Root River State Trail

2019 Minnesota State Trail Visitor Study

JULY 2020

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Trail use estimates are the culmination of years of work and coordination among partners in Minnesota. Many individuals and organizations were involved in collecting data on state trails. Michael Petesch and Ian Vaagenes at the Department of Transportation, Dr. Greg Lindsey of the University of Minnesota, Andrew Oftedal at Parks & Trails Council of Minnesota, and Charlie Moore from Arrowhead Regional Development Commission contributed significant time to this project and provided critical guidance over the past several years.

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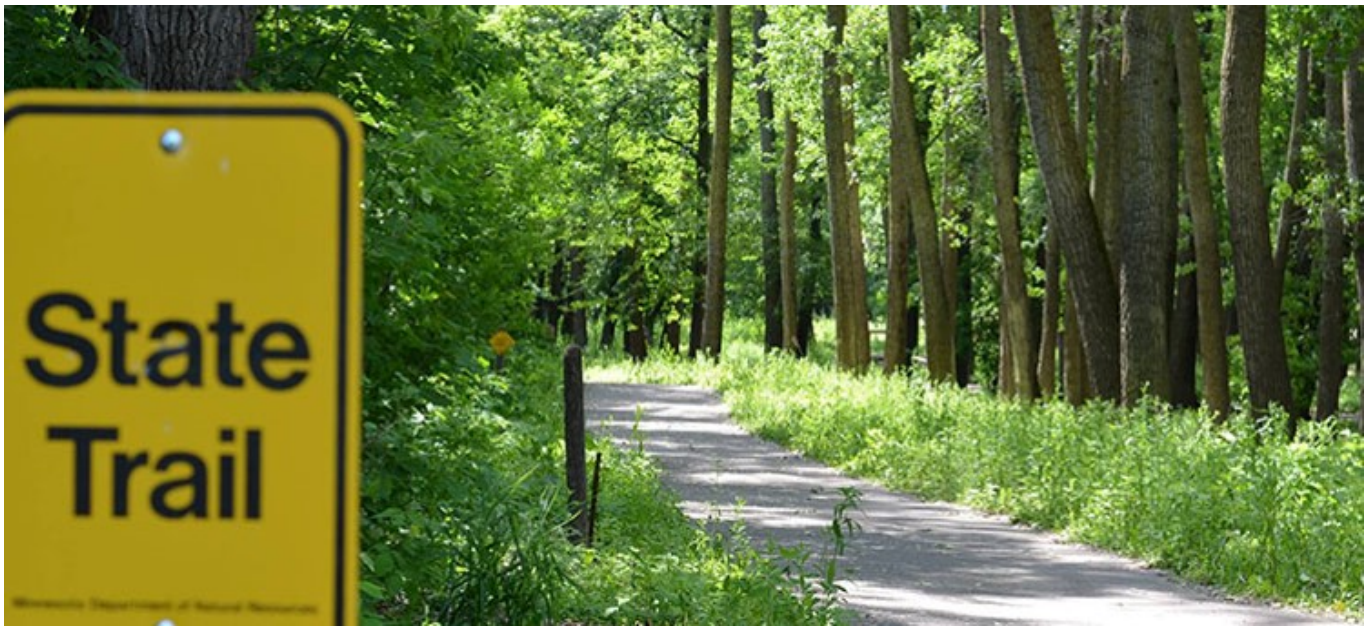

Introduction

The Minnesota Department of Natural Resources Parks and Trails Division (DNR) is committed to better understanding and enhancing visitors' outdoor recreation experiences. To that end, the DNR conducted a trail intercept survey in summer 2019 to gather information from and about state trail visitors, including their demographics, activities, frequency of usage, barriers, motivations, satisfaction, and opinions about trail management and funding. This report presents findings from that survey.

In 2015, the DNR developed a system plan to advance new approaches for managing the DNR's state parks and recreation areas, forest recreation areas, water recreation system, and state trails. This plan helps guide strategic investment decisions according to five principles: invest limited resources strategically, protect and interpret natural and cultural resources, inspire the next generation of stewards, promote tourism, and contribute to Minnesota's quality of life.

To ensure the plan is carried out in accordance with the guiding principles and to support the overall system, the DNR is conducting a series of research projects across these systems. This report shares the findings focused on the state trail system. In 2017, the DNR conducted a survey of Minnesota state parks visitors, and the DNR plans to study the forest recreation areas and the water recreation system in the years to come.

The DNR has been conducting state trail surveys since the 1990s. These previous studies examined visitors' experiences at one or two trails at a time. This 2019 study was larger in scope and represents opinions of summer visitors to 640 miles of paved and hardened surface state trails.

The DNR contracted with Wilder Research to analyze the survey data and prepare this report.

Minnesota state trail system

Figure 1. Primary and Secondary State Trail Corridors[1]

State trails included in the survey[2]

Primary corridors

- Brown's Creek
- Cuyuna Lakes
- Douglas
- Gateway
- Gitchi-Gami
- Glacial Lakes
- Goodhue-Pioneer
- Harmony-Preston Valley
- Heartland
- Mill Towns
- Minnesota Valley
- Paul Bunyan
- Root River
- Sakatah Singing Hills
- Willard Munger

Secondary corridors

- Alex Laveau
- Blazing Star
- Casey Jones
- Central Lakes
- Great River Ridge
- Luce Line
- Shooting Star

"DNR trails are a great resource for Minnesotans. Doing a great job!" – Gateway visitor

"The state trails are an asset to Minnesota." – Paul Bunyan visitor

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1 Map of all Minnesota State Trails

2 The primary and secondary corridors guide DNR investment priorities for the state trail system. The DNR applies differentiated guidance to primary and secondary corridors on topics including new development, rehabilitation, maintenance, trailhead amenities, and how partners can best support state trails.

The survey covered non-motorized, summer visitors. Natural-surface trails, motorized trails, and some small and remote trails were excluded from the survey project. The map includes all state trails, but not all state trails were surveyed.

Survey Crew on the Heartland State Trail

Methodology overview

The 2019 Minnesota State Trail Visitor Study presents findings from a DNR-designed and -administered survey. The survey was developed to study activity on non-motorized and summer-use trails in Minnesota. The survey did not include trails used only in the winter or trails used predominantly for motorized recreation. Motorized recreation surveys, for example, have been conducted through surveys of registered vehicle owners rather than through intercept surveys.

In total, 2,973 visitors were intercepted on the trail and invited to participate in the survey; 1,561 visitors (53%) completed the initial survey and 1,412 visitors (47%) declined or were not eligible to participate. Of the 1,561 visitors who completed the initial survey, 841 visitors (54%) completed the follow-up survey. The follow-up survey asked more detailed questions about state trail experiences, including certain aspects of state trails and opinions about funding and trail passes. The follow-up survey respondents were similar in their demographic characteristics to everyone who completed the initial survey (Figure A2 in Appendix).

The survey was administered by DNR staff during the 2019 summer season (between Memorial Day and Labor Day). It was conducted at 190 locations along 640 miles of state trails. The sampling plan was developed in two phases for the first and second halves of the summer. The DNR randomly selected sampling days for each week of data collection, then assigned trail segments to sampling days with random assignment of time of day for on-site intercepts and interviews.

Since 2015, the DNR and partners have been conducting automated traffic counts of state trail use (see Appendix and the next section for detailed information). The information from the counts was used to inform the sampling plan for this project (e.g., to target the sample size for each trail and for cyclists/non-cyclists; and to estimate counts for data collection on weekdays and weekends). The automated counts measure overall activity on trails, in terms of trail miles traveled. The number of visits is not the same as miles traveled because different user groups travel different distances on a typical trail visit. For instance, bicyclists travel about six times farther than people who walk or run. The sampling plan and survey results are representative of trail activity, but not representative of total visits.

At the determined trail locations, staff intercepted visitors to participate in the survey. If visitors came as a group, the adult with the most recent birthday was asked to participate in the survey. An initial survey was administered onsite via a tablet computer.

From left to right: Paul Bunyan State Trail, Luce Line State Trail, and Gateway State Trail.

The initial survey included questions about visitors' motivation to visit the trail, their demographics, and how the visitors found out about the trail and planned for their trip.

After completing the initial survey, DNR data collectors asked the same respondent to participate in a voluntary follow-up survey that could be taken on-site or at home at a later time. The follow-up survey dug deeper into the visitors' experiences, such as asking about their satisfaction with the various trail amenities and maintenance, and their opinions about funding and trail pass fees.

For a detailed explanation of the survey methodology, please contact the DNR Parks and Trails Division.

Notes

- As context, this report includes information about Minnesota adult residents – age 18 and older for age, gender, and race/ethnicity and age 25 and older for education attainment - from the 2014-2018 American Community Survey 5-year estimates ("2018 Minnesota adult population") and relevant results from previous DNR studies. It should be noted that the sample and methodology in the 2019 State Trail Visitor Study is different from previous studies. To read previous reports, please visit the Minnesota Department of Natural Resources State Parks and State Trails Studies (https://www.dnr.state.mn.us/aboutdnr/reports/pat/index.html)
- The survey results reflect the views of adult visitors (age 18 and up) who agreed to participate in the survey. They are referred to as "visitors" in this report. Their responses may not represent opinions of all state trail visitors.
- The term "tourists" and "locals" are used to describe two different groups of visitors. Locals are those who have traveled less than 50 miles from their home and did not stay overnight to visit the trail; and tourists are those who traveled more than 50 miles and/or stayed overnight to visit the trail.
- About half of the visitors in the follow-up survey provided additional comments and suggestions for improving Minnesota state trails. Selected comments are included to illustrate the relevant findings throughout the report as well as in the Appendix.
- Meaningful significant differences among types of visitors (e.g., locals vs. tourists, younger vs. older respondents) are included in the report.

Survey findings

Characteristics of state trail visitors

The DNR seeks to better understand who visits state trails. In this section, we describe the demographic characteristics of the trail visitors, the size and composition of the visiting group, prior visits to the trail, and whether the visitors are locals or tourists.

