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DEPARTMENT OF COMMUNITY DEVELOPMENT

Economic contribution of ATV trails in Koochiching, Lake, and St. Louis Counties, Minnesota

A report of the Economic Impact Analysis program

Presented by Brigid Tuck and John Bennett



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August 2024

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Executive summary

Increasingly, Minnesotans are engaging with the outdoors via all-terrain vehicles (ATVs). ATV registrations rose by 36 percent between 2005 and 2020.¹ As more machines sell, riders seek out more trails. In response, the Minnesota Department of Natural Resources (DNR), cities, counties, and local ATV clubs are coming together to develop new trails and trail connections, especially in Northern Minnesota. The Voyageurs Trail near Crane Lake and the Prospectors Trail connecting Ely, Tower, Soudan, Babbitt, and Embarrass are examples of these new trail developments.

The Northeastern Regional ATV Joint Powers Board was interested in understanding the economic benefits of ATV trail riders. Thus, University of Minnesota Extension partnered with the joint powers board to measure the economic contribution of ATV trails in the region. The analysis relied primarily on a survey of ATV riders that included 986 usable responses.

Key findings include:

Designated trails are drawing visitors to the three counties.

Survey results indicated the designated trails drew visitors to the region. In 2023, an estimated 219,230 riders used ATV trails in Koochiching, Lake, and St. Louis Counties. Of those, 85 percent were in the region primarily to ride trails and 91 percent rode on officially designated trails. While riding is the primary activity, other top activities for riders were visiting attractions and/or points of interest, hunting, and fishing.

Riding is a group activity. Visitors (those traveling more than 50 miles and/or staying overnight as part of their ride), had an average of seven people in their travel party, while local residents had an average travel party size of six people.

A positive reputation is driving visits and influencing lengths of stay.

ATV trails in Northeastern Minnesota had a positive reputation among ATV riders. Survey results showed word of mouth and websites/social media accounts of ATV clubs are the primary methods riders used to learn about the trails, indicating people are talking and sharing positive experiences.

Riders valued multiple aspects of the trails. Survey respondents indicated their most enjoyed aspects of riding in the region were the ability to be outdoors, the scenery, and amenities along the trails. Riders also indicated a preference for a variety of trail types. Among the favorites were curvy trails, gravel trails, and sand/dirt trails.

Notably, satisfaction with the trail riding experience influenced length of stay in the region. Visitors reported staying an average of 4.6 days during their most recent trip, of which they spent 4.3 days riding. Commonly used accommodations included a hotel or motel, the rider's own second home or cabin, and campgrounds.

¹ Kennedy, T. (29, May 2021). ATV boom reshaping Minnesota's forests and DNR's priorities. *Star Tribune*. <https://www.startribune.com/atv-boom-reshaping-minnesota-s-forests-and-dnr-s-priorities/600062734/>

Mobile analytics data also pointed to growth in ridership. A study of the Matilla rest stop showed a 22 percent increase in use between the summer of 2022 and summer 2023.

Trail development would bring more riders to the region.

Survey respondents indicated additional trails would drive more visits to the region. When asked what would encourage them to ride more in the region, the number one response was additional trails. The second most listed suggestion was additional trail connections and access points, particularly connections between communities.

Multiple respondents (primarily visitors) commented on the desire to have more trail connections. They were interested in having additional ways to access local businesses, community amenities, and attractions.

Survey results also indicated an opportunity to expand options for accommodations. Visitors reported they would like to see more ATV-friendly campgrounds and lodging options closer to the trails for ease of access.



ATV ridership and trail development drives economic activity.

On average, each ATV rider who visited the region spent \$144.10 per day, while local riders spent \$38.50. Given the more than 200,000 riders in 2023, ATV riders spent an estimated \$23.4 million at businesses in the region. The highest amount of spending was at lodging establishments, restaurants and bars, and gasoline stations.

In total, ATV riders contributed an estimated \$36.1 million in economic activity to Koochiching, Lake, and St. Louis Counties in 2023. This included \$12.4 million in labor income. Riders also supported employment for 300 workers. The economic impact accounted for both direct spending by riders, along with the ripple effects of that spending. Ripple effects were highest in the real estate and utilities (i.e., electricity, natural gas) industries.

In addition to the ATV trail riders who bring annual economic activity to the region, ATV clubs, cities, counties, and other organizations continue to invest in trail development. Between 2019 and 2024, organizations invested \$11.7 million in trail development and improvements (such as shelters and bridges). These construction projects also created economic activity in the region.

Trail development and improvements generated an estimated \$16.8 million in economic activity between 2019 and 2024. This included nearly \$6.0 million in labor income and support for 100 jobs.

Koochiching, Lake, and St. Louis Counties

ATV Riders in 2023

219,230 ATV riders

80% were visitors

91% rode on a designated trail system

Lodging, restaurants, and gas stations

Businesses that see the most ATV riders



300 Minnesotan's jobs supported

\$36.1 million economic activity generated

5 average number of days visitors were in the region

Real estate and utilities

Industries that most indirectly benefit



Project overview

Increasingly, Minnesotans are engaging with the outdoors via all-terrain vehicles (ATVs). ATV registrations rose by 36 percent between 2005 and 2020.² As more machines sell, riders seek out more trails. In response, the Department of Natural Resources (DNR), cities, counties, and local ATV clubs are coming together to develop new trails and trail connections, especially in Northern Minnesota. The Voyageurs Trail near Crane Lake and the Prospectors Trail connecting Ely, Tower, Soudan, Babbitt, and Embarrass are examples of these new trail developments.

ATV trail riders bring with them their spending. When they come to a community, they rent hotel rooms or campsites, eat at restaurants, buy groceries, and shop at local stores, among other things. This spending creates additional economic activity, as the businesses serving the riders increase their spending. In addition, as the state and communities make investments in ATV trail development, that spending also generates economic activity.

The Northeastern Regional ATV Joint Powers Board was interested in understanding the economic benefits of ATV trail riders. University of Minnesota Extension partnered with the joint powers board to measure the economic contribution of ATV trails in the region.

The goal of this project was to answer the following questions:

- How much do ATV riders spend in a community during their visit?
- Which businesses directly benefit from ATV use?
- Which businesses indirectly benefit from ATV use?
- What opportunities exist to increase the economic benefits of trail riding?

