. This also meant fewer new monies arrived to stimulate the region's economies.



Economic Impacts of Annual Equipment Spending

Method to Estimate Annual Equipment Spending

Based on the 2008 UMN survey, Kelly (2009) estimated annual equipment spending by horseback riders in various regions. Similar to trip spending, the equipment purchases were grouped according to IMPLAN sectors to facilitate impact measurements. Used equipment was excluded from these groups.

The annual spending estimates were entered into the regional IMPLAN models to determine their impacts on local economies. Statewide estimates were applied to the state IMPLAN model for estimates that included inter-region interactions among all Minnesota businesses.

Results-- estimates of equipment purchases and their economic impacts

Purchases of new equipment by horseback riders reached $38.8 million, but purchases of horses, boarding, feed, veterinary and farrier (horse shoeing) services were the large expenditures combined in the other category ($357.8 million). Slightly more than one-half of total spending on new equipment, horses and maintenance ($530.2 million) occurred in the metro area ($279.8 million). The south region ($111.7 million) had some 21 percent share of statewide spending. The northern and central regions had much smaller new equipment, horses and maintenance expenses (between $33.8 million and $64.7 million).

Total spending of $530.2 million on new equipment, horses and maintenance produced some $705.7 million in industry output (excluding imports), $390.9 million in state GSP, $169.6 million in employee compensation and $49.4 million in state and local taxes. In 2004, Buhr (2004) estimated some $678 million in statewide horse related expenditures, including labor

costs. Direct economic impact was estimated at $553 million, which produced $930 million in total impact.

Table 6. 5. Economic impacts of annual equipment spending, horseback riders, Minnesota, by region

(thousand $)

Equipment Spending	Northwest	Northeast	Central	Metro area	South	State*
New equipment	$2,478	$2,939	$4,737	$20,493	$8,182	$38,829
Repair maintenance	$7,822	$9,276	$14,952	$64,687	$25,827	$122,564
Insurance	$632	$750	$1,209	$5,229	$2,088	$9,908
Storage	$74	$87	$141	$608	$243	$1,153
Other	$22,831	$27,076	$43,642	$188,815	$75,387	$357,751
Total	$33,836	$40,128	$64,680	$279,833	$111,727	$530,204
Economic Impact of Equipment Spending						
Output (Local Sales)	$38,795	$27,705	$75,661	$255,884	$117,574	$705,694
Gross Regional Product	$20,671	$15,252	$40,847	$146,697	$62,241	$390,881
Employment (no. of jobs)	642	551	1,332	3,552	1,451	8,532
Employee Compensation	$7,999	$7,885	$16,544	$80,570	$22,616	$169,618
State and Local Taxes	$2,724	$2,305	$5,229	$19,664	$7,969	$49,378

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Summary-- Combined Economic Impacts from Horseback Trail- related Activities

When combined with trip expenditures, annual spending on equipment raised trail-related spending to some $580.1 million statewide. Gross sales by local businesses (net of imports) reached $761.8 million, including indirect and induced sales. The contribution of this spending to GSP amounted to $420.2 million. The job impacts were 9,053 jobs and $186.5 million in labor compensation (wages and salaries plus benefits). State and local tax revenues from all sources were estimated at $53.1 million.

Table 6.6. Economic impacts of trail- related spending, horseback riders, Minnesota, by region

(thousand $)

	Northwest	Northeast	Central	Metro area	South	State*
Trip spending by horseback riders	$3,807	$3,673	$16,050	$7,173	$14,333	$49,853
Purchases of Equipments	$33,836	$40,128	$64,680	$279,833	$111,727	$530,204
Total	$37,643	$43,801	$80,730	$287,006	$126,060	$580,057
Economic Impacts						
Output (Local Sales Net of Imports)	$2,927	$2,740	$12,542	$8,027	$12,684	$56,134

Trip Spending	$38,795	$27,705	$75,661	$255,884	$117,574	$705,694
Equipment Spending	$41,722	$30,445	$88,203	$263,911	$130,258	$761,828
Total						
Gross Regional Product						
Trip Spending	$1,663	$1,580	$7,252	$4,200	$6,231	$29,363
Equipment Spending	$20,671	$15,252	$40,847	$146,697	$62,241	$390,881
Total	$22,334	$16,832	$48,099	$150,897	$68,472	$420,244
Employment (no. of jobs)						
Trip Spending	43	40	168	67	159	522
Equipment Spending	642	551	1,332	3,552	1,451	8,532
Total	$685	$591	$1,501	$3,618	$1,609	$9,053
Employee Compensation						
Trip Spending	$908	$906	$4,243	$2,497	$3,467	$16,877
Equipment Spending	$7,999	$7,885	$16,544	$80,570	$22,616	$169,618
Total	$8,907	$8,791	$20,787	$83,067	$26,083	$186,496
State and Local Taxes						
Trip Spending	$236	$220	$985	$531	$858	$3,686
Equipment Spending	$2,724	$2,305	$5,229	$19,664	$7,969	$49,378
Total	$2,960	$2,525	$6,214	$20,195	$8,827	$53,064

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Due to high acquisition and maintenance costs of horses, the metro area had the highest horseback riding-related purchases at $287.0 million, followed by the south region at $126.1 million, and the central region at $80.7 million. The northwest and northeast regions each had less than $44.0 million in total spending.

CROSS-COUNTRY SKIERS

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total skier spending and its local economic impact. Total person-days in the region came from trail use by local skiers (or region residents) and nonlocal skiers (visitors from other regions and from out-of- state).

The DNR "2004 Outdoor Participation Survey of Minnesotans: Report on findings" (Kelly, 2005) provided estimates of total person-days of cross-country skiing by residents of each region. But information on their destination region was limited to proximity from home: trips to nearby trails (within 30 minutes from home), trips to distant trails (beyond 30 minutes), and trips to venues outside Minnesota. Using trip information from the 2008 UMN survey, Kelly allocated these resident trips to their destination regions. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were estimated at the destination regions

Further, the 2004 DNR estimates covered only adult skiers- those at least 20 years old. Kelly analyzed the 2008 UMN Survey data regarding ski trip members and increased the DNR estimates by about 22 percent to include younger skiers.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails (275 thousand-person-days) were assumed equal and offsetting to trip days of visitors from out-of-state. These out-of-state visits were allocated among the regions based on their share of total person-days by skiers that traveled to distant trails (beyond 30 minutes from home).

Results-- estimates of total person-days cross-country skiing

Two-thirds of skiing days spent at local trails

Table 7.1 shows estimates of total person-days of cross-country skiing in each destination region. Short trips to local trails were most popular (within 30 minutes from home), accounting for two of every three person-days of cross country skiing in the state (1,255 thousand-person-days). Metro area residents accounted for two-thirds of these short trips (830 thousand-person-days).

Table 7.1 Total user days at Minnesota trails by cross-country skiers, by destination region

(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	83.6	8.0	10.0	29.4	50.0	181.0
Northeast	150.3	29.8	39.2	100.0	173.0	492.3
Central	49.7	5.0	77.6	18.4	31.0	181.7
Metro area	830.1	6.7	7.7	4.0	14.0	862.5
South	111.3	2.9	0.3	2.5	7.0	124.0
Statewide	1,225.0	52.4	134.8	154.3	275.0	1,841.5

Two-thirds of travelers bound for the northeast region

The northeast region was the choice destination for nearly two-thirds (273 thousand-person days) of residents from other regions traveling more than 30 minutes from home and out-of-state visitors (429 thousand-person- days). These skiers incurred high expenses because of extended stays away from their home regions. Metro area residents comprised nearly two of every three person-days of Minnesota travelers to the northeast region (63 thousand-person-days).

Method to Estimate Average Trip Spending

As shown in Table 7.1, the trip days in each destination region were grouped by distance from home- either to nearby trails (within 30 minutes from home), or distant trails (beyond 30 minutes) With information on the origin and destination of skiers, the trip days were grouped further, according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by nonlocal skiers, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local skiers. For both of these groups, trip cost increases with travel distance from home.

The 2008 UMN Survey included questions on respondent's consumer spending at home, as well as during travel and stay at the destination area. Kelly estimated average spending from the sample of cross-country skiers in local and distant trails, and distributed them among IMPLAN consumer commodities and services. When multiplied by estimates of total days by different groups of cross-country skiers in each region, these spending profiles produced estimates of their total spending at local trails, and by consumption category

Results-- average spending by residents and nonresidents on various commodities/services

Table 7.2 shows that local skiers spent an average of $11.59 per person-day at nearby trails, mostly for licenses and fees ($4.64 per day), gasoline or other fuels ($2.32 per day), groceries

and convenience food ($1.25 per day) and recreational equipment purchases ($1.16 per day). With an overnight stay, resident's expenses increased five times to $53.66 per person-day, mostly for lodging ($23.15 per day), gasoline or other fuels ($8.77), meals and drinks at restaurants and bars ($7.58), and grocery or convenience store food ($6.83 per day).

For nonresidents coming from distant places (beyond 30 minutes from home) and out-of-state visitors, their expenses averaged $43.04 per day and $51.81 per day, respectively. Largest expenses were lodging ($23.15 to $32.08 per day), meals and drinks at restaurants and bars ($4.09 to $7.58 per day) and grocery or convenience store food ($3.42 to $4.42 per day).

Table 7.2. Average spending by cross-country skiers in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$0.09	$23.15	$0.09	$23.15	$32.08
Grocery or convenience store	$1.25	$6.83	$0.39	$3.42	$4.42
Restaurant/bar meals & drinks	$1.07	$7.58	$1.07	$7.58	$4.09
Gasoline or other fuels	$2.32	$8.77	$0.79	$3.57	$4.33
Other transportation costs	$0.11	$0.36	$0.02	$0.18	$0.13
Recreational equip purchases	$1.16	$1.62	$0.10	$0.81	$3.22
Recreational equip rentals	$0.29	$0.49	$0.15	$0.38	$0.03
Recreational equip repair	$0.37	$0.22	$0.07	$0.07	$0.11
Payments to public agencies	$4.64	$2.04	$2.35	$1.56	$2.45
Entertainment (casinos)	$0.06	$0.52	$0.06	$0.50	$0.10
Shopping	$0.15	$1.94	$0.02	$1.71	$0.86
Other	$0.08	$0.13	$0.07	$0.09	$0.00
Total	$11.59	$53.66	$5.16	$43.04	$51.81
Statewide*	$11.59	$53.66	*	*	$51.81

Note: * Statewide, all region cross-country skiers are Minnesota residents.

Total Spending by Cross-Country skiers

Applying average spending estimates in Table 7.2 to total-person-days of skiing for each group of skiers in Table 7.1 produced total spending estimates for each destination region.

Statewide spending estimates

At the state level, all Minnesota skiers are considered residents, incurring the average cost of region residents at local trails ($11.59 per day in trails within 30 minutes from home) and distant trails ($53.66 per day for trails beyond 30 minutes). Applying these average daily expenditures to total person-days skiing by Minnesota residents resulted in some $26.9 million in consumer spending. Out-of-state visitors added $14.2 million in spending, which increased total spending in Minnesota trails to $41.1 million.

Spending estimates for various regions

At the region level, resident spending included both at-home costs and travel-and-destination expenses. But for nonresidents of the region and Minnesota visitors, only travel-and-destination expenses were used to estimate expenses at the destination. Hence, the sum of regions' expenditures at local trails was smaller at $38.6 million, compared to the statewide total of $41.1 million. However, the individual region's expenditures were used in impact analysis because they represented actual spending by residents and nonresidents in the destination region. This is consistent with other state and federal studies that measure trip impacts only at the destination region (footnote). For statewide impacts, all expenses at-home, travel and destination were applied to Minnesota residents.

Northeast and metro area dominate skier spending

The northeast region has the most popular trails for longer stays. In 2007, this region obtained the highest total skier spending in the state ($16.8 million). Metro area residents and Minnesota visitors spent an estimated $2.7 million and $8.9 million, respectively. The region's residents spent $3.3 million and nonresidents spent $1.9 million.

The Metro area had the second highest spending at $10.9 million, almost exclusively from residents ($10.0 million). Estimated spending in the other regions was small, and amounted to less than one-half of the metro area estimates.

Table 7.3. Total spending by cross-country skiers in Minnesota, by region
(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
North West	$1,401	$1,314	$2,575	$3,890	$5,291
North East	$3,339	$4,505	$8,938	$13,443	$16,781
Central	$842	$1,194	$1,610	$2,804	$3,646
Metro Area	$9,980	$212	$738	$950	$10,930
South	$1,446	$110	$375	$485	$1,931
Statewide*	$26,846	$0	$14,237	$14,237	$41,083

Note: * Statewide, all region cross-country skiers are Minnesota residents.
Sum of region expenditures is less than statewide because at-home expenditures by nonresidents are not included in the regions.

Economic Impacts of Spending by Cross-country Skiers

The estimated skier spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business sectors and

public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect- income induced effect, occurs when income earned by employees in all affected businesses results in another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total skier spending of $41.1 million produced $33.0 million in total output for directly affected businesses. Excluded from this output were some $8.1 million in consumer goods imported into the regions, such as groceries, gasoline, recreational equipment, apparel, memorabilia and gifts. However, indirect and induced effects on other businesses and their employees increased total output to $55.5 million, which was one-third larger than the initial spending.

When the cost of producer goods and services purchased by affected businesses were subtracted from these revenues, their contribution to gross regional product (GRP or value added) came to $18.7 million. Indirect effects (spin-off effects) on other businesses and induced effects on household re-spending of additional incomes increased the impact on GRP to $30.9 million.

Some 428 jobs were created on an annual basis, which is equivalent to 856 jobs during the short skiing season. Including indirect and induced jobs, the total job impact reached 603 annual jobs. Labor compensation from these jobs (wages and salaries including benefits) amounted to $17.9 million. State and local tax revenues were estimated at $3.9 million.

Table 7.4. Economic impacts of trip spending by cross-country skiers in Minnesota, by region*

(thousand $)	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by skiers	$5,291	$16,781	$3,646	$10,930	$1,931	$41,083
Output (Net of Imports)						
Direct Effect	$3,985	$12,794	$2,760	$8,350	$1,346	$32,972
Indirect Effect	$1,043	$3,306	$787	$2,004	$316	$11,249
Induced Effect	$860	$2,852	$687	$2,690	$345	$11,284
Total	$5,888	$18,952	$4,234	$13,044	$2,007	$55,505
Gross Regional Product						
Direct Effect	$2,224	$7,212	$1,583	$5,000	$750	$18,665
Indirect Effect	$496	$1,645	$380	$1,080	$139	$5,896
Induced Effect	$471	$1,616	$385	$1,557	$182	$6,366
Total	$3,191	$10,473	$2,348	$7,637	$1,071	$30,927
Employment (no. of jobs)						
Direct Effect	72	222	46	92	22	428
Indirect Effect	10	29	7	13	2	79
Induced Effect	10	31	7	22	4	96
Total	92	281	60	126	28	603

Employee Compensation						
Direct Effect	$1,215	$3,997	$934	$3,525	$468	$11,366
Indirect Effect	$256	$932	$204	$603	$79	$3,293
Induced Effect	$215	$809	$190	$808	$87	$3,240
Total	$1,686	$5,738	$1,328	$4,936	$634	$17,899
State and Local Taxes	$445	$1,452	$313	$809	$129	$3,856

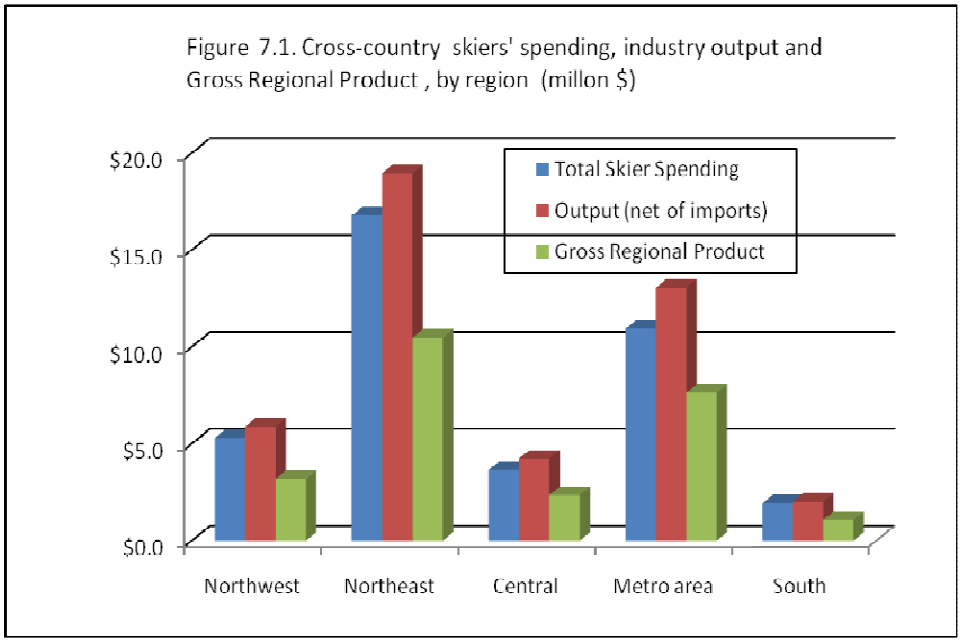
Notes: * For each region, the impacts are due to at-home and trip spending by residents, and trip spending by nonresidents and visitors from out-of-state.

** Statewide impacts are larger than sum of region impacts because they include at-home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

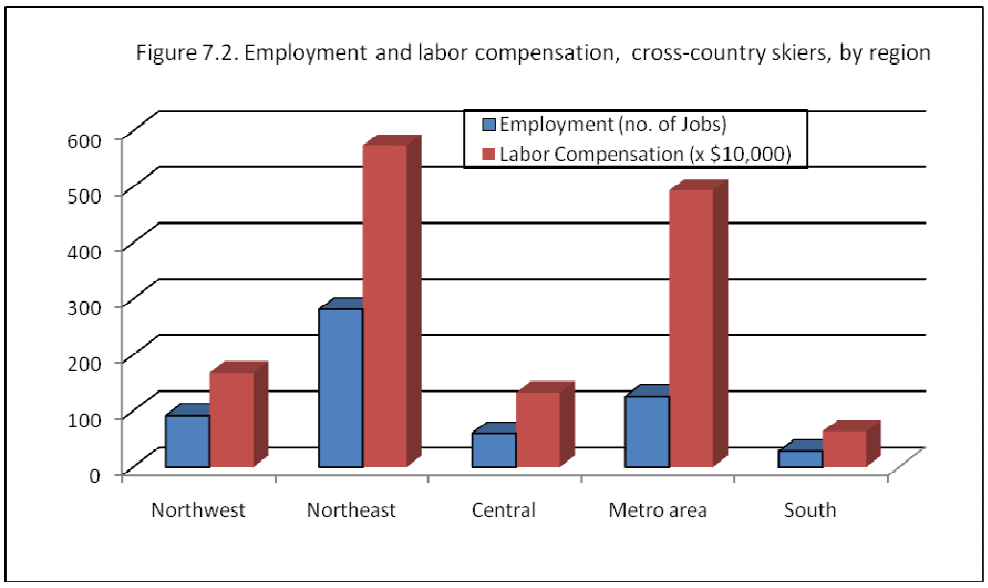
Regional economic impacts

The IMPLAN regional models estimated the economic impacts of skier spending in the destination regions. With the northeast showing the highest spending at $16.8 million, the total impacts on GRP came to $10.5 million, followed by the metro area at $7.6 million and the northwest at $3.2 million.

Among the regions, the south region had the lowest cross-country ski participation (124.2 thousand-person days) and spending at $1.9 million. This produced a GRP contribution of $1.1 million, or about one-tenth of the GRP contribution in the northeast.

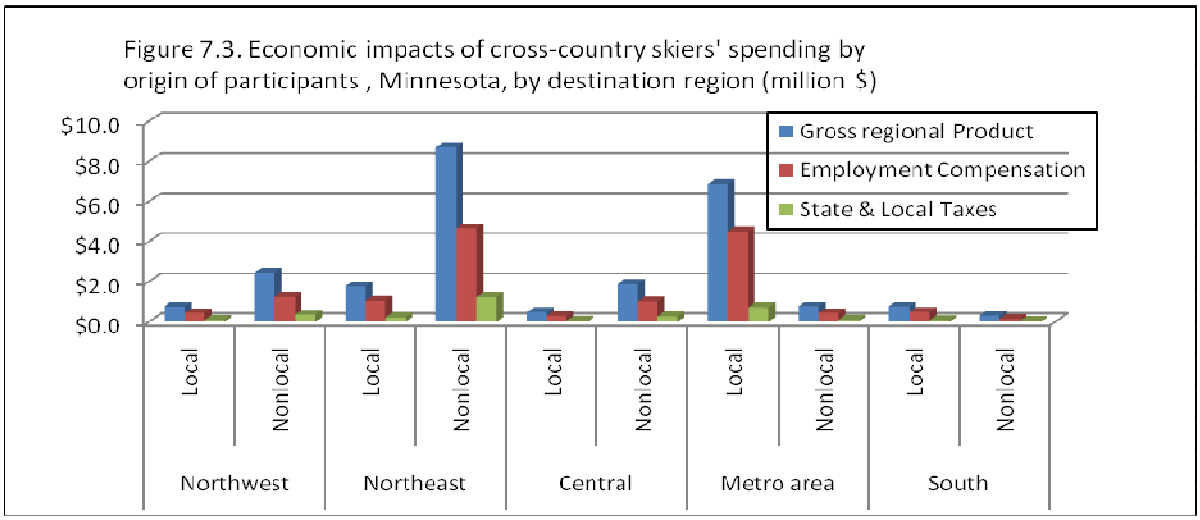


Similarly, the northeast region led in the number of jobs at 281 jobs and in labor compensation with $5.7 million, followed by the metro area with 126 jobs and $4.9 million in labor compensation.