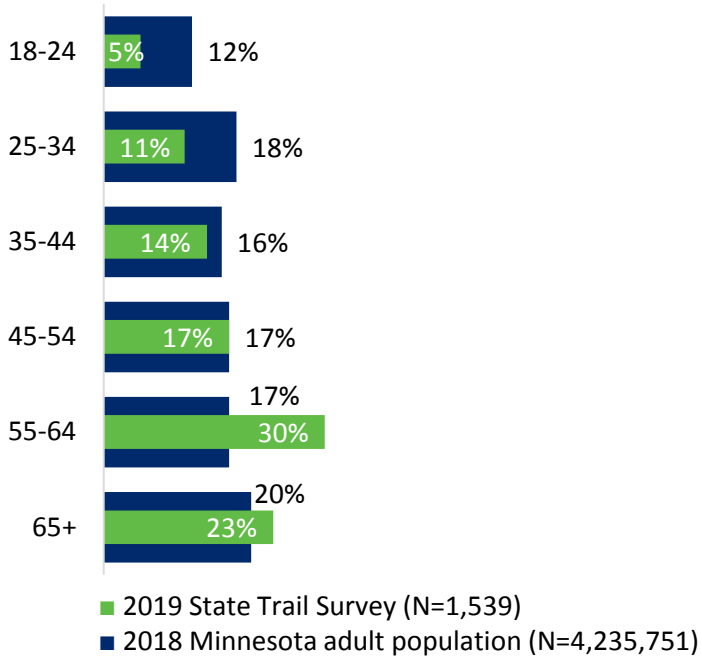
Demographics

Compared to the Minnesota adult population, **trail visitors were older, had higher incomes, had higher educational attainment, and were more often identified as white**.[3] Their demographic characteristics were similar to the characteristics of respondents in previous state trail and state parks visitor studies, except for income levels (Figure A3 in Appendix).

Age

Seventy percent of adult trail visitors were age 45 or older (Figure 2).

Figure 2. Age of adult visitors compared to Minnesota adult population

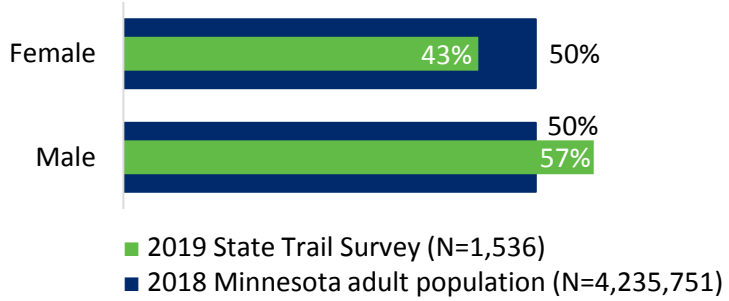


[3] Included a few visitors (14%) who were from out of state.

Gender

Male visitors make up a larger share of visitors than female visitors (Figure 3).

Figure 3. Gender of adult visitors compared to Minnesota adult population

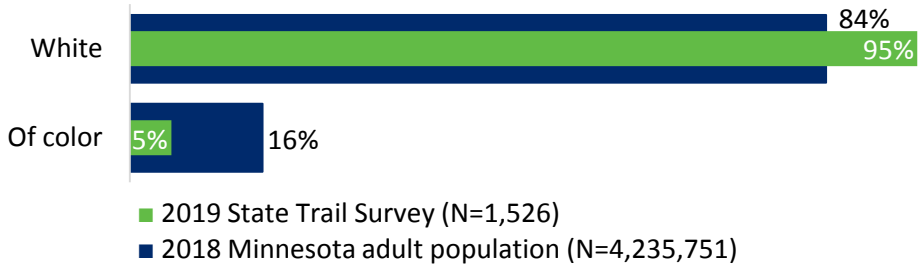


Note. The survey included gender selections for male, female, non-binary, transgender, or none of these. Less than 0.5% of the visitors selected non-binary, transgender, or none of these.

Race/ethnicity

Nearly all of the trail visitors were white (Figure 4).

Figure 4. Race/ethnicity of adult visitors compared to Minnesota adult population



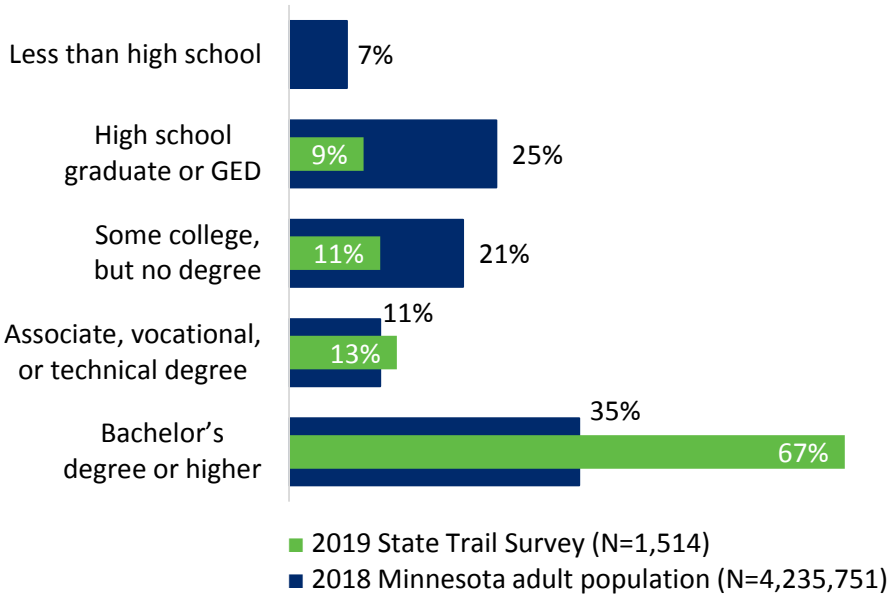
Respondents were asked to describe their race and/or ethnicity as: White, non-Hispanic; Hispanic or Latino; Black or African American; African; Asian; Middle Eastern; Native, First Nation, Alaska Native; Pacific Islander; or Other. Respondents could choose multiple answers. Those who selected White, non-Hispanic only are categorized as White; the remaining groups are categorized as "Of Color." None of the respondents indicated African or Middle Eastern.

Visitors of color tended to be younger. Fifty-eight percent of visitors of color were younger than age 45, compared to 28% of white visitors (Figure A4 in Appendix).

Educational attainment

State trail visitors tend to have higher educational attainment than the overall Minnesota adult population; 67% of trail visitors have a bachelor's degree or higher compared to 35% of Minnesota's adult population (Figure 5).

Figure 5. Educational attainment of visitors compared to Minnesota adult population

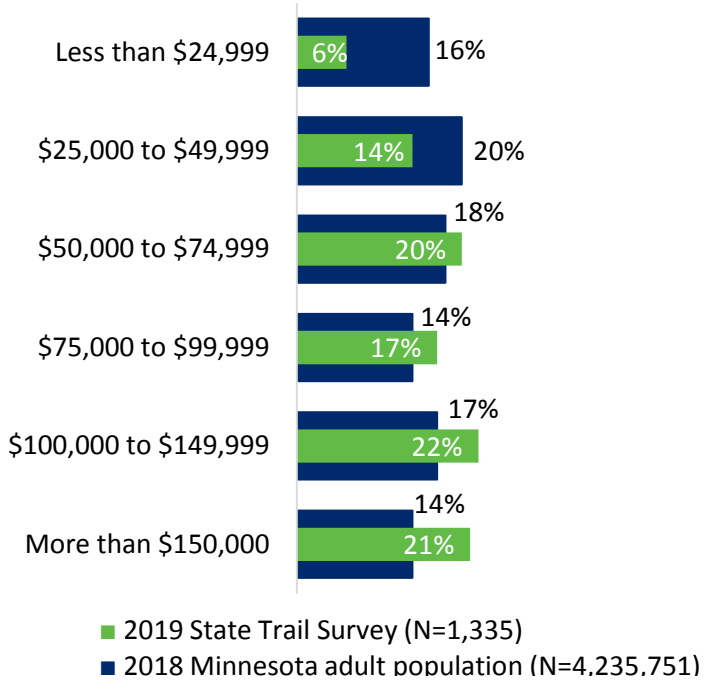


Note. The survey did not include an option for "less than high school." However, it did include an option of "none of these," which 0.1% of the survey respondents selected. The figures for the 2018 Minnesota adult population in this chart are for adults age 25 and older.

Household income

Compared to the Minnesota population, state trail visitors had higher household incomes. Sixty percent of state trail visitors reported a total household income of $75,000 or more in 2018, compared to 45% of all Minnesota households (Figure 6).

Figure 6. Household income of visitors compared to Minnesota adult population

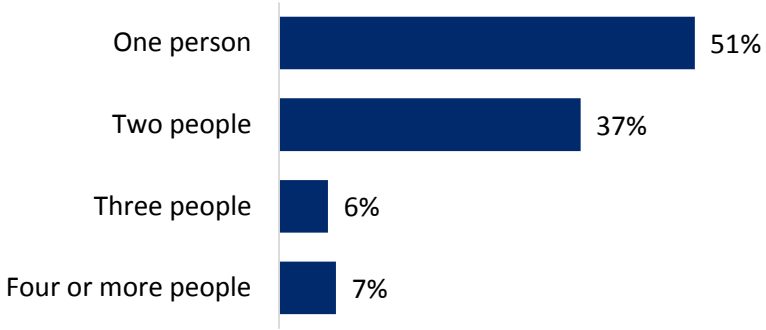


Compared to previous DNR studies (2017 State Parks Visitor Study and 2007-13 State Trail Users), the share of visitors in 2019 with household incomes of $100,000 or more was higher (43% vs. 32-33%; Figure A3 in Appendix).

Group size and composition

Half of the survey respondents indicated that they visited the trail alone and another 37% visited with one other person. Much smaller shares of trail visitors came in groups of three, or, four or more (Figure 7).

Figure 7. Group size



Note. N=1,561

When survey respondents were asked to describe their visiting group, **most of the respondents (88%) indicated that their group included only adults (this figure includes single visitors)**. The remaining survey respondents were accompanied by children (Figure 8).

Figure 8. Group composition

Included in your group are…	N=1,523
Only adults ages 18 and up	88%
Adults with children ages 12 and younger	10%
Adults with children between the ages of 13 and 17	4%

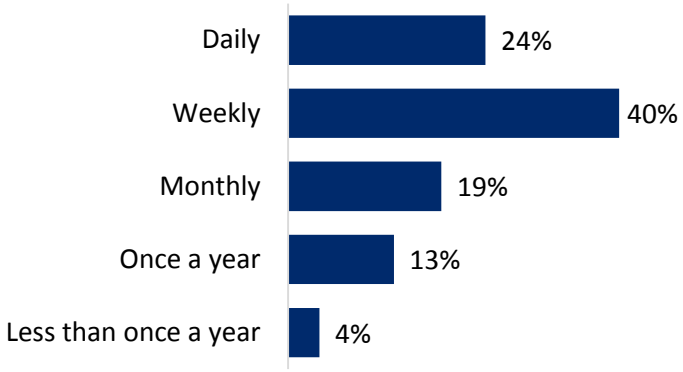
Note. Total percentage does not add up to 100% because survey respondents could select one or both groups of children.

