

Economic Impacts of Michigan Downhill Skiers and Snowboarders, 2000-01¹

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INTRODUCTION

Michigan's downhill ski areas serve an important segment of Michigan's travel market and contribute to state and local economies. The purpose of this study is to estimate spending patterns of downhill ski area visitors and to estimate the overall economic impact on the state. Spending profiles will be used in the state's tourism economic impact model (MITEIM) to evaluate state and local impacts of ski area development and marketing actions. Statewide spending estimates for skiers can also be compared with overall tourist spending and other vertical markets to assess downhill skiing's relative share of Michigan's travel market.

Tourism spending is defined to include all spending by travelers on trips of 60 miles or more away from home. Recent estimates put overall Michigan travel spending at about \$11.3 billion in 2000. Excluding about \$3.3 billion in air transportation, tourists spent about \$8 billion in the state in 2000. Studies have been conducted to measure spending and the economic importance of a number of Michigan travel market segments. For example, snowmobilers spent \$110 million on trips to Michigan destinations in 1996-97 (Stynes, Nelson and Lynch, 1998), boaters spent \$300 million in 1998, and golfers spent \$300 million in 2000 (Stynes, Talhelm and Sun 2000). These studies have all used a common approach to assure some consistency in the estimates. These figures only include spending on trips of 60 miles or more (one-way) away from home. They do not include major purchases of equipment, at-home expenses, or spending on local trips.

The SABRES report prepared from the 1994/95 National Skier/Boarder Survey (Leisure Trends Group, 1995) estimated that skiers spent \$267 million in Michigan during the 1994-95 season. This estimate was based on 2 million skier visits and included \$52 million in at home expenses. Skier spending profiles were estimated from a survey of 1,600 adult skiers at Michigan resorts. The study estimated spending per skier per day to be \$114.60. A third of the sample were from out-of-state and 52% were staying overnight on the trip. As skier visits and spending patterns vary widely across ski resorts, reliable estimates are difficult to obtain. The National Ski Areas Association publishes annual estimates at the regional level. Skier visits, while fluctuating with snow conditions, have been relatively flat nationally and declined some in the Midwest region since 1993-94. NSAA estimated 6.4 million skier visits in 1999-2000 for the Midwest region (NSAA, 2000).

The objectives of this study are to:

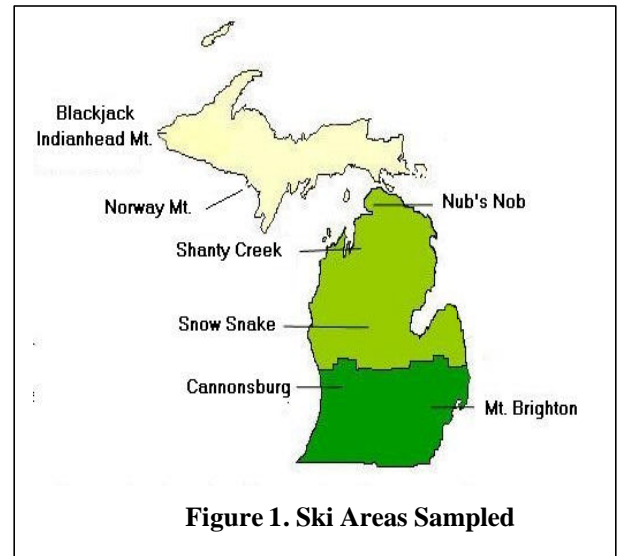
1. Estimate trip spending patterns for Michigan downhill skiers and snowboarders. Spending averages for distinct skier segments will be used in the state economic impact model to estimate economic impacts of ski area development and marketing actions.
2. Estimate the overall economic contribution of Michigan's downhill ski areas to state and local economies.
3. Determine downhill skiing's share of Michigan travel spending.

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METHODS

Two surveys were conducted, one of skiers to estimate trip spending patterns and another of ski area managers to measure the overall volume of ski activity. Skier trip spending is converted to a per skier visit basis and then multiplied by regional and statewide skier visits to estimate total trip spending. Total spending is then applied to an input-output model of the Michigan economy to estimate economic impacts in terms of sales, income, jobs and value added.

Skier Survey: A regionally stratified sample of skiers at selected Michigan downhill ski areas was conducted during the 2000-01 ski season to measure trip spending. The state was divided into three regions. Three ski areas were chosen in each of the two northern regions; two ski areas covered southern Michigan. Skiers were contacted on site on randomly selected weekend dates in January, February and March, 2001. Skiers were given the option of providing an e-mail address to complete the survey on-line, a mailing address to which the survey would be sent, or skiers could take a mailback survey with them. The survey measured basic trip and party characteristics and spending during the trip, both at the ski resort and in the local region. A total of 821 skiers were contacted and responses were received from 488 (Table 1). Six of ten skiers chose the e-mail/on line option for completing the survey. These skiers were sent an e-mail message directing them to a website where they could complete the survey on-line. Four of ten skiers chose the more traditional mailback option. Response rates were slightly higher for the e-mail sample (62% vs 56%).



Ski Area Manager Survey: To expand spending measured in the sample of skiers to all trips to Michigan downhill ski areas, an end-of-season survey was sent in April to all Michigan downhill ski areas. This survey requested the number of skier visits, a brief profile of skiers, and employment and revenue information for the ski area. Responses were received from only 13 of 42 Michigan ski areas. Follow-up contacts were made by the Michigan Ski Industry Association in an attempt to increase the response rate. However, many ski areas were reluctant to provide the requested information even on a confidential basis. As the number of skier visits was critical to deriving a statewide estimate, we employed a simple model to predict skier visits for each of Michigan's 42 areas. A linear regression model based on lift capacity (VTF) of each area was estimated to predict skier visits for areas that did not report. Total skier visits for the 2000-01 season were estimated at 2.2 million.