Relative importance of resident and nonresident spending in various regions

Figure 7.3 shows the importance of attracting cross-country skiers into the region. In the northeast region, an influx of nonlocal skiers (nonresidents of the region and out-of-state visitors) to local trails ($13.4 million in spending) boosted GRP to the highest among the regions ($10.5 million). In the northwest and central regions, nonresidents and visitors were also significant contributors to spending and GRP. In the metro area, most skiers were region residents on daytrips.



Travel by many cross-country skiers from the metro area to the northeast region brought with them sizable spending to the trails. There were very few skiing visitors to the metro area to make up for the loss in local spending.

Economic Impacts of Annual Equipment Spending

Method to estimate annual equipment spending

Based on the 2008 UMN survey, Kelly (2009) estimated annual equipment spending by cross-country skiers in various regions. Similar to trip spending, the equipment purchases were grouped according to IMPLAN sectors to facilitate impact measurements. Used equipment was excluded from these groups.

The annual spending estimates were entered into the regional IMPLAN models to determine their impacts on local economies. Statewide estimates were applied to the state IMPLAN model for estimates that included inter-region interactions among Minnesota businesses.

Results-- estimates of equipment purchases and their economic impacts

Purchases of new cross-country ski equipment reached $7.4 million statewide, or 86 percent of the $8.6 million total equipment spending in the state. About 70 percent of this spending occurred in the metro area. The other regions had less than $1.0 million each in equipment spending. The equipment spending added another $4.7 million in state GSP, $2.5 million in employment compensation and $0.8 million in state and local taxes.

Table 7. 5. Economic impacts of annual equipment spending, cross-country skiers, Minnesota, by region

(thousand $)

Equipment Spending	Northwest	Northeast	Central	Metro area	South	State*
New equipment	$366	$612	$380	$5,199	$835	$7,392
Repair maintenance	$25	$41	$25	$349	$56	$496
Insurance	$0	$0	$0	$0	$0	$0
Storage	$0	$0	$0	$1	$0	$1
Other	$33	$55	$34	$468	$75	$665
Total	$424	$708	$440	$6,016	$967	$8,554
Economic Impact of Equipment Spending						
Output (Local Sales)	$252	$448	$308	$4,982	$745	$7,699
Gross Regional Product	$152	$268	$184	$3,128	$427	$4,681
Employment (no. of jobs)	4	8	5	67	10	102
Employee Compensation	$73	$140	$97	$1,703	$236	$2,516
State and Local Taxes	$28	$49	$32	$523	$75	$781

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Summary-- Combined Economic Impacts from Cross-Country Ski Trail-related Activities

When combined with trip expenditures, annual spending on equipment induced trail related spending of some $49.6 million statewide. Gross sales by local businesses (net of imports) reached $63.2 million. The contribution of this spending to GSP amounted to $35.6 million. The job impacts were 705 jobs and $20.4 million in labor compensation (wages and salaries plus benefits). State and local tax revenues from all sources were estimated at $4.6 million.

Table 7.6. Economic impacts of trail- related spending, cross-country skiers, Minnesota, by region

(thousand $)

	Northwest	Northeast	Central	Metro area	South	State*
Trip spending by skiers	$5,291	$16,781	$3,646	$10,930	$1,931	$41,083
Purchases of Equipments	$424	$708	$440	$6,016	$967	$8,554
Total	$5,715	$17,489	$4,086	$16,946	$2,898	$49,637
Economic Impacts						
Output (Local Sales Net of Imports)						
Trip Spending	$5,888	$18,952	$4,234	$13,044	$2,007	$55,505
Equipment Spending	$252	$448	$308	$4,982	$745	$7,699
Total	$6,140	$19,400	$4,542	$18,026	$2,752	$63,204
Gross Regional Product						
Trip Spending	$3,191	$10,473	$2,348	$7,637	$1,071	$30,927
Equipment Spending	$152	$268	$184	$3,128	$427	$4,681
Total	$3,343	$10,741	$2,532	$10,765	$1,498	$35,608
Employment (no. of jobs)						
Trip Spending	92	281	60	126	28	603
Equipment Spending	4	8	5	67	10	102
Total	96	289	65	193	38	705
Employee Compensation						
Trip Spending	$1,686	$5,738	$1,328	$4,936	$634	$17,899
Equipment Spending	$73	$140	$97	$1,703	$236	$2,516
Total	$1,759	$5,878	$1,425	$6,639	$870	$20,415
State and Local Taxes						
Trip Spending	$445	$1,452	$313	$809	$129	$3,856
Equipment Spending	$28	$49	$32	$523	$75	$781
Total	$473	$1,501	$345	$1,332	$204	$4,637

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Metro area equipment purchases increased total spending to the level of the northeast

The metro area had $10.9 million in trip spending at local trails, compared to $16.8 million in the northeast region. But some $6.0 million in equipment purchases in the metro area raised trail-related spending to $16.9 million, or about the same level as the northeast region ($17.5 million). The impacts of this total spending on GRP of both regions were similar. Differences in wage rates and economic multipliers produced more jobs in the northeast region but at slightly lower employee compensation.

INLINE SKATERS

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total spending by inline skaters and its local economic impact. Total trip days in the region were estimated for local skaters (or region residents) and nonlocal skaters (visitors from other regions and from out-of- state).

The DNR "2004 Outdoor Participation Survey of Minnesotans: Report on findings" (Kelly, 2005) provided estimates of inline skater days by residents of each region, but their destinations were given only by trail proximity from home: nearby trails (within 30 minutes from home), distant trails (beyond 30 minutes), or to out-of-state venues. There were no samples for inline skaters in the 2008 UMN Survey, so Kelly used information on walkers/hikers to allocate the DNR estimates of skater days at the region of origin to skater days at the destination regions. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were defined at the destination regions.

Further, the 2004 DNR estimates covered only adult trail users- those at least 20 years old. Based on information on walkers from the 2008 UMN Survey, Kelly increased the 2004 DNR estimates by 24 percent to include younger skaters.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN Survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails were assumed equal and offsetting to trip days of visitors from out-of-state. For skaters, the estimates for walking were used as proxy (199 thousand-person-days). These out-of-state visitors were allocated among the regions based on their share of total person-days by walkers that traveled to distant trails (beyond 30 minutes from home).

Results-- estimates of total person-days by Inline skaters in various regions

Table 8.1 shows estimates of total days of skating in each destination region based on the 2004 DNR Participation Survey and the 2008 UMN survey for walkers/hikers. Skating by residents at local venues comprised four of every five skating-person-days in the state (4,792 thousand-person-days). More than two-thirds of the local trips occurred in the Metro Area (3,808 thousand-person-days).

Among Minnesota inter-region travelers, central region trails were favorite destinations for trips within 30 minutes from home (256 thousand-person-days or 51 percent), and the northeast region for trips beyond 30 minutes (177 thousand-person-days or 54 percent). Almost all travelers to these regions came from the metro area.

Table 8.1 Total user days at Minnesota trails by inline skaters, by destination region

(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	161.5	18.6	57.6	81.1	35.1	353.9
Northeast	118.0	11.8	97.2	176.7	111.4	515.3
Central	266.7	7.1	255.8	36.2	21.8	587.5
Metro area	3,807.8	13.1	16.4	4.9	10.0	3,852.2
South	438.1	12.9	73.3	28.4	20.5	573.2
Statewide	4,792.1	63.7	500.3	327.2	198.8	5,882.1

Method to Estimate Average Trip Spending

As shown in Table 8.1, the trip days in each destination region were grouped by proximity from home- either to nearby trails (less than 30 minutes from home), or distant trails (beyond 30 minutes). With information on the origin and destination of walkers, the trip days for skaters were grouped further according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by nonlocal skaters, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local skaters. For both of these groups, trip cost increases with travel distance from home.

Since there were no samples for inline skaters in the 2008 UMN survey, Kelly used average spending in local and distant trails by runners as proxy, and distributed them among IMPLAN consumer commodities and services; licenses and fees; and equipment purchases, rental and repair costs. Spending by nonlocal skaters was derived from estimates for nonlocal runners.

Results-- average spending by residents and nonresidents on various commodities/services

Using results from the 2008 Survey for runners, average spending for resident skaters was assumed at slightly over $3 per day during short trips (within 30 minutes from home) and $26 per day in more distant venues (beyond 30 minutes from home). Lodging, meals and drinks, groceries, and gasoline were major expenditure items during those distant trips.

Table 8.2. Average spending by inline skaters in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$0.00	$7.70	$0.00	$7.70	$7.70
Grocery or convenience store	$0.73	$5.71	$0.63	$2.25	$2.25

Restaurant/bar meals & drinks	$0.26	$3.46	$0.26	$3.46	$3.46
Gasoline or other fuels	$0.87	$3.40	$0.27	$1.31	$1.31
Other transportation costs	$0.02	$2.57	$0.01	$0.47	$0.47
Recreational equip purchases	$0.00	$0.28	$0.00	$0.23	$0.23
Recreational equip rentals	$0.00	$0.00	$0.00	$0.00	$0.00
Recreational equip repair	$0.00	$0.00	$0.00	$0.00	$0.00
Payments to public agencies	$0.22	$0.57	$0.22	$0.57	$0.57
Entertainment (casinos)	$0.00	$0.42	$0.00	$0.42	$0.42
Shopping	$1.00	$1.89	$0.11	$1.47	$1.47
Other	$0.00	$0.00	$0.00	$0.00	$0.00
Total	$3.10	$26.02	$1.51	$17.90	$17.90
Statewide*	$3.10	$26.02	*	*	$17.90

Note: * Statewide, all region inline skaters are Minnesota residents.

Results-- Total Spending by Inline skaters

Applying average spending estimates in Table 8.2 to total person-days for each group of skaters in Table 8.1 produced total spending estimates for each destination region.

Statewide spending estimates

At the statewide level, all Minnesota skaters are considered residents, incurring the average expenses of region residents at local trails ($3.10 per day in trails within 30 minutes from home) and distant trails ($26.02 per day for trails beyond 30 minutes from home). Applying these average daily expenditures to total person-days skating by Minnesota residents resulted into some $26.6 million in consumer spending. Out-of-state visitors added $3.5 million in spending, which increased total spending in Minnesota trails to $30.1 million.

Total spending by Inline skaters in various regions

At the region level, resident spending included both at-home costs and travel-and-destination expenses. But for nonresidents and out-of-state visitors traveling to the region, only travel-and-destination expenses were allowed. This limited the spending stimulus for each region to those purchases made within the region. This procedure is consistent with local and national studies on the economic impacts of a tourism venue on the region's economy. At the state level, all expenses of skaters were included in the stimulus, including some $3.5 million of at-home expenses by inter-region travelers. Hence, the sum of each region's spending and economic impacts were smaller than the separate state estimates.

Table 8.3. Total spending by inline skaters in Minnesota, by region
(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
North West	$985	$1,539	$628	$2,167	$3,151
North East	$674	$3,311	$1,995	$5,305	$5,979

Central	$1,011	$1,033	$390	$1,423	$2,434
Metro Area	$12,132	$112	$179	$291	$12,423
South	$1,692	$618	$368	$986	$2,678
Statewide*	$26,556	0	$3,559	$3,559	$30,115

Note: * Statewide, all region inline skaters are Minnesota residents.
Sum of region expenditures is less than statewide because at-home expenditures by nonresidents are not included in the regions.

Inline Skaters in Metro Area venues posted highest spending in the state

With large numbers of Metro area residents skating around lakes, parks and trails, their estimated spending reached $12.1 million, or nearly one-half of statewide estimates for local skaters. On the other hand, the northeast region attracted most Minnesota travelers staying overnight (54 percent) and spending more ($17.90 per day), which helped produce the second highest spending ($6.0 million) among the regions. The central region had the highest number of nonresidents traveling within 30 minutes from home (mostly from the metro area), but their low average spending ($1.51 per day) resulted in the lowest regional spending in the state ($2.4 million).

Economic Impacts of Inline Skating in Various Regions

The estimated skater spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business sectors and public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect- income induced effect, occurs when income earned by employees in all affected businesses results in another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total skater expenditure of $30.1 million produced $19.1 million in output of directly affected businesses. Excluded from this output were some $11.0 million in imported consumer items such as groceries, gasoline, recreational equipment, apparel, souvenirs and gifts. However, indirect impacts or 'spin-off' effects on local suppliers and induced impacts from the re-spending of employee incomes produced another $12.5 million in industry output. This raised total output by all businesses slightly above the initial spending.

When the total value of inputs (producer goods and services) purchased from local suppliers was deducted from this output, the gross state product amounted to $15.9 million. This represents the value of all goods and services produced in the region that can be attributed to skaters' spending. It does not include imports of consumer goods or producer items, and avoids double counting of sales between producers and their local suppliers.

Some 218 jobs were supported by the direct spending of skaters, and another 94 jobs from indirect and induced impacts. Total labor compensation (wages, salaries and fringe benefits) from these jobs amounted to $8.9 million, and state and local revenues reached $2.2 million.

Table 8.4. Economic impacts of trip spending by inline skaters in Minnesota, by region*
(thousand $)

	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by inline skaters	$3,151	$5,979	$2,434	$12,423	$2,678	$30,115
Output (Net of Imports)						
Direct Effect	$2,223	$4,291	$1,526	$6,305	$1,500	$19,052
Indirect Effect	$627	$1,111	$458	$1,645	$414	$6,806
Induced Effect	$444	$920	$343	$1,479	$320	$5,696
Total	$3,294	$6,322	$2,327	$9,429	$2,234	$31,554
Gross Regional Product						
Direct Effect	$1,119	$2,286	$755	$2,846	$713	$9,211
Indirect Effect	$296	$552	$218	$857	$180	$3,525
Induced Effect	$244	$521	$193	$857	$169	$3,213
Total	$1,659	$3,359	$1,166	$4,560	$1,062	$15,949
Employment (no. of jobs)						
Direct Effect	40	76	24	53	25	218
Indirect Effect	6	10	4	10	3	45
Induced Effect	5	10	4	12	3	49
Total	50	95	31	75	32	312
Employee Compensation						
Direct Effect	$604	$1,283	$454	$1,753	$394	$5,377
Indirect Effect	$151	$310	$114	$474	$102	$1,929
Induced Effect	$111	$262	$96	$444	$81	$1,635
Total	$866	$1,855	$664	$2,671	$577	$8,941
State and Local Taxes	$239	$471	$161	$606	$150	$2,156

Notes: * For each region, the impacts are due to at-home and trip spending by residents, and trip spending by nonresidents and visitors from out-of-state.
** Statewide impacts are larger than sum of region impacts because they include at-home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

Regional economic impacts

The IMPLAN regional models estimated the local economic impacts of skater spending in the destination regions. With the large population of the metro area and the popularity of skating around lakes, parks and trails, total spending ($12.4 million) was more than double those in the other regions. The prevalence of resident runners on local trails in the metro area also meant a high proportion of consumer items that were procured from outside the region (imports), such as bottled water and energy drinks, snacks and apparel. Only about one-half of the spending in this region stimulated local producers of consumer goods. But in the northern and central regions where travelers stayed at hotels, motels and resorts, consumed their meals and drinks at local restaurants and bars, and visited other amusement places and casinos, up to

two-thirds of the spending translated into local output. Indirect and induced impacts augmented output to reach the level of the initial spending.

Figure 8.1 shows that the metro area had the highest total spending among the regions, but imports of consumer goods demanded by predominantly- day trippers kept local industry output below the spending stimulus. Gross state product also dropped sharply by a relatively large amount in the metro area, compared to other regions.

With relatively lower demand for imported consumer items by travelers to the northern and central regions, the stimulus produced enough direct, indirect and induced impacts for total output to equal the initial spending.

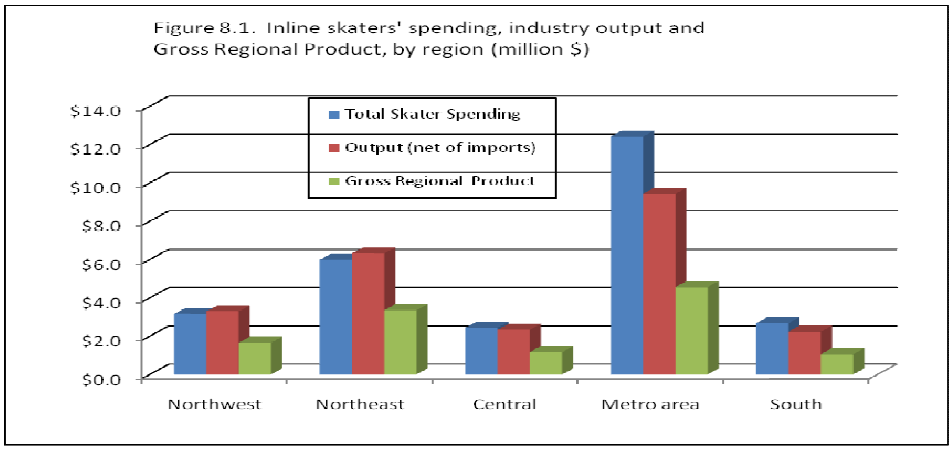
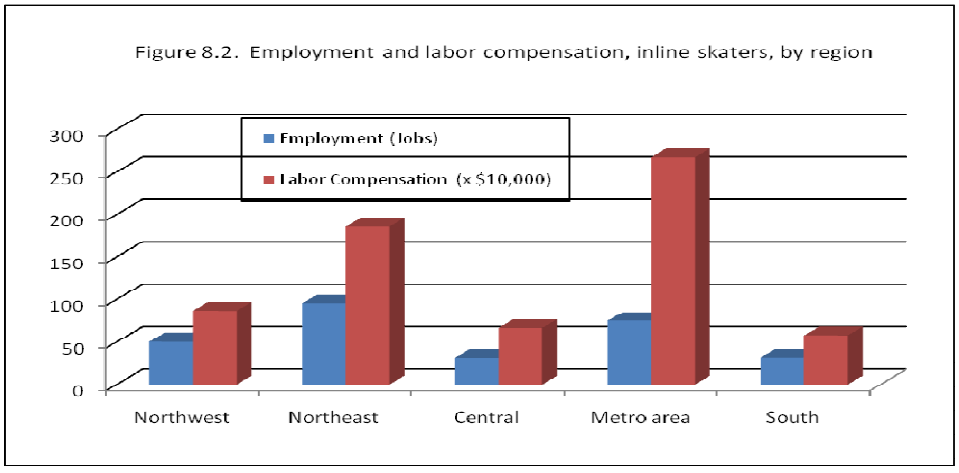
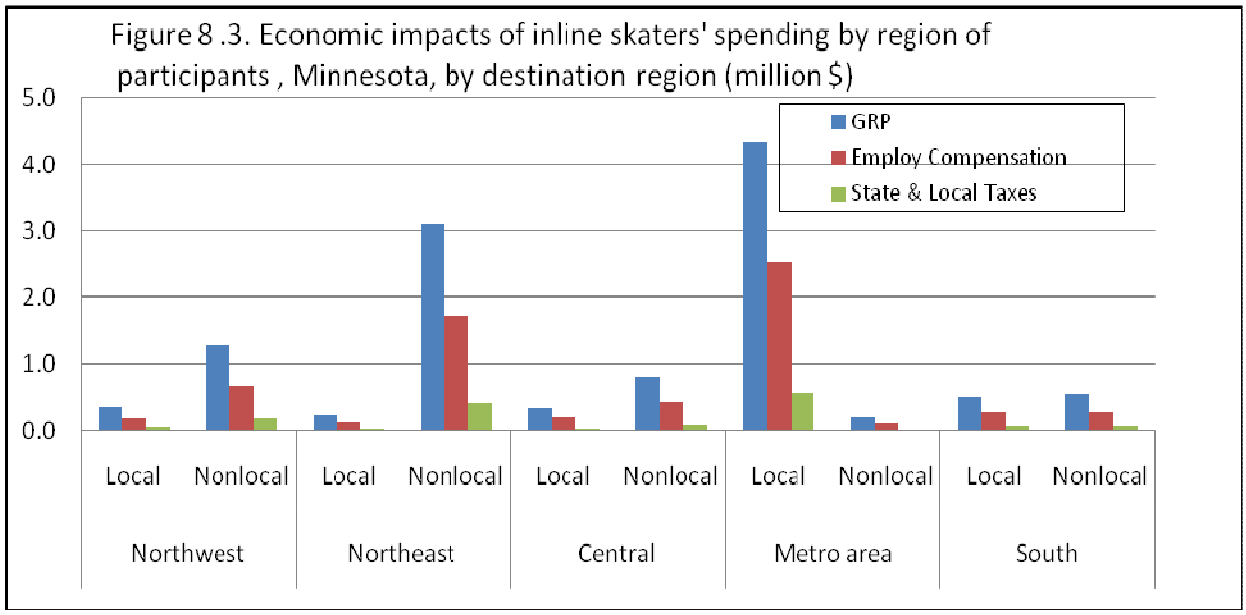


Figure 8.2 shows the effect of regional differences in the mix of products and services demanded from local businesses, the labor intensity in those industries and local wage rates- on total labor demand and compensation. Due to high labor intensity in lodging, restaurants and bars, grocery stores, amusement places and other businesses frequented by distant travelers/vacationers, the employment impacts were the largest in the northeast region. However, higher wages in affected industries in the metro area such as manufacturers produced the highest labor compensation (wages, salaries and fringe benefits) among the regions.



Relative importance of resident and nonresident spending in various regions

With two-thirds of statewide skating person-days, the metro area dominated in skating expenditures and local economic impacts. Almost all of the spending and impacts came from residents. In the northeast, northwest and central regions, travelers provided most new monies to stimulate the local economy.



Economic Impacts of Annual Equipment Spending

With non-coverage of inline skaters in the 2008 UMN survey, Kelly did not estimate equipment spending for this activity.

OFF-HIGHWAY MOTORCYCLES (OHM)

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total spending by OHM riders and its local economic impact. Total person-days in the region were estimated for local OHM users (or region residents) and nonlocal OHM users (visitors from other regions and from out-of- state).