Project approach

To answer these questions, Extension conducted an economic contribution study. Economic contribution is comprised of direct, indirect, and induced effects. The direct effect is the spending directly related to the activity itself—in this case, the spending by ATV riders and their travel parties, as well as spending to develop ATV trails. Indirect and induced effects are the impacts on other businesses due to the direct spending. Indirect impacts relate to the supply chain—for example, a visitor buys dinner at a local restaurant. That restaurant, in turn, makes purchases from its food supplier, from the local utility for electricity, and so forth. Those businesses then increase their production, demanding more from their suppliers, and so forth. Induced impacts relate to the spending of income. A restaurant worker earns income, which they then spend on housing, health care, and food, and thus increasing activity on those supply chains.

Economic contribution of ATV trail users

Direct effect of ATV trail users

To measure the direct effect of ATV riders, Extension calculated total spending by trail users, following the basic formula of the number of trail users multiplied by spending per person.

Per person spending

To measure per person spending by ATV trail riders, Extension, in cooperation with local ATV clubs, conducted a survey. The survey was initially deployed in fall of 2022 via the social media channels of

² Kennedy, T. (29, May 2021). ATV boom reshaping Minnesota's forests and DNR's priorities. *Star Tribune*. <https://www.startribune.com/atv-boom-reshaping-minnesota-s-forests-and-dnr-s-priorities/600062734/>



the local trail clubs and the three counties involved in the project. To supplement the data, the ATV clubs distributed postcards to riders along the trail and at key trail ride events during the 2023 season. In total, Extension collected 1,174 responses (Table 1). Of the respondents, 986 reported riding in the region within the previous 12 months and thus qualified to complete the survey.

A key distinction in quantifying the economic contribution of trail users is the status of resident versus visitor. Residents have significantly different spending patterns than visitors, and this needs to be accounted for in the analysis.³ For this study, Extension used the commonly accepted definition of a visitor as someone who has travelled more than 50 miles or spent the night in the area as part of their trip.

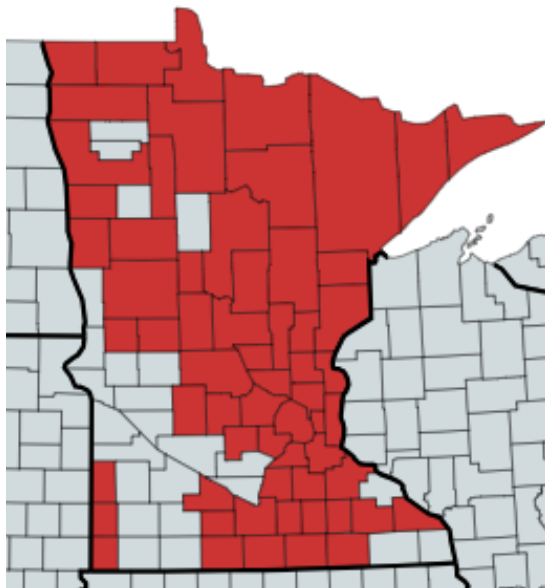
Survey respondents were asked if they met the above definition on their most recent ATV ride in the region. Those responding “yes” were considered visitors. Visitors accounted for 80 percent of the respondents.

Table 1: Breakout of Survey Respondents, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails

Category	Number of Respondents
Total responses	1,174
Number who rode in the region in last 12 months	986
Number who identified as local residents	197
Number who identified as visitors	789

Respondents came from across Minnesota, representing 63 of the 87 counties in the state (Map 1).

Map 1: Primary Zip Code of Survey Respondents, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails (Minnesota only)



³ Jeong, J.Y., Crompton, J.L., & Dudensing, R.M. (2016). The potential influence of researchers’ “hidden” procedure decisions on estimates of visitor spending and economic impact. *Journal of Travel Research* 57(7) 874-888. DOI: 10.1177/0047287515605932

There were also responses from visitors in 14 states and the District of Columbia. Respondents came from Colorado, Florida, Illinois, Indiana, Iowa, Missouri, New Mexico, Ohio, South Dakota, Tennessee, Texas, Wisconsin, Washington, and Virginia.

Survey results pointed to variations in travel patterns and spending between visitors and residents. Visitors tended to be in larger groups, had a higher number of riders per vehicle, and spent more time on the trail (Table 2).

Table 2: Statistics for Most Recent Ride, ATV Trail Users in Koochiching, Lake, and St. Louis Counties, Minnesota

Category	Visitors	Residents
Average number of people riding on trail	10	6
Average number of children in party	1.3	1
Average number of people per vehicle	2.1	1.8
Average number of hours spent riding	11.9	5.7

Visitors also spent more per person per day (Table 3). Visitors averaged \$144.10 in spending, with the highest amounts being spent on lodging, dining out, and transportation. Residents averaged \$38.50 per person per day. Residents reported their highest spending categories were dining out, ATV-related purchases, and transportation.

Table 3: Spending per Person Per Day, ATV Trail Users in Koochiching, Lake, and St. Louis Counties, Minnesota

Category	Visitors	Residents
Restaurants/bars	\$34.60	\$17.30
Lodging	\$43.30	\$0
Shopping	\$11.50	\$2.00
ATV-related	\$12.40	\$6.30
Groceries	\$12.30	\$3.70
Transportation	\$20.00	\$4.40
Recreation/entertainment	\$7.90	\$3.60
Other	\$2.10	\$1.20
Total	\$144.10	\$38.50

ATV trail user counts

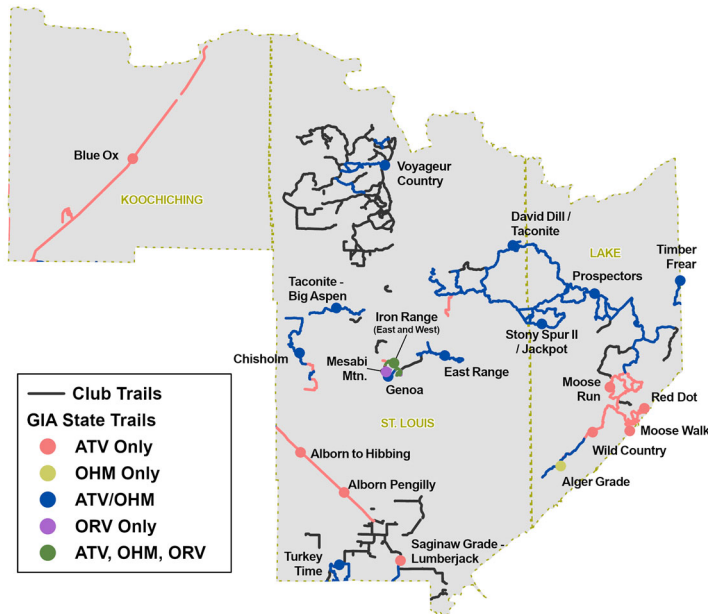
To measure the number of trail users, Extension again partnered with the local ATV clubs. Clubs placed trail counters on five trails—Alborn-Pengilly, Prospectors, Chisholm, East Range, and Voyageur Country (Map 2). Generally speaking, the trail counters were out from early May through early November of 2023.