Analysis: Skier trips were segmented into four types to explain spending patterns: local trips, day trips of 60 miles or more, overnight stays in motels, and overnight stays with friends, relatives or an owned seasonal home. Spending averages per party trip, per party night and per skier visit were computed from the sample. The per skier visit spending averages were imported into the MITEIM model where they were multiplied by skier visits by each segment. Total skier spending is applied to economic ratios and multipliers for the Michigan economy based on a 1998 input-output model estimated with the IMPLAN system (MIG, Inc., 1999).

Table 1. Skier Trip Sample by Ski Area and Response Mode

Region/ Ski Resort	Skiers Contacted			Responses			Response Rate		
	On-line	Mail	Total	On-line	Mail	Total	On-line	Mail	Total
Upper Peninsula									
Blackjack	71	40	111	44	21	65	62%	53%	59%
Indianhead	28	24	52	15	14	29	54%	58%	56%
Norway Mountain	<u>110</u>	<u>69</u>	<u>179</u>	<u>74</u>	<u>39</u>	<u>113</u>	<u>67%</u>	<u>57%</u>	<u>63%</u>
UP Total	209	133	342	133	74	207	64%	56%	61%
Northern Lower Peninsula									
Nub's Nob	56	44	100	34	25	59	61%	57%	59%
Shanty Creek	60	39	99	36	17	53	60%	44%	54%
Snow Snake	<u>56</u>	<u>40</u>	<u>96</u>	<u>34</u>	<u>27</u>	<u>61</u>	<u>61%</u>	<u>68%</u>	<u>64%</u>
NLP Total	172	123	295	104	69	173	60%	56%	59%
Southern Lower Peninsula									
Cannonsburg	65	35	100	42	20	62	65%	57%	62%
Mt. Brighton	<u>57</u>	<u>27</u>	<u>84</u>	<u>32</u>	<u>14</u>	<u>46</u>	<u>56%</u>	<u>52%</u>	<u>55%</u>
SLP Total	122	62	184	74	34	108	61%	55%	59%
Grand Total	503	318	821	311	177	488	62%^b	56%	59%

a. Skiers choosing the On-line approach provided an e-mail address and completed the survey online. The Mail sub-sample either provided a mailing address to which a questionnaire was sent or took a mailback survey with them.

b. The on-line response rate is 67% if we exclude 42 non-working e-mail addresses.

SURVEY RESULTS

Skier Characteristics

Characteristics of the sample of skier trips are similar to the SABRES study. We estimate that about two thirds of skiers are Michigan residents and 16% are from Wisconsin. About half of the adult skiers are 36-45 years of age, a third are under 36 and 19% are over 45 (Table 2). About 37% of skier households include at least one child (under 18) and a similar percentage of skier parties include children. The median household income for Michigan skiers in 2000 was about \$80,000, with 21% earning under \$50,000, and 35% earning over \$100,000. Fifteen percent of skiers own a seasonal home in Michigan. Twenty-three percent of the sample reported some snowboarding this winter, compared to only five percent cross country skiing. About ten percent are primarily snowboarders. As a percentage of activity at downhill ski areas, skiers report 87% downhill skiing and 13% snowboarding.

Table 2. Sample Characteristics^a

	Percent (%)
State of Residence	
Michigan	60%
Illinois	4%
Indiana	2%
Ohio	2%
Wisconsin ^b	28%
Ontario, Canada	1%
Other	4%
Household Income	
Below \$25,000	4%
\$25,000-\$49,999	17%
\$50,000-\$74,999	25%
\$75,000-\$99,999	20%
\$100,000-\$149,999	22%
Above \$150,000	13%
Age	
Under 25	16%
26-35	17%
36-45	49%
46-55	9%
55 or Over	10%
Household size (average)	
Adults	2.1
Children (under 18)	1.3
Total	3.4
Own a seasonal home in MI	
Yes	15%
Ski Activity	
Downhill Skiing	86%
Snowboarding	13%
Cross country skiing	1%

a. The sample is of skier visits rather than skiers and will therefore give more weight to those who ski more days.

b. The Wisconsin percentage is biased upward by a larger than average sample at Norway Mt. Similarly, Illinois, Ohio and Indiana will be underestimated due to lower than average sample in southern Michigan. When adjusted for this bias, percentages are similar to the SABRES study with about 67% of skiers from Michigan and 16% from Wisconsin.

Michigan Ski Trip Characteristics

Skiing or snowboarding was the primary purpose of the trip for 92% of the skiers (Table 3). Just over half of the skiers were on overnight trips (54%) averaging 2.4 nights away from home. Lodging types for skiers on overnight trips were divided about a third each to skiers staying at the ski resort itself, those staying in a motel or condo in the local area, and skiers staying in a private home (an owned seasonal home or with friends and relatives). Ten percent of skiers were in groups of more than ten people. The most common party sizes were four (22%), two (20%) and three (15%).

Table 3. Characteristics of the ski trip

	Pct
Primary Reason for the trip	
Skiing/Snowboarding	92%
General vacation or weekend trip	5%
Visiting friends or relatives in the area	2%
Business or other reasons	1%
Day or overnight trip	
Day trip	54%
Overnight trip	46%
Lodging type	
Day Visitor	54%
Hotel at the ski resort	13%
Hotel in the area	16%
Seasonal home	9%
VFR	8%
Length of Stay (nights)	
1	18%
2	46%
3	25%
4	7%
5+	4%
Party Size	
1	6%
2	20%
3	15%
4	22%
5	11%
6-10	16%
>10	10%

Skier Visit Segments

Skier visits were segmented into four lodging types which help explain spending patterns (Table 4). "Locals" are skiers who live within 60 miles of the ski area. They constitute almost 30% of skier visits, many using season passes. The "Day Trip" segment are skiers who travel more than 60 miles to the ski area and do not stay overnight in the area (27%). Skiers on overnight trips are divided between a "Motel" (27%) and "VFR/SH" (17%) segment. The Motel segment includes skiers staying at the ski resort or a motel, condo, or other commercial lodging in the area. The VFR/SH Segment is composed of skiers staying in an owned seasonal home/condo or with friends or relatives in the area. The sampling scheme was successful in obtaining a reasonably even distribution across the four segments.