In addition, the DNR intercepted 92 children under the age of 18, without an adult (6% of those who were stopped by DNR staff). They were not eligible to participate in the survey and not included in the sample.

Repeat and first-time visitors

For most of the visitors (89%), their trip was not their first visit to the trail. This result is quite a bit higher than the previous State Parks Visitor Study in 2017, where 59% of the survey respondents were repeat visitors. **Of those repeat visitors, 64% visited the trails on at least a weekly basis** (Figure 9).

Figure 9. Frequency of use by repeat visitors



Note. N=1,378

Local visitors and tourists

Local visitors are those who traveled less than 50 miles from their home and did not stay overnight to visit the trail, and tourists are those who traveled more than 50 miles to the trail and/or stayed overnight during their visit.

The share of local visitors outnumbered the tourists, 72% to 28%. The percentage of tourists who visited the trails is lower than the previous trail study (35%) and the 2017 State Parks Visitor Study (68%).

State trail trip

The DNR seeks to better understand the characteristics of the visitor trips. In this section, we describe the information used by visitors to plan for the trip, their reasons to visit the trail, and ways they get to the trail. We also describe the activities trail visitors participate in during their trip to a Minnesota state trail, equipment used, and the accommodation they use during their visit to the trail. Understanding answers to these and other questions about visitors' trips is helpful for DNR staff to better plan for future trail use.

Getting to the trail

Sources of information for all visitors

When asked how the visitors found out about the trail, **the majority of state trail visitors reported that they have known about the trail they visited for a long time** (72%). Ten percent reported that they received a referral from a family or friend (Figure 10).

Figure 10. Sources of information for visitors

Source of information	All visitors (N=1,557)
Known about this trail for years	72%
Referral from family or friend	10%
Stumbled upon; happened to be in the area	7%
Online (Google, website, blog, social media, etc.)	4%
Recommendation from a business, visitor center, etc.	1%
From the DNR (website, social media, brochure, staff, etc.)	2%
Smartphone app	1%
Publication (brochure, magazine, or newspaper)	1%
TV or radio	<1%
Events (e.g., consumer show, fairs, bicycle tour)	<1%
Other	2%

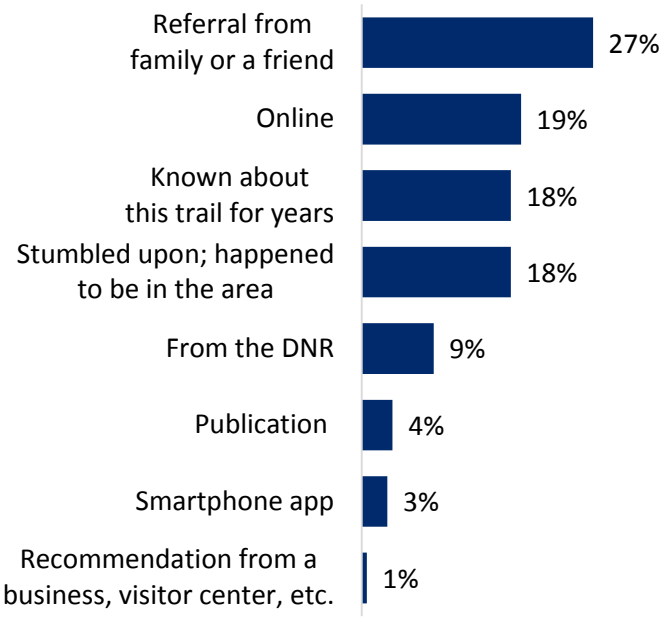
Note. Visitors could select more than one source.

Gitchi-Gami State Trail

Sources of information for first-time visitors

Eleven percent of the survey respondents indicated that this was their first visit to the trail where they received the survey. Of those who had never visited the trail before, more than one-fourth were referred by a family member or friend. Other frequently cited sources included online, known about the trails for years, and stumbled upon the trail (Figure 11).

Figure 11. Sources of information for first-time visitors



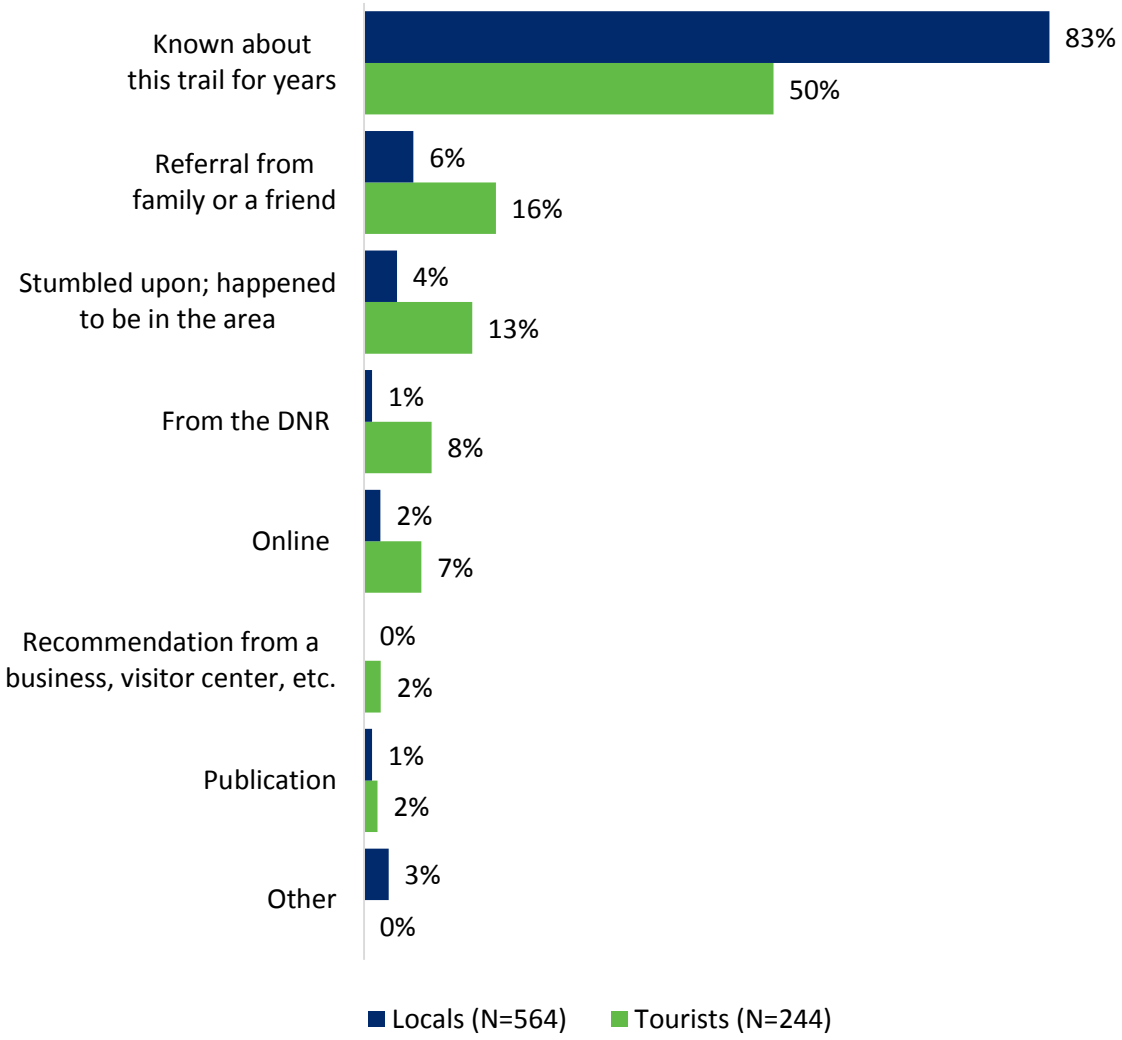
Note. N=164. Visitors could select more than one source.

"From the DNR" includes the DNR website, social media, brochure, staff, etc. Events (e.g., consumer show, fairs, bicycle tour); TV or radio; and "Other" categories are not displayed; each of them was mentioned by one visitor.

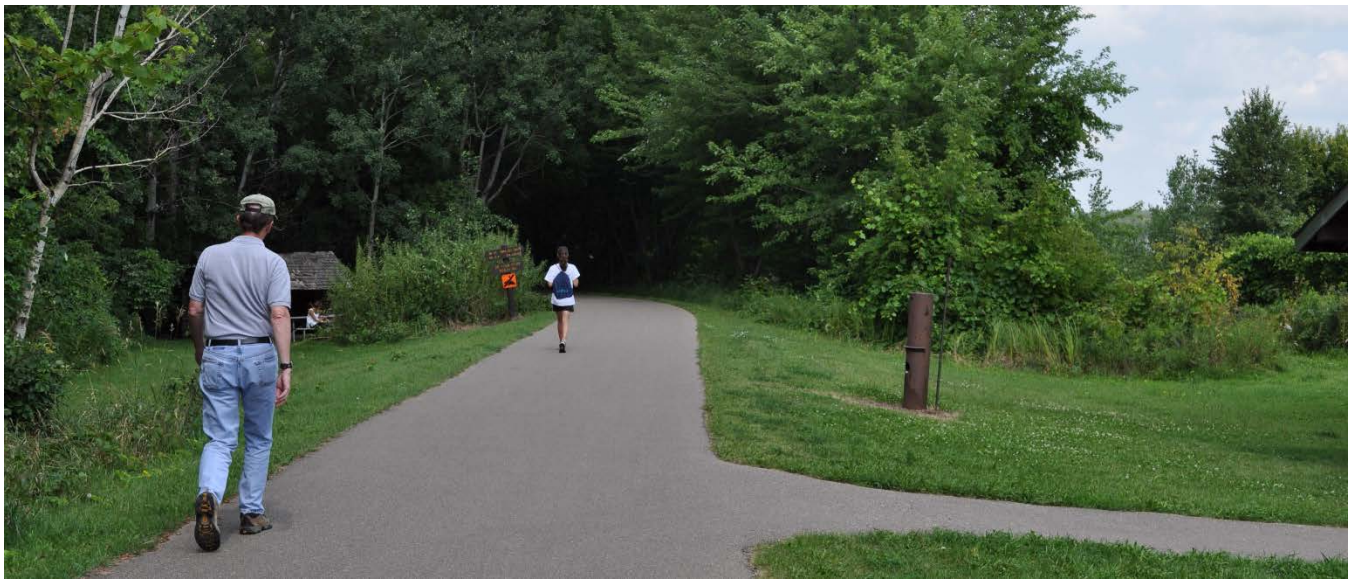
Source of information for tourists

Half of tourists already knew about the trail they visited. Eight percent of tourists learned about the trail from DNR-produced media or from DNR staff, as opposed to 1% of locals (Figure 12).