To estimate total trip days, Kelly (2009) first distributed the 2004 total number of registered OHM vehicles among the regions using 2008 DNR regional data. Since OHM was not included in the 2004 DNR survey of outdoor participants, average days of use were obtained from the 2008 UMN survey. Applying the regional average days of use to the number of vehicles produced estimates of total trip person-days by OHM owners in each region. These trip days were allocated among the destination regions based on 2008 UMN survey data regarding travel origins and destinations. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were estimated at the destination regions.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails (23 thousand-person-days) were assumed equal and offsetting to trip days of visitors from out-of-state. These out-of-state visits were allocated among the regions based on their share of total person-days by OHM users that traveled to distant trails (beyond 30 minutes from home).

Results- estimates of total person-days by OHM riders

Table 9.1 shows estimates of total person-days of OHM use in each destination region. Short trips to local trails were most frequent, accounting for 45 percent (123 thousand-person-days) of total days spent in OHM in the state (274 thousand person-days). The central region had the highest use of nearby OHM trails (33 thousand person-days). Each of the other regions had some 21 thousand to 24 thousand-resident-person-days in nearby OHM trails.

The northeast region benefited from the most number of visitor-days from other regions and states (51 thousand-person-days), which raised the region total to 79 thousand-person-days. With 61 percent fewer traveler visits (31 thousand person-days), the North West region fell behind 24 percent in total OHM person-days (60 million person-days). In contrast, the Central region had the highest resident user days at nearby trails (33 thousand person-days), which produced the second highest trail use (62 thousand person-days). In the Metro Area, few travelers to the trails produced the smallest number of user days among the regions (30 thousand person-days).

Table 9.1 Total user days at Minnesota trails by OHM users, by destination region

(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	21.2	7.6	7.9	17.4	5.6	59.7
Northeast	23.8	3.6	4.8	37.2	9.2	78.6
Central	33.1	5.9	9.9	9.8	3.5	62.3
Metro area	22.5	3.5	3.4	0	0.8	30.2
South	22.8	1.6	1.5	13.6	3.4	42.9
Statewide	123.4	22.2	27.5	78	22.6	273.7

Method to Estimate Average Trip Spending

As shown in Table 9.1, the trip days in each destination region were grouped by proximity from home- either to nearby trails (within 30 minutes from home), or distant trails (beyond 30 minutes). With information on the origin and destination of OHM users, the trip days were grouped further according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by nonlocal OHM users, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local OHM users. For both of these groups, trip cost increases with travel distance from home.

Based on the 2008 UMN Survey and NVUM estimates for travel less than 50 miles, Kelly estimated average spending by OHM riders in local and distant trails, and distributed them among IMPLAN consumer commodities and services. Spending by nonlocal OHM riders was derived from estimates for local riders.

Results-- average spending by residents and nonresidents on various commodities/services

From the survey, local OHM riders spent an average of $32.20 per person-day in nearby trails, mostly for gasoline or other fuels ($7.85 per day), recreational equipment purchases including sporting goods ($5.95 per day), grocery or convenience store food and drinks ($3.86 per day), lodging ($3.74 per day) and restaurant/bar meals and drinks ($3.38). With an overnight stay in distant trails, resident's expenses almost doubled (to $62.86 per day), mostly due to a large increase in gasoline expense (to $16.32 per day), lodging (to $11.10 per day) and grocery and convenience store food and drinks (to $10.83 per day).

For nonresidents and visitors coming from distant places (more than 30 minutes from home), their travel-and-destination expenses averaged about $32.00 per day. Largest expenses were lodging ($11.10 to $15.33 per day), grocery or convenience store food ($6.29 to $8.76 per day) and restaurant/bar meals and drinks ($3.67 to $5.40 per day).

Table 9.2. Average spending by OHM users in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$3.74	$11.10	$3.74	$11.10	$15.33
Grocery or convenience store	$3.86	$10.83	$2.34	$6.29	$8.76
Restaurant/bar meals & drinks	$3.38	$5.40	$3.38	$5.40	$3.67
Gasoline or other fuels	$7.85	$16.32	$2.40	$1.29	$1.18
Other transportation costs	$0.53	$6.73	$0.08	$3.15	$0.48
Recreational equip purchases	$5.95	$1.54	$2.03	$0.02	$0.00
Recreational equip rentals	$0.40	$3.35	$0.28	$3.35	$1.33
Recreational equip repair	$2.03	$1.96	$0.34	$1.17	$0.50
Payments to public agencies	$2.22	$1.64	$0.91	$0.11	$0.22
Entertainment (casinos)	$0.62	$1.97	$0.27	$0.41	$0.59
Shopping	$1.33	$1.61	$0.57	$0.05	$0.00
Other	$0.28	$0.42	$0.00	$0.00	$0.00
Total	$32.20	$62.86	$16.32	$32.35	$32.07
Statewide*	$32.20	$62.86	*	*	$32.07

Note: * Statewide, all region OHM users are Minnesota residents.

Results-- total spending by OHM riders in various regions

Applying average spending estimates in Table 9.2 to total person-days of snowmobiling for each group of snowmobilers in Table 9.1 produced total spending estimates for each destination region.

Statewide spending estimates

At the state level, all Minnesota OHM riders are considered residents, incurring the average expenses of region residents at local trails ($32.20 per day for trails within 30 minutes from home) and distant trails ($62.86 per day for trails beyond 30 minutes). Applying these average daily expenditures to total person-days of OHM riding by Minnesota residents resulted in some $11.9 million in consumer spending. With very few visitors expected for OHM riding, Minnesota residents accounted for almost all of total spending ($11.2 million).

Northeast region led all regions in OHM participation and spending

At the region level, resident spending included both at-home costs and travel-and-destination expenses. But for nonresidents and Minnesota visitors, only travel-and-destination expenses were applied at the destination region. This reduced the regions' spending to a total of $9.1 million, compared to the statewide total of $11.9 million. Each region's expenditures were

used in impact analysis because they represented actual spending by residents, nonresidents and visitors from out-of-state in the destination region- the main area of interest.

The northeast region had the most person-days by OHM riders (79 thousand-person-days), and led other regions in total spending ($2.6 million). The northwest and central regions followed with total spending of $2.0 million each. In contrast, total spending in the south region and the metro area were less than $1.5 million each because a large number of OHM riders traveled to the northern regions.

Table 9.3. Total spending by OHM users in Minnesota, by region
(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
North West	$1,161	$690	$181	$871	$2,032
North East	$993	$1,283	$295	$1,578	$2,571
Central	$1,436	$480	$114	$594	$2,030
Metro Area	$947	$55	$26	$81	$1,028
South	$832	$464	$110	$574	$1,407
Statewide*	$11,159	$0	$725	$725	$11,884

Note: * Statewide, all region OHM users are Minnesota residents.
Sum of region expenditures is less than statewide because at-home expenditures by nonresidents are not included in the regions.

Economic Impacts of OHM Riding in Various Regions

The estimated OHM rider spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business sectors and public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect- income induced effect, occurs when income earned by employees in all affected businesses results in another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total OHM spending of $11.9 million produced $8.9 million in total output for directly affected businesses. Excluded from this output were some $3.0 million in consumer goods imported into the regions, such as groceries, gasoline, recreational equipment, apparel, memorabilia and gifts. However, indirect and induced impacts of this spending on other businesses and their employees increased total output to $14.8 million.

When the cost of producer goods and services purchased by affected businesses were subtracted from their outputs, their contribution to gross regional product (GRP or value added) amounted to $4.5 million. Indirect effects (spin-off effects) on other businesses and induced effects from household re-spending of additional incomes increased the impact on GRP to $7.7 million.

Some 102 jobs were created by this economic activity on an annual basis, or equivalent to 204 jobs during the OHM season. Including indirect and induced jobs, the total job impact reached 146 jobs on an annual basis. Labor compensation from these jobs (wages and salaries including benefits) amounted to $4.2 million. State and local tax revenues from all sources were estimated at $1.1million.

Table 9.4. Economic impacts of trip spending by OHM users in Minnesota, by region*

(thousand $)

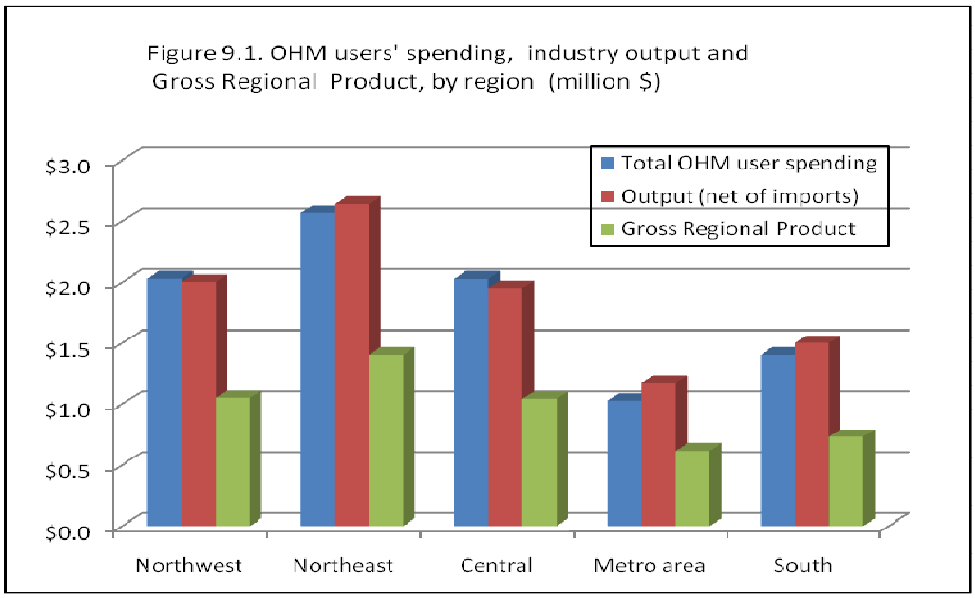
	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by OHM Users	$2,032	$2,571	$2,030	$1,028	$1,407	$11,884
Output (Net of Imports)						
Direct Effect	$1,354	$1,787	$1,274	$751	$998	$8,896
Indirect Effect	$361	$465	$372	$225	$282	$3,133
Induced Effect	$289	$391	$307	$199	$222	$2,738
Total	$2,004	$2,643	$1,953	$1,175	$1,502	$14,767
Gross Regional Product						
Direct Effect	$720	$952	$691	$379	$490	$4,459
Indirect Effect	$174	$233	$180	$122	$126	$1,648
Induced Effect	$158	$222	$172	$116	$117	$1,545
Total	$1,052	$1,407	$1,043	$617	$733	$7,652
Employment (no. of jobs)						
Direct Effect	23	29	21	8	16	102
Indirect Effect	4	4	3	2	2	21
Induced Effect	3	4	3	2	2	23
Total	30	37	27	11	21	146
Employee Compensation						
Direct Effect	$352	$506	$382	$227	$243	$2,512
Indirect Effect	$88	$129	$95	$68	$71	$904
Induced Effect	$73	$111	$86	$60	$56	$786
Total	$513	$746	$563	$355	$370	$4,202
State and Local Taxes	$157	$205	$152	$84	$106	$1,057

Notes: * For each region, the impacts are due to at-home and trip spending by residents, and trip spending by nonresidents and visitors from out-of-state.

** Statewide impacts are larger than sum of region impacts because they include at-home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

Results-- regional economic impacts

The IMPLAN regional models estimated the economic impacts of OHM spending in the destination regions. With the northeast region showing the highest spending at $2.6 million, the total impacts on the region's GRP came to $1.4 million. This was followed by the northwest and central regions each at $1.0 million in GRP.



Similarly, the northeast led in the number of jobs at 37 jobs and in labor compensation at $0.7 million, followed by the northwest region with 30 jobs and $0.5 million in labor compensation.

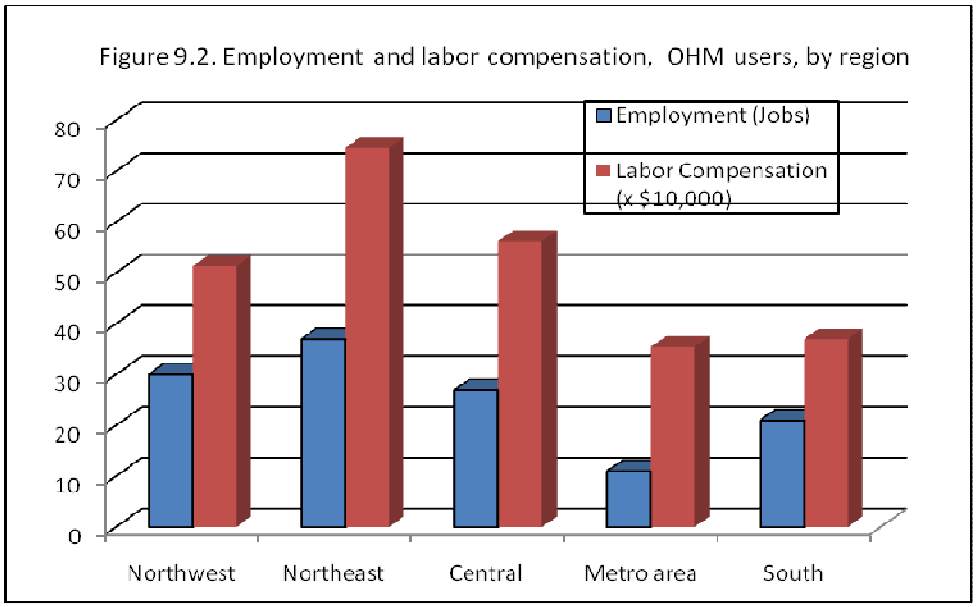
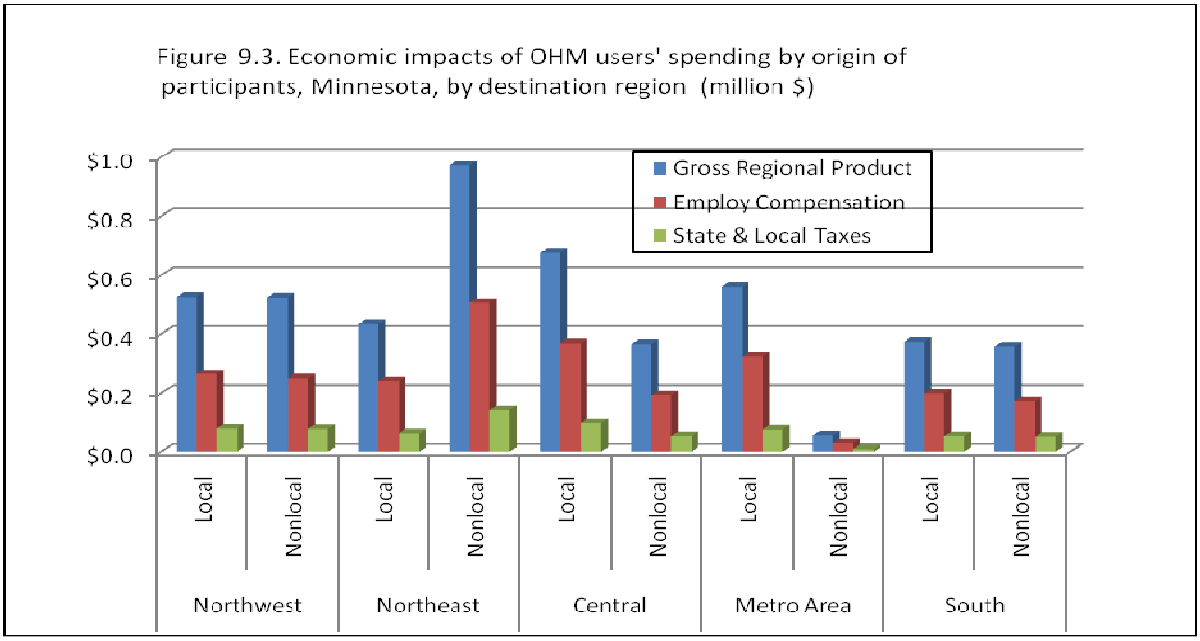


Figure 9.3 shows the importance of attracting OHM riders into the region. In the northeast region, the influx of nonresidents and visitors to local trails ($1.0 million in GRP) increased

total GRP to the highest among the regions ($1.4 million). These nonlocal sources were equally large contributors to spending and GRP as the local sources in the northwest and south regions. In the central region and metro area, residents were the primary trail users.



Economic Impacts of Annual Equipment Spending

Method to estimate annual equipment spending

Based on the 2008 UMN survey, Kelly (2009) estimated annual equipment spending by OHM users in various regions. Similar to trip spending, the equipment purchases were grouped according to IMPLAN sectors to facilitate impact measurements. Used equipment was excluded from these groups.

The annual spending estimates were entered into the regional IMPLAN models to determine their impacts on local economies. Statewide estimates were applied to the state IMPLAN model for estimates that included inter-region interactions among Minnesota businesses.

Results-- estimates of equipment purchases and their economic impacts

Purchases of new equipment by OHM riders reached $1.7 million, or 53 percent of their $3.1 million total equipment spending in the state. About 44 percent of this spending occurred in the metro area ($1.4 million). The other regions had between $0.3 million and $0.6 million in equipment spending.

The equipment spending produced some $1.7 million in state GSP, $0.9 million in employment compensation and $0.2 million in state and local taxes.

Table 9. 5. Economic impacts of annual equipment spending, OHM users, Minnesota, by region

(thousand $)

Equipment Spending	Northwest	Northeast	Central	Metro area	South	State*
New equipment	$157	$221	$306	$720	$246	$1,650
Repair maintenance	$87	$122	$169	$398	$136	$913
Insurance	$37	$51	$71	$168	$57	$385
Storage	$4	$5	$7	$17	$6	$39
Other	$12	$17	$24	$55	$19	$127
Total	$296	$416	$577	$1,358	$465	$3,113
Economic Impact of Equipment Spending						
Output (Local Sales)	$226	$296	$452	$1,141	$371	$2,902
Gross Regional Product	$116	$163	$242	$683	$194	$1,666
Employment (no. of jobs)	3	4	6	13	5	33
Employee Compensation	$54	$88	$128	$409	$104	$942
State and Local Taxes	$18	$26	$37	$97	$30	$239

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Summary- Combined Economic Impacts from OHM Trail-Related Activities

When combined with trip expenditures, annual spending on equipment increased trail- related spending to some $15.0 million statewide. Gross sales by local businesses (net of imports) reached $18.0 million. The contribution of this spending to GSP amounted to $9.3 million. The job impacts were 179 jobs and $5.1 million in labor compensation (wages and salaries plus benefits). State and local tax revenues from all sources were estimated at $1.3 million.

Table 9.6. Economic impacts of trail- related spending, OHM users, Minnesota, by region

(thousand $)

	Northwest	Northeast	Central	Metro area	South	State*
Trip spending by OHM Users	$2,032	$2,571	$2,030	$1,028	$1,407	$11,884
Purchases of Equipments	$296	$416	$577	$1,358	$465	$3,113
Total	$2,328	$2,987	$2,607	$2,387	$1,871	$14,997
Economic Impacts						
Output (Local Sales Net of Imports)						
Trip Spending	$2,004	$2,643	$1,953	$1,175	$1,502	$14,767
Equipment Spending	$226	$296	$452	$1,141	$371	$2,902
Total	$2,230	$2,939	$2,405	$2,316	$1,873	$17,669

Gross Regional Product						
Trip Spending	$1,052	$1,407	$1,043	$617	$733	$7,652
Equipment Spending	$116	$163	$242	$683	$194	$1,666
Total	$1,168	$1,570	$1,285	$1,300	$927	$9,318
Employment (no. of jobs)						
Trip Spending	30	37	27	11	21	146
Equipment Spending	3	4	6	13	5	33
Total	33	41	33	24	26	179
Employee Compensation						
Trip Spending	$513	$746	$563	$355	$370	$4,202
Equipment Spending	$54	$88	$128	$409	$104	$942
Total	$567	$834	$691	$764	$474	$5,144
State and Local Taxes						
Trip Spending	$157	$205	$152	$84	$106	$1,057
Equipment Spending	$18	$26	$37	$97	$30	$239
Total	$175	$231	$189	$181	$136	$1,296

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Large equipment spending in the metro area made up for the smallest trail spending among the regions. Evidently, the equipments were purchased mostly by metro area residents bound for the northern regions. This combined spending in the metro area resulted in comparable total economic impacts with the northern and central regions.

OFF-ROAD VEHICLES (ORV)

Method to Estimate Total Trip Days

For each region, estimates of trail use (total person-days) and average spending were used to determine total spending by ORV riders and its local economic impact. Total person-days in the region were estimated for local ORV users (or region residents) and nonlocal ORV users (visitors from other regions and from out-of- state).

To estimate total trip days, Kelly (2009) first distributed the 2004 total number of registered ORV vehicles among the regions using 2008 DNR regional data. Because ORV registrations were required only if used in DNR designated or grant-in-aid ORV trails, the regional estimates of ORV units could be underestimated in this study.

Since ORV was not included in the DNR 2004 survey of outdoor participants, average days of use were obtained from the 2008 UMN survey. Applying the regional average days of use to the number of vehicles produced estimates of total person-days by ORV owners. These trip days were allocated among the destination regions based on 2008 UMN survey data on travel origins and destinations. In conformance with national and state recreational trail studies, the spending and economic impacts in this study were estimated at the destination regions.

Trip days by visitors from out-of-state

The sampling universe of the 2008 UMN survey did not include out-of-state visitors to Minnesota recreational trails. Instead, the estimated trip days of Minnesotans to out-of-state trails (9 thousand-person-days) were assumed equal and offsetting to trip days of visitors from out-of-state. These out-of-state visits were allocated among the regions based on their share of total person-days by ORV users that traveled to distant trails (beyond 30 minutes of travel from home).

Results-- estimates of total person-days by ORV users

Table 10.1 shows estimates of total person-days of ORV use in each destination region. Trips to nearby trails were most frequent, accounting for one-half (57 thousand-person-days) of total days spent in ORV in the state (113 thousand-person-days). Most of local ORV riding occurred in the northwest region (18 thousand-person-days), followed by the northeast region (15 thousand-person-days) and the south region (12 thousand-person-days). Resident daytrips were less than one-half of these numbers in the central region and metro area (each at about 6 thousand-person-days); and residents' travel from these regions to northeast region trails involved slightly more person-days (each at 7 thousand-person-days).