The trail counters selected for this project used a magnetometer to detect passing vehicles. They are self-contained units that do not have external wires or tubes and designed to be used in rugged, remote locations.

The ATV clubs used several factors when determining where to place the trail counters. First, the clubs focused on places where ATVs had to travel single file (for example, when crossing a bridge). This allowed the counter to measure all vehicles, as opposed to multiple ATVs passing simultaneously. Second, the clubs prioritized sections of the trail that received regular traffic. Finally, for larger trail systems, the clubs looked at locations that would capture ATVs that might access the trails from various entry points. Prospectors Trail, for example, has multiple loops and spurs and covers a large geographical area.

In December 2023, the clubs provided Extension with trail counts. Extension then performed two sets of adjustments. First, a few counters were placed out in June versus May, so Extension used data from other trail counters to fill the gap.

**Map 2: ATV and OHM Trails in Koochiching, Lake, and St. Louis Counties, Minnesota
(Grant-In Aid Trails)**



Second, the trail counts provided a physical count of ATV vehicles (Table 4). In total, the counters recorded 63,353 ATVs. Extension then converted the ATV counts into an estimate of the number of riders and separated those riders into visitors and residents.

Table 4: Trail User Counts, Five Trails in Koochiching, Lake, and St. Louis Counties, Minnesota, 2023

Physical Count of ATVs	Visitors	Residents	Total
63,353	86,660	18,570	105,230

The ATVs had the potential to be counted multiple times by the same counter. This was particularly true on out and back trails, like the Alborn-Pengilly Trail, where most people likely rode down the trail, turned around, and rode back. As a general rule, Extension assumed that on the out and back trails, 75 percent of ATVs were counted twice and adjusted the counts accordingly. For the trails that are more of a loop in nature, Extension assumed 67 percent of ATVs were counted twice and adjusted accordingly. To verify these assumptions, Extension met with the ATV clubs. By and large, the ATV clubs agreed with the assumptions, but a few modifications were made based on those discussions.

In total, Extension estimated 105,230 people used the five trails during the 2023 ATV riding season. Based on survey work, we estimated 86,660 were visitors and 18,570 were residents.

The next step, then, was to estimate the total number of trail riders on all trails in the three counties. Based on the DNR trail data, the five trails that had counters in 2023 represented 48 percent of the total trail mileage in the region. Extrapolating that out to represent all trail riders results in an estimate of 219,230 ATV riders in the three counties in 2023.

Table 5: Trail User Counts (Extrapolated), All ATV Trails in Koochiching, Lake, and St. Louis Counties, Minnesota, 2023

Number of ATVs	Visitors	Residents	Total
131,986	180,542	38,688	219,230

Total spending by ATV trail users

ATV trail users in Koochiching, Lake, and St. Louis Counties spent an estimated \$27.5 million in 2023 (Table 6). This includes \$26.0 million in “new spending” drawn in by visitors and \$1.5 million in spending by residents. Directly, restaurants, bars, and lodging establishments benefited the most from ATV trail users.

Of this, 85 percent of the spending can be directly attributed to the ATV trails. Survey respondents were asked if the ATV trails were the primary purpose of their trip to the region, and 85 percent responded in the affirmative. Spending by those in the region for other purposes (for example, to attend a wedding) is attributable to the event they came to attend, not the trails. Thus, the total direct spending by ATV trail users in the three counties was \$23.4 million.

Table 6: Total Spending, ATV Trail Users on All Trails in Koochiching, Lake, and St. Louis Counties, Minnesota, 2023

Category	Visitors	Residents	Total	Attributable to the Trails
Restaurants/bars	\$6,246,760	\$677,030	\$6,923,790	\$5,885,220
Lodging	\$7,817,480	\$0	\$7,817,480	\$6,644,860
Shopping	\$2,076,240	\$42,560	\$2,118,800	\$1,800,970
ATV-related	\$2,238,720	\$232,130	\$2,470,850	\$2,100,220
Groceries	\$2,220,670	\$162,490	\$2,383,160	\$2,025,680
Transportation	\$3,610,840	\$193,440	\$3,804,280	\$3,233,640
Recreation/entertainment	\$1,426,280	\$139,280	\$1,565,560	\$1,330,730
Other	\$379,140	\$38,690	\$417,830	\$355,150
Total	\$26,016,130	\$1,485,620	\$27,501,750	\$23,376,470

Indirect and induced effects of ATV trail users

To measure the indirect and induced effects, Extension used the input-output model IMPLAN. Input-output models trace the flow of goods and services throughout an economy. Once the flow is established, the model can be used to demonstrate how a change in one area of the economy (say, retail sales) affects other sectors of the economy (for example, construction or health care).

Total economic contribution of ATV trail users

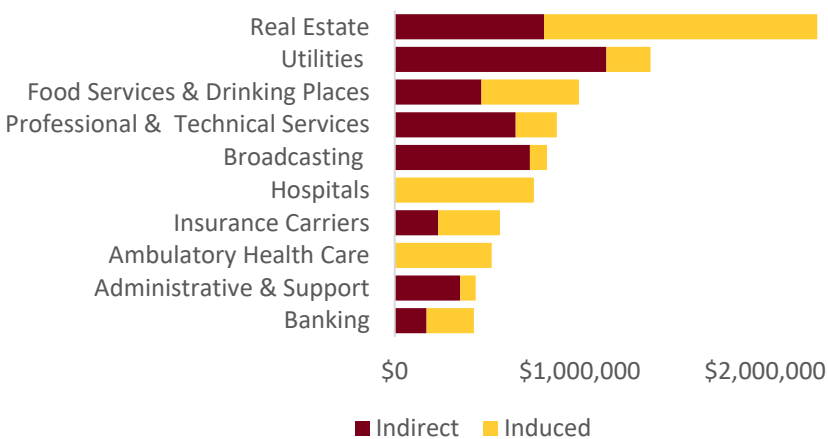
In total, ATV riders contributed an estimated \$36.1 million in economic activity to Koochiching, Lake, and St. Louis Counties in 2023. This included \$12.4 million in labor income. Riders also supported employment for 300 workers (Table 7).