Table 4. Skier Trip Segments^a

Segment	N	Pct ^b
Local	121	29%
Day Trip	114	27%
Motel	113	27%
<u>VFR/SH</u>	<u>70</u>	<u>17%</u>
Total	418	100%

a. Skiers in groups of more than 10 people are excluded.

b. The sample segment shares vary somewhat from population estimates in Table 10, where a higher percentage of day trips are classified as local.

An important factor in estimating spending is clarifying the spending unit. Skiers were asked to report the number of members of their party for whom they covered expenses. The average group party size was 5.6, while the average spending party size was 3.0 (Table 5). Locals and skiers on day trips averaged around 2.75 skier visits per spending party compared to about 7 skier visits for skiers on overnight trips.

Table 5. Party size, Length of Stay, and Skier Visits by Segment

	Local	Day Trip	Motel	VFR/SH	Total
Party Size ^a	3.2	6.9	7.2	5.2	5.6
Length of Stay (days/nights)	1.0	1.0	2.3	2.5	1.6
Spending Party Size	2.8	2.7	3.1	3.4	3.0
Skier Visits of Spending party	2.8	2.7	7.2	7.0	5.0

a. Excludes large groups.

Skier Trip Spending

Skiers were asked to report all spending at the ski resort and within 60 miles of the ski area for all members of their spending party. Spending was itemized in 12 categories. Large groups with more than 7 persons in the spending party were excluded from the analysis (42 cases). An average travel party consisted of 5.6 people, with 3 people as the average spending unit.

Spending averages are first reported on a per spending party trip basis (the unit in which they were measured) and then converted to a per party-night, and per skier visit basis. The latter is used to estimate total spending by multiplying skier visits by average spending per skier visit. Spending on ski packages was apportioned to lift tickets, equipment rental, lodging and meals according to the packages purchased. An "equivalent" lift ticket price per day of \$20 for adults and \$12 for children was added for skiers using season passes.

A typical skier spending unit of 3 people spent \$335 per trip divided 72% at the ski resort and 28% in the local area (Table 6). Sixty percent of the on-site expenses were for skiing (including lift tickets, equipment rental and lessons). Overall, about forty-five percent of spending was for skiing, 20% for restaurants, and 17% each for lodging and other items. Skiers staying overnight in motels and related lodging spent \$812 during their stay compared to \$135 per party for visitors on day trips. Visitors staying in owned seasonal homes or with friends and relatives averaged \$400 per trip, but only slightly more than day visitors on a per night basis.

Table 6. Michigan Skier Spending by Segment (\$ per party per trip)

	Local	Day Trip	Motel	VFR/SH	Total	Pct.
Spending at Ski Resort						
Lift tickets	53.11	54.16	195.03	137.67	107.76	32%
Equipment rental	15.81	19.70	42.70	34.97	29.28	9%
Lessons	6.40	3.24	9.76	11.29	8.62	3%
Lodging	4.22	-	139.86	-	29.17	9%
Restaurant/Bar	24.03	23.41	79.24	47.06	44.39	13%
Groceries	3.10	5.15	10.56	22.10	8.87	3%
Recreation/Entertainment	0.48	0.75	5.59	2.00	1.89	1%
<u>Other Retail</u>	<u>3.93</u>	<u>4.07</u>	<u>24.29</u>	<u>12.44</u>	<u>10.20</u>	<u>3%</u>
On-Site Total	111.08	110.47	507.03	267.54	240.19	72%
Spending in Local Area						
Equipment rental	0.17	-	7.71	8.72	2.91	1%
Lodging	-	-	139.29	-	26.36	8%
Restaurant/Bar	4.52	4.31	70.43	36.43	23.07	7%
Groceries	2.71	1.84	24.20	28.48	11.22	3%
Gas & Oil	7.78	15.08	40.98	44.96	24.00	7%
Other auto	0.08	0.19	0.70	1.71	0.50	0%
Local transp.	0.09	-	0.32	-	0.12	0%
Recreation/Entertainment	0.04	-	5.34	5.20	1.84	1%
<u>Other Retail</u>	<u>0.14</u>	<u>2.75</u>	<u>15.75</u>	<u>5.96</u>	<u>4.78</u>	<u>1%</u>
Local Area Total	15.53	24.18	304.72	131.46	94.79	28%
Grand Total	126.61	134.65	811.75	399.00	334.97	100%

Spending figures are converted to a per party-night and per skier visit basis in Tables 7 and 8, respectively. The party night is the preferred unit in the MITEIM model, however, in this case our best estimate of volume of activity is skier visits. Skiers staying in motels average \$354 per night, compared to \$125 for locals, \$135 for day trips of more than 60 miles and \$157 for overnight visitors staying in a seasonal home or with friends or relatives. Summing lodging expenses at the resort and in the local area for the Motel segment yields an average room rate of about \$120 per night.²

² If one takes into account that some parties may rent multiple rooms, the per night room rate will be slightly lower.

As we will use skier visits as the basis for expanding spending from the sample to state and regional totals, spending was put on a skier visit basis by dividing spending per trip (Table 6) by the number of skier visits per spending party in Table 5.

Table 7. Michigan Skier Spending by Segment (\$ per party per night)

	Local	Day Trip	Motel	VFR/SH	Total
Spending at Ski Resort					
Lift tickets	52.25	54.16	85.09	54.14	66.83
Equipment rental	15.55	19.70	18.63	13.75	18.16
Lessons	6.30	3.24	4.26	4.44	5.35
Lodging	4.15	-	61.02	-	18.09
Restaurant/Bar	23.64	23.41	34.57	18.51	27.53
Groceries	3.05	5.15	4.61	8.69	5.50
Recreation/Entertainment	0.47	0.75	2.44	0.79	1.17
<u>Other Retail</u>	<u>3.87</u>	<u>4.07</u>	<u>10.60</u>	<u>4.89</u>	<u>6.33</u>
On-Site Total	109.27	110.47	221.21	105.21	148.96
Spending in Local Area					
Equipment rental	0.17	-	3.37	3.43	1.80
Lodging	-	-	60.77	-	16.35
Restaurant/Bar	4.45	4.31	30.73	14.33	14.31
Groceries	2.66	1.84	10.56	11.20	6.96
Gas & Oil	7.65	15.08	17.88	17.68	14.88
Other auto	0.08	0.19	0.31	0.67	0.31
Local transp.	0.09	-	0.14	-	0.07
Recreation/Entertainment	0.04	-	2.33	2.05	1.14
<u>Other Retail</u>	<u>0.14</u>	<u>2.75</u>	<u>6.87</u>	<u>2.34</u>	<u>2.97</u>
Local Area Total	15.28	24.18	132.95	51.70	58.78
Grand Total	124.55	134.65	354.16	156.91	207.74