Travelers frequented trails in the northeast and northwest regions

The northeast region benefited from the most number of travelers from other regions and states (21 thousand-person-days), which raised the region total to 42 thousand-person-days. Because there were only one-half as many visitors to the northwest, the total number of

person-days was smaller than in the northeast. There were few visitors in the central, metro area and south regions (each with less than 5 thousand person-days).

Table 10.1 Total user days at Minnesota trails by ORV users, by destination region

(thousand-person-days)

Destination	Residents		Nonresidents		Minnesota	Region
Region	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors	Total
Northwest	17.9	2.0	4.4	5.8	2.0	32.0
Northeast	15.3	6.3	3.0	12.8	4.8	42.2
Central	5.8	2.3	1.8	1.2	0.9	12.0
Metro area	5.2	0.7	0.1	0.1	0.2	6.3
South	12.3	3.1	1.4	2.2	1.3	20.4
Statewide	56.5	14.4	10.7	22.2	9.1	112.9

Method to Estimate Average Trip Spending

As shown in Table 10.1, the trip days in each destination region were grouped by proximity from home- either to nearby trails (within 30 minutes from home), or distant trails (more than 30 minutes). With information on the origin and destination of ORV users, the trip days were grouped further according to whether they were region residents, travelers from other regions, or visitors from out-of-state.

These groupings are important because during overnight/multi-day trips by nonlocal ORV users, their spending on lodging, meals, gasoline and other items increase sharply, compared to daytrips by local ORV users. For both of these groups, trip cost increases with travel distance from home.

Based on the 2008 UMN survey and NVUM estimates for less than 50 miles travel, Kelly estimated average spending by ORV users in local and distant trails, and distributed them among IMPLAN consumer commodities and services. Spending by nonlocal ORV users was derived from estimates for local users.

Results- average spending by residents and nonresidents on various commodities/services

From the 2008 UMN survey, local ORV riders spent an average of $22.74 per person-day in nearby trails (within 30 minutes travel from home), mostly for gasoline or other fuels ($6.60 per day), grocery or convenience store food and drinks ($4.25 per day), and recreational equipment purchases, including sporting goods ($3.53 per day). At distant trails (beyond 30 minutes travel from home) resident's expenses increased three-fold (to $68.53 per day), mostly due to a large increase in gasoline expense (to $22.56 per day), grocery and convenience store food and drinks (to $9.73 per day), lodging (to $9.43 per day), recreational equipment repair and maintenance ($9.06 per day) and restaurant/bar meals and drinks (to $6.68 per day).

For nonresidents and visitors coming from distant places (more than 30 minutes from home), their travel-and destination-expenses averaged about $39.00 per day. Largest expenses were gasoline and other fuels ($7.78 to $11.40 per day), lodging ($9.43 to $9.81 per day), meals and drinks at restaurants and bars ($3.93 to $6.68 per day), and grocery or convenience store food ($3.78 to $4.01 per day).

Table 10.2. Average spending by ORV users in Minnesota

($ per-person-day)

	Residents		Nonresidents		Minnesota
	Within 30 min	Beyond 30 min	Within 30 min	Beyond 30 min	Visitors
Spending Categories					
Lodging, including camping	$1.57	$9.43	$1.57	$9.43	$9.81
Grocery or convenience store	$4.25	$9.73	$1.32	$3.78	$4.01
Restaurant/bar meals & drinks	$1.22	$6.68	$1.22	$6.68	$3.93
Gasoline or other fuels	$6.60	$22.56	$1.72	$7.78	$11.40
Other transportation costs	$0.33	$0.89	$0.05	$0.26	$1.38
Recreational equip purchases	$1.76	$3.51	$0.39	$1.43	$0.99
Recreational equip rentals	$0.00	$0.12	$0.00	$0.04	$0.52
Recreational equip repair	$3.53	$9.06	$1.97	$5.13	$1.35
Payments to public agencies	$1.31	$2.72	$0.30	$1.38	$1.68
Entertainment (casinos)	$1.08	$1.46	$0.41	$1.38	$1.45
Shopping	$0.92	$2.07	$0.26	$1.36	$1.74
Other	$0.19	$0.32	$0.01	$0.08	$1.40
Total	$22.74	$68.53	$9.22	$38.72	$39.65
Statewide*	$22.74	$68.53	*	*	$39.65

Note: * Statewide, all region ORV users are Minnesota residents.

Total spending by ORV riders in various regions

Applying average spending estimates in Table 10.2 to total person-days of ORV riding for each group of riders in Table10.1 produced total spending estimates for each destination region.

Statewide spending estimates

At the state level, all Minnesota ORV users are considered residents, incurring the average expenses of region residents at local trails ($22.74 per day in trails within 30 minutes from home) and distant trails ($68.53 per day for trails beyond 30 minutes from home). Applying these average daily expenditures to total person-days ORV riding by Minnesota residents resulted in some $4.4 million in consumer spending. With very few visitors expected for ORV riding, Minnesota residents accounted for almost all of total spending ($4.0 million).

Northeast region led all regions in ORV participation and spending

At the region level, resident spending included both at-home costs and travel-and-destination expenses. But for nonresidents and Minnesota visitors, only-travel-and-destination expenses were applied at the destination region. This reduced the regions' spending to a total of $3.6 million, compared to the statewide total of $4.4 million. Each region's expenditures were used in impact analysis because they represented actual spending by residents, nonresidents and visitors from out-of-state in the destination region- the main area of interest.

The northeast region had the most person-days ORV riding (42 thousand-person-days), and led other regions in total spending ($1.5 million). The northwest, south and central regions followed with total spending of $0.9 million, $0.6 million and $0.4 million, respectively. In contrast, total person days (6 thousand-person-days) and *s*pending ($0.2 million) in the metro area were the smallest among regions, because most local ORV owners traveled to the northern regions.

Table 10.3. Total spending by ORV users in Minnesota, by region
(thousand $)

	Residents	Nonresidents		Subtotal	Total
	(Same region)	Minnesota	Out- of- State	Nonlocal	
North West	$547	$265	$77	$342	$889
North East	$782	$523	$188	$711	$1,493
Central	$286	$64	$34	$98	$385
Metro Area	$165	$6	$8	$15	$180
South	$490	$100	$52	$152	$642
Statewide*	$4,035	$0	$361	$361	$4,395

Note: * Statewide, all region ORV users are Minnesota residents.
Sum of region expenditures is less than statewide because at-home expenditures by nonresidents are not included in the regions.

Economic Impacts of ORV Riding in Various Regions

The estimated ORV-user spending by commodity/service group was used as stimulus amount to the regional and statewide IMPLAN models. This is the direct impact of recreational activity spending on specific sectors of the local economy. In turn, these affected business sectors and public agencies purchase production inputs from their local suppliers, creating the indirect or "spin-off" effect on the rest of the economy. The third effect, income induced effect, occurs when income earned by employees in all affected businesses results in another round of consumer spending.

Statewide economic impacts

The statewide IMPLAN model estimated that total ORV spending of $4.4 million produced $3.3 million in total output for directly affected businesses. Excluded from this output were

some $1.1 million in consumer goods imported into the regions such as groceries, gasoline, recreational equipment, apparel, memorabilia and gifts. However, indirect and induced impacts of this spending on other businesses and their employees increased total output to $5.3 million.

When the cost of producer goods and services purchased by affected businesses were subtracted from their outputs, their contribution to gross regional product (GRP or value added) amounted to $1.6 million. Indirect effects (spin-off effects) on other businesses and induced effects from household re-spending of additional incomes increased the impact on GRP to $2.7 million.

Some 35 jobs were created by this economic activity on an annual basis, or equivalent to 70 jobs during the ORV season. Including indirect and induced jobs, the total job impact reached 51 jobs on an annual basis. Labor compensation from these jobs (wages and salaries including benefits) amounted to $1.5 million. State and local tax revenues from all sources were estimated at $0.4 million.

Table 10.4. Economic impacts of trip spending by ORV users in Minnesota, by region*

(thousand $)

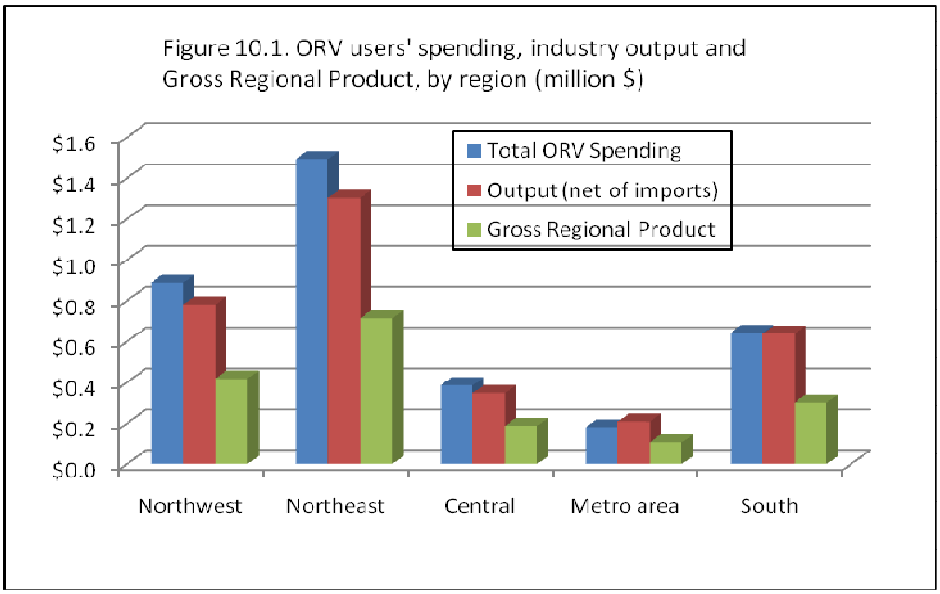
	Northwest	Northeast	Central	Metro area	South	Statewide**
Trip Spending by ORV Users	$889	$1,493	$385	$180	$642	$4,395
Output (Net of Imports)						
Direct Effect	$532	$892	$229	$135	$436	$3,274
Indirect Effect	$133	$208	$63	$38	$109	$1,079
Induced Effect	$116	$203	$56	$35	$93	$979
Total	$781	$1,303	$348	$208	$638	$5,332
Gross Regional Product						
Direct Effect	$289	$495	$126	$66	$206	$1,601
Indirect Effect	$64	$104	$31	$20	$48	$562
Induced Effect	$65	$114	$31	$20	$49	$552
Total	$418	$713	$188	$106	$303	$2,715
Employment (no. of jobs)						
Direct Effect	9	15	4	1	7	35
Indirect Effect	1	2	1	0	1	7
Induced Effect	1	2	1	0	1	8
Total	12	19	5	2	8	51
Employee Compensation						
Direct Effect	$151	$281	$72	$40	$109	$920
Indirect Effect	$32	$59	$16	$12	$28	$307
Induced Effect	$30	$57	$15	$11	$23	$281
Total	$213	$397	$103	$63	$160	$1,508
State and Local Taxes	$63	$103	$28	$15	$44	$375

Notes: * For each region, the impacts are due to at-home and trip spending by residents, and trip spending by nonresidents and visitors from out-of-state.

** Statewide impacts are larger than sum of region impacts because they include at-home spending by Minnesotans traveling within the state, and inter-region interactions in IMPLAN.

Results- regional economic impacts

The IMPLAN regional models estimated the economic impacts of ORV spending in the destination regions. With the northeast region showing the highest spending at $1.5 million, the total impact on the region's GRP came to $0.7 million. This was followed by the north west region at $0.4 million in GRP and the south region at $0.3 million. ORV was not a popular activity in the metro area and the central region, each with less than one-fourth of the spending in the northeast region.



Similarly, the northeast led in the number of jobs at 19 jobs and in labor compensation at $0.4 million, followed by the northwest region with 12 jobs and $0.2 million in labor compensation.

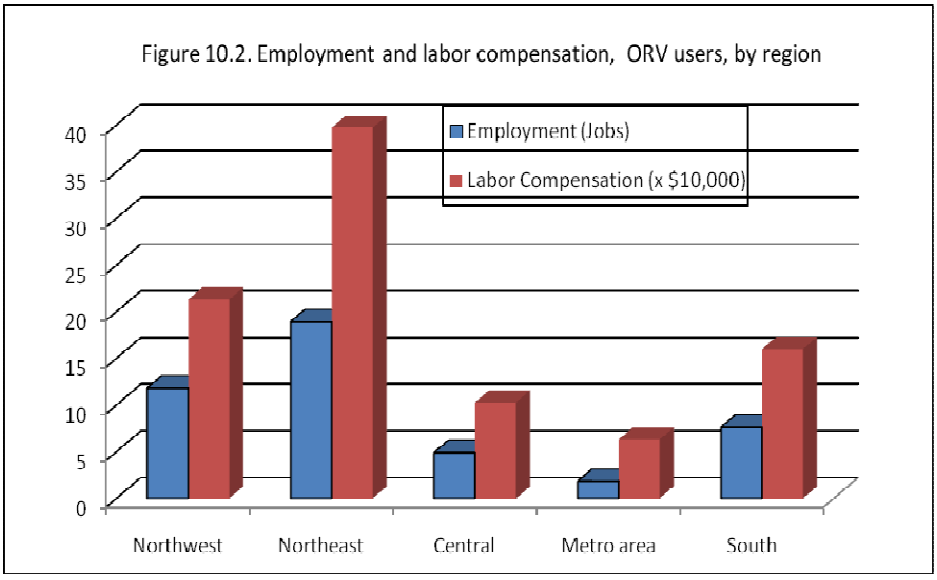
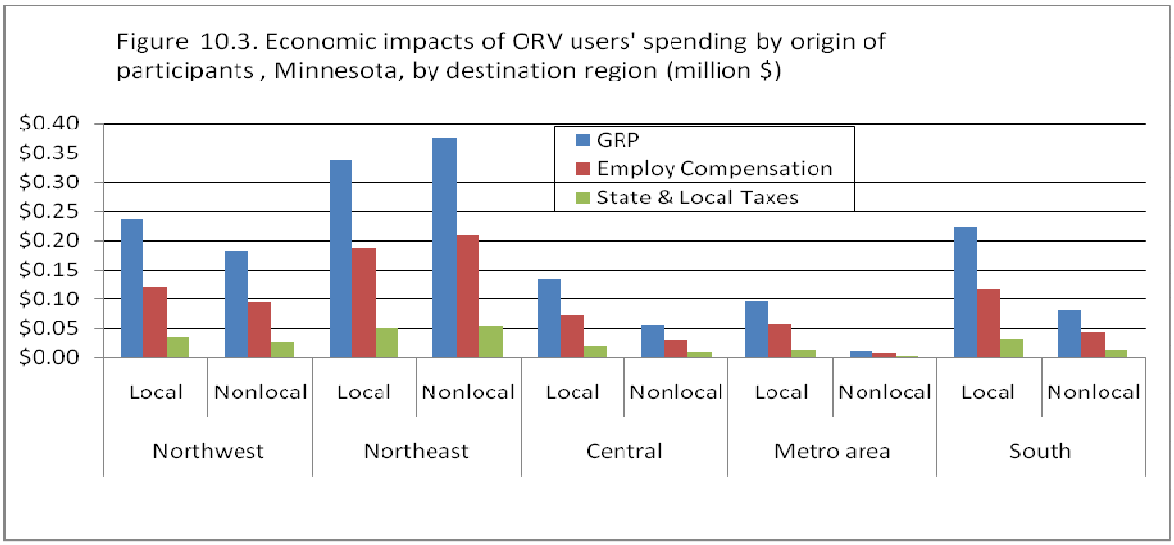


Figure 10.3 shows the importance of attracting ORV users into the region. In the northeast region, the influx of nonlocal trail users (nonresidents and out-of-state visitors) to local trails ($0.4 million in spending) increased total GRP to the highest among the regions ($0.7 million). In the northwest and south regions, nonresidents and visitors were significant contributors to spending and GRP, but not as important as resident ORV users. In the central region and metro area, both resident and nonresident spending lagged behind the other regions.



Economic Impacts of Annual Equipment Spending

Method to estimate annual equipment spending

Based on the 2008 UMN survey, Kelly (2009) estimated annual equipment spending by ORV users in various regions. Similar to trip spending, the equipment purchases were grouped according to IMPLAN sectors to facilitate impact measurements. Used equipment was excluded from these groups.

The annual spending estimates were entered into the regional IMPLAN models to determine their impacts on local economies. Statewide estimates were applied to the state IMPLAN model for estimates that included inter-region interactions among Minnesota businesses.

Results-- estimates of equipment purchases and their economic impacts

Purchases of new equipment by ORV riders reached $1.8 million, or 49 percent of their $3.7 million total equipment spending in the state. About 25 percent of this spending occurred in the metro area ($0.9 million). The other regions had between $0.6 million and $0.8 million in equipment spending.

The equipment spending produced some $2.1 million in state GSP, $1.2 million in employment compensation and $0.3 million in state and local taxes.

Table 10. 5. Economic impacts of annual equipment spending, ORV users, Minnesota, by region

(thousand $)

Equipment Spending	Northwest	Northeast	Central	Metro area	South	State*
New equipment	$317	$326	$292	$437	$390	$1,761
Repair maintenance	$176	$181	$162	$243	$217	$979
Insurance	$145	$150	$134	$200	$179	$808
Storage	$7	$8	$7	$10	$9	$42
Other	$24	$25	$22	$33	$29	$133
Total	$669	$690	$616	$923	$824	$3,722
Economic Impact of Equipment Spending						
Output (Local Sales)	$532	$494	$505	$810	$684	$3,605
Gross Regional Product	$266	$264	$262	$482	$347	$2,050
Employment (no. of jobs)	7	7	6	8	8	39
Employee Compensation	$127	$145	$142	$297	$189	$1,195
State and Local Taxes	$38	$40	$38	$63	$51	$275

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

Summary-- Combined Economic Impacts from ORV Trail-related Activities

When combined with trip expenditures, annual spending on equipment increased trail- related spending to some $8.1 million statewide. Gross sales by local businesses (net of imports) reached $8.9 million. The contribution of this spending to GSP amounted to $4.8 million. The job impacts were 90 jobs and $2.7 million in labor compensation (wages and salaries plus benefits). State and local tax revenues from all sources were estimated at $0.7 million.

Table 10.6. Economic impacts of trail- related spending, ORV users, Minnesota, by region

(thousand $)

	Northwest	Northeast	Central	Metro area	South	State*
Trip spending by ORV Users	$889	$1,493	$385	$180	$642	$4,395
Purchases of Equipments	$669	$690	$616	$923	$824	$3,722
Total	$1,558	$2,183	$1,001	$1,103	$1,466	$8,118
Economic Impacts						
Output (Local Sales Net of Imports)	$781	$1,303	$348	$208	$638	$5,332
Trip Spending	$532	$494	$505	$810	$684	$3,605
Equipment Spending	$1,313	$1,797	$853	$1,018	$1,322	$8,937
Total						

Gross Regional Product						
Trip Spending	$418	$713	$188	$106	$303	$2,715
Equipment Spending	$266	$264	$262	$482	$347	$2,050
Total	$684	$977	$450	$588	$650	$4,765
Employment (no. of jobs)						
Trip Spending	12	19	5	2	8	51
Equipment Spending	7	7	6	8	8	39
Total	19	26	11	10	16	90
Employee Compensation						
Trip Spending	$213	$397	$103	$63	$160	$1,508
Equipment Spending	$127	$145	$142	$297	$189	$1,195
Total	$340	$542	$245	$360	$349	$2,703
State and Local Taxes						
Trip Spending	$63	$103	$28	$15	$44	$375
Equipment Spending	$38	$40	$38	$63	$51	$275
Total	$101	$143	$66	$78	$95	$650

Note: State* = Although equipment spending by region sums to the state total, the impacts are larger at the state level because they include inter-region interactions.

With the highest trip spending among the regions, the Northeast region led all regions in ORV related spending ($2.2 million). This was followed by spending in the northwest region ($1.6 million) and the south region ($1.5 million). The metro area and the central region had $1.1 and $1.0 million in total spending, respectively.

DISCUSSION

This chapter summarizes the survey results, analyses and economic impact estimates on the 10 recreational trails. After presenting a state summary of the more popular recreational activities and their statewide economic impacts, the focus shifts to the regions, presenting their popular trails as influenced by weather, topography, demographics and trail development.

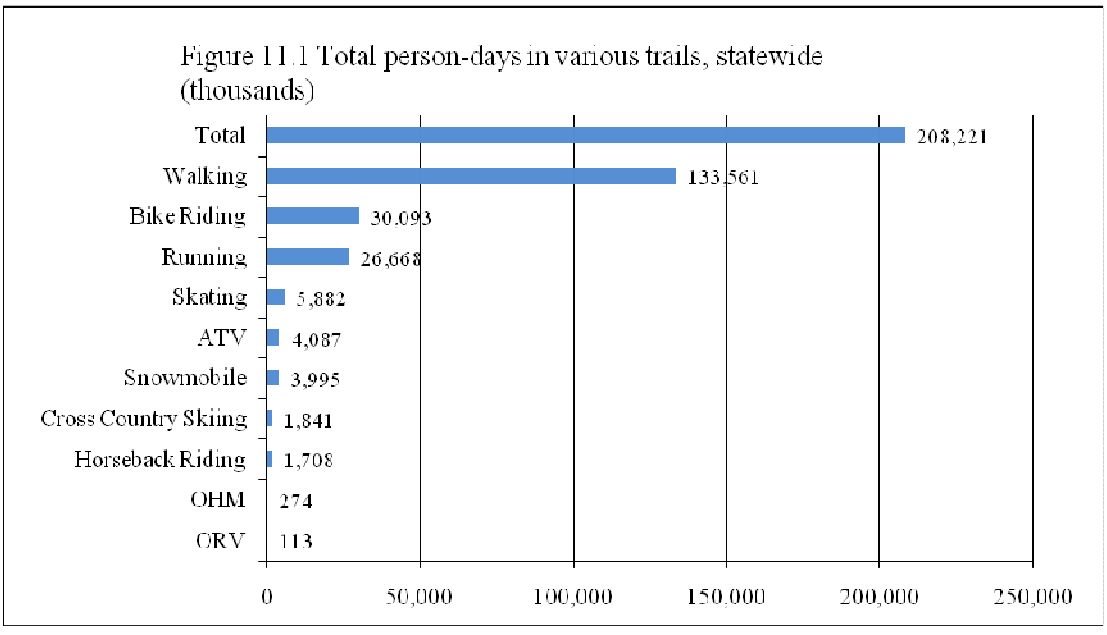
Three sources of spending- local trail users, visitors from other Minnesota regions and travelers from out-of-state were differentiated to show the relative sizes of spending at the trails. Spending estimates for each of these users were applied to the IMPLAN regional models to estimate their economic impacts on local business activity as measured by gross output or sales, gross regional product, employment and employee compensation and state and local revenues from fees and taxes. Economic impacts were also estimated for each region's household spending on new equipment, storage and maintenance, and other annual upkeep expenses.