Table 7: Economic Contribution, ATV Trail Users on All Trails in Koochiching, Lake, and St. Louis Counties, Minnesota, 2023

Category	Output	Labor Income	Employment
Direct	\$23,376,470	\$8,899,420	230
Indirect	\$6,295,670	\$1,561,720	30
Induced	\$6,416,250	\$1,980,810	40
Total	\$36,088,390	\$12,441,950	300

ATV riders directly spent \$23.4 million to ride in the region. This generated an additional \$12.7 million at businesses that do not necessarily ever see an ATV rider. The industries that most benefitted included real estate and utilities (Chart 1). Indirect effects are generated when an ATV rider triggers a business to spend more money on its supply chain. For example, a restaurant may stay open later to serve ATV riders, thus spending more money on electricity, benefiting the utility industry. Induced effects are generated when people employed due to ATV riders spend money to operate their households. For example, a restaurant stays open an extra hour, which means an employee earns more money, which they then spend on rent, benefiting the real estate industry.

Chart 1: Top Industries Impacted, ATV Trail Users on All Trails in Koochiching, Lake, and St. Louis Counties, Minnesota, 2023



For this study, the highest indirect effects were in utilities, broadcasting (advertising), and professional and technical services (i.e., accounting). The highest induced effects were in real estate, health care, and food services and drinking places, which reflects where people spend their incomes.

Economic contribution of ATV trail development

In addition to the ATV trail riders, who bring annual economic activity to the region, ATV clubs, cities, counties, the state, and other organizations continue to invest in trail development. According to records from the joint powers board, organizations invested \$11.7 million in trail development and improvements (such as shelters and bridges) between 2019 and 2024. These construction projects also created economic activity in the region.



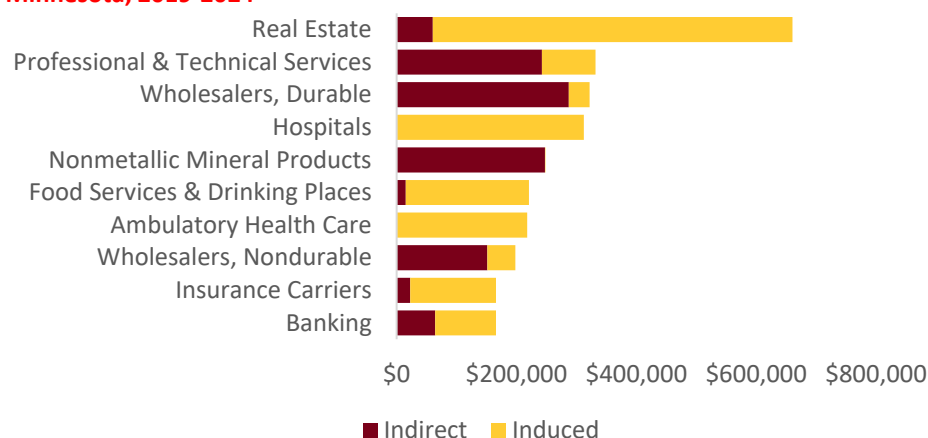
Trail development and improvements generated an estimated \$16.8 million in economic activity between 2019 and 2024 (Table 8). This included nearly \$6.0 million in labor income and supported 100 jobs.

Table 8: Economic Contribution, ATV Trail Development and Improvements in Koochiching, Lake, and St. Louis Counties, Minnesota, 2019-2024

Category	Output	Labor Income	Employment
Direct	\$11,706,850	\$4,452,840	70
Indirect	\$2,041,470	\$554,140	10
Induced	\$3,058,740	\$956,320	20
Total	\$16,807,060	\$5,963,300	100

Of the \$16.8 million generated by trail development and improvements, \$11.7 million went directly to construction companies, architects and engineers, and others directly involved in the projects. An additional \$5.1 million of economic activity accrued to businesses not directly involved in the projects. The top industries impacted are shown in Chart 2 and included real estate, professional and technical services, and durable good wholesalers.

Chart 2: Top Industries Impacted, ATV Trail Development and Improvements in Koochiching, Lake, and St. Louis Counties, Minnesota, 2019-2024



ATV ridership trends

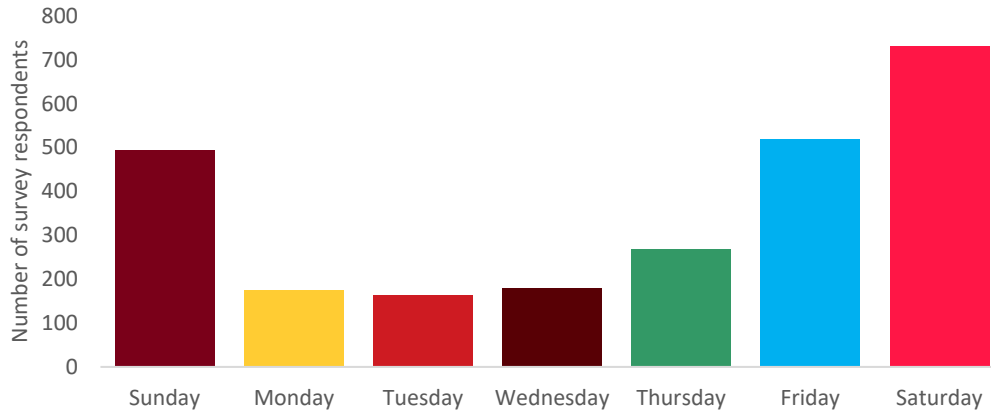
Knowing the economic contribution of ATV trails at a particular point in time is valuable for decisionmakers. So, too, is understanding ridership trends. Extension accessed two sources of data to explore trends. First, the ATV rider survey provided some helpful context. Second, mobile analytics data, which draws from cell phone location tracking, also provided information.

Mobile analytics companies compile data based on cell phone locations to track visitors and visit patterns. For example, if your cell phone is located most nights at a site in Le Sueur County, that would register as your “home location.” If that phone is then located for two nights at a site in Lake County, that would register as a “visit location.” For this study, Extension used the mobile analytics platform Placer AI.