Skiers spent \$67 on a per skier visit basis, \$112 if staying in a motel, \$45 for locals, \$50 for non-local day trips and \$57 for the VFR/SH segment (Table 8). The average lift ticket cost comes to about \$27 for skiers staying in motels and \$20 for the other three segments. This represents a mix of adult and children's rates, full and half day tickets, complimentary passes, and an "equivalent" amount for skiers on discount packages, multi-area passes and season passes³.

Spending averages for the day trip and motel segments in the Northern Lower Peninsula were adjusted somewhat to reflect higher lift ticket rates and distances to markets in this region (Table 9). Otherwise, differences in the segment shares explain variations in skier spending across the three regions.

³ The per day lift ticket equivalents used were \$20 per day for adult season passes, \$12 for children, 50% of the costs of ski packages that did not include lodging and 30% of overnight packages.

Table 8. Michigan Skier Spending by Segment (\$ per skier visit)

	Local	Day Trip	Motel	VFR/SH	Total ^a
Spending at Ski Resort					
Lift tickets	18.88	20.11	26.91	19.67	21.43
Equipment rental	5.62	7.31	5.89	5.00	5.82
Lessons	2.28	1.20	1.35	1.61	1.71
Lodging	1.50	-	19.30	-	5.80
Restaurant/Bar	8.54	8.69	10.93	6.72	8.83
Groceries	1.10	1.91	1.46	3.16	1.76
Recreation/Entertainment	0.17	0.28	0.77	0.29	0.38
<u>Other Retail</u>	<u>1.40</u>	<u>1.51</u>	<u>3.35</u>	<u>1.78</u>	<u>2.03</u>
On-Site Total	39.48	41.02	69.96	38.22	47.76
Spending in Local Area					
Equipment rental	0.06	-	1.06	1.25	0.58
Lodging	-	-	19.22	-	5.24
Restaurant/Bar	1.61	1.60	9.72	5.20	4.59
Groceries	0.96	0.68	3.34	4.07	2.23
Gas & Oil	2.76	5.60	5.65	6.42	4.77
Other auto	0.03	0.07	0.10	0.24	0.10
Local transp.	0.03	-	0.04	-	0.02
Recreation/Entertainment	0.01	-	0.74	0.74	0.36
<u>Other Retail</u>	<u>0.05</u>	<u>1.02</u>	<u>2.17</u>	<u>0.85</u>	<u>0.95</u>
Local Area Total	5.52	8.98	42.04	18.78	18.85
Grand Total	45.00	50.00	112.00	57.00	66.61

a. Weighted average of segment spending columns using skier visit shares as weights.

b. Standard errors for the per visit spending averages are 5% of the mean overall and less than 10% for individual segments.

Table 9. Average Spending per Skier Visit by Region and Segment

	Local	Day Trip	Motel	VFR/SH	Total
Southern Lower	45	48	95	57	47.15
Northern Lower	45	55	120	57	80.20
<u>Upper Peninsula</u>	<u>45</u>	<u>48</u>	<u>95</u>	<u>57</u>	<u>71.10</u>
State Total	45	50	112	57	66.61

Skier Visits

The National Ski Areas Association (NSAA) defines a skier visit as any individual skiing (or snowboarding) at a ski area for any part of a day. This includes skiers on full-day, half-day, season or complimentary passes.⁴ Skier visits are the units that we use to expand spending from our sample to all skiers either at a single area, all ski areas within a designated region, or statewide. Reliable estimates of skier visits for Michigan ski areas are not available. The SABRES study (Leisure Trends Group, 1995) used a round figure of 2 million skier visits in 1994-95. Only 13 Michigan ski areas provided estimates of skier visits for the 2000-01 winter season and these could not be assumed to be representative of ski areas statewide. The 2000-01 season was one of the best in recent years for Michigan with significant early snowfall.

Using data from the 13 Michigan ski areas that provided visit estimates for 2000-01, a simple linear regression model was estimated to predict skier visits based on lift capacity at each area (VTF). The model explained 75% of the variation in skier visits for the 13 reporting areas. The model was applied to the remaining 27 areas to predict skier visits at each area. Summing the predictions across all ski areas, we estimate there were about 2.2 million skier visits in Michigan in 2000-01, divided 36% to southern lower Peninsula ski areas, 45% to northern lower peninsula and 18% to the Upper Peninsula.

As spending varies considerably across the four skier segments (particularly between the motel segment and the other three), we also estimated the distribution of skier visits across the four segments in each region. The segment shares are based on the skier sample, reported shares by 13 ski area managers for their facility, and some judgment. The motel shares are the most critical for estimating spending. We estimate that 2.5% of skier visits in the SLP involve an overnight stay in commercial lodging. Corresponding "MOTEL" shares are 40% for the NLP and 45% in the UP. The estimated 2.2 million skier visits in Michigan in 2000-01 were allocated to the four segments using these percentages (Table 10).

Locals account for 36% of skier visits statewide, followed by Motel (27%), VFR/SH (21%) and day trip segments (15%). Segment shares vary considerably by region with skiers mostly locals or on day trips at southern Michigan ski areas and 70-75% of skiers on overnight trips at northern resorts.