State Summary

Popular trails

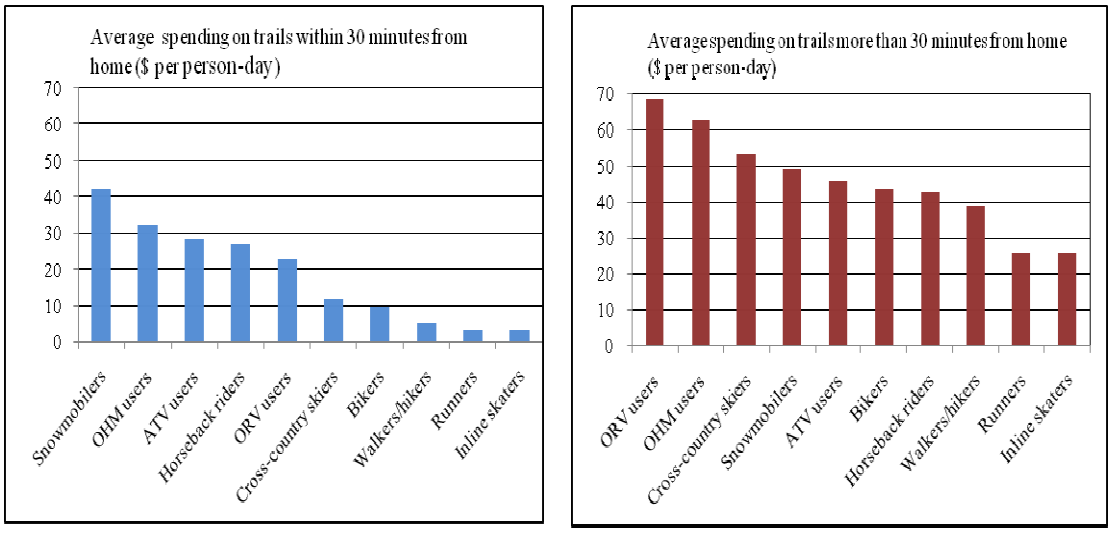
Walking/hiking in outdoor trails dominated trail-related activities

Walking/hiking in outdoor trails comprised nearly two of every three days spent in the 10 trails of this study. Bike riding and running were the next most popular activities, but participation (total person-days) in each was less than one-fourth of the walkers/ hikers.

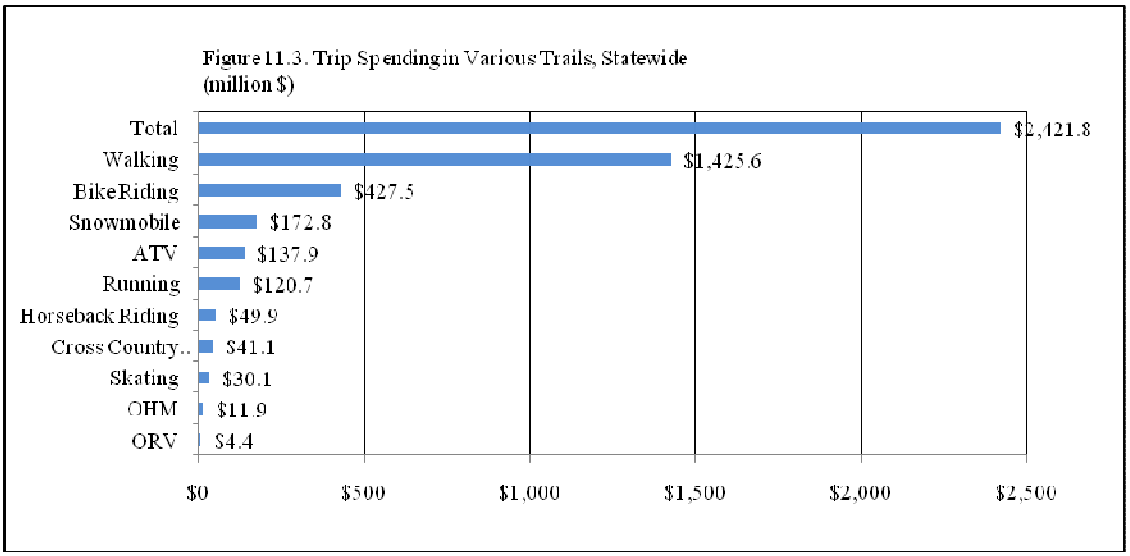


For most activities, trips beyond 30 minutes from home cost twice as much per person-day as short trips to nearby trails. In this study, most of the trips to distant trails were multi-day visits that involved lodging.

Figure 11.2 Average trip spending by region residents on trails, by distance from home



Walking trips at nearby parks and trails in the Metro Area involved low average spending per user (about $5 per person-day). But the overwhelming number of persons engaged in this activity boosted total spending to $1,426 million, or 59 percent of total spending in the 10 trails. Bicycle riding was a distant second in total user spending at $427 million, or less than one-third of total spending in walking/hiking.

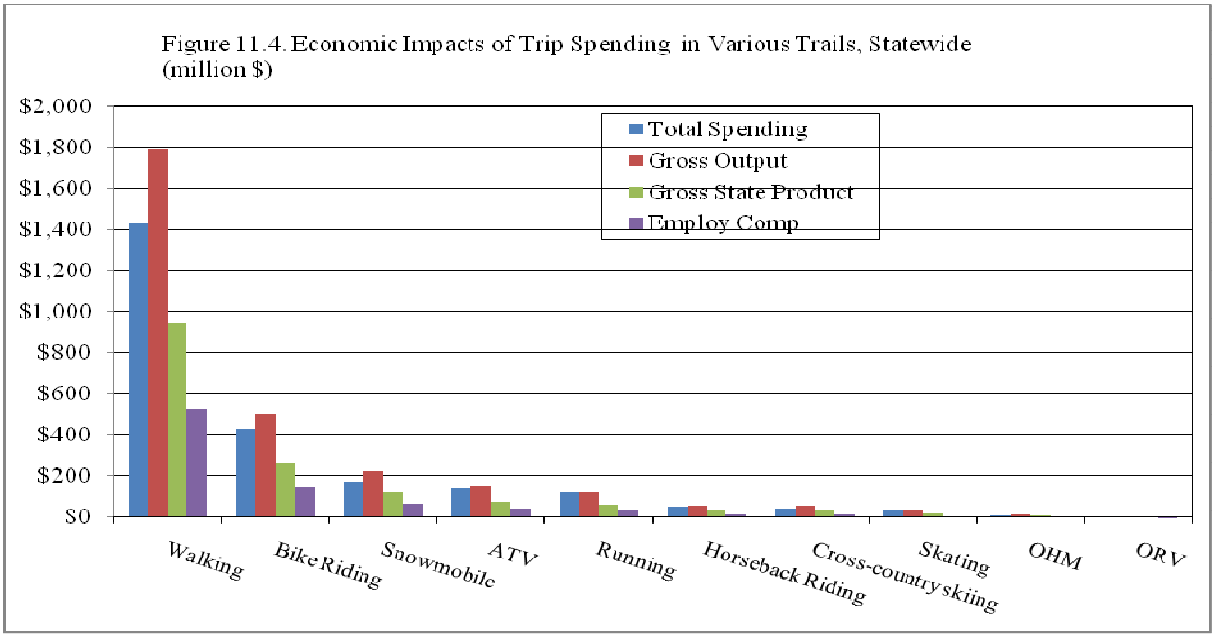


Snowmobile, ATV and running formed a third group of trails in terms of user spending, which ranged from $121 million to $173 million, or about one-third of the bicycle-riding's total spending. A fourth group was composed of horseback riding, cross country skiing and

inline skating, with spending that ranged from $30 million to $50 million. Off-highway motorcycles (OHM) and off road vehicles (ORV) were the least popular, each with less than $12 million in total spending.

Economic impacts of trail-related spending

With the highest trip spending, walkers/hikers led in contributions to local industry sales or gross output ($1,792 million), gross state product ($939 million), employment compensation ($526 million) and state and local government revenues ($125 million). Some 19,000 jobs in the state were supported by this spending at walking/hiking trails.



These impacts reflected the amount of spending in various trails. For example, with 59 percent of total trip spending, walking/hiking produced 61 percent of GSP and wages and salaries (employment compensation). The next most prevalent activity, biking, had 18 percent of the spending and almost similar contributions to GSP and total jobs. The third group, snowmobile, ATV and running, each had about 6 percent of the spending, GSP and wages and salaries.

Household annual spending on equipments

Equipment spending of $839 million produced $1,004 million in total industry sales or gross output, and $564 million in GSP. This was a large amount, equivalent to more than one-third of total trip spending and its economic impacts. Most of the spending came from purchases of new equipment, storage, feed, and other maintenance costs associated with horseback riding ($530 million). Spending on new snowmobile equipment was second highest at $105 million, followed by ATV ($75 million), biking ($54 million) and running ($37 million). Cross-country skiing, OHM and ORV had less than $9 million in equipment spending.

Economic impacts of spending on trips and equipments

The total spending of $3,261 million on trips and equipments produced $3,957 million in state gross output. The GSP contribution of this spending reached some $2,105 million. Although the economic impact of this spending was only 0.8 percent of the state's total GSP, they were felt most strongly in communities adjacent to the trails. The impact on jobs, employee compensation and state and local revenues was estimated at 42,900 jobs, $1,132 million and $281 million, respectively.

Table 11.1. Economic impacts of spending on trips and equipments, statewide*

	Trip Spending	Gross Output	Gross State Product	Employee Compensation	State and Local Taxes	Jobs
		-(thousand $)-				-(no.)-
Walking/hiking	$1,425,613	$1,792,053	$939,390	$526,187	$124,986	19,094
Biking	$427,478	$498,928	$261,243	$145,142	$35,845	5,263
Snowmobile	$172,816	$225,744	$118,236	$67,907	$15,346	2,324
ATV	$137,860	$150,764	$74,936	$41,285	$10,511	1,435
Running	$120,745	$122,018	$61,237	$34,464	$8,241	1,193
Horseback	$49,853	$56,134	$29,363	$16,877	$3,686	522
Cross Country Skiing	$41,083	$55,505	$30,927	$17,899	$3,856	603
Inline skating	$30,115	$31,554	$15,949	$8,941	$2,156	312
OHM	$11,884	$14,767	$7,652	$4,202	$1,057	146
ORV	$4,395	$5,332	$2,715	$1,508	$375	51
Total	$2,421,842	$2,952,799	$1,541,648	$864,412	$206,059	30,943
	Equipment Spending	Gross Output	Gross State Product	Employee Compensation	State and Local Taxes	Jobs
Walking/hiking	$23,371	$20,632	$12,696	$6,856	$2,166	282
Biking	$53,555	$50,131	$29,794	$15,912	$4,737	616
Snowmobile	$104,645	$103,044	$58,457	$33,806	$7,917	1,105
Running	$37,136	$32,781	$20,174	$10,894	$3,442	448
ATV	$74,633	$77,362	$43,611	$25,383	$5,790	807
Horseback	$530,204	$705,694	$390,881	$169,618	$49,378	8,532
Cross Country Skiing	$8,554	$7,699	$4,681	$2,516	$781	102
Inline skating	N/A	N/A	N/A	N/A	N/A	N/A
OHM	$3,113	$2,902	$1,666	$942	$239	33
ORV	$3,722	$3,605	$2,050	$1,195	$275	39
Total	$838,933	$1,003,850	$564,009	$267,123	$74,725	11,963
Trips and Equipments	$3,260,775	$3,956,649	$2,105,658	$1,131,535	$280,784	42,906
2007 Minnesota Economy**		$494,381,000	$259,085,000	$150,318,000		

* Statewide impacts are larger than the sum of regions because these include spending at the region of origin and inter-region interactions among businesses.

** IMPLAN 2007 estimates.

Economic impacts of local and nonlocal sources of trail spending

At the state level, all Minnesota residents are local sources of spending at the trails. Only visitors from outside-the state provide the nonlocal source of spending. But by bringing in new monies, visitors have a direct and undiminished impact on the state's economy. For Minnesota residents that travel from the home region to trails in a different region, their spending at the destination has the potential of displacing (reducing) their spending at home. In cases where the trips are for different purposes such as frequent short trips in the metro area versus their multi-day vacation trips to the northeast region, displacement at the home region would be less likely. Rather, competing vacation trips to other states may be affected by these vacation trips to the northeast region.

Since the origin and destination of all trail users were inside the state, total spending included all at-home, en route and trail expenditures. Spending at-home and en route for Minnesota travelers added $261 million, or 12 percent to statewide spending at the 10 trails.

However, the sampling universe of the 2008 UMN survey (drivers' licenses and recreational vehicle registrations) constrained the sampling to Minnesota residents. Unlike other surveys of guests at lodging places, campgrounds, and recreational trails, out-of-state visitors were not included in this survey. For this study, the trip days of Minnesota travelers to out-of-state venues were assumed equal or offsetting to the trip days of out-of-state visitors to Minnesota trails. This amounted to 15.2 million visitor person-days for all trails, or 7 percent of the state total. Further, higher lodging and other expenses incident to longer stays increased the visitors' spending to $439 million, or 18 percent of the state total.

Table 11.2. Total participation days and spending by Minnesota residents and nonresidents, statewide

	Participation Days			Trails Spending		
	Local	Nonlocal*	Total	Local	Nonlocal*	Total
		-(thousand)-			-(thousand $)-	
Walking/hiking	122,379	11,182	133,561	$1,110,251	$315,362	$1,425,613
Biking	28,543	1,549	30,092	$373,212	$54,266	$427,478
Snowmobile	3,539	455	3,994	$155,864	$16,952	$172,816
ATV	3,889	198	4,087	$131,539	$6,321	$137,860
Running	25,537	1,131	26,668	$100,490	$20,255	$120,745
Horseback	1,529	180	1,709	$42,996	$6,857	$49,853
Cross Country Skiing	1,566	275	1,841	$26,846	$14,237	$41,083
Inline skating	5,683	199	5,882	$26,556	$3,559	$30,115
OHM	251	23	274	$11,159	$725	$11,884
ORV	104	9	113	$4,035	$360	$4,395
Total	193,020	15,201	208,221	$1,982,948	$438,894	$2,421,842

* Visitors from out-of-state

Economic impacts of trip spending by residents and out-of-state visitors

The 18 percent contribution of visitors to trail spending produced some $341 million in GSP, or 22 percent of total GSP from the trails. There were similar 22 percent contributions by visitors to state and local taxes ($45 million) and trail-related jobs (7,100 jobs).

Table 11.3. Economic impacts of trip spending by residents and out-of-state visitors, statewide

	Residents				Out-of-state visitors			
	Trip Spending	Gross State Product -(thousand $)-	State & Local Taxes	Jobs -(no.)-	Trip Spending	Gross State Product -(thousand $)-	State & Local Taxes	Jobs -(no.)-
Walking/hiking	$1,110,251	$689,231	$92,040	13,843	$315,362	$250,159	$32,946	5,252
Biking	$373,212	$223,627	$30,808	4,476	$54,266	$37,616	$5,037	787
Snowmobile	$155,864	$104,561	$13,559	2,035	$16,952	$13,675	$1,787	288
ATV	$131,539	$70,521	$9,920	1,343	$6,321	$4,415	$591	92
Running	$100,490	$45,732	$6,181	860	$20,255	$15,505	$2,060	333
Horseback	$42,996	$25,277	$3,269	443	$6,857	$4,086	$417	79
Cross- country skiing	$26,846	$19,265	$2,281	366	$14,237	$11,662	$1,575	237
Inline skating	$26,556	$13,224	$1,794	254	$3,559	$2,725	$362	59
OHM	$11,159	$7,082	$979	135	$725	$570	$78	12
ORV	$4,035	$2,474	$342	46	$361	$241	$33	5
Total	$1,982,948	$1,200,994	$161,173	23,799	$438,894	$340,654	$44,886	7,144

Regional Summaries

This section identifies the most popular trails in each region and measures their local economic impacts. Differences in latitudes of the regions produce enough climatic differences and topography to favor certain recreational activities. For example, a colder and longer winter season, fluffier and deeper snow and wider, open spaces are ideal conditions for snowmobiling in the northern regions. Not only are the snowmobile trails popular among the region's residents, but they attract large numbers of snowmobilers from the metro area. In contrast, warmer weather and numerous trails around lakes and parks encourage more metro area walkers and cross-country skiers to the convenience of nearby trails.

In this study, trail spending and its economic impacts were estimated for each destination region. Consistent among park and trail studies in various states are user counts and their spending within the boundaries of the venues. Hence, the economic impacts are limited to activities within the parks or trails.

There were three groups of trail users by region of origin: (1) local or residents of the region, (2) travelers from other Minnesota regions, and (3) out-of-state visitors. Economic impacts were measured based on the total number of person-days at the trails and average spending of

each of these groups at their destination regions. For travelers from other regions, expenses at home and during travel were excluded from the total spending.

Northwest Region

Economic impacts of trail-related spending

Total spending at northwest trails reached $373 million, or 15 percent of the statewide total. This spending was third highest among the regions, equal to the south region but behind the northeast and the metro area.

The pattern of trip spending among trails in the northwest region was similar to statewide, but with slightly more walking/hiking (66 percent) compared to statewide (59 percent). Bicycle riding, snowmobile, ATV and running continued to be major activities, although spending on snowmobiling was higher than biking in this region. The northwest region posted the second highest spending on snowmobiling ($41 million) and ATV ($27 million), behind the northeast region ($54 million and $30 million, respectively).

The total trail spending of $373 million produced $369 million in local business output (total sales excluding imports of consumer goods and services but including indirect and induced effects among businesses), and $195 million in GRP. This GRP measured the net product of local businesses, representing their value added. The spending also generated $28 million in state and local taxes. Some 5,900 jobs were supported by this trail spending.

New equipment purchases, storage and maintenance and related upkeep costs by residents in the region added $68 million in spending. The total spending of $441 million produced $434 million in local business output, and $229 million in GRP. The economic impact of this spending was only 1.8 percent of the region's total GRP, but it was concentrated among communities and businesses near the trails. Indirect and induced impacts spilled over to the population and commercial centers of the region. The total impact on jobs, employee compensation and state and local revenues in the region were 6,900 jobs, $117 million and $33 million, respectively.

Table 12.1. Economic impacts of spending on trips and equipments, Northwest region

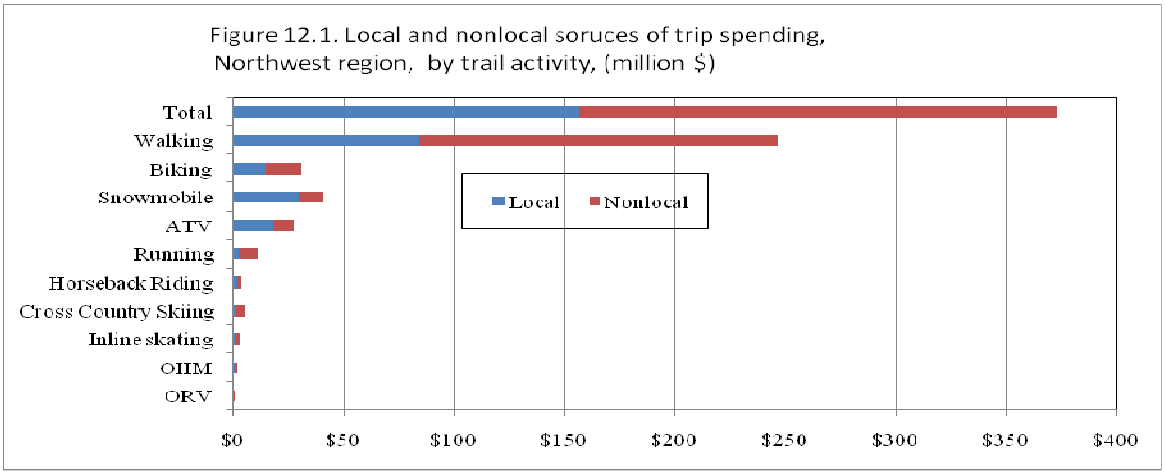
	Trip Spending	Gross Output	Gross Region Product	Employee Compensation	State & Local Taxes	Jobs
		-(thousand $)-				(no.)
Walking/hiking	$246,709	$254,171	$134,073	$70,442	$19,220	4,071
Biking	$31,193	$28,487	$15,043	$7,797	$2,215	450
Snowmobile	$40,686	$38,638	$20,718	$11,140	$2,889	601
ATV	$27,470	$21,400	$11,418	$5,892	$1,732	332
Running	$11,291	$11,169	$5,808	$3,052	$838	178
Horseback riding	$3,807	$2,927	$1,663	$908	$236	43
Cross-country skiing	$5,291	$5,888	$3,191	$1,686	$445	92
Inline skating	$3,151	$3,294	$1,659	$866	$239	50

OHM	$2,032	$2,004	$1,052	$513	$157	30
ORV	$889	$781	$418	$213	$63	12
Total	$372,519	$368,759	$195,043	$102,509	$28,034	5,858
	Equipment Spending	Gross Output	Gross Region Product	Employee Compensation	State & Local Taxes	Jobs
Walking/hiking	$1,842	$1,088	$674	$323	$126	19
Biking	$3,164	$1,918	$1,106	$525	$196	31
Snowmobile	$15,321	$12,444	$6,221	$2,939	$900	163
ATV	$10,937	$9,391	$4,639	$2,197	$659	120
Running	$1,488	$879	$545	$261	$102	15
Horseback riding	$33,836	$38,795	$20,671	$7,999	$2,724	642
Cross-country skiing	$424	$252	$152	$73	$28	4
Inline skating	N/A	N/A	N/A	N/A	N/A	N/A
OHM	$296	$226	$116	$54	$18	3
ORV	$669	$532	$266	$127	$38	7
Total	$67,977	$65,526	$34,391	$14,498	$4,792	1,004
Trips and Equipments	$440,496	$434,285	$229,434	$117,007	$32,826	6,862
2007 Northwest region economy*		$25,575,000	$12,444,000	$6,502,000		

Note: * IMPLAN 2007 estimates.