Figure 12. Information sources for tourists and locals



Note. The questions used to determine whether a visitor was considered a local or tourist were asked in the follow-up survey. The total number of follow-up survey respondents who responded to this question is 808. "From the DNR" includes the DNR website, social media, brochure, staff, etc. Percentages may not add up to 100% due to rounding.

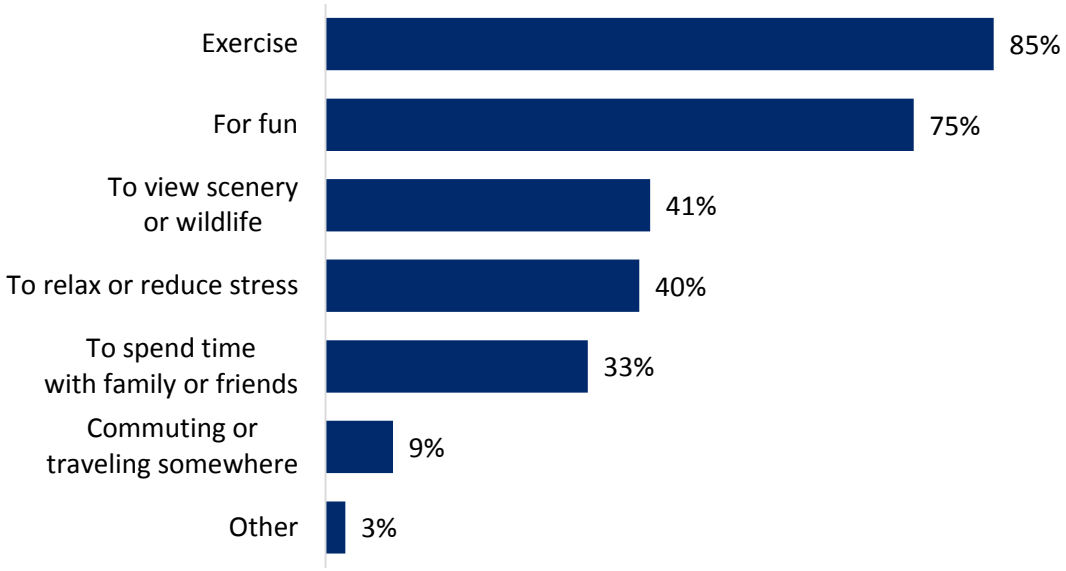


Douglas State Trail

Reason for using the trail

Eighty-five percent of visitors were using the trail for exercise, and 75% were using the trail for fun. About one in ten visitors used the trail for commuting or traveling somewhere (Figure 13).

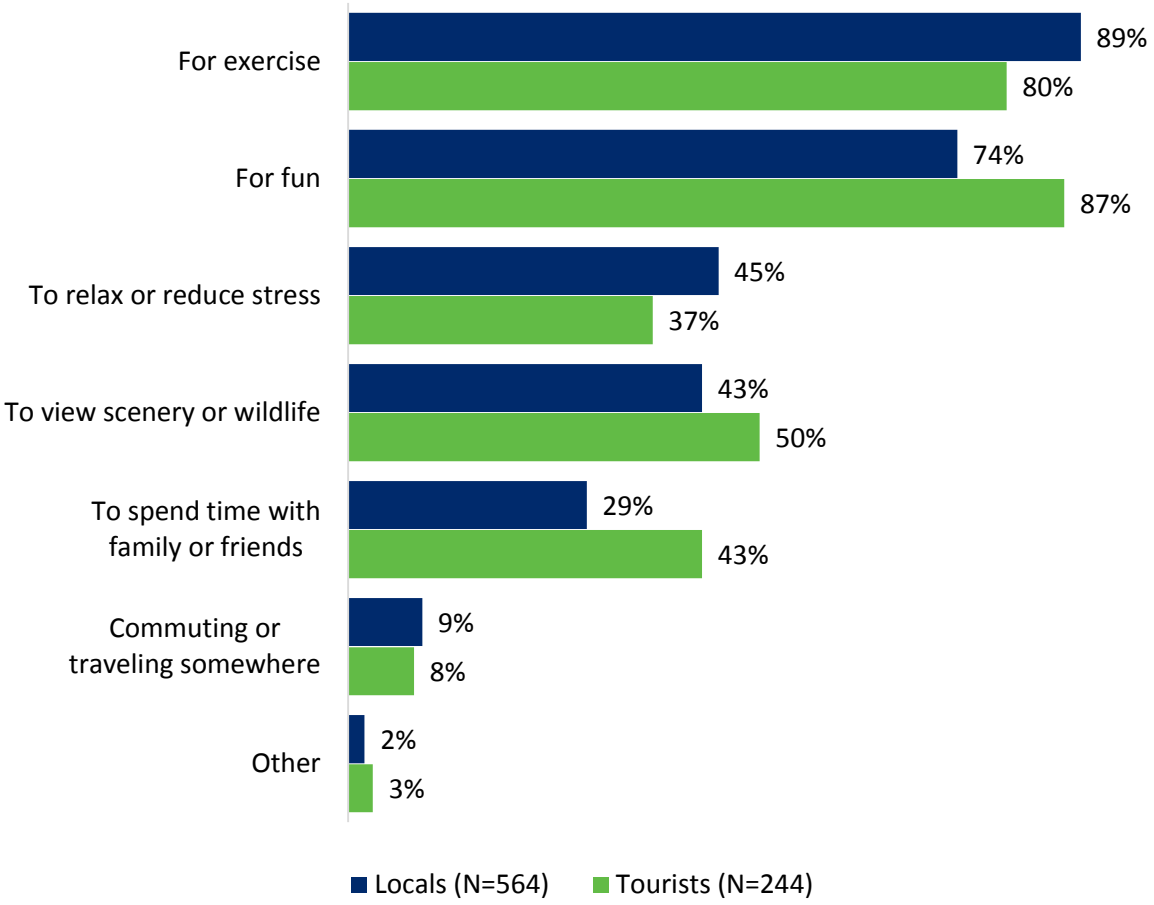
Figure 13. Reasons for using the trail



Note. N=1,557. Visitors could select more than one reason.

In addition to using the trails for fun or exercise, a higher share of tourists than locals reported using the trail to spend time with family or friends (43% vs. 29%).

Figure 14. Locals' and tourists' reasons for using the trail

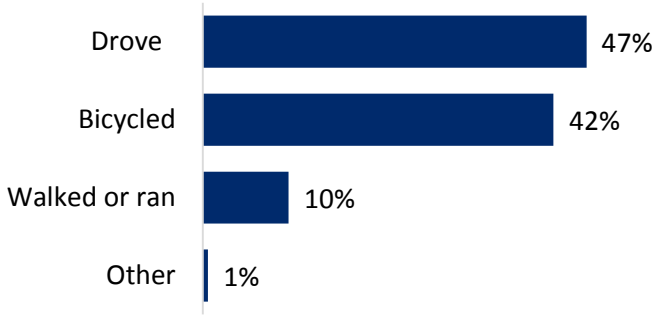


Note. Visitors could select more than one reason for using the trail.

Ways to get to the trail

When asked how they got to the trail, **almost half of visitors indicated that they drove (47%) or bicycled (42%)**.

Figure 15. Ways to get to the trail



Note. N=838

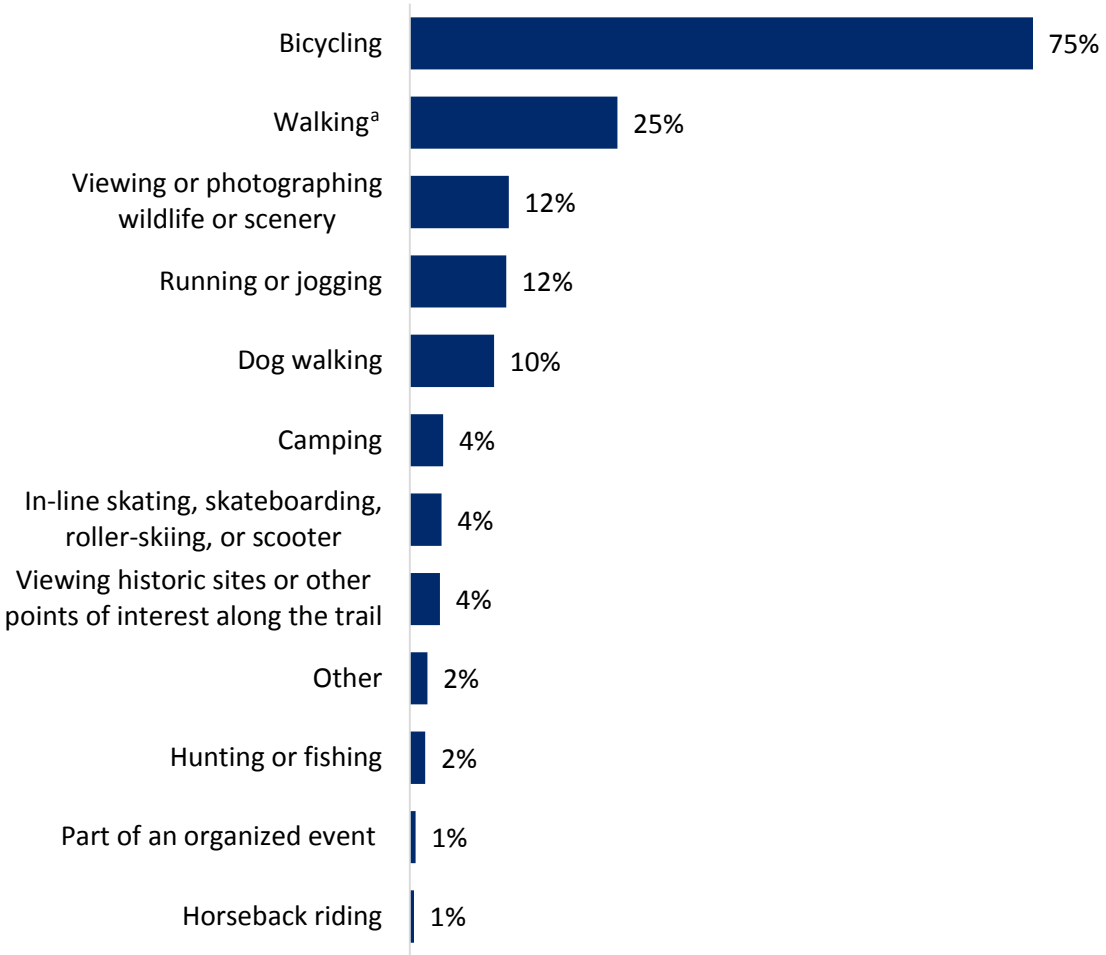
At the trail

On-trail activities

Visitors used the trails for a variety of activities. **Bicycling was the most prevalent activity**, with three-quarters (75%) of visitors indicating their group was participating in this activity during their visit. Walking was the second most common trail activity, with one-quarter (25%) of visitors indicating their group was participating in this activity.