Table 10. Distribution of Skier Visits by Region and Skier Segment

	Local	Day Trip	Motel	VFR/SH	Total
Skier Visits					
Southern Lower	600,000	160,000	20,000	20,000	800,000
Northern Lower	150,000	100,000	400,000	350,000	1,000,000
Upper Peninsula	<u>40,000</u>	<u>80,000</u>	<u>180,000</u>	<u>100,000</u>	<u>400,000</u>
State Total	790,000	340,000	600,000	470,000	2,200,000
Percent					
Southern Lower	75%	20%	2.5%	2.5%	100%
Northern Lower	15%	10%	40%	35%	100%
Upper Peninsula	<u>10%</u>	<u>20%</u>	<u>45%</u>	<u>25%</u>	<u>100%</u>
State Total	36%	15%	27%	21%	100%

⁴ We excluded skiing by ski area employees.

Total Skier Trip Spending

Total skier spending by region and segment may now be estimated by multiplying the spending averages (per skier visit) for each segment (Table 9) by the number of skier visits (Table 10). Total skier spending in 2000-01 is estimated to be \$146 million (Table 11). This includes all spending by skiers within 60 miles of the ski area, while on trips. The motel segment accounts for 46% of this spending. The "VFR/SH" segment accounts for 21% of skier visits and 18% of trip spending. Local skiers account for 36% of skier visits and 24% of spending.

Table 11. Total Skier Spending by Segment and Region (\$Millions)

	Local	Day Trip	Motel	VFR/SH	Total	Pct
Southern Lower	27.0	7.7	1.9	1.1	37.7	26%
Northern Lower	6.8	5.5	48.0	20.0	80.2	55%
<u>Upper Peninsula</u>	<u>1.8</u>	<u>3.8</u>	<u>17.1</u>	<u>5.7</u>	<u>28.4</u>	<u>19%</u>
State Total	35.6	17.0	67.0	26.8	146.4	100%
Percent	24%	12%	46%	18%	100%	

Regionally, \$80.2 million (55%) of skier trip spending accrues to the NLP, \$37.7 million (26%) to SLP, and \$28.4 million (19%) to the UP. If we omit spending by local skiers (not counted as "tourism"), total skier spending on trips in 2000-01 was \$110 million. This is the same amount estimated for Michigan snowmobilers in 1996/97 (Stynes et. al. 1998).

Comparisons with SABRES Study

The \$146 million is considerably lower than the SABRES 1994-95 estimate of \$215 million⁵, particularly given price increases since 1994-95 and a slight increase in predicted skier visits. Skier profiles in the two studies are similar in terms of the percentage of overnight vs day trips, party sizes, and skier origins. The 2000-01 sample was much smaller than the 1994-95 SABRES study⁶, however, sampling errors for spending are less than 10%. The 2000-01 survey did not begin sampling until January and therefore missed the holiday season⁷. Length of stays for skiers on overnight trips was 2.3 in 2000-01 compared to 3.2 in 1994-95. This shouldn't, however, be a factor as spending is compared on a per night basis.

There is not sufficient detail in the SABRES study to fully explain the discrepancy between the two studies. Spending estimates derived from visitor surveys can be subject to a number of potential problems. SABRES only reports spending on a per adult skier basis, so it is not clear how the spending party, and particularly children, may have been handled. It appears the adult spending rate was applied to all skier visits. When using individual skiers instead of spending parties as the unit of analysis, inflated estimates of spending can result if skiers report expenses for others in their party or if shared expenses like gasoline and lodging are not handled carefully. The correct "per skier visit or per skier day" estimate for such expenses depends on the number of people in the vehicle or room. If adults include expenses for other members of their party (such as children and spouses), some spending will be double counted if the resulting averages are multiplied by total skier visits.

⁵ SABRES estimate of \$267 million included \$52 million in at home retail purchases, which are excluded here.

⁶ SABRES sampled 17 areas compared to our 8 and 1,600 skiers compared to 488 in 2000-01.

⁷ This bias is partially compensated for by sampling only on weekends, which misses the lower mid-week rates. Average spending for the motel segment in NLP on lodging and lift tickets was also adjusted upward to reflect higher peak season rates and higher rates at some resorts not included in the sample.

The per skier visit averages in Table 8 above may be compared with the SABRES study spending averages. SABRES estimated that a typical Michigan **adult skier** in 1994-95 spent \$78 per day plus an additional \$31 on retail purchases for a total of \$109 per person per day. Spending on skiing (lift tickets, equipment rentals and lessons) is similar in our study (not taking into account any price increases between 1995 and 2000). The largest differences are in lodging, retail and recreation/entertainment expenses. Our sample of skiers reported \$35 in retail purchases on a party trip basis. Skiers on day trips reported only about \$12 in retail purchases, compared to \$70 for skiers on overnight trips. However, on a per skier visit basis retail spending is only \$7.

Our average for lodging expenses is about half that of SABRES, but the average per night room rate of \$120 for 2000-01 seems reasonable. The SABRES study is unclear about their assumptions about people per room or how children were handled in estimating overall spending. Although over half of skier visits are on overnight trips, only 27% involve hotel/motel expenses as many skiers are staying in seasonal homes or with friends and relatives. The SABRES per person per night lodging expense of \$20 equates to \$75 per night for those incurring a lodging expense ($\$20/.27$), which then comes to \$225 per room night based on three people per room. The total lodging expense will be inflated when multiplied by skier visits if skiers get in two days of skiing during a one night stay.

Table 12. Comparison of SABRES and MSU Skier Spending Averages^a

Spending category	SABRES	MSU
	1994-95	2000-01
Lift tickets	19.5	21.4
Equipment rental	4.6	6.4
Lessons	2.3	1.7
Lodging	19.6	11.0
Restaurants	16.0	13.4
Recreation/Entertainment	11.0	0.7
Transportation	5.0	4.9
<u>Retail</u>	<u>31.0</u>	<u>7.0</u>
Total	109	66.6

a. SABRES is on a per person day basis, MSU per skier visit basis.