Economic impacts of local and nonlocal sources of trail spending

Travelers from other regions and out-of-state visitors were major sources of spending in the northwest region. Travelers accounted for 58 percent of spending in all trails and 66 percent in the most popular- walking/hiking trails. All trails had significant numbers of visitors from other Minnesota regions. Due to higher average spending, these travelers incurred larger expenses than local residents, which provided greater inducement to local businesses.



In the most popular walking/hiking trails, visitors or nonlocal users ($163 million) spent twice as much as local users ($84 million). The impact of visitors' spending on the region's GRP ($96 million) was relatively higher at 2.5 times the local users' spending impact ($38 million). This was due to a large proportion of visitor spending on lodging, meals, trail fees, amusement and casinos, and other items that remained within the region, while local users' spending on groceries, gasoline and other consumer items required substantial imports. These imports "leaked out" some of the stimulus from the region.

Table 12.2. Economic impacts of trip spending by local and non-local trail users, Northwest Region

	Local Trail Users				Nonlocal Trail Users			
	Trip Spending	Gross State Product	State & Local Taxes	Jobs	Trip Spending	Gross State Product	State & Local Taxes	Jobs
		-(thousand)-		(no.)		-(thousand)-		(no.)
Walking	$84,207	$37,852	$5,517	1,111	$162,503	$96,221	$13,703	2,960
Biking	$14,967	$6,380	$959	184	$16,226	$8,663	$1,256	266
Snowmobile	$30,235	$14,560	$2,019	407	$10,451	$6,158	$870	194
ATV	$18,441	$6,900	$1,072	192	$9,029	$4,518	$660	140
Running	$2,531	$816	$122	23	$8,760	$4,992	$716	155
Horseback riding	$2,262	$947	$132	24	$1,545	$716	$104	20
Cross-country skiing	$1,401	$733	$89	19	$3,890	$2,458	$356	73
Inline skating	$985	$365	$55	11	$2,167	$1,294	$184	40
OHM	$1,161	$527	$79	15	$871	$525	$78	15
ORV	$547	$237	$36	6	$342	$181	$27	5
Total	$156,736	$69,317	$10,080	1,991	$215,782	$125,726	$17,954	3,868

Northeast Region

Economic impacts of trail-related spending

Total spending at the northeast trails reached $628 million, the highest among the regions and equivalent to 26 percent of the statewide total. This spending was two-thirds larger than spending in the northwest region and one-fifth larger than spending in the populous and high income- metro area.

The northeast led all regions in spending in six of the 10 trails: walking/hiking ($414 million), snowmobile (54 million), ATV ($30 million), cross-country skiing ($17 million), OHM ($3 million) and ORV ($1 million).

The pattern of trip spending among trails in the North East region was similar to statewide, where two-thirds of total spending was incurred in walking/hiking trails. In contrast to the northwest region, bicycle riding had higher trail expenses than snowmobiling. Cross-country skiing joined ATV and running as popular activities. But horseback riding was less popular in

the region than statewide; and it had lower spending (less than $4 million) in this region than inline skating ($6 million).

Total trails spending of $628 million produced $642 million in local business output (total sales excluding imports of goods and services but including indirect and induced effects among businesses), and $347 million in GRP. This GRP measured the net product of local businesses, representing their value added. The spending also generated $48 million in state and local taxes. Some 9,700 jobs were supported by this trail spending.

New equipment purchases, storage and maintenance and related upkeep costs by residents in the region added $77 million in spending. The total spending of $705 million produced $696 million in local business output and $377 million in GRP. The economic impact of this spending was only 2.6 percent of the region's total GRP, but it was concentrated among communities and businesses near the trails. Indirect and induced impacts spilled over to the population and commercial centers of the region. The total impact on jobs, employee compensation and state and local revenues in the region were 10,700 jobs, $208 million and $53 million, respectively.

Table 13.1. Economic impacts of spending on trips and equipments, Northeast region

	Trip Spending	Gross Output	Gross Region Product	Employee Compensation	State and Local Taxes	Jobs
		-(thousand $)-				(no.)
Walking	$413,846	$435,231	$235,455	$130,285	$32,835	6,600
Biking	$76,400	$75,335	$40,550	$22,132	$5,790	1,146
Snowmobile	$53,624	$51,227	$28,185	$16,148	$3,836	773
ATV	$30,142	$24,297	$13,106	$7,272	$1,905	367
Running	$23,572	$23,481	$12,496	$6,921	$1,755	352
Horseback riding	$3,673	$2,740	$1,580	$906	$220	40
Cross-country skiing	$16,781	$18,952	$10,473	$5,738	$1,452	281
Inline skating	$5,979	$6,322	$3,359	$1,855	$471	95
OHM	$2,571	$2,643	$1,407	$746	$205	37
ORV	$1,493	$1,303	$713	$397	$103	19
Total	$628,081	$641,531	$347,324	$192,400	$48,572	9,710

	Equipment Spending	Gross Output	Gross Region Product	Employment Compensation	State & Local Taxes	Jobs
Walking	$1,800	$1,145	$696	$364	$129	22
Biking	$3,128	$1,965	$1,143	$593	$201	35
Snowmobile	$16,483	$12,149	$6,492	$3,553	$989	168
ATV	$11,823	$9,164	$4,835	$2,659	$722	122
Running	$2,072	$1,318	$801	$419	$148	25
Horseback riding	$40,128	$27,705	$15,252	$7,885	$2,305	551
Cross-country skiing	$708	$448	$268	$140	$49	8
Inline skating	N/A	N/A	N/A	N/A	N/A	N/A
OHM	$416	$296	$163	$88	$26	4
ORV	$690	$494	$264	$145	$40	7
Total	$77,247	$54,684	$29,914	$15,846	$4,609	942

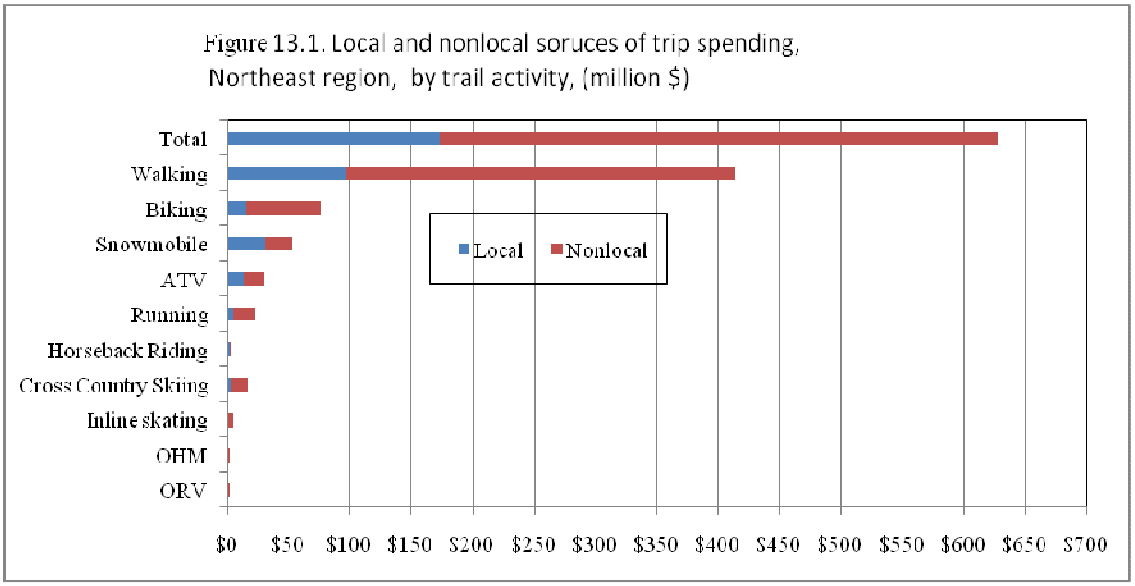
Trips and Equipments	$705,328	$696,215	$377,238	$208,246	$53,182	10,652
2007 Northeast region Economy*		$27,826,000	$14,245,000	$8,063,000		

Note: * IMPLAN 2007 estimates.

Economic impacts of local and nonlocal sources of trail spending

Resorts, campgrounds, hotels and motels, restaurants and other businesses in this region cater mostly to trail visitors from the metro area, other Minnesota regions and out-of-state. These travelers accounted for 73 percent of spending in all trails and 77 percent in the most popular-walking/hiking trails. Other trails almost exclusively frequented by visitors were inline skating (89 percent), cross-country skiing (80 percent) and bike riding (79 percent).

The region's residents spent some $173 million at local trails, or 27 percent of total spending. Travelers, mostly from the metro area accounted for $243 million (39 percent), and out-of-state visitors added $212 million (34 percent). With lodging, meals, and other additional expenses due to longer stays, visitors typically incurred larger expenses than local residents. These new monies from visitors provided great inducement to local businesses.



Another economic benefit from visitor spending was the high local content of lodging, meals, trail access, amusement and casinos, and other goods and services purchased at the destination region. In contrast, local residents' spending on groceries, gasoline and other consumer items required substantial imports, which "leaked out" some of the stimulus from the region. For all trails, visitor spending produced a higher impact on GRP (59 percent of spending), compared to the local residents' spending impact on GRP (44 percent of spending).

Table 13.2. Economic impacts of trip spending by local and non-local trail users, Northeast region

	Local Trail Users				Non-Local Trail Users			
	Trip Spending	Gross State Product	State & Local Taxes	Jobs	Trip Spending	Gross State Product	State & Local Taxes	Jobs
		-(thousand)-		(no.)		-(thousand)-		(no.)
Walking	$96,717	$43,705	$6,184	1,207	$317,129	$191,750	$26,651	5,392
Biking	$16,244	$6,905	$1,015	188	$60,156	$33,645	$4,775	958
Snowmobile	$32,224	$15,367	$2,067	403	$21,400	$12,818	$1,769	370
ATV	$14,307	$5,204	$783	140	$15,835	$7,902	$1,122	227
Running	$5,888	$2,133	$306	57	$17,683	$10,363	$1,449	296
Horseback riding	$1,742	$707	$96	17	$1,931	$873	$124	23
Cross-country skiing	$3,339	$1,778	$221	45	$13,443	$8,695	$1,231	236
Inline skating	$674	$245	$35	6	$5,305	$3,114	$436	89
OHM	$993	$434	$63	12	$1,578	$973	$142	26
ORV	$782	$337	$50	9	$711	$376	$53	10
Total	$172,910	$76,815	$10,820	2,083	$455,171	$270,509	$37,752	7,627

Comparison with Davidson Peterson Associates' economic impact study in the northeast region

The Davidson Peterson Associates' economic impact study for travelers to northeast Minnesota (Davidson Peterson, 2009c) was an accompanying report of the Profile of Minnesota Travelers Series (Davidson Peterson, 2009a & 2009b). From interviews of travelers, accommodation managers and 1,000 sample households, total traveler expenditure in the region was estimated at $1,601million. Using a similar input-output model of the regional economy, this spending generated $668 million in resident income, 33,500 full time equivalent jobs, and $255 million in state and local government revenues. There were 5.76 million person-visits to the region, of which 1.31 million were daytrips and 4.45 million were overnight stays.

However, slightly more than one-half of the trips were for pleasure; and more than one-fourth were business trips and nearly one-fifth were meetings/conventions. Compared to trail use, these trips involved very large expenditures for lodging, meals, amusement and casinos, and other items. Average spending was $278 per person-day for these visitors, which was 10 times larger than the average trail spending by visitors from the 2008 UMN survey ($28 to $39 per person-day).

In the 2008 UMN study, the travelers were exclusively trail visitors with an estimated $445 million in spending, or slightly more than one-fourth of the Davidson Peterson economic impact study. This spending generated proportionately smaller labor compensation ($148.8 million) and supported jobs (7,600 full-time and part-time jobs). Hence, the wide discrepancy in results from the two studies could be attributed to differences in the samples' trip purpose and spending.

Central Region

Economic impacts of trail-related spending

Total trail spending in the central region was the smallest among the regions at $258 million, or 11 percent of the state total. This spending was 30 percent lower than in the south region and 50 percent lower than in the metro area. However, the central region led in spending at horseback riding ($16 million), followed closely by the south region ($14 million).

The pattern of trip spending among trails in the central region was slightly different from statewide. Walking/hiking expenses dominated all activities with a 52 percent share, but this was slightly lower than the state average of 59 percent. Also, this region had a higher share of biking (20 percent compared to 18 percent statewide), ATV (9 percent compared to 6 percent statewide) and horseback riding (6 percent compared to 2 percent statewide).

The total trail spending of $258 million induced $259 million in local business output (sales excluding imports of consumer goods and services but including indirect and induced effects among businesses) and $137 million in GRP. This GRP measured the net product of local businesses, representing their value added. The spending also generated $19 million in state and local taxes. Some 3,700 jobs were supported by this trail spending.

New equipment purchases, storage and maintenance and related upkeep costs by the region's residents added $102 million in spending. The total trail-related spending of $360 million produced $365 million in local business output and $195 million in GRP. The economic impact of this spending was only 0.7 percent of the region's total GRP, but it was concentrated among communities and businesses near the trails. Indirect and induced impacts spilled over to the population and commercial centers of the region. The total impact on jobs, employee compensation and state and local revenues in the region was 5,400 jobs, $102 million and $27 million, respectively.

Table 14.1. Economic impacts of spending on trips and equipments, Central region

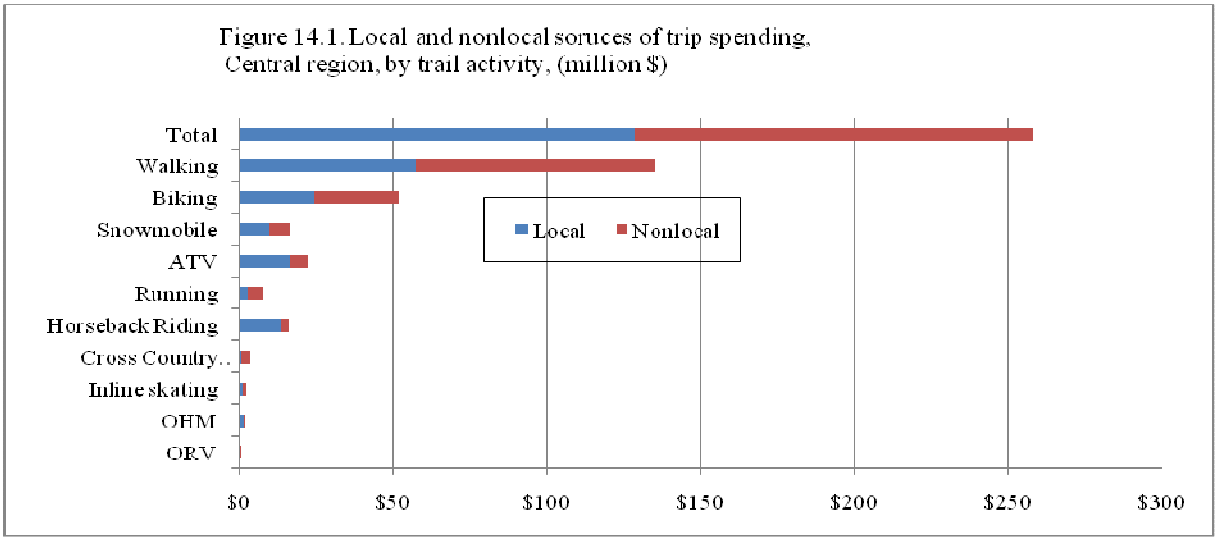
	Trip Spending	Gross Output	Gross Region Product	Employee Compensation	State and Local Taxes	Jobs
		-(thousand $)-				(no.)
Walking	$135,040	$142,917	$75,747	$42,611	$10,457	2,048
Biking	$51,839	$52,278	$27,109	$14,995	$3,864	731
Snowmobile	$16,669	$16,944	$9,142	$5,234	$1,239	244
ATV	$22,158	$18,282	$9,688	$5,357	$1,430	256
Running	$7,635	$7,159	$3,585	$2,057	$492	96
Horseback riding	$16,050	$12,542	$7,252	$4,243	$985	168
Cross-country skiing	$3,646	$4,234	$2,348	$1,328	$313	60
Inline skating	$2,434	$2,327	$1,166	$664	$161	31
OHM	$2,030	$1,953	$1,043	$563	$152	27
ORV	$385	$348	$188	$103	$28	5
Total	$257,885	$258,984	$137,268	$77,155	$19,121	3,666

	Equipment Spending	Gross Output	Gross Region Product	Employee Compensation	State and Local Taxes	Jobs
Walking	$2,169	$1,444	$880	$469	$159	24
Biking	$4,747	$3,633	$2,085	$1,090	$344	51
Snowmobile	$15,423	$12,877	$6,700	$3,599	$970	163
ATV	$11,646	$10,298	$5,297	$2,852	$751	127
Running	$1,884	$1,254	$764	$407	$138	21
Horseback riding	$64,680	$75,661	$40,847	$16,544	$5,229	1,332
Cross-country skiing	$440	$308	$184	$97	$32	5
Inline skating	N/A	N/A	N/A	N/A	N/A	N/A
OHM	$577	$452	$242	$128	$37	6
ORV	$616	$505	$262	$142	$38	6
Total	$102,183	$106,434	$57,261	$25,330	$7,699	1,734
Trips and Equipments	$360,068	$365,418	$194,529	$102,485	$26,820	5,400
2007 Central region economy*		$58,729,000	$29,089,000	$17,067,000		

Note: * IMPLAN 2007 estimates.

Economic impacts of local and nonlocal sources of trail spending

Travelers from other regions and out-of-state visitors were important sources of trail spending in the central region. These travelers accounted for 50 percent of spending in all trails and 58 percent in the most popular- walking/hiking trails. Cross-country skiing (77 percent), running (63 percent) and inline skating (59 percent) had larger spending from this group compared to local users. But local residents dominated ATV (75 percent) and horseback riding (86 percent).



Visitors or nonlocal users of central region trails spent relatively more at the popular walking/hiking trails (60 percent of their total trail spending) than the local users (45 percent). Another economic benefit from this visitor spending was the high local content of lodging, meals, trail access, amusement and casinos, and other goods and services demanded by the travelers. Conversely, groceries, gasoline and other consumer items demanded by local users have a high import content that "leaked" some of the stimulus out of the region. For all trails, this visitor spending produced a higher impact on GRP (61 percent of spending), compared to the local users' spending impact on GRP (45 percent of spending).

Table 14.2. Economic impacts of trip spending by local and nonlocal trail users, Central region

	Local Trail Users				Nonlocal Trail Users			
	Trip Spending	Gross State Product	State & Local Taxes	Jobs	Trip Spending	Gross State Product	State & Local Taxes	Jobs
		-(thousand)-		(no.)		-(thousand)-		(no.)
Walking	$57,362	$26,548	$3,687	704	$77,678	$49,199	$6,770	1,345
Biking	$24,547	$11,152	$1,626	293	$27,292	$15,957	$2,238	438
Snowmobile	$9,936	$5,010	$671	126	$6,732	$4,132	$568	117
ATV	$16,511	$6,644	$998	171	$5,646	$3,044	$432	85
Running	$2,814	$900	$123	23	$4,822	$2,685	$369	74
Horseback riding	$13,734	$6,090	$822	139	$2,316	$1,162	$163	29
Cross-country skiing	$842	$471	$56	11	$2,804	$1,877	$257	49
Inline skating	$1,011	$358	$50	9	$1,423	$808	$111	22
OHM	$1,436	$676	$98	17	$594	$367	$54	10
ORV	$286	$133	$20	3	$98	$55	$8	2
Total	$128,480	$57,982	$8,151	1,496	$129,405	$79,286	$10,970	2,170

Metro Area

Economic impacts of trail-related spending

Notwithstanding the highest concentration of population, businesses and incomes, the metro area was second to the northeast region in trails spending ($523 million compared to $628 million in the northeast). Attracted by diverse and well groomed trails, travelers from the metro area boosted spending in the northern and central regions. But spending by metro area residents at local trails still surpassed other regions in three types of recreational activities: bike riding ($137 million), running ($48 million) and inline skating ($12 million).

The pattern of trip spending among trails in the metro area was slightly different from statewide. Walking/hiking expenses dominated all activities with a 55 percent share, and slightly lower than the 59 percent state average. This region had a higher share of biking (26 percent compared to 18 percent statewide) and running (9 percent compared to 5 percent statewide).

The total trail spending of $523 million produced $554 million in local business output (total sales excluding imports of consumer goods and services but including indirect and induced effects among businesses), and $290 million in GRP. This GRP measured the net product of local businesses, representing their value added. The spending generated $38 million in state and local taxes. Some 5,100 jobs were supported by this trail spending.

New equipment purchases, storage and maintenance and related upkeep costs by residents in the region added $424 million in spending. Most of this spending involved equipment, feed and other upkeep costs of horses ($280 million). The total spending of $948 million produced $935 million in local business output and $513 million in GRP. Due to a large manufacturing base and service industries, the economic impact of this spending was only 0.3 percent of the region's total GRP. But this spending was concentrated among communities and businesses near the trails. Indirect and induced impacts spilled over to the population and commercial centers of the region. The total impact on jobs, employee compensation and state and local revenues in the region were 10,200 jobs, $295 million and $69 million, respectively.