> ***"Minnesota does bike trails right. The Root River Trail had perfect pavement. The towns offered many places to eat and shop. Less than an hour after a windstorm, the trail crew was clearing the trail of fallen tree branches. Thank you Minnesota!" – Root River visitor***

Figure 16. Trail activities during their visit

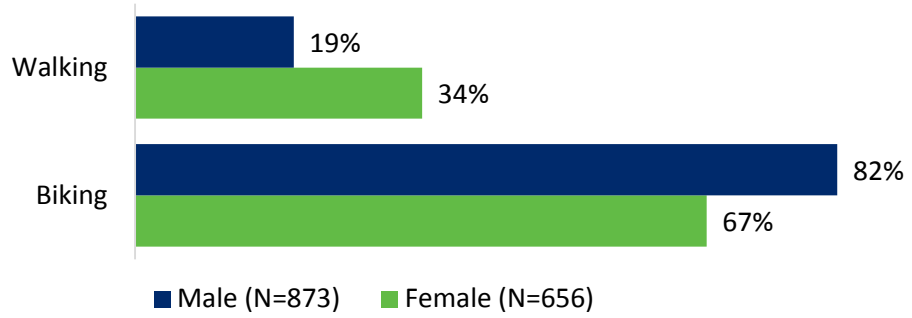


Note. N=1,560. Visitors could select more than one activity.

[a] Including using any type of mobility assist device

While a higher share of men were biking compared to women, a higher percentage of women were walking compared to men (Figure 17).

Figure 17. Walking and bicycling activities by gender



Note. The survey included gender selections for non-binary, transgender, or none of these. Less than 0.5% of the visitors selected one of these categories. Percentages may add up to more than 100% due to rounding.

Results also show that:

- Nearly a quarter of non-bicyclists used the trail to walk their dog(s).
- Three-quarters of people who visited primary corridors (75%) reported that their primary activity was bicycling, compared to 55% of secondary corridor visitors. The remaining people who visited secondary corridors (43%) said they run, jog, or walk as their primary activity.
- A higher percentage of tourists indicated bicycling as an activity compared to local visitors (82% to 67%).

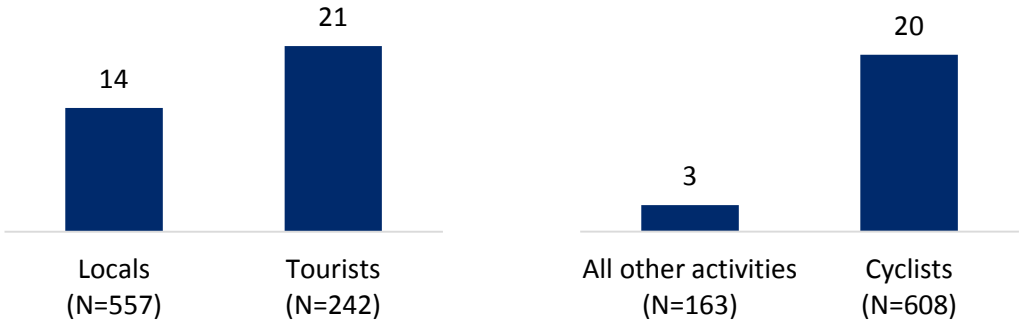
Equipment used during visit

Nearly all trail visitors (95%) indicated that they did not use any specialized equipment during their visit. The majority of the remaining visitors, who were almost entirely adults older than age 55, used an electric-assist bicycle (4%). Other types of equipment, such as wheelchairs and electric scooters, skateboards, or Segways registered less than 0.5% of responses. Non-electric bicycles were not included in the specialized equipment list.

Travel distance on the trail

The survey asked the visitors to estimate how many miles they traveled on the state trail on the day of their visit. **The median distance that visitors traveled on the trail was 15 miles** (Figure 18); the median for tourists was higher than the median for locals (median for tourists: 21 miles and median for locals: 14 miles). As would be expected, cyclists traveled greater distances than non-cyclists (median of 20 miles vs. 3 miles). Nearly all visitors (99%) indicated that they used paved or limestone trails during their visit and 1% used a trail shoulder or parallel natural surface trail.

Figure 18. Median distance traveled on trail (miles)



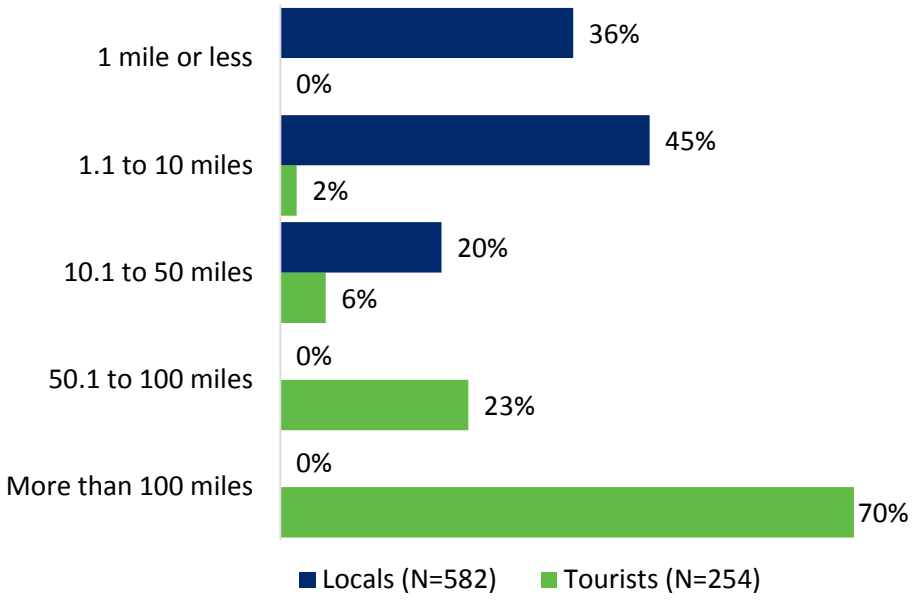
Of all trail visitors, 85% traveled out-and-back on the trail, 4% traveled one way, and 11% traveled in a loop, using a different trail or route to go one-way.

Travel distance from home

The survey asked visitors to estimate the distance of the trail from their permanent home. While the majority of locals (81%) indicated that the trail was less than 10 miles from their homes, **70% of tourists indicated it was more than 100 miles**.

In general, higher-income households were more likely than lower-income households to have visited a trail that is farther than 100 miles from their homes.

Figure 19. Travel distance from home

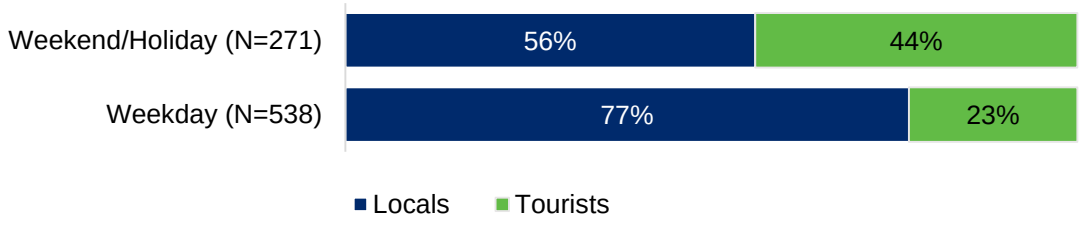


Note. Local visitors are those who traveled less than 50 miles from their home and did not stay overnight to visit the trail, and tourists are those who traveled more than 50 miles to the trail and/or stayed overnight during their visit. Percentages may add up to more than 100% due to rounding.

Visiting days

Among visitors during weekdays, 77% were locals and 23% were tourists. This difference is smaller during weekends and holidays when 56% of the visitors were locals and 44% were tourists.

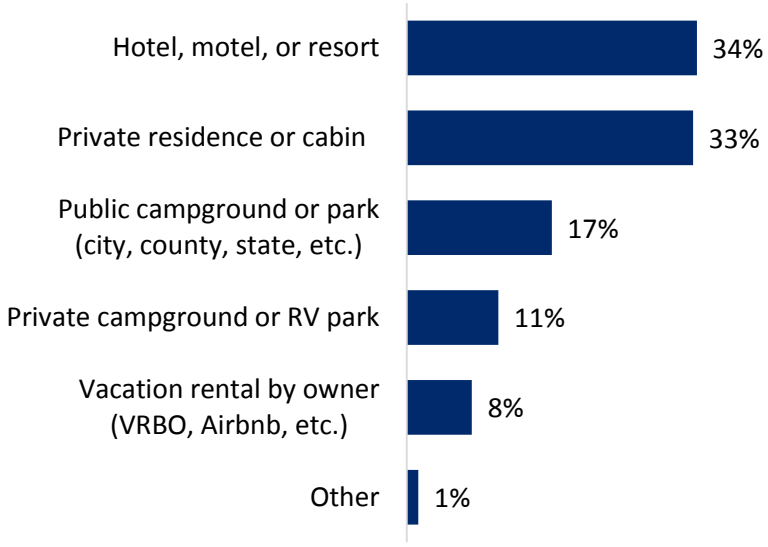
Figure 20. Visiting days for locals and tourists



Overnight accommodations for tourists

More than half (53%) of tourists who stayed overnight during their visit chose to lodge at private, commercial establishments (i.e., vacation rental by owner; hotel, motel, or resort; private campground or RV park). Respondents were able to select more than one accommodation type. Fewer than one-fifth (17%) of visitors stayed at a public campground or park (Figure 21). In general, the higher a household's income, the more likely they were to stay in private lodging. For example, 31% of visitors with household incomes of $75,000 or more reported staying in a hotel, motel, or resort during their visit, compared to 15% of visitors with household incomes less than $75,000. Also, among income level groups, 64% of visitors with incomes less than $75,000 reported that they did not stay overnight.