We had planned to validate the 2000-01 spending totals against ski area revenue figures, but the response rate to the ski area manager survey was not sufficient to project overall ski area revenue. Secondary economic data on ski areas is incomplete due to industry classification problems and the fact that many ski areas have year-round operations that cannot be separated out (e.g. golf, conferences, lodging, resort and other activities). For example, the 1997 economic census (US Dept. of Commerce, 1999) lists 13 ski areas in Michigan with receipts of \$23.8 million, a payroll of \$7.4 million and 1,437 jobs. These are likely resorts concentrating mainly on skiing. If we extrapolate from these 13 areas to 42 Michigan ski resorts, total statewide receipts of ski areas is \$80 million. This compares favorably with the 2000-01 estimate, as we estimate a statewide total of \$64 million in skiing revenue and another \$41 million in non-ski revenue of ski areas from skiers. The 13 businesses classified as ski areas likely have lower than average "non-ski" revenues, so we would expect a figure between \$64 and \$105 and \$80 million is near the middle of this range.

Split of Skier Spending Between Ski Resorts and the Surrounding Community

An important element of a regional economic impact analysis is sorting out who benefits from the activity. The regional distribution of skier spending in Table 11 measures which regions of the state benefit from downhill skiing. Like snowmobiling, ski areas attract tourists from out-of-state and southern Michigan population centers. Their spending benefits local economies in northern Michigan. While most skiers at southern Michigan resorts are local, these areas benefit the community by keeping spending within the region that would otherwise flow to northern Michigan or out-of-state ski areas.

Skier trip spending benefits the ski resorts as well as other businesses the area. Two-thirds of skier visits at Michigan resorts are generated by "tourists" who generate income and jobs in the area through their spending. Local restaurants, shops and motels may sell directly to skiers, while other businesses in the area and local government units benefit indirectly by selling goods and services to the ski resorts or through the re-circulation of income earned from skiers within the local economy.

Based on the spending profiles gathered from skiers, about 72% of skier spending accrues to the ski areas -- 44% of this is ski-related revenue and 28% is revenue from lodging, restaurant and retail sales at the ski area (Table 13). Another 28% of skier spending occurs outside the ski resort in the local community. The shares of revenue accruing to the ski area or other local businesses vary quite a bit by region and skier segment due to the types of ski resorts in each region and the kinds of skiers they attract. Local skiers and skiers on day trips spend over 80% of their money at the ski area. Skiers who stay overnight in commercial lodging (motel segment) have a greater impact on the local economy, spending 38% of their money "off-site" in the community. Skiers staying in seasonal homes or with friends and relatives focus mainly on skiing at the ski area, but also spend a third of their money in the community. The more detailed trip spending profiles in Tables 6-8 indicate exactly what items each group buys.

Table 13. Percent of Skier Spending by Revenue Category and Segment

Revenue Category	Local	Day	Motel	VFR/SH	Total
Ski Revenue	59%	57%	30%	46%	44%
Other Revenue to Ski Resorts	28%	25%	32%	21%	28%
<u>Revenue to Local Area</u>	<u>12%</u>	<u>18%</u>	<u>38%</u>	<u>33%</u>	<u>28%</u>
Total	100%	100%	100%	100%	100%

The shares of skier spending in each revenue category also varies regionally. Skiing revenue is the largest share of overall skier spending in Southern Michigan (57%), where spending outside the ski area represents only 15% of all spending. In the UP and NLP about a third of all skier spending takes place in the community and two thirds accrues to ski resorts (Table 14).

Table 14. Skier Spending by Revenue Category, Segment and Region (Revenue in \$ Millions)

Region/ Revenue Category	Local	Day	Motel	VFR/SH	Total	Pct
SLP						
Skiing Revenue ^a	16.1	4.4	0.6	0.5	21.6	57%
Other Revenue to Ski Resorts	7.6	1.9	0.6	0.2	10.4	28%
<u>Spending in Local Area</u>	<u>3.3</u>	<u>1.4</u>	<u>0.7</u>	<u>0.4</u>	<u>5.8</u>	<u>15%</u>
SLP Total	27.0	7.7	1.9	1.1	37.7	100%
NLP						
Skiing Revenue	4.0	3.1	14.6	9.2	31.0	39%
Other Revenue to Ski Resorts	1.9	1.4	15.3	4.2	22.8	28%
<u>Spending in Local Area</u>	<u>0.8</u>	<u>1.0</u>	<u>18.0</u>	<u>6.6</u>	<u>26.4</u>	<u>33%</u>
NLP Total	6.8	5.5	48.0	20.0	80.2	100%
UP						
Skiing Revenue	1.1	2.2	5.2	2.6	11.1	39%
Other Revenue to Ski Resorts	0.5	1.0	5.5	1.2	8.1	29%
<u>Spending in Local Area</u>	<u>0.2</u>	<u>0.7</u>	<u>6.4</u>	<u>1.9</u>	<u>9.2</u>	<u>32%</u>
UP Total	1.8	3.8	17.1	5.7	28.4	100%
State of Michigan						
Skiing Revenue	21.1	9.7	20.4	12.3	63.7	44%
Other Revenue to Ski Resorts	10.0	4.2	21.4	5.6	41.3	28%
<u>Spending in Local Area</u>	<u>4.4</u>	<u>3.1</u>	<u>25.2</u>	<u>8.8</u>	<u>41.4</u>	<u>28%</u>
State Total	35.6	17.0	67.0	26.8	146.4	100%

a. Skiing Revenue includes lift tickets, equipment rental and lessons.

Economic Impacts of Skier Spending

Skier spending can be translated into statewide economic impacts by applying the estimates of skier spending to a model of the Michigan economy. We use the MITEIM model with 1998 economic ratios and multipliers for Michigan along with skier spending profiles from Table 8 and estimates of skier visits from Table 9. Armed with skier spending profiles, the MITEIM model can quickly generate economic impacts for a variety of scenarios. Two scenarios are reported here to illustrate :

1. Statewide Economic Impact of All Skier Trip Spending (\$146 million)
2. Local Impact of a Single Northern Michigan Ski Area (150,000 skier visits)

The MITEIM model and skier spending template are available on-line for those who may wish to examine other scenarios.