Insights from ATV rider survey

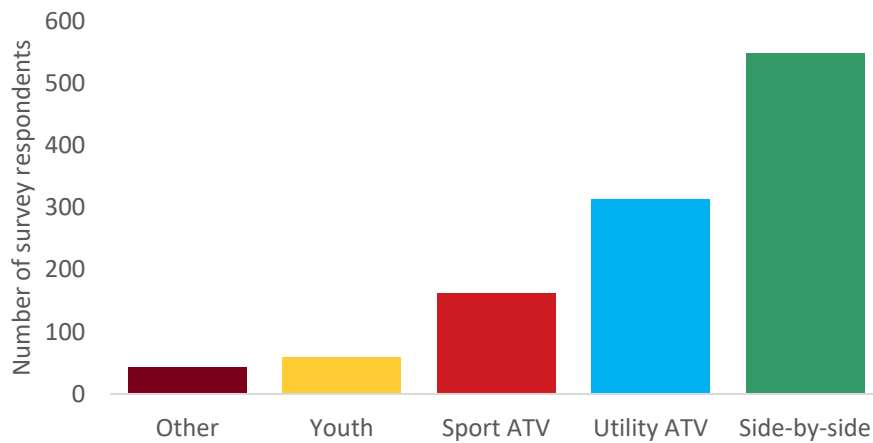
Not surprisingly, ATV ridership was highest on the weekends, particularly Saturday (Chart 3). Ridership appeared to tick up starting on Thursdays, with Tuesday being the least busy day on the trails.

Chart 3: Ridership by Day of the Week, All Survey Respondents, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails



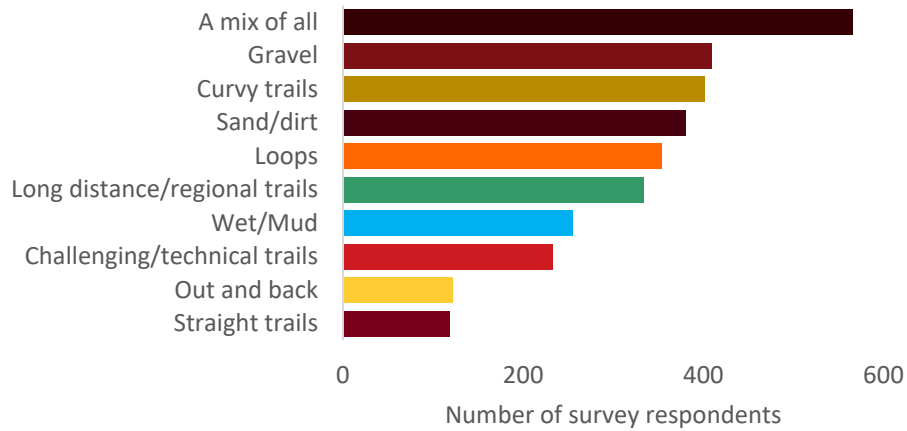
Side-by-sides were the most commonly reported ATV type among survey respondents, followed by utility ATVs (Chart 4).

Chart 4: Type of Vehicle Being Ridden, All Survey Respondents, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails



Trail riders preferred a mix of trails (Chart 5). Other popular trail types included gravel, curvy, and sand or dirt trails.

Chart 5: Preferred Type of Trail, All Survey Respondents, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails



Officially designated trails drove ATV traffic to the region. More than 90 percent of visitors indicated they rode an officially designated trail (Chart 6). This figure was lower for local residents, which is not surprising as they have more knowledge of options, and they may have private land for riding (Chart 7).

Chart 6: Rode on an Officially Designated Trail, Visitors

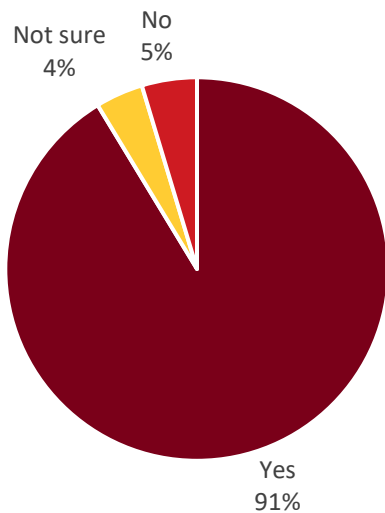
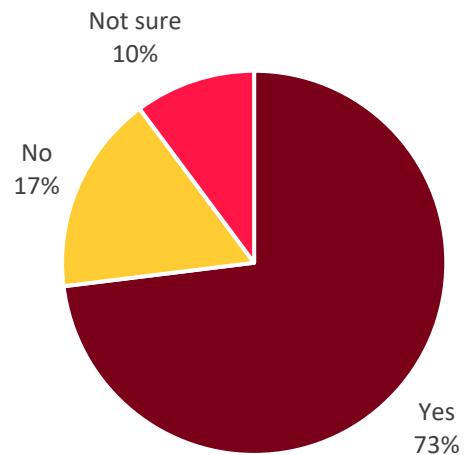


Chart 7: Rode on an Officially Designated Trail, Local Residents



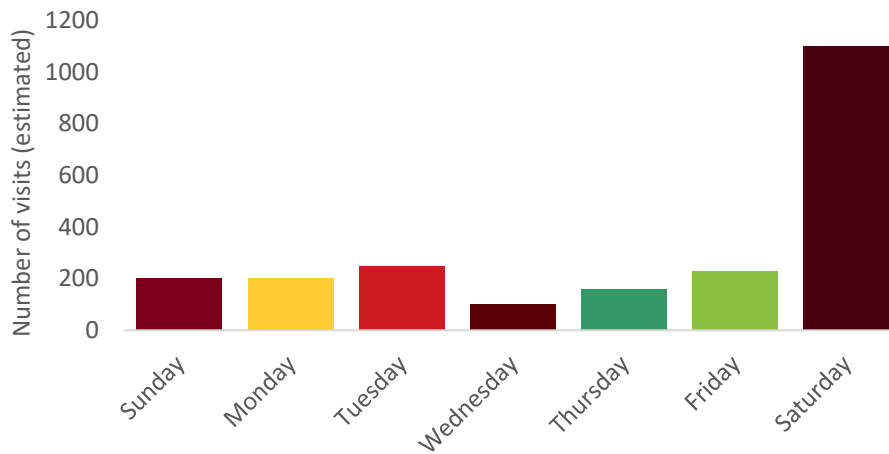
Insights from mobile analytics

Mobile analytics data reinforced survey results.

To get a sense of ATV trail use patterns, Extension pulled a mobile analytics report (from Placer AI) for the Mattila rest stop. This gravel parking lot has a few amenities (such as a picnic table) and is a stop for riders along the Prospectors Trail. The report covered the summer and fall months (June through November).