Table 15.1. Economic impacts of spending on trips and equipments, Metro area

	Trip Spending	Gross Output	Gross Region Product	Employee Compensation	State and Local Taxes	Jobs
		-(thousand $)-				(no.)
Walking	$289,565	$325,311	$169,061	$98,942	$21,705	3,022
Biking	$137,309	$140,351	$75,635	$43,895	$10,342	1,374
Snowmobile	$12,902	$15,934	$8,309	$5,015	$1,035	144
ATV	$3,419	$3,632	$1,819	$1,036	$253	32
Running	$48,409	$36,601	$17,680	$10,362	$2,348	291
Horseback riding	$7,173	$8,027	$4,200	$2,497	$531	67
Cross-country skiing	$10,930	$13,044	$7,637	$4,936	$809	126
Inline skating	$12,423	$9,429	$4,560	$2,671	$606	75
OHM	$1,028	$1,175	$617	$355	$84	11
ORV	$180	$208	$106	$63	$15	2
Total	$523,338	$553,712	$289,624	$169,772	$37,728	5,142

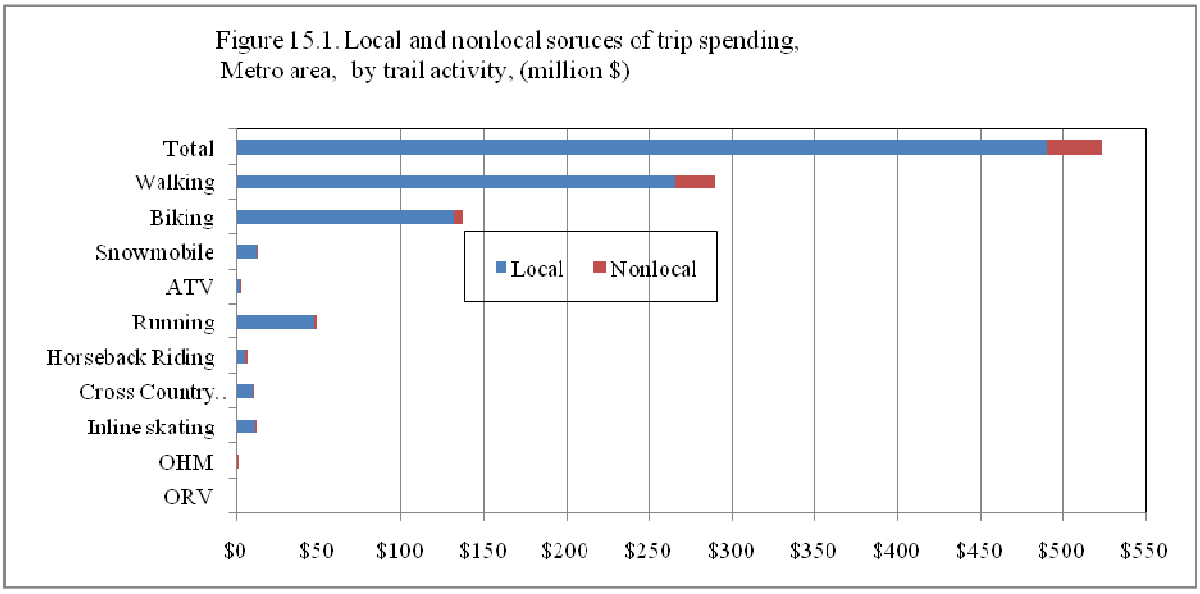
	Equipment Spending	Gross Output	Gross Region Product	Employee Compensation	State and Local Taxes	Jobs
Walking	$13,281	$10,672	$6,790	$3,717	$1,167	150
Biking	$33,200	$29,113	$17,845	$9,655	$2,822	357
Snowmobile	$37,135	$33,059	$19,592	$12,010	$2,604	340
ATV	$27,553	$25,819	$15,216	$9,400	$1,977	256
Running	$25,005	$20,091	$12,784	$6,998	$2,197	281
Horseback riding	$279,833	$255,884	$146,697	$80,570	$19,664	3,552
Cross-country skiing	$6,016	$4,982	$3,128	$1,703	$523	67
Inline skating	N/A	N/A	N/A	N/A	N/A	N/A

OHM	$1,358	$1,141	$683	$409	$97	13
ORV	$923	$810	$482	$297	$63	8
Total	$424,303	$381,571	$223,217	$124,758	$31,113	5,023
Trips and Equipments	$947,641	$935,283	$512,841	$294,530	$68,841	10,164
2007 Metro area economy*		$323,567,000	$179,453,000	$105,868,000		

Note: * IMPLAN 2007 estimates.

Economic impacts of local and non-local sources of trail spending

Very few travelers visited metro area recreational trails. Only about 6 percent of total spending in the region's trails was attributed to visitors from outside the region. Metro area residents accounted for 94 percent of total spending and 92 percent of walking/hiking spending. Bike riding was also a popular activity among the region's residents.



Trail use by local walkers/hikers in the metro area reached 51 million person-days, or one-fourth of total person-days spent in all state trails. But low average spending during these short trips ($5 per person-day) produced $266 million in spending, or only 11 percent of total spending in state trails. Some 13 million person-days of local bicycle riding produced the next largest spending at $132 million. Local runners ($47 million), snowmobilers ($13 million), inline skaters ($12 million) and other trail users ($20 million) increased the total spending to $490 million, or 20 percent of total spending in all state trails.

High import component of goods and services purchased by local trail users limited the GRP contribution to $265 million, or 54 percent of total spending. In contrast, high local content of

$33 million worth of goods and services purchased by nonlocal users or visitors produced $25 million in GRP (75 percent of total spending).

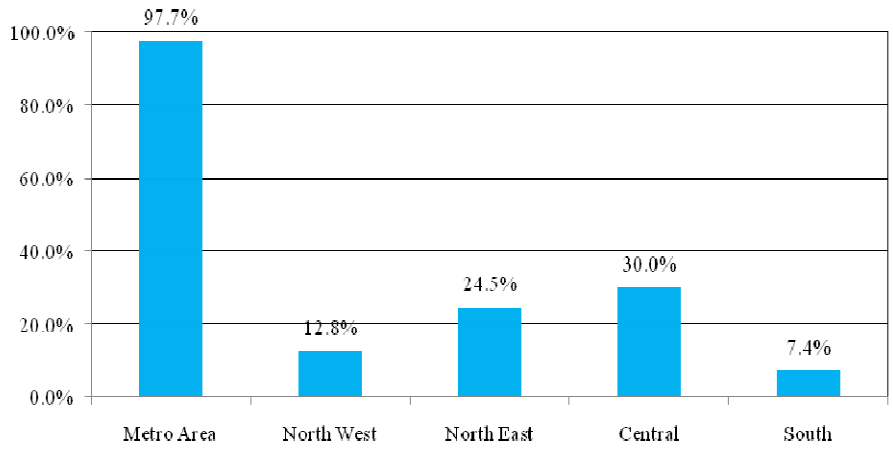
Table 15.2. Economic impacts of trip spending by residents and out-of-state visitors, Metro Area

	Local Trail Users				Non-Local Trail Users			
	Trip Spending	Gross State Product	State & Local Taxes	Jobs	Trip Spending	Gross State Product	State & Local Taxes	Jobs
		-(thousand)-		(no.)		-(thousand)-		(no.)
Walking	$265,779	$150,846	$19,344	2,683	$23,785	$18,215	$2,361	338
Biking	$132,202	$72,153	$9,884	1,309	$5,107	$3,482	$458	65
Snowmobile	$12,734	$8,180	$1,019	141	$169	$129	$16	2
ATV	$3,152	$1,642	$229	28	$267	$177	$24	3
Running	$47,019	$16,665	$2,215	271	$1,389	$1,015	$133	19
Horseback Riding	$5,937	$3,377	$426	53	$1,236	$823	$105	14
Cross Country Skiing	$9,980	$6,869	$708	113	$950	$768	$101	14
Inline skating	$12,132	$4,349	$578	71	$291	$211	$28	4
OHM	$947	$560	$76	10	$81	$57	$8	1
ORV	$165	$96	$13	2	$15	$10	$2	0
Total	$490,048	$264,737	$34,492	4,681	$33,289	$24,887	$3,236	461

Significant trail use by Metro area travelers

Metro area residents traveled extensively to trails in the northern and central regions. These travelers contributed up to 30 percent of the regions' trail use. The share of spending by these Metro area travelers was larger, because their average daily spending ($29 per day) was nearly three times larger than the average spending by the regions' residents ($10 per day).

Figure 15.2. Contribution of metro area residents to trail-user-days in various regions



South Region

Economic impacts of trail-related spending

Total trail spending in the south region was the second lowest among the regions at $370 million, or 15 percent of the state total. It was slightly lower than spending in the northwest region ($373 million). However, it was a close second to the central region in horseback riding ($14 million compared to $16 million in the central region), and third highest in ATV ($26 million compared to the central region at $30 million and the northwest region at $27 million).

The pattern of trip spending among trails in the South region was slightly different from statewide. Walking/hiking had a 50 percent share of total trails expenses, lower than the statewide average of 59 percent. But bike riding was more popular with a 24 percent share of spending, compared to 18 percent statewide. The other activities had similar relative contributions as the statewide average.

The total trails' spending of $370 million produced $357 million in local business output (total sales excluding imports of consumer goods and services but including indirect and induced effects among businesses), and $172 million in GRP. This GRP measured the net product of local businesses, representing their value added. It generated $24 million in state and local taxes. Some 5,000 jobs were supported by this trail spending.

New equipment purchases, storage and maintenance and related upkeep costs by residents added $167 million in spending. Most of this spending involved equipment, feed and other upkeep costs of horses ($112 million). The total spending of $533 million produced $517 million in local business output and $256 million in GRP. The economic impact of this spending was only 1.1 percent of the region's total GRP, but it was concentrated among communities and businesses near the trails. Indirect and induced impacts spilled over to the population and commercial centers of the region. The total impact on jobs, employee compensation and state and local revenues in the region were 7,000 jobs, $128 million and $35 million, respectively.

Table 16.1. Economic impacts of spending on trips and equipments, South region

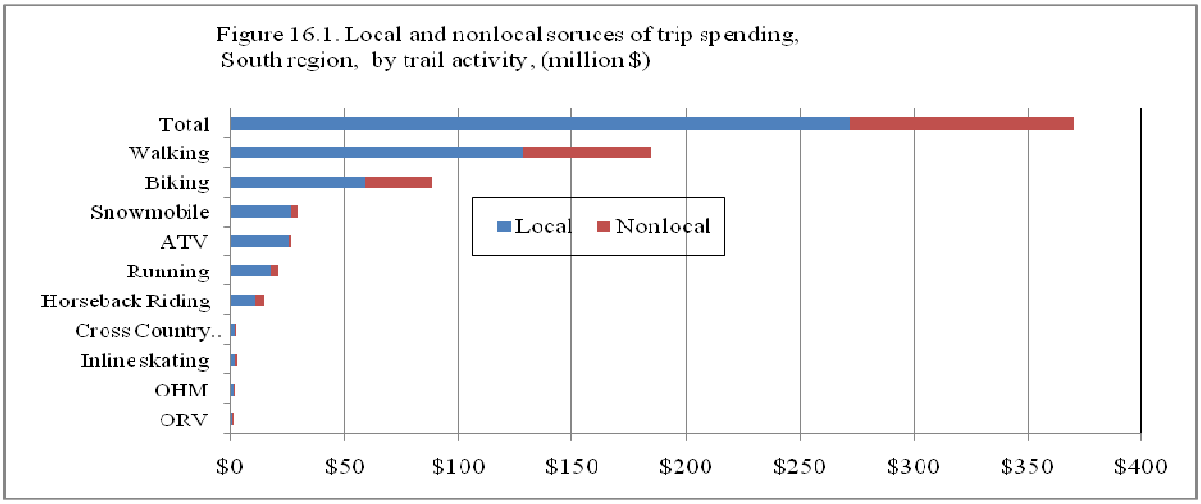
	Trip Spending	Gross Output	Gross Region Product	Employee Compensation	State and Local Taxes	Jobs
		-(thousand $)-				(no.)
Walking	$184,844	$185,517	$89,293	$48,663	$12,313	2,677
Biking	$88,156	$84,913	$41,400	$21,929	$5,981	1,228
Snowmobile	$29,140	$30,869	$14,786	$8,252	$1,990	411
ATV	$26,496	$22,711	$10,543	$5,619	$1,580	289
Running	$20,734	$14,103	$6,562	$3,662	$755	183
Horseback riding	$14,333	$12,684	$6,231	$3,467	$858	159
Cross-country skiing	$1,931	$2,007	$1,071	$634	$129	28
Inline skating	$2,678	$2,234	$1,062	$577	$150	32
OHM	$1,407	$1,502	$733	$370	$106	21

ORV	$642	$638	$303	$160	$44	8
Total	$370,360	$357,178	$171,984	$93,333	$23,906	5,033
	Equipment Spending	Gross Output	Gross Region Product	Employee Compensation	State and Local Taxes	Jobs
Walking	$4,279	$3,290	$1,909	$1,064	$342	45
Biking	$9,316	$7,252	$4,031	$2,205	$682	93
Snowmobile	$20,283	$17,110	$8,693	$4,686	$1,278	208
ATV	$12,674	$11,297	$5,664	$3,052	$814	135
Running	$6,686	$5,140	$2,982	$1,663	$534	70
Horseback riding	$111,727	$117,574	$62,241	$22,616	$7,969	1,451
Cross-country skiing	$967	$745	$427	$236	$75	10
Inline skating	N/A	N/A	N/A	N/A	N/A	N/A
OHM	$465	$371	$194	$104	$30	5
ORV	$824	$684	$347	$189	$51	8
Total	$167,221	$163,463	$86,488	$35,815	$11,775	2,025
Trips and Equipments	$537,581	$520,641	$258,472	$129,148	$35,681	7,058
2007 South region economy*		$58,683,000	$23,852,000	$12,818,000		

Note: * IMPLAN 2007 estimates.

Economic impacts of local and non-local sources of trail spending

Similar to the metro area, the region's residents accounted for most of the spending at the trails (73 percent). But relatively more visitors from other regions and out-of-state went to the walking/hiking trails (30 percent share of expenses) compared to the metro area (8 percent) and statewide (22 percent). Biking trails also had a larger share of visitor spending (33 percent share of expenses) compared to the Metro Area (4 percent) and statewide (13 percent). For the other trails, the percent contribution by visitors was similar to the metro area and statewide.



Some 23 million person-days spent by local walkers in the southern region were second highest among the regions, behind the Metro Area walkers' total of 52 million person-days. Low average spending during these short trips ($5 per person-day) produced $129 million in spending. In contrast, 5 million person-days of bicycle riding produced the next largest spending at $59 million by local trail users. Local snowmobilers ($26 million), ATV ($25 million), runners ($17 million), horseback riders ($11 million) and other trails users ($5 million) increased total spending by local users to $272 million.

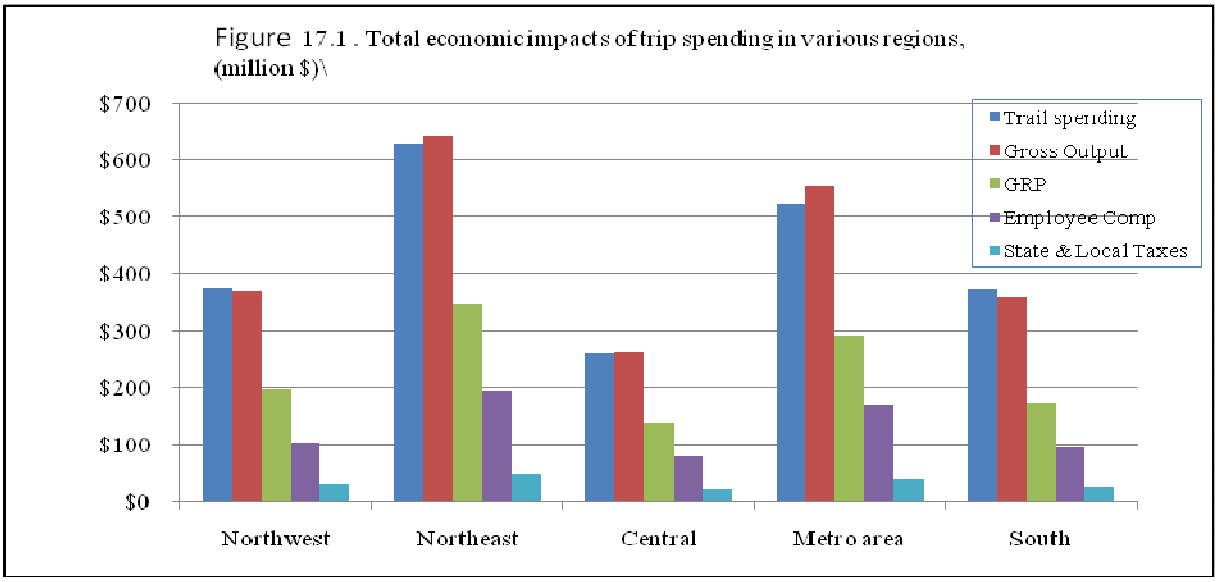
High import component of goods and services purchased by local trail users limited the GRP contribution to $115 million, or 42 percent of total spending. In contrast, higher local content of $98 million worth of goods and services purchased by nonlocal users or visitors produced $57 million in GRP (58 percent of total spending).

Table 16.2. Economic impacts of trip spending by residents and out-of-state visitors, South Region

	Local Trail Users				Non-Local Trail Users			
	Trip Spending	Gross State Product	State & Local Taxes	Jobs	Trip Spending	Gross State Product	State & Local Taxes	Jobs
		-(thousand)-		(no.)		-(thousand)-		(no.)
Walking	$128,551	$55,579	$7,672	1,606	$56,293	$33,714	$4,641	1,071
Biking	$59,343	$25,623	$3,764	729	$28,813	$15,777	$2,217	499
Snowmobile	$26,395	$13,124	$1,764	358	$2,744	$1,662	$226	53
ATV	$25,204	$9,879	$1,486	268	$1,291	$664	$94	21
Running	$17,058	$4,498	$647	117	$3,676	$2,064	$108	66
Horseback Riding	$10,887	$4,664	$633	114	$3,446	$1,567	$225	45
Cross Country Skiing	$1,446	$760	$85	18	$485	$311	$44	10
Inline skating	$1,692	$508	$73	14	$986	$554	$77	18
OHM	$832	$374	$54	10	$574	$359	$52	10
ORV	$490	$221	$32	6	$152	$82	$12	2
Total	$271,899	$115,230	$16,210	3,239	$98,461	$56,754	$7,696	1,795

Region Summary

With the highest spending in the most popular trails- walking/hiking trails and five other recreational trails in the state, the northeast region led in total trail spending ($628 million) and its economic impact on the region ($347 million in GRP). Visitors from the metro area, other Minnesota regions and out-of-state provided 73 percent of total trail spending ($455 million) and 77 percent of spending ($317 million) in the most popular- walking/hiking activity.



The northwest region also benefited greatly from visitors to local trails. Over one-half of the $373 million total trail spending and some 64 percent of the $247 million spending in walking/hiking trails came from the visitors. The central region obtained the same percentage contribution from visitors: one-half of the $258 million in total trail spending and 58 percent of the $135 million in walking/hiking expenditures.

In contrast, local residents accounted for nearly all of the trail spending in the metro area. Large numbers of local users offset the effect of low daytrip spending to produce the second highest trail spending among the regions ($523 million).

The south region followed the northwest region closely at $370 million in spending. Similar to the metro area, residents provided a large part of the spending (73 percent). Visitors contributed only 27 percent of spending, but they were a relatively larger group in walking/hiking and biking trails than visitors to the metro area and statewide.

Conclusion

This study took up the challenge of collecting and estimating trail use and spending for each of the 10 recreational trails in various regions of the state. Kelley used a variety of sources because trail data are not readily available at this level of detail. Three groups of trails dominated outdoor recreational participation. Walking/hiking was the most popular activity with nearly two of every three person-days at the trails (134 million-person-days). Bicycle riding and running followed with 27 to 30 million-person days. Inline skating, ATV and snowmobile formed another group with 4 to 6 million-person-days. The rest of the trails, cross-country skiing, horseback riding, ORV and OHM had each less than 2 million-days of use.

The importance of travelers to northeast region trails is highlighted by this study. The Running Marathon events in Duluth are popular not only among Metro Area runners, but it also draws numerous participants from other states and countries. Further, development of trails, access roads, highways, lodging places, amusement and shopping places and other investments by public entities and the local hospitality industry will attract more visitors that will bring in additional new monies to the region. Spending by metro area visitors to the northern trails may actually have small displacement effect in the home region because the trip purpose and duration (mini-vacation) may not directly affect the popular day trips in the metro area. Rather, the mini-vacation trips to other regions may infringe more on out-of-state vacation plans by metro area trail users.

In terms of local economic impact, the high proportion of visitor spending on lodging, meals, trail fees and access, amusement and casinos, and other consumer items produced locally meant a larger net impact on local businesses. In contrast, the high import content of groceries, snacks, gasoline and other items largely purchased by local users meant "leakage" of the spending stimulus out of the region.

Recommendation for further work

Visitors are important sources of new monies in the state, and they are prime advertising targets of tourism offices and hospitality industries of various cities and states. Yet, data are either scanty or too broad to make reasonable estimates of visitors that are attracted by the states' trails, lodging places and complementary amusement places. In this study, results for sample residents in a 2004 DNR survey that travelled to out-of-state venues were used as proxy for incoming visitors. It could be an untenable assumption, since the northeast region trails and other amenities are a big draw to neighboring states. At least, the out-of-state share of 7 percent of visitor days and 18 percent of total trail spending should be compared with other indicators or data sources.

REFERENCES

Aase, S. 2008. The number factory. *Twin Cities Business*. February 2008.