A few technical details, definitions, and comments are important to understanding the economic impact results. The first scenario and Table 15 are used to illustrate. Impacts are reported by economic sector (rows in Table 15) and for several distinct economic measures (columns). To use an input-output model or the MITEIM model, skier spending must be allocated to particular economic sectors. Multipliers and economic ratios for each sector reflect the production function for the corresponding good or service. Ski areas are not neatly classified as they provide a variety of services. Our approach was to assign ski-related expenses (lift tickets, equipment rental, and ski lessons) to the amusements and recreation sector, which we have relabeled as "Skiing, Recr. & Entert." A small amount of skier spending on other amusements and entertainment are also allocated to this sector, so the category is not a pure "ski area or skiing" sector. Lodging expenses are assigned to the lodging sector irrespective of whether provided by the ski resort or an area motel. Similarly all restaurant and bar expenses are allocated to "restaurants" and all retail sales to the retail trade sector. The margins on groceries and gas and oil purchases also appear in retail trade, while the "Local production" category represents the manufacturing share of all goods purchased by tourists that are made within the state.

The measures of economic impact we report are sales, jobs, personal income and value added. Sales are the spending of skiers that accrue to businesses as sales or revenue. Only the retail margins on retail purchases are entered in the retail trade sector. Wholesale margins appear in wholesale trade and the manufacturing piece of retail purchases shows up in our local production category. Personal income includes wages, salaries, payroll benefits and proprietor's income. Value added is the most commonly used measure of the contribution of an industry or region to state or national gross domestic product. It includes personal income, rents and profits, and indirect business taxes. Employment estimates are not full time equivalents as part time jobs are counted as a job. The job estimates do adjust for seasonal jobs as three persons employed for fourth months would count as one annual job.

Impacts are separated into direct and secondary effects. Think of the direct effects as the economic impacts on businesses selling directly to skiers. These are most important and are itemized by sector. Secondary effects include additional sales, jobs and income generated from indirect and induced effects. Indirect effects are impacts in backward linked industries from which ski areas and other tourist businesses buy goods and services. Induced effects results from employees of ski areas and other tourism businesses spending their incomes in the local area. The skier spending sales multiplier of 1.6 for the state of Michigan indicates for every \$1 of direct sales from skier spending, another \$.60 in sales is generated through secondary effects.⁸

⁸ The MITEIM model uses IMPLAN's Type SAM multipliers, which do not re-circulate payroll contributions to retirement programs and also adjust for worker commuting patterns. The resulting multipliers are more conservative, for example, many use a statewide sales multiplier of 2.0.

Scenario 1: Statewide economic significance of skier trip spending - impacts of all \$146 million in skier spending on the state economy.

The \$146 million that skier's spent on trips in 2000-01 yielded \$136 million in direct sales, \$54 million in direct personal income, \$86 million in value added and supported 3,900 jobs. These direct effects cover impacts on businesses that receive money directly from skiers, i.e ski areas, restaurants, motels, retail shops. The \$10 million difference between spending and direct sales is the cost of imported goods sold by retail shops to skiers -- only the retail margins on these sales accrue to the state unless the goods are locally made.

Table 15. Economic Impacts of Skier Spending ; Statewide Significance

Sector/Spending category	Sales \$000's	Personal Income Jobs	Value Added \$000's
Direct Effects			
Motel, hotel cabin or B&B	24,293	574	15,690
Restaurants & bars	29,512	839	15,786
Ski Areas, Recr, Entert. ^a	66,621	2,262	44,472
Local transportation	272	3	158
Retail Trade	7,842	190	6,648
Wholesale Trade	1,914	14	1,310
<u>Local Production of Goods</u>	<u>5,227</u>	<u>20</u>	<u>1,507</u>
Total Direct Effects	135,681	3,903	85,570
Secondary Effects	80,946	976	50,603
Total Effects	216,627	4,879	136,173

a. Includes ski area revenue from lift tickets, equipment rental and lessons. About 5% of the total is other amusements and entertainment. Ski area revenue from lodging, meals and retail trade are reported in those sectors.

Sectors receiving the greatest direct impact are ski areas and other amusements (\$67 million in sales) , restaurants and bars (\$29 million), lodging establishments (\$24 million) , and retail trade ((\$7.8 million).

Total impacts include direct and secondary effects. Total statewide impacts of skier spending in 2000-01 including secondary effects is \$217 million in sales, \$84 million in personal income, \$136 million in value added and about 4,900 jobs.

The MITEIM model also estimates tax revenues generated from skier spending (just on the direct effects). The tax impact of skier spending is about \$20 million, split about evenly between sales taxes (gas, room and general sales tax) and income taxes (Table 16). The state of Michigan receives about \$11 million in tax revenues.

Table 16. Tax Impacts of Skier Spending			(\$ 000's)
	Sales	Income	Total
Federal	979	7,825	8,805
State	8,699	1,822	10,521
<u>Local</u>	450	-	450
Total	10,128	9,648	19,776

Scenario 2 : Economic impacts of a "typical" downhill ski area on the local region. We assume a ski area generating 150,000 skier visits in 2000-01 split according to the NLP segment shares (15% local, 10% day trips, 40% motel and 35% VFR/SH and using statewide spending averages. Multipliers and ratios for a typical rural region of northern Michigan are used.

These skiers spend \$11.5 million in the area resulting in direct sales of \$10.2 million (Table 17). The ski area receives about \$4.5 million in ski revenue and employs about 150 people (for ski operations) with a payroll of \$1.5 million. Lodging establishments receive \$2.3 million in room sales, and restaurants \$2.2 million. The portion of lodging and restaurant activity accruing to the ski resort depends on the percentage of skiers staying at the ski resort vs in the surrounding area. For example, if the ski resort captures half of the lodging and restaurant activity, it would have total sales of \$6.8 million (\$4.5 million ski + \$1.2 million lodging + 1.1 million food and beverage), with the remaining \$3.4 million accruing to other local businesses.