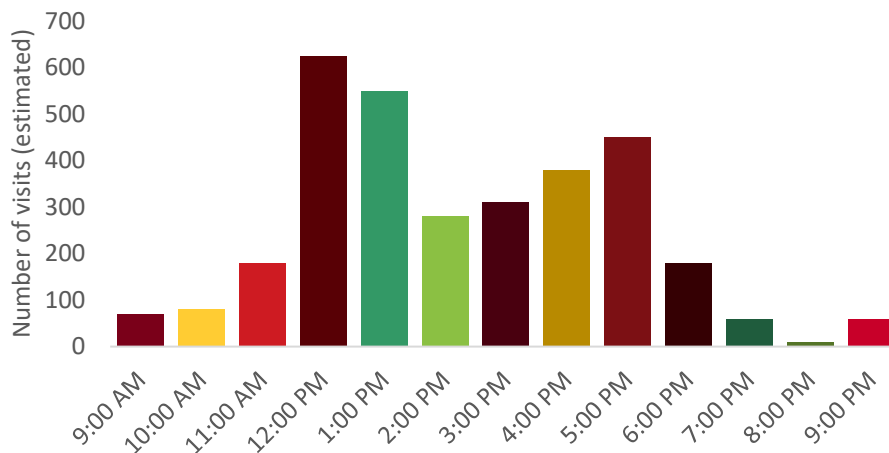
Consistent with survey data, the mobile analytics data showed the weekend was the most popular time of the week to ride the ATV trails (Chart 8).

Chart 8: Estimated Visits by Day of the Week, Mattila Rest Stop, June to November 2023, Source: Placer AI



While ATV riders visited the Mattila rest stop throughout the day, peaks were noted around lunch (noon) and in later afternoon (Chart 9).

Chart 9: Estimated Visits by Time of Day, Mattila Rest Stop, June to November 2023, Source: Placer AI



Mobile analytics data indicated ATV trail ridership has been increasing. The Mattila site received 22 percent more visits during the 2023 period compared to the same period in 2022. Since 2020, visits have increased by 70 percent (Table 9). On average, riders spent 36 minutes at the site. They typically only visited once during the season, which indicates new riders are coming through.

Table 9: Visitor Statistics, Mattila Rest Stop, June to November 2023, Placer AI

Change in number of visitors year-over-year	22%
Change in number of visitors year-over-two years	60%
Change in number of visitors year-over-three years	70%
Average dwell time	36 minutes
Visit frequency	1.06

Finally, mobile analytics can provide insights into the journeys of ATV riders (Chart 10). Prior to stopping at the Mattila rest stop, 32 percent of ATV riders were at home, 21 percent were at a pub/bar, 27 percent were at a retail store, and 14 percent were at a gas station. This reinforces the survey data which showed spending by ATV riders at these locations.

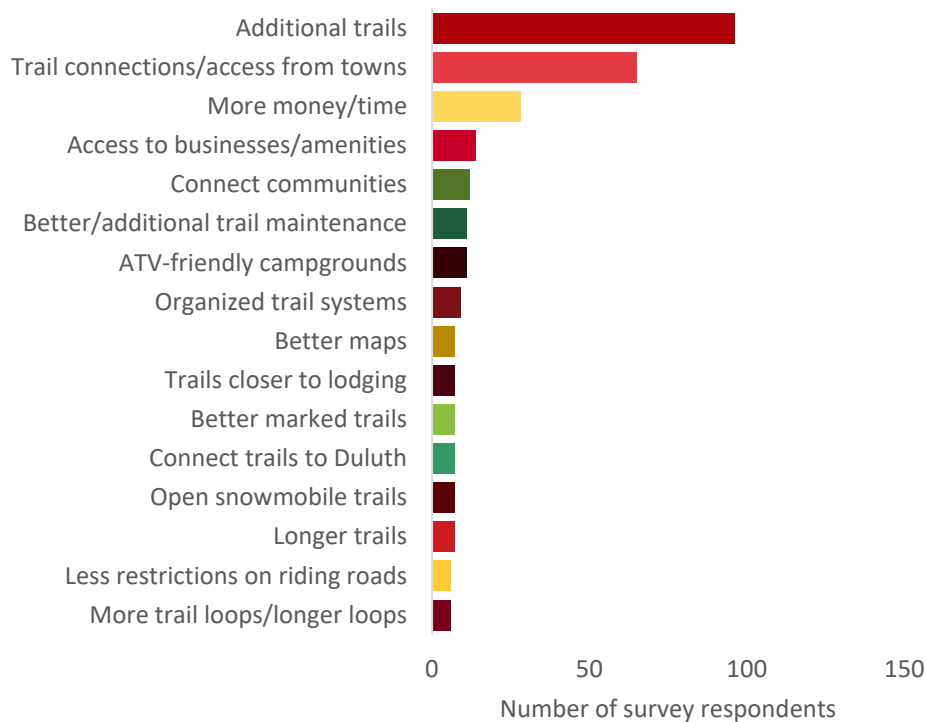
Chart 10: Location of ATV Riders Before and After Matilla Stop, June to November, 2023, Placer AI



Insights for future trail and community development

Finally, survey results pointed to potential needs and desires for future trail development and community development in general. When asked what would encourage them to spend more time riding in the three counties, the most common response was additional trail development (Chart 11). After that, visitors indicated a desire to have trail connections that would allow access to nearby communities.

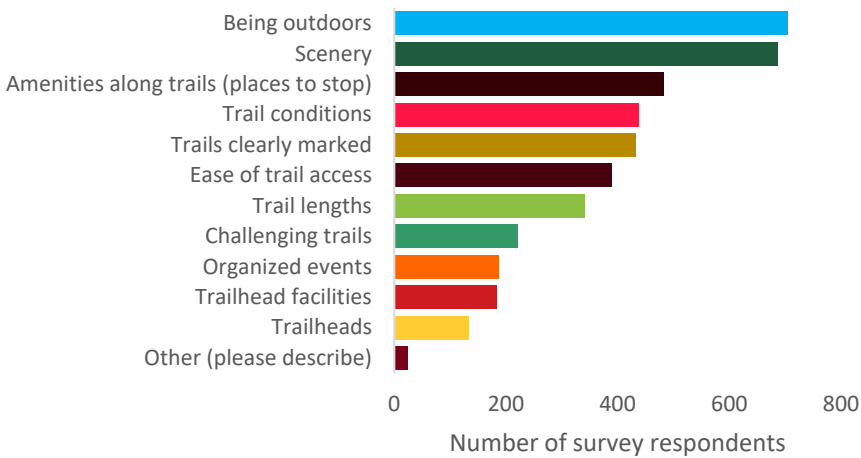
Chart 11: Open-Ended, What Would Encourage You to Ride More in Koochiching, Lake, and St. Louis Counties, Minnesota, Visitors



When asked about the aspects of riding in the area, respondents rated the ability to be outdoors as the most enjoyed aspect (Chart 12), followed closely by scenery. Amenities along the trail (places to stop) rounded out the top three. As more trails are developed, this information shows the need to keep scenic stops and amenities a priority. Trail conditions were ranked fourth, which indicates the need for trail maintenance and upkeep.