Buhr, B. 2004. *The Economic Value of Horses in Minnesota.* Department of Agricultural and Applied Economics, University of Minnesota, St. Paul, January 2004.

Davidson Peterson Associates (2009a). *The Profile of Travelers in Minnesota: June through May (2005-2006 and 2007-2008)*, Report prepared for Minnesota Office of Tourism, University of Minnesota Tourism Center and The Minnesota Arrowhead Association, The Minnesota Heartland Tourism Association, Southern Minnesota Tourism Association and Metro Tourism Committee, Kennebunk, Maine.

Davidson Peterson Associates (2009b). *The Profile of Travelers in Minnesota: Winter Season (2005-2006 and 2007-2008)*, Report prepared for Minnesota Office of Tourism, University of Minnesota Tourism Center and The Minnesota Arrowhead Association, The Minnesota Heartland Tourism Association, Southern Minnesota Tourism Association and Metro Tourism Committee, Kennebunk, Maine.

Davidson Peterson Associates (2009c). *The Economic Impact of Expenditures by Travelers on Minnesota's Northeast Region and the Profile of Travelers, June 2007-May 2008*, Report prepared for Minnesota Office of Tourism, University of Minnesota Tourism Center and The Minnesota Arrowhead Association, The Minnesota Heartland Tourism Association, Southern Minnesota Tourism Association and Metro Tourism Committee, Kennebunk, Maine.

English, D.B.K., Kocis, S.M., Zarnoch,S.J. & Arnold, J.R. (2002). *Forest Service National Visitor Monitoring Process: Research Method Documentation.* U.S. Department of Agriulture, Forest Service, Southern Research Station, Research Paper SRS-57, July 2002.

Goldberg, M.,Sinclair, K.C. & Milligan, M. (2004). *Job and Economic Development Impact (JEDI) Model: A User Friendly Tool to Calculate Economic Impacts from Wind Projects*, Conference paper presented at the 2004 Global Wind Power Conference, Chicago, Illinois, March 29-31, 2004.

Kelly. T. (2009a). Summer motorized activity trip-spending analysis. Personal communications, Office of Management and Budget Services, Minnesota Department of Natural Resources, May 2009.

Kelly. T. (2009b). Summer non-motorized activity trip-spending analysis. Personal

communications, Office of Management and Budget Services, Minnesota Department of Natural Resources, May 2009.

Kelly. T. (2009c). Winter activity trip-spending analysis. Personal communications, Office of Management and Budget Services, Minnesota Department of Natural Resources, Dec 2008.

Kelly, T. (2008). *2007 Minnesota State Parks Study, Research Summary Report.* Office of Management and Budget Services, Minnesota Department of Natural Resources, October 2008, St. Paul.

Kelly, T. (2005). *2004 Outdoor Recreation participation survey of Minnesotans: Report on Findings*, Office of Management and Budget Services, Minnesota Department of Natural Resources, St. Paul, Minnesota, 2005.

Kort, J.R. (2009). Letter to IMPLAN announcing selection as impact model for the USDA programs under the American Recovery and Reinvestment Act (ARRA) of 2009, April 9, 2009. http://implan.com/v3/index.php?option=com_content&view=article&id=264:implan-slutions-for-monitoring-job-creation&catid=110:dr-implans-blog&Itemid=169

Lindberg, K. & J. Loomis. (2009). *Economic impacts of non-motorized (quiet) recreation on the Wallowa-Whitman national forest*. Produced by the Central Oregon Recreation Services for The Wilderness Society, Bend, Oregon, March 11, 2009.

MIG, Inc. (2009a). *About us.* From http://implan.us/v3/index.php?option=com_content&view=category&layout=blog&id=83&itemid=136

MIG, Inc. (2009b). IMPLAN simulation report tables on output, conducted for this study, Summer 2009.

IMPLAN, Inc. (2008a). *Impact vs contribution analysis*. From http://implan.us/v3/index.php?option=com_content&view=article&id=201:impact-vs-contribution-analysis&catid=110:dr-implans-blog&itemid=169.

MIG, Inc. (2008b). *2007 IMPLAN data is now available*. Downloaded from IMPLAN, http://implan.com/index.php?option=com_content&task=view&id=232&Itemid=1

MIG, Inc. (2004). *IMPLAN Professional, Version 2.0 Social Accounting and Impact Analysis Software, User's Guide, Analysis Guide and Data Guide*. Stillwater, Minnesota, February 2004.

Minnesota Department of Natural Resources. 2009a. Forest Studies, 2004-2008, 3 reports available in www.dnr.state.mn.us/aboutdnr/reports/index.html

Minnesota Department of Natural Resources. 2009b. State Park Studies, 2001-2007, 10 reports available in www.dnr.state.mn.us/aboutdnr/reports/index.html

Minnesota Department of Natural Resources. 2009c. Trail Studies, 8 reports available in www.dnr.state.mn.us/aboutdnr/reports/index.html

Minnesota Department of Natural Resources. 2002. *Contributions of the Minnesota State Park System to State and Regional Economies,* Office of Management and Budget Services, St. Paul, August 2002.

Reeder, R. (2006). *Rural development strategies: amenity-based development.* Briefing Rooms, Economic Research Service, U.S. Department of Agriculture, July 17, 2009. Retrieved July 17, 2009, www.ers.usda.gov/Briefing/RuralDevelopment/AmenityBased.htm

Retzlaff. & Taylor D.T. (2006) *Assessing national forest recreation estimates using tourism and IMPLAN.* Paper presented at 37th Annual Conference of the Mid-Continent Regional Science Association, and 6th Biennial IMPLAN National Users' Conference, Indianapolis, Indiana, June 8- 10, 2006.

Schneider, I., Schuweiler, A., & Bipes, T. (2009). *Profile of Minnesota Recreational Trail users*. Report prepared for The Minnesota Recreational Trail Users Association, September 2009.

Schneider, I., Elisabeth, P., Salk, R., & Schoenecker, T. (2005). *Snowmobiling in Minnesota: an economic impact and consumer profile,* University of Minnesota Tourism Center, St. Paul, Minnesota, April 2005.

Starbuck, C.M., Berrens, R.P. &Mckee, M. (2006). Simulating changes in forest recreation demand and associated economic impacts due to fire and fuels management activities. *Forest Policy and Economics, 8 (2006).*

Stynes, D.J. & White, E.M. (2006). *Spending profiles for national forest recreation visitors by activity*. Report to USDA Forest Service, East Lansing, MI: Department of Park, Recreation and Tourism Resources, Michigan State University, February 1, 2006.

Stynes, D.J. 1999. *Approaches to estimating the economic impacts of tourism: some examples*. From http://web4.canr.msu.edu/MGM2/econ/

Stynes, D.J. 1997. *Economic impacts of tourism*. From http://web4.canr.msu.edu/MGM2/econ/

U.S. Forest Service. 2009a. *Forest Service Recreation Contributes to the National Economy*. From www.fs.fed.us/recreation/GDP_Recreation_Impacts.pdf

U.S. Forest Service.2009b. *For more detailed information on NVUM*, From www.fs.fed.us/recreation/programs/nvum/

Appendix A

Description of the IMPLAN Model

The Department of Employment and Economic Development leases the Minnesota IMPLAN Group, Inc (MIG, Inc) computer software and economic databases to build statewide and regional economic models for impact analysis. IMPLAN (Impact analysis for planning) started in the late 1970s as a mainframe computing tool at the U.S. Forest Service (USFS) to assess the economic impact of its activities. The USFS supported work at the Department of Agricultural and Applied Economics of the University of Minnesota (UM) in building economic databases for the computer model. With continuing support from the U.S. Forest Service, IMPLAN was enhanced by research studies and newer data in the field.

In 1993, the project was spun off as a private company (MIG, Inc) by UMN and USFS. It soon became a popular tool for impact analysis of recreational trail use and other rural development initiatives in the country side. It has been paired with the USFS National Visitor Use Monitoring (NVUM) procedure that creates sophisticated and credible estimates of trail use and visitor spending in national forests. Further, the USFS uses the model to estimate the contribution of its recreational programs to the national economy in terms of the portion of Gross Domestic Product that is sustained or maintained by visitor visits to the National Forest System (NFS) lands. In April 2009, the Economic Research Service, U.S. Department of Agriculture selected IMPLAN from among leading models in the nation to estimate the potential job creation impact of USDA programs under the American Recovery and Reinvestment Act (ARRA) of 2009 (Kort, J. 2009).

At the core of the model are procedures to derive a local input-output model by applying local demographic, economic and fiscal data to the latest available U.S. input-output model. For each local industry, this model describes the distribution of inputs purchased and outputs sold, labor inputs and compensation, imports and exports of finished products and materials, value added, and household and government demands and incomes. Based on the strength of these purchases, and given an outside stimulus such as increased demand for a product (the direct effect), the model estimates the indirect or "spin-off effects" among industries trading in producer goods, and "induced effects" among households providing labor and receiving incomes from these industries. Hence, the model estimates the total impact of a stimulus as it spreads through all local industries, households and government.

Although static in formulation and construction, frequent updates on federal and state data adjust the multipliers that determine the sizes of the indirect and induced impacts to current conditions. In addition, definitions, calculations and interpretations of economic variables are modified to stay current with conventions of the national accounts system. MIG, Inc research and development keeps abreast with innovations in the modeling field. Currently, the Regional Purchase Coefficients that describe the proportion of local demand supplied by local producers are being reformulated using a gravity model adapted from transportation research.

MIG, Inc provides comprehensive user support in its website (www.implan.com), on-site classroom workshops and travelling workshops. It holds biennial user conferences in

conjunction with the Mid-Continent Regional Association conferences. The research papers are published in the Conference Proceedings of the website.

The client list of MIG, Inc includes 25 federal agencies, 103 state agencies in 38 states (6 agencies in Minnesota), 266 universities and colleges, 82 local government entities and 110 private consulting businesses and non-profit organizations.

IMPLAN Clients as of November, 2009		Number
Federal Agencies		25
State Agencies		103
States	38	
Minnesota	6	
MN Department of Agriculture Marketing Section		
MN Dept of Employment and Econ Development		
MN Department of Natural Resources		
MN Economic Development Center		
MN Office of Legislative Auditor		
MN Pollution Control Agency		
Universities and Colleges		266
Local Government agencies		82
Private Consulting Companies and non-profit companies		110
Total Clients		586

Source:
http://implan.com/v3/index.php?option=com_content&view=category&layout=blog&id=141&Itemid=137

APPENDIX B

Minnesota Recreational Trail User Questionnaire

Greetings!

The University of Minnesota, in cooperation with the Minnesota Recreational Trail Users Association and Minnesota Department of Natural Resources, is interested in your recreational outdoor walking/hiking trail experiences. The information we get from this questionnaire will enhance the management of, and your experiences at, various trail areas across Minnesota.

We have selected a small number of walkers/hikers to share their views and therefore, every questionnaire is important. The enclosed survey should take just 15 minutes to complete. All the information you provide is completely voluntary, confidential, and anonymous. Once our mailing procedures are complete, your name will be removed.

If you have any questions or concerns about the survey, please feel free to phone me at 612.624.6719 or email me at bipe0002@umn.edu. Thank you in advance for your participation in this important project!

Sincerely,

Ingrid Schneider, Ph.D.
Project leader

Theresa Bipes
Graduate Research Assistant

First, a few questions about your outdoor walking/hiking.

1. What year did you begin recreational walking/hiking outdoors (fill in one)?

19____ OR 200____ __Can't remember

2. Including you, how many people in your household participated in the last 12 months in recreational walking/hiking outdoors ____ People

Of these people, how many are 20 or older? ____ People

3. Below is a list of possible reasons why people walk/hike outdoors. Please circle the appropriate number that indicates how important each reason is to you for walking/hiking outdoors.

	Very unimportant	Unimportant	Neither	Important	Very important
To be close to nature	1	2	3	4	5
To do something with my family	1	2	3	4	5
To be physically active	1	2	3	4	5
To be on my own	1	2	3	4	5
To test my skills & abilities	1	2	3	4	5
To be with members of my own group	1	2	3	4	5
To view the scenery	1	2	3	4	5
To get away from the usual demands of life	1	2	3	4	5
To explore and discover new things	1	2	3	4	5
To relax physically	1	2	3	4	5
To experience solitude	1	2	3	4	5
To challenge myself	1	2	3	4	5
To experience nature	1	2	3	4	5
To be with people who enjoy the same things I do	1	2	3	4	5
To be away from other people	1	2	3	4	5
To experience silence & quiet	1	2	3	4	5
To have thrills & excitement	1	2	3	4	5
To rest mentally	1	2	3	4	5
To enjoy different experiences from home	1	2	3	4	5
To get/keep physically fit	1	2	3	4	5

Now, some questions about your outdoor walking/hiking and related expenditures

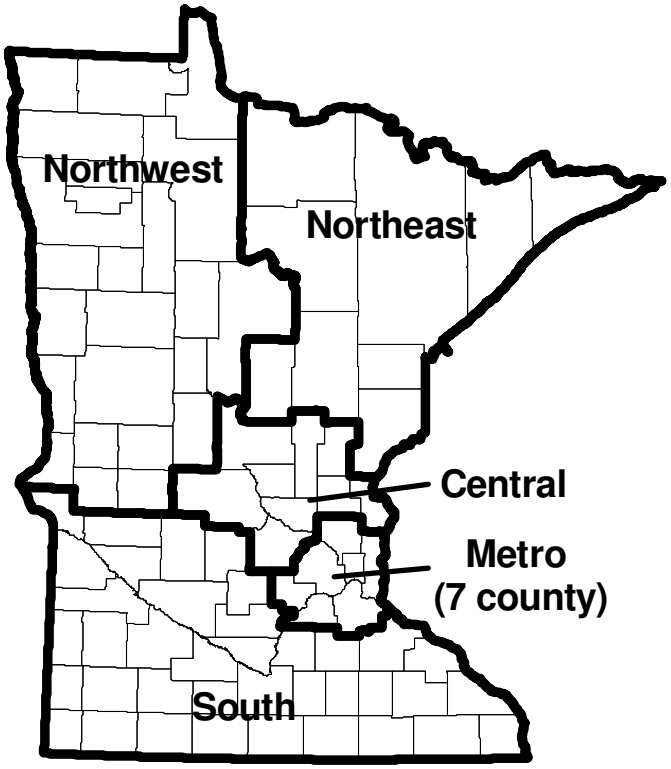
Experiences <u>within a 30-minute drive</u> of your primary home

4. How many days in the last 12 months did you walk/hike outdoors for recreation <u>within a 30-minute drive</u> of your primary home? ____ Days (if 0, go to question 12)

5. Of these days, how many were in each region?

___Northwest ___Northeast ___Central

___Metro ___Southern ___Outside MN (where?_____)



Now, think back to a recent walking/hiking trip that was <u>within a 30-minute drive</u> from your home, and answer the following questions about that trip.

6. How many <u>days</u> in duration was this trip (count part of a day as 1 day)? ____ Days

7. How many <u>miles</u> did you travel <u>one-way</u> from home on this trip? ____ Miles

8. In what region was the destination area for this trip (see map; check one)?

___Northwest ___Northeast ___Central
___Metro ___Southern ___Outside MN

9. On this recreational walking/hiking trip, how much money did you and your party spend? Please complete the table below for spending at home getting ready for the trip, while traveling to/from the area, and in the destination area where you walked/hiked outdoors. If you spent nothing on an item, please enter "0."

	At home spending (getting ready for trip)	Travel & destination area (to/from & in the area)
Lodging, including camping at a privately-owned campground		
Grocery or convenience store food & drink		
Restaurant/bar meals & drinks	NA	
Gasoline or other fuels		
Other transportation related costs		
Recreational equipment purchases (including sporting goods)		
Payments to public agencies (licenses, entrance fees, etc.)		
Entertainment (including casinos)		
Shopping		
Other (please specify)		
TOTAL		

10. How many people were covered by these expenditures? _____ People

11. Of these people, how many were under 20 years of age? _____ People under 20 years

Experiences more than a 30-minute drive from your primary home

12. How many days in the last 12 months did you walk/hike outdoors more than a 30-minute drive from your primary home? ____ Days (if 0, go to question 20)

13. Of these days, how many were in each region (see map on adjacent page)?

___Northwest ___Northeast ___Central

___Metro ___Southern ___Outside MN (where?_____)

Now, think back to a recent outdoor walking/hiking trip that was more than a 30-minute drive from your home, and answer the following questions about that trip.

14. How many days in duration was this trip (count part of a day as 1 day)? ____ Days

15. How many miles did you travel one-way from home on this trip? ____ Miles

16. In what region was the destination area for this trip (see map on adjacent page; check one)?

___Northwest ___Northeast ___Central
___Metro ___Southern ___Outside MN

17. On this recreational outdoor walking/hiking trip, how much money did you and your party spend? Please complete the table below for spending at home getting ready for the trip, while traveling to/from the area, and in the destination area where you walked/hiked outdoors. If you spent nothing on an item, please enter "0."

	At home spending (getting ready for trip)	**Travel & destination area (to/from & in area)**
Lodging, including camping at a privately-owned campground		
Grocery or convenience store food & drink		
Restaurant/bar meals & drinks	**NA**	
Gasoline or other fuels		
Other transportation related costs		
Recreational equipment purchases (including sporting goods)		
Payments to public agencies (licenses, entrance fees, etc.)		
Entertainment (including casinos)		
Shopping		
Other (please specify)		
TOTAL		

18. How many people were covered by these expenditures? ____ People

19. Of these people, how many were under 20 years of age? _____Under 20 years

20. Beyond travel and expenses covered above, what were your household's expenses in the last 12 months for walking/hiking outdoors? If you spent nothing on an item, enter "0."

	Expenses in last 12 months
Purchase of new equipment	$
Purchase of previously owned equipment	$
Other (explain)	$

Now, some questions about your trail experiences.

21. When walking/hiking outdoors on a trail, how often do you observe each of the following?

	Never	Sometimes	Many times	Almost always	Don't know
Rude or discourteous users	0	1	2	3	DK
Others not yielding	0	1	2	3	DK
Others passing too closely	0	1	2	3	DK
Others out of control	0	1	2	3	DK
Others going too fast	0	1	2	3	DK
Litter on or near the trail	0	1	2	3	DK
Seeing off trail/road use	0	1	2	3	DK
Seeing evidence of off trail/road use (erosion, marks, etc.)	0	1	2	3	DK
Too many other users on the trail	0	1	2	3	DK
Hearing other users on the trail	0	1	2	3	DK
Accessibility issue	0	1	2	3	DK
Other (explain)	0	1	2	3	DK

22. Which of these interferes <u>the most</u> with your trails experience (check <u>one</u>)?

___Rude or discourteous users
___Others not yielding
___Others passing too closely
___Others out of control
___Others riding too fast
___Accessiblity Issue
___Seeing evidence of off
___Seeing off trail/road use
___Too many other users on the trail
___Hearing other users on the trail
___Litter on/near the trail
___Other (explain: _____ _____)
___Nothing interferes most
(Go to Question 27)

23. Was this interference in #22 with other walkers/hikers (circle one)? Yes No
Please share any details or comments on this interference.

24. Was this interference in #22 stressful (circle one)? Yes No

25. Indicate how much you agree with the following statements about what interferes <u>the most</u> with your walking/hiking experience on trails.

	Strongly disagree	Disagree	Unsure	Agree	Strongly Agree
I can change or do something about it	1	2	3	4	5
I have to accept it as it is	1	2	3	4	5
I have to hold back from acting	1	2	3	4	5
I need to know more before acting	1	2	3	4	5

26. When this most interfering experience happens, how often do you use the following responses?

	Do not use	Use infrequently	Use occasionally	Use frequently
Follow establish rules for trail etiquette	0	1	2	3
Talk to other members of my group about the incident	0	1	2	3
Wish the situation would go away or be over with	0	1	2	3
Think about why the incident occurred	0	1	2	3
Don't let it get to me; refuse to think about it too much	0	1	2	3
Try to forget the whole thing	0	1	2	3
Go on as if nothing had happened	0	1	2	3
Refuse to get too serious about it	0	1	2	3
Stand my ground and fight for what I wanted	0	1	2	3
I try to keep my feelings to myself	0	1	2	3
I know what has to be done so I double my efforts to make things work	0	1	2	3
Express anger to the person who caused the incident	0	1	2	3
I make a plan of action and follow it	0	1	2	3
Try not to burn bridges	0	1	2	3
Make light of the situation	0	1	2	3
Keep others from knowing how bad things were	0	1	2	3
Talk to area personnel about the incident	0	1	2	3
Come up with a couple of different solutions	0	1	2	3
Plan to avoid the area on my next visit	0	1	2	3
Leave the area and go to a different part of the area	0	1	2	3
Try to get the person responsible to change their mind	0	1	2	3
Leave the area altogether	0	1	2	3
Change the time I will walk/hike next	0	1	2	3

time				
Alter my pace to avoid others	0	1	2	3

Finally, a few questions about you.

27. Are you…? ___ Male or ___ Female

28. What year were you born? 19_____

29. What is the highest level of education you have completed (check one)?

___ Some high school
___ Graduated high school/GED
___ Some votech
___ Graduated from votech or completed associate degree
___ Some college
___ Graduated from college
___ Some postgraduate
___ Postgraduate degree(s)

30. In what ethnicity and race would you place yourself?

Ethnicity (check one): ____ Hispanic or Latino

Race (check all that apply):

31. Including you, how many adults, teens, and children live in your household?

____ Adults (18+) ____ Teens (13 to 17 years) ____ Children (12 or under)

32. What is your annual household income before taxes (check one)?

____ LESS THAN $25,000
____ $25,000-34,999
____ $35,000-49,999
____ $50,000-74,999
____ $75,000-99,999
____ $100,000 -124,999
____$125,000-149,999
____$150,000-174,999
____$175,000 OR MORE

Please mail the completed questionnaire back in the postage-paid envelope provided.

THANK YOU FOR YOUR PARTICIPATION!

If you want more information about this study, contact Dr. Ingrid Schneider,
115 Green Hall, 1530 Cleveland Avenue North, St. Paul, MN 55108-1027;
612-624-2250; ingridss@umn.edu.