Figure 21. Overnight accommodations of tourists



Note. N=229.
Survey respondents could select multiple answer options.

Money spent during trip for tourists

Overall, **tourists spent an average of $525 on their trips to state trails (tourist median: $204)**. Lodging was the largest expense, averaging $300 per group (tourist median: $50). Food and beverages were the second-most expensive expenditure, with tourist groups spending an average of $113 during their trip (tourist median: $50; Figure 22).

Figure 22. Visitors' expenditures

	All visitors (average)	All visitors median (and range)	Locals (average)	Locals median (and range)	Tourists (average)	Tourists median (and range)
Transportation	$20	$1 ($0-$500)	$3	$0 ($0-$80)	$54	$30 ($0-$500)
Food and beverages	$43	$3 ($1-$1000)	$9	$0 ($0-$900)	$113	$50 ($0-$1,000)
Lodging	$98	$0 ($0-$7200)	$1	$0 ($0-$500)	$297	$50 ($0-$7,200)
Entertainment	$6	$0 ($0-$500)	$1	$0 ($0-$500)	$15	$0 ($0-$400)
Equipment and rental	$13	$0 ($0-$2000)	$6	$0 ($0-$2000)	$26	$0 ($0-$600)
Other expenses	$7	$0 ($0-$1000)	$1	$0 ($0-$100)	$19	$0 ($0-$1,000)
Total spending	**$187**	**$10 ($0-$8200)**	**$22**	**$2 ($0-$2730)**	**$525**	**$204 ($0-$8,200)**

Note. N for all visitors=710-719; N for locals=477-486; N for tourists=233-234.
The survey asked visitors, “Please estimate how much you and your group spent on the following types of expenses during your visit to the trail.” While more than half (58%) of tourist groups consisted of two people, the size of the groups ranged from 1 to 15 people. The survey did not capture information related to the duration of overnight lodging or days spent in the area.

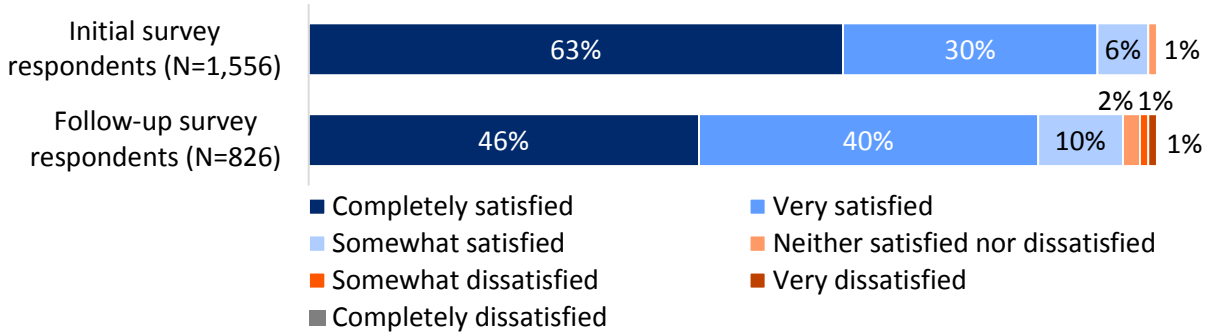
Satisfaction with the trails

Providing high-quality experiences is a cornerstone of the DNR's efforts to attract new trail visitors, as well as bring current visitors back to state trails. In general, visitors across the demographic groups and types (e.g., locals or tourists, cyclists or non-cyclists, those who visited primary or secondary corridors) who completed the 2019 survey were highly satisfied with their visit to the trail.

Overall satisfaction

Most visitors who completed the initial or follow-up survey reported that they were very satisfied or completely satisfied with their visit to the trail (Figure 23). These results are similar to the 2017 State Parks Visitor Survey (89% reporting being very or completely satisfied with their state park visit). When asked whether they would recommend the trail that they visited to a friend or family member, 100% of the respondents in both the initial and follow-up surveys in 2019 answered "yes."

Figure 23. Overall satisfaction



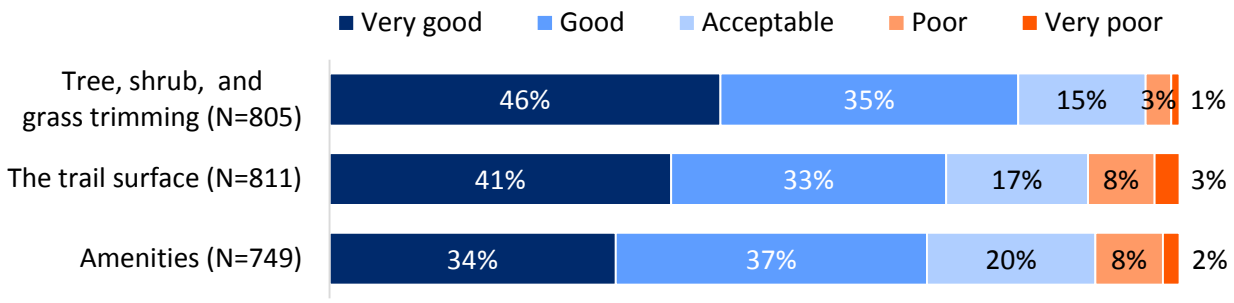
Note. Visitors in the follow-up survey were asked, "After completing your visit and with further reflection, which statement most closely reflects your feelings about your visit?" The follow-up survey respondents were a subset of the initial survey respondents.

Cracks on the Gateway State Trail

Satisfaction with aspects of the trail

Visitors in the follow-up survey were asked questions about the quality of three trail aspects: the trail surface (including being clear of potholes, cracks, and debris); tree, shrub, and grass trimming; and amenities (parking, toilet facilities, drinking water, etc.). **Nearly all responding visitors (more than 90%) rated the quality of these aspects of the trail as acceptable, good or very good** (Figure 24).

Figure 24. Quality of trail aspects



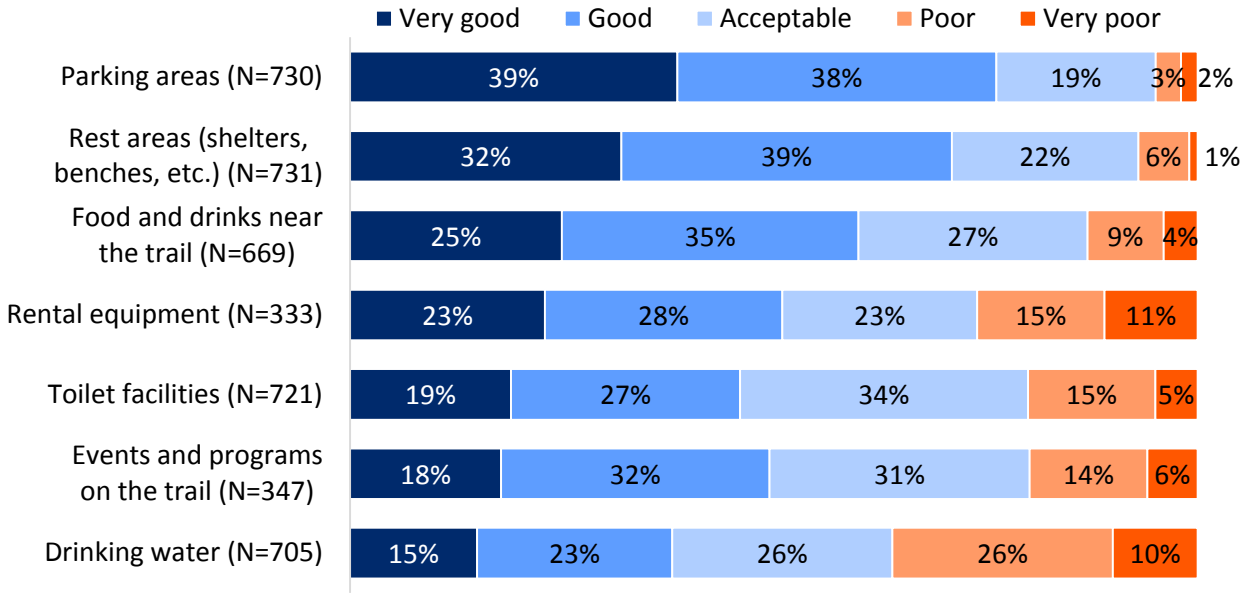
Note. The "N/A, No opinion" response was excluded from analysis. Percentages may add up to more than 100% due to rounding.

"MN trails are FAR superior to those we've been on in other nearby Midwestern states. We are so proud of our state for investing in our bike trails, taking good care of them, and building new ones. We hope the state continues to value this wonderful asset. We are a really healthy couple [ages 60+] and credit the ease of access we have to so many great and safe bike trails. Thank you!" – Sakatah Singing Hills visitor

Satisfaction with the availability of trail amenities

The visitors were also asked to rate their satisfaction with the availability of different trail amenities. **Most visitors (80% or more) rated the availability of toilet facilities, parking areas, rest areas, food and drinks near the trail, and events and programs on the trail as acceptable, good, or very good**. Availability of parking and rest areas were rated the highest. Drinking water availability was rated the lowest (36% poor to very poor), though 64% of visitors rated it at least acceptable (Figure 25). Looking at primary and secondary corridors, a higher percentage of secondary corridor visitors rated the drinking water availability poor or very poor than the primary corridor visitors (56% vs. 33%).

Figure 25. Availability of trail amenities

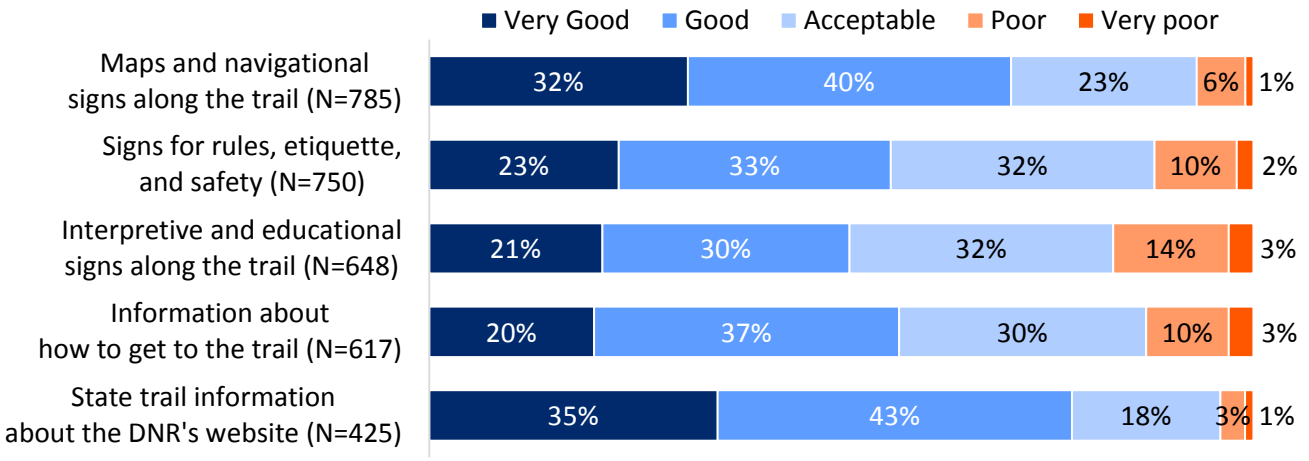


Note. The "N/A, No opinion" response was excluded from analysis. Percentages may add up to more than 100% due to rounding.