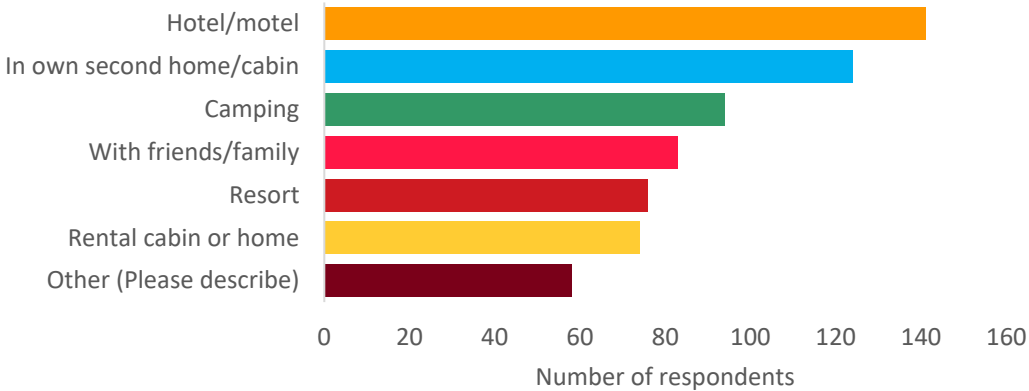


Chart 12: Most Enjoyed Aspects of Riding in Koochiching, Lake, and St. Louis Counties, Minnesota, All Survey Respondents, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails



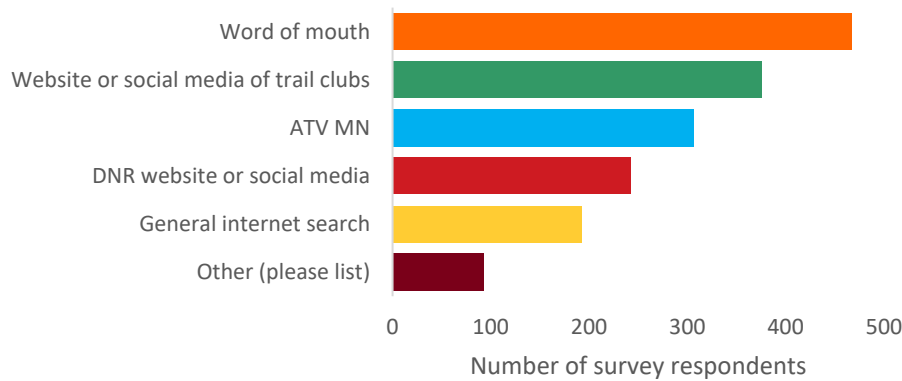
Trail riders used a mix of accommodations during their visit to the region (Chart 13). More than 140 of respondents indicated they stayed in a hotel or motel. A considerable number of riders reported camping. In open-ended comments, many also indicated a desire for additional camping options that were ATV-friendly. This may be an area of exploration for community development, as it opens up additional opportunities for people to stay in the region.

Chart 13: Accommodations, Visitors, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails



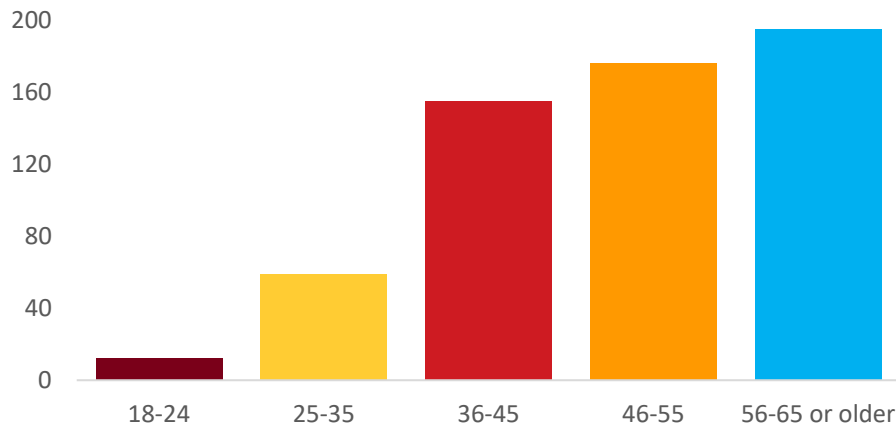
Word of mouth was the most common way trail riders learned about trails in the region (Chart 14). From a marketing perspective, this indicates the region and its trails have a positive reputation. It also presents challenges, as it can be hard to spread information about trail conditions and changes. If a trail is closed for maintenance, for example, riders may not be aware until after they have arrived, leading to frustration. The websites and social media of clubs were also important sources of information, which indicates a need to keep them fresh and updated on a regular basis.

Chart 14: Methods of Learning About Trails in Koochiching, Lake, and St. Louis Counties, Minnesota, All Survey Respondents, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails



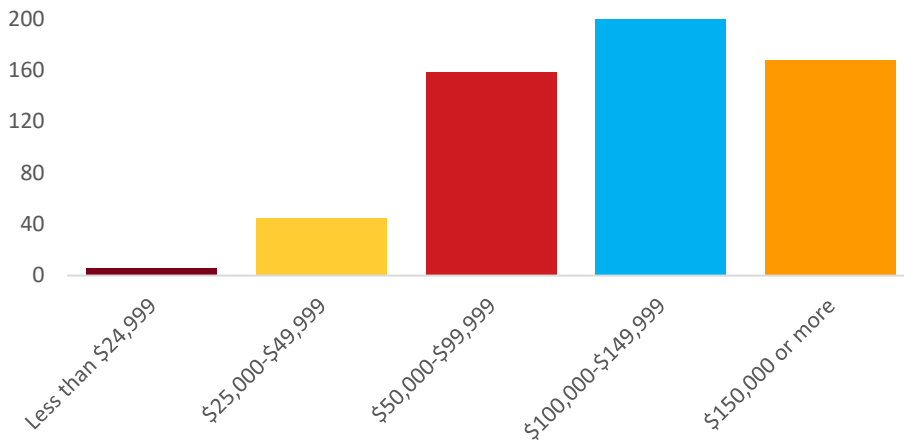
Finally, the survey provided insight into the demographics of trail riders. The largest group of riders were in the 55 and older category, with the lowest number in the 18 to 24 range (Chart 15). There were a fair number of riders between the ages of 36 to 55, but this information may also highlight the need to continue to recruit and engage younger riders to keep the sport vibrant in the future. There may also be a need to find ways for younger riders to purchase or rent ATVs.