Total direct effects are 326 jobs in the region, \$3.3 million in personal income and \$5 million in value added. Secondary effects are smaller for a rural area than for the state as a whole, as they only include money that re-circulates within the local area. The skier spending sales multiplier for a typical northern Michigan county is 1.34. Total local impacts of the ski area are \$13.7 million in sales, \$4.5 million in personal income, \$7.3 million value added and 383 jobs.

Table 17. Economic Impacts of a Northern Michigan Ski Area ^b

Sector/Spending category	Direct Sales \$000's	Jobs	Personal Income \$000's	Value Added \$000's
Direct Effects by Sector				
Motel, hotel cabin or B&B	2,345	63	670	1,017
Restaurants & bars	2,248	73	700	975
Ski Areas, Recr, Entert. ^a	4,743	166	1,549	2,535
Local transportation	24	0	7	11
Retail Trade	644	22	328	513
Wholesale Trade	110	1	44	75
<u>Local Production of Goods</u>	<u>121</u>	<u>0</u>	<u>10</u>	<u>22</u>
Total Direct Effects	10,235	326	3,309	5,149
Secondary Effects	3,497	57	1,183	2,133
Total Effects	13,732	383	4,492	7,282

a. Includes ski area revenue from lift tickets, equipment rental and lessons. About 5% of the total is other amusements and entertainment. Ski area revenue from lodging, meals and retail trade are reported in those sectors.

b. Based on 150,000 skier visits divided as follows: 15% local, 10% day trips, 40% motel and 35% VFR/SH.

Study limitations

While the skier visit estimate is consistent with the SABRES estimate and recent NSAA regional figures, all of these estimates are based on at best partial responses from ski areas. Michigan lacks a solid estimate of the volume of skier trips or visits. The regression model used to predict skier visits in 2000-01 is a simple one and may not adequately capture differences across ski areas and sub-regions of the state.

Spending averages are based on a sample of 471 skier trips. We only sampled at 8 ski areas, did not sample on weekdays and began after the prime holiday season. These may introduce some errors, although the sample is adjusted in some analyses to compensate for sample limitations. The skier and trip profiles, however, match the SABRES study quite closely and sampling errors on spending averages are in the 5-10% range. As spending by skiers staying in commercial lodging is much greater than other skiers, their share of overall skier visits significantly influences the spending estimates. The shares estimated here rest on the skier survey, ski area manager estimates, and some judgment. Difference between our skier spending figures and the SABRES 1994-95 estimate are discussed above.

Estimating spending in a skier survey is subject to a host of potential errors. Such surveys rely on accurate memory and reporting by skiers of their expenses on the trip. There are also numerous messy issues in handling season and multi-area passes, a variety of different ski packages and discounts, handling large groups, and converting spending to a skier visit basis. We recommend, whenever possible, that survey based estimates be validated against other sources. The low response to our end of season ski manager survey limited plans to validate spending estimates generated from the skier survey against revenue estimates reported by ski areas. Secondary economic data for ski areas is also limited, although projections from ski areas included in the 1997 Economic Census for Michigan are consistent with our totals.

We should also note that this survey does not cover expenditures of skiers on equipment, clothing, and other items that are made at home. We also miss some en route expenditures of skiers that occur outside of the 60 mile radius around ski areas.

Recommendations for further research

We recommend that the Michigan ski industry adopt procedures to more regularly track the industry. An end-of-season survey like the one used here could provide annual estimates of skier visits, revenue and employment. The primary obstacle appears to be concerns over the confidentiality of the results. State and regional profiles of the Michigan ski industry can be produced without revealing the performance of any particular ski area. Aggregate figures for the three regions employed here would help track the performance of the industry on both a statewide and regional basis.

Armed with good overall industry statistics, skier spending surveys would not be needed on a regular basis. Overall skier spending can be projected from ski area revenues, if we know the percentage of skier spending at ski areas vs in surrounding communities. A few targeted spending questions appended to more general ski market surveys would be adequate.

The combination of an on-line and mailback survey worked reasonably well. Sixty percent of skiers chose the on-line option, which considerably reduces survey costs. Further investigation should be done to assess which skiers prefer the on-line approach and to evaluate the quality of responses between mailback and on-line approaches.

References

- Leisure Trends Group. 1995. Michigan Ski Industry; Ski Area Business Role in the Economy of the State (SABRES Report). Report to Michigan Ski Industries Assoc.
- MIG, Inc. 1999. IMPLAN Professional Version 2.0. Stillwater, MN: Minnesota IMPLAN Group.
- National Ski Areas Association (NSAA). Skier Visits by Year and Region. Available ON-line at http://www.nsaa.org/media/stats/99_00_visits.pdf.
- Goeldner, C.R., et. al. 1996. Economic Analysis of North American Ski Areas; 1976-93. Boulder, CO: Business research Division, University of Colorado.
- Nelson, C. Lynch, J. and Stynes, D. 2000. Michigan licensed off-road vehicle use and users: 1989-99. East Lansing, MI: Department of Park, Recreation and Tourism Resources, Michigan State University.
- Stynes, D.J., Sun, Y. and Talhelm, D. 2000. Michigan golf tourists - Economic impacts. East Lansing, MI: Department of Park, Recreation and Tourism Resources, Michigan State University. On-Line: <http://www.prr.msu.edu/econimpact/golfMI2000.pdf>
- Stynes, D.J. 2000. Michigan Tourism Economic Impact Model (MITEIM). East Lansing, MI: Michigan State University, Department of Park, Recreation and Tourism Resources.
- Stynes, D.J. 2000. Economic Impacts of Recreation and Tourism Website. December 1, 2000. URL: <http://www.msu.edu/course/prr/840/econimpact>.
- Stynes, D.J. , Nelson, C. and Lynch, J. 1998. State and regional economic impacts of snowmobiling in Michigan. East Lansing, MI: Department of Park, Recreation and Tourism Resources, Michigan State University. On-Line: <http://www.msu.edu/course/prr/840/econimpact/pdf/sbecimpact.pdf>
- U.S. Dept of Commerce. 1999. Michigan 1997 Economic Census; Arts, Entertainment and Recreation. Economics and Statistics Administration, U.S. Census Bureau. Report - EC97S71A-MI.