Satisfaction with the trail information

Visitors rated the quality of the trail information positively. The information included maps and navigational signs along the trail; signs for rules, etiquette, and safety; interpretive and educational signs along the trail; information about how to get to the trail; and information about the DNR's website. **More than 80% of visitors rated each of these information types as acceptable, good, or very good** (Figure 26).

Figure 26. Quality of trail information



Note. The "N/A, No opinion" response was excluded from analysis. Percentages may add up to more than 100% due to rounding.

Conflicts with other users

Most visitors (93%) said that they did not have any problems or conflicts with other trail users. The few visitors who reported conflicts with other trail users most commonly mentioned poor trail etiquette as the source of the dissatisfaction, including people stopping in the middle of the trail, cyclists taking up too much room on the trail, or cyclists who did not slow down around pedestrians or did not announce themselves when passing, and issues with dogs (e.g., dogs were not leashed or waste was not picked up).

"Excessive speed, passing too close to pedestrians, no announcements when passing from behind, and loud music from stereos on bikes." – Central Lakes visitor

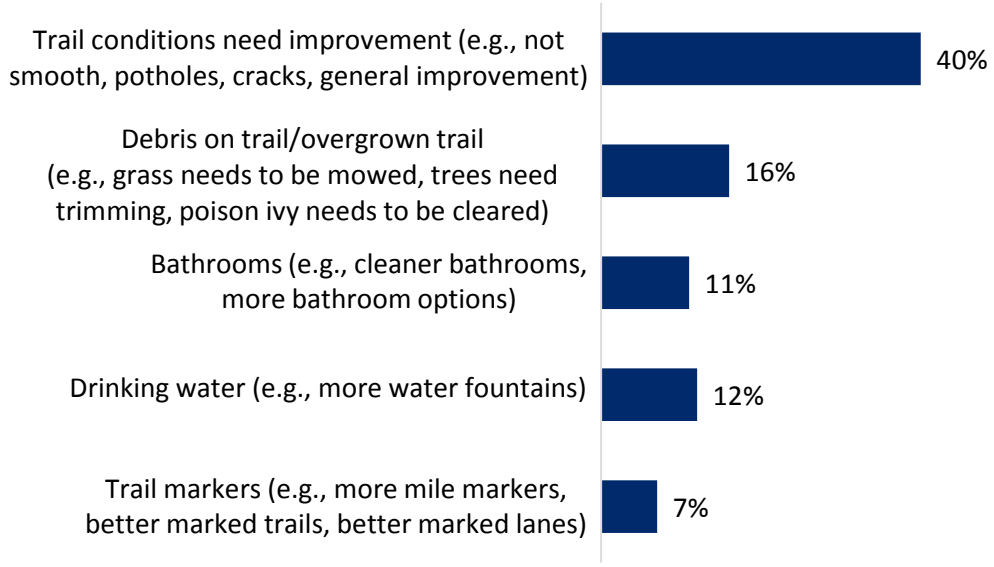
"Trail etiquette needs to improve and a few more signs about trail etiquette/rules should be posted. Some dog walkers do not control their animals. Some bicyclists are traveling too fast on the trail and don't announce when they approach." – Douglas visitor

"I was surprised at the lack of patience for children from other trail users. It did not feel really welcoming for our young kids on bikes and scooters, who themselves were using proper trail etiquette." – Root River visitor

Ways for improvement

Visitors who indicated that they were less than completely satisfied with their experience were asked for suggestions for improvement. A total of 326 of the 445 visitors (47%) provided one or more answers. Their answers were organized into themes. **The most common themes for improvement are related to trail conditions** (Figure 27).

Figure 27. Top five improvement themes



Note. N=326

Other comments noted from visitors about improvements, but not included in the graph above: general trail condition comments (not specified to any of the answers above), flooding on trails, less construction on trails, general facility comments (not specified to any of the answers above), parking options, more garbage cans available, more benches along the trails, more materials/guidance available to trail users, more trail markers, more education flyers or brochures along the trails or at stops, information about the towns along the trails, easily accessible trail maps, more trail maps on the trails, trail etiquette signs, poor etiquette from other users, problems with dogs, poor behavior from bikers, bikers (in general), speeding bikers, need for more trails, more connections amongst trails/connections to current trails, completion of trails, dangerous conditions where trails meet the road, trails too close to the roadways, motorized vehicles on non-motorized trails, food (general), more places to eat along the trails, general safety concerns, addition of more lights on the trails.

"Access to water, clean and more bathrooms." – Luce Line visitor

"I enjoy the trails a lot. The biggest problems are pavement surface, tree trimming, and weed-whipping that needs to be done. Also, after windy days, lots of sticks on the path never get cleared off. I would like to see more bathrooms along the path, but with more bathrooms come vandalism. [I would like to see] winter plowing or sweeping. Where the trail crosses at Jamaca Avenue in the winter, they don't clear the snow off. [It] would be nice to use the rest of the trail in the winter." – Gateway visitor

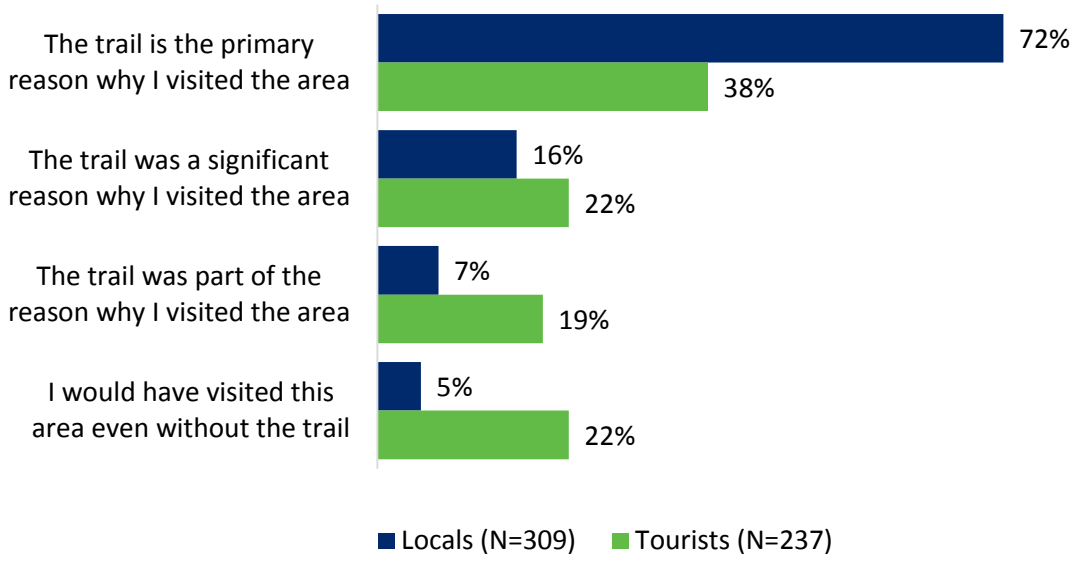
Investment and funding

Importance of the trail

State trails are an important reason for visiting the area. When asked how important the trail was in visiting the area, **75% of all visitors indicated that the trail was a primary or significant reason for their visit**. The remaining visitors indicated that the trail was part of the reason why they visited the trail (12%) or they would have visited the area without the trail (12%).

Among tourists, 60% indicated that the trail was the primary or a significant reason why they visited the area. Another 19% of tourists indicated that the trail was at least part of the reason why they visited the area. However, a larger share of tourists than locals would have visited the area even if the trail was not there (22% vs. 5%) (Figure 28).

Figure 28. Trails as a reason for visiting the area



Note. Percentages may add up to more than 100% due to rounding.

"Bicycle trails in MN are the reason I'm retiring in MN. The trails are the reason I'm willing to pay the high MN taxes. Construct more trails and maintain them, I'm willing to pay even more taxes. A paved bicycle trail around Leech Lake would be beyond wonderful!" – Paul Bunyan visitor

Investment in trails

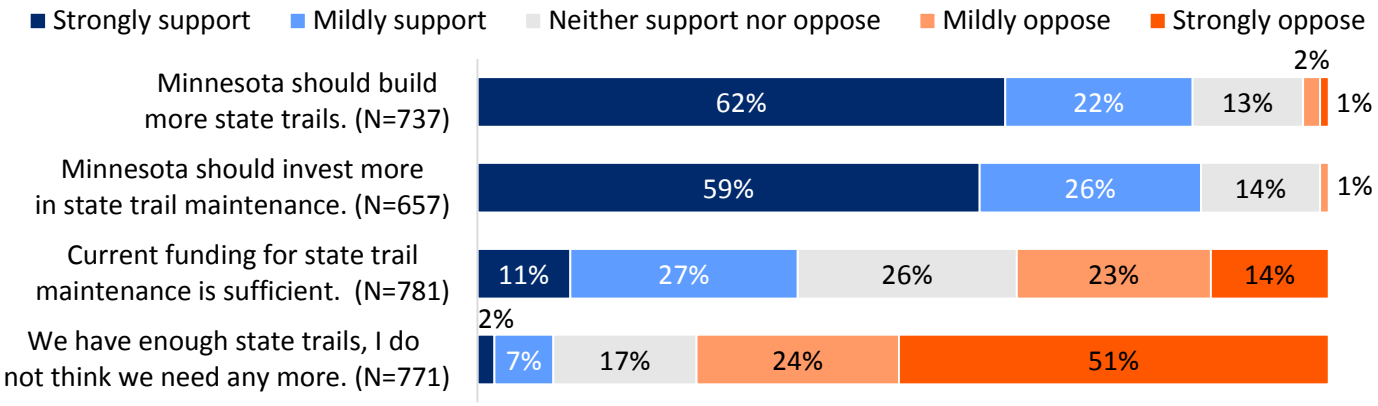
The survey asked trail visitors to indicate their level of support or opposition to a number of investments on state trails and funding-related statements to gauge trail visitor opinion on these topics.