Chart 15: Age of Survey Respondent, Visitors, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails



ATV riders tended to be on the higher end of the income scale (Chart 16). This gives them more disposable income to spend on ATV trips, but again, raises the question about accessibility for lower income riders.

Chart 16: Household Income of Survey Respondents, Visitors, Koochiching, Lake, and St. Louis Counties, Minnesota ATV Trails



Sensitivity analysis

To calculate the economic contribution of ATV trail riders in the region, Extension made multiple assumptions. These assumptions were based on facts as much as possible, such as survey results and local knowledge. It is good practice, however, to test how changing these assumptions affects the results of the analysis. This section of the report shows how changing two of the assumptions impacts the results.

Changing the ratio of out and back trips

As explained earlier, the ATVs had the potential to be counted multiple times by the same counter. Extension made assumptions (based on local knowledge of trail use) about the number of times an ATV might pass a counter.

In the main portion of this report, Extension assumed that on the out and back trails, 75 percent of ATVs were counted twice. For the trails that are more of a loop in nature, Extension assumed 67 percent of ATVs were counted twice.

For this scenario, Extension changed those assumptions. For the out and back trails, Extension assumed 90 percent of ATVs were counted twice. For trails that were of a loop in nature, Extension assumed 75 percent of ATVs were counted twice.

Changing assumptions about the percent of out and back trail riders led to a decrease in the number of total riders—from 219,230 visitors to 191,690. This correspondingly lowers the total economic contribution to \$31.5 million (Table 10), which represents a 13 percent decrease.



Table 10: Economic Contribution, ATV Trail Users on All Trails in Koochiching, Lake, and St. Louis Counties, Minnesota, 2023 – Change Assumptions on the Ratio of Out and Back

Category	Output	Labor Income	Employment
Direct	\$20,432,120	\$7,776,530	200
Indirect	5,503,100	\$1,365,140	25
Induced	5,606,740	\$1,730,900	30
Total	\$31,541,960	\$10,872,570	255

Changing the ratio of visitors

A second significant assumption of this report is that 80 percent of trail users were visitors and 20 percent were local residents. This ratio was drawn from the survey. For this scenario, Extension assumed 70 percent of trail users were visitors and 30 percent were local riders.

Changing this assumption lowered the number of trail riders from 219,230 to 203,462. It also decreased the number of visitors but increased the number of local riders. Under this scenario, the total economic contribution of trail riders fell to \$30.8 million, a 15 percent decrease (Table 11).

Table 11: Economic Contribution, ATV Trail Users on All Trails in Koochiching, Lake, and St. Louis Counties, Minnesota, 2023 – Change Assumptions on the Ratio of Visitors

Category	Output	Labor Income	Employment
Direct	\$20,010,000	\$6,374,910	160
Indirect	\$5,925,920	\$1,474,330	30
Induced	\$4,854,730	\$1,498,570	30
Total	\$30,790,650	\$9,347,810	220

Notes on the analysis

To measure the economic impact of the trail system, Extension used trail counts from five of the trails in the region and extrapolated those trail counts to represent the entire system. By default, this assumes the trails without counters have similar traffic patterns and usage.



Appendix: Definitions and Terms

Input-Output Terms

Special models, called input-output models, exist to conduct economic impact analysis. There are several input-output models available, and IMPLAN is one such model. Many economists use IMPLAN for economic contribution analysis because it can measure output and employment impacts, is available on a county-by-county basis and is flexible for the user. While IMPLAN has some limitations and qualifications, it is one of the best tools available to economists for input-output modeling. Understanding the IMPLAN tool's capabilities and limitations helps ensure the best results from the model.

One of the most critical aspects of understanding economic impact analysis is the distinction between the “local” and “non-local” economy. The model-building process identifies the local economy. Either the group requesting the study or the analyst defines the local area. Typically, the study area (the local economy) is a county or a group of counties that share economic linkages. In this report, the study area is the three counties of Koochiching, Lake, and St. Louis.

A few definitions are essential to properly interpret the results of an IMPLAN analysis. These terms and their definitions are provided below.

Output

Output is measured in dollars and is equivalent to total sales. The output measure can include significant “double counting.” Think of food sold at a restaurant, for example. The value of food (say, beef) is counted when it is sold from the farmer to the food manufacturing company, again when the food item (say, a hamburger patty) is sold to the wholesaler, and yet again when the restaurant sells it as a hamburger to an ATV rider. The value of the beef is built into the price of each of these items, and then the sale of each item is added to determine total sales (or output).

Employment

IMPLAN includes total wage and salaried employees, as well as the self-employed, in employment estimates. Because employment is measured in jobs and not in dollar values, it tends to be a very stable metric (no inflation).

Labor Income

Labor income measures the value added to the product by the labor component. So, in the beef/hamburger example, when the beef is sold to the food manufacturing company, a certain percentage of the price is for the farmer's labor to raise the cow. Then when the hamburger is sold to the restaurant, it includes some markup for its labor costs in the price. When the restaurant sells it to an ATV rider, he/she includes a value for the labor. These individual value increments for labor can be measured, which amounts to labor income. Labor income does *not* include double counting.

Labor income includes both employee compensation and proprietor income. It is measured as wages, salaries, and benefits.

Direct Impact

Direct impact is equivalent to the initial activity in the economy. In this study, it is spending by riders of the ATV trails and by organizations doing trail development.

Indirect Impact

Indirect impact is the summation of changes in the local economy that occur due to spending for inputs (goods and services) by the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, this implies a corresponding increase in



output by the plant. As the plant increases output, it must also purchase more inputs, such as electricity, steel, and equipment. As the plant increases purchases of these items, its suppliers must also increase production, and so forth. As these ripples move through the economy, they can be captured and measured. Ripples related to the purchase of goods and services are indirect impacts.

Induced Impact

The induced impact is the summation of changes in the local economy that occur due to spending by labor—that is, spending by employees in the industry or industries directly impacted. For instance, if employment in a manufacturing plant increases by 100 jobs, the new employees will have more money to spend on housing, groceries, and going out to dinner. As they spend their new income, more activity occurs in the local economy. This can be quantified and is called the induced impact.

Total Impact

The total impact is the summation of the direct, indirect, and induced impacts.