Overall, **the majority of visitors (84%) mildly or strongly support the idea of building more trails, and a majority (85%) mildly or strongly support the idea that the state should invest more in state trail maintenance.** However, visitors were roughly divided on the notion that current funding for state trail maintenance is sufficient, with about equal shares (37%-38%) opposing or supporting current funding levels.

Results also show that:

- There is not a meaningful difference in opinions by household income.
- A majority of both cyclists and non-cyclists mildly and strongly supported the idea of investing more in state trail maintenance, though a slightly higher share of cyclists were in support (88% compared to 74%); similarly, cyclists (86%) and non-cyclists (76%) mildly or strongly supported the idea of building more state trails. There is a slightly higher opposition among cyclists to the statement that current state funding for trail maintenance is sufficient (40% compared to 26%).

Figure 29. Visitors' views on investments on state trail system



Note. Percentages may add up to more than 100% due to rounding.

"We love the trails and they should be available to everyone. Figure out a tax system to support them. Lottery money?" – Paul Bunyan visitor

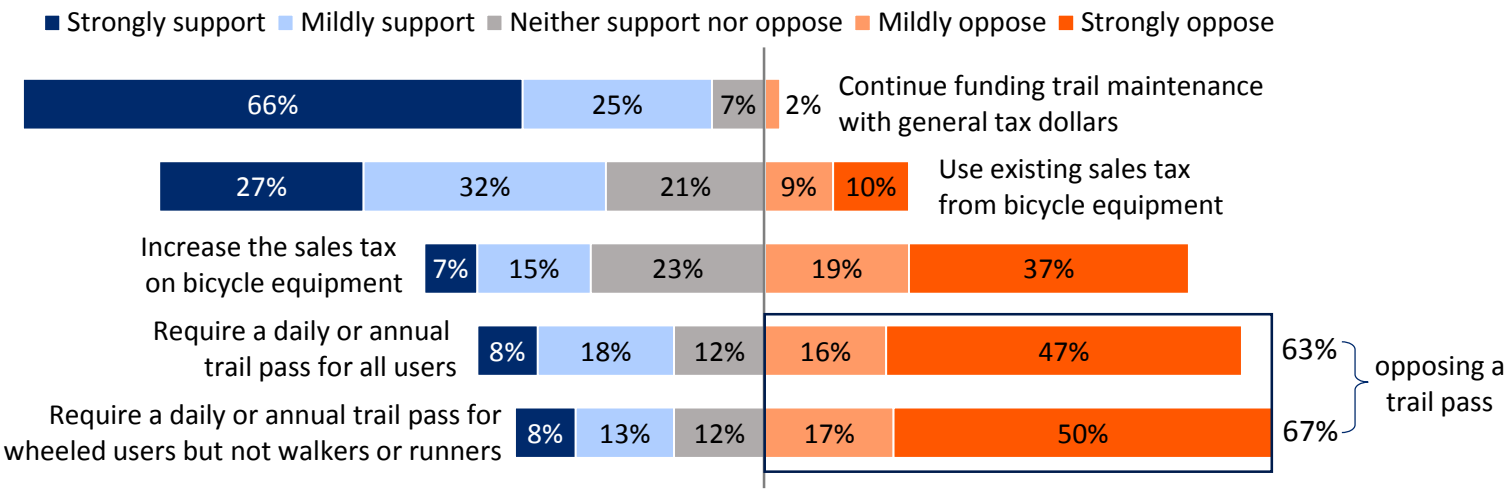
Overall funding opinions

Visitors were asked their opinions on various ways for funding state trails. **Most of the visitors (91%) strongly or mildly supported continuing funding state trail maintenance with general tax dollars**. However, when asked about **their opinions on other methods of funding (e.g., with daily or annual passes or sales taxes from bicycle equipment), visitor support was somewhat mixed** (Figure 30).

For example, when asked specifically about a bicycle equipment tax, 59% of trail users supported the use of existing sales tax to maintain trails, compared to 19% who opposed using existing sales tax. Fifty-six percent opposed an increase in the sales tax on bicycling equipment, compared to 22% who supported it. More than 60% of visitors opposed some kind of required trail pass.

> ***"I feel very strongly that the beauty of our state is something everyone here should enjoy and our state taxes should pay for that. If additional tax is needed, I'm happy to pay it to live here."*** ***– Luce Line visitor***
>
> ***"I use motorized state trails the most. Snowmobilers and ATV users pay their way with license fees. It is time for bicycle riders to pay for their trails too! Taxpayers should not pay for non-motorized trails!"*** ***– Gitchi-Gami visitor***

Figure 30. Funding



Note. Percentages may add up to more than 100% due to rounding.

There is not a meaningful difference in funding and pass requirement opinions by household income or primary trail activity.

Trail annual pass opinions

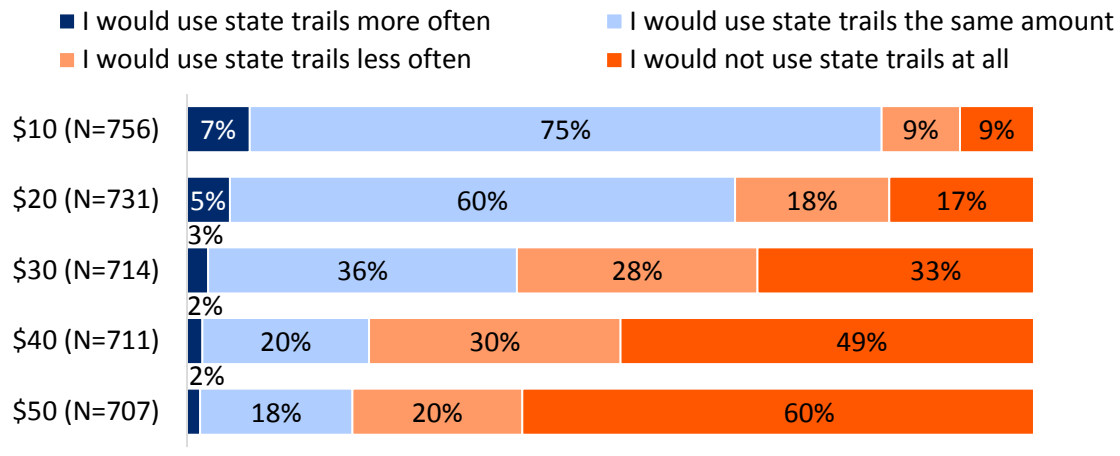
The operation and maintenance of Minnesota state trails is funded from general tax dollars as well as revenue from lottery in-lieu-of-sales taxes. Most state trail visitors are not charged a direct use fee, like the state park permit, that would support at least some of the operation and maintenance costs. Some states, such as Wisconsin, charge state trail visitors for a trail pass, and certain local entities in Minnesota charge fees for the Cannon Valley and Mesabi regional trails. The DNR sought information on visitor's perspectives on trail passes, since this is a common idea for how to provide funds to support state trail maintenance.

The Minnesota DNR requires snowmobilers, cross-country skiers, and equestrians to have a trail permit to use state recreation facilities. Notably, each of these passes were instituted because of user group advocacy and they apply to other areas besides state trails. Snowmobilers must have a trail registration to legally ride on state or grant-in-aid funded trails. The horse pass gives riders access to horse trails and facilities in state parks, state forest recreation areas, and state trails. The cross-country ski pass is required to ski on groomed trails in state parks, state forests, and on state and grant-in-aid trails.

The DNR was interested in knowing whether different annual pass price points make any difference in visitors' opinions about their likelihood to visit state trails. Results of this 2019 State Trail Visitor Study show that an annual trail pass could significantly affect use of state trails (Figure 31). The impact on trail usage starts immediately at $10, with almost 20% of respondents saying they would decrease use or not use the trail at all. As the price increases, the share of visitors saying that they would not use the trail also increases (8%-16% for every $10 of an increase in fee).

Enforcement of a state trail pass may be challenging because trails are interconnected and cross jurisdictional boundaries. Many trail visitors may not be aware of the difference between state, regional, and local trails and may not know when they are using a state trail. Some trail systems are perceived as a single trail even though they are a patchwork of connected state, regional, and local trails with multiple management authorities.

Figure 31. Trail pass fee opinions



Note. Percentages may add up to more than 100% due to rounding.

We also examined the trail fee opinions for visitors with different annual income levels (i.e., less than $50,000 or more than $50,000) and for those who reported different primary activities (i.e., bicycling or other activities).

Figure 32 shows that regardless of income, visitors reported they would use trails less frequently as the cost of a proposed trail fee increases, with lower-income visitors registering more price-sensitivity. For both income levels, the biggest drop appears between the price point of $20 and $30. When the cost of a proposed fee increased from $20 to $30, the share of lower-income visitors who would use the trails the same amount dropped from 50% to 24%, and the share of higher-income visitors dropped from 60% to 38%.

Figure 32. Trail fee opinions by income level

	$10		$20		$30		$40		$50	
Annual trail fee	Income less than $50,000 N=111	Income $50,000 or more N=527	Income less than $50,000 N=105	Income $50,000 or more N=513	Income less than $50,000 N=103	Income $50,000 or more N=499	Income less than $50,000 N=104	Income $50,000 or more N=494	Income less than $50,000 N=102	Income $50,000 or more N=492
I would not use state trails at all	15%	8%	24%	16%	41%	31%	59%	47%	72%	59%
I would use state trails less often	9%	9%	22%	18%	30%	29%	27%	31%	16%	21%
I would use state trails the same amount	66%	75%	50%	60%	24%	38%	13%	20%	12%	19%
I would use state trails more often	9%	7%	4%	6%	5%	2%	1%	2%	1%	2%

Note. Percentages may not add up to 100% or exceed 100% due to rounding.

Figure 33 shows similar trends among cyclists and non-cyclists. As the cost of proposed annual passes increases, cyclists and non-cyclists would use trails less. When the cost of a proposed fee increased from $20 to $30, the share of cyclists who would use the trails the same amount dropped from 62% to 38%, and the share of non-cyclists dropped from 50% to 31%. If the DNR required a trail pass of $30 annually, 59% of cyclists would use the state trails less often or not at all.

Figure 33. Trail fee opinions of cyclists and non-cyclists

	$10		$20		$30		$40		$50	
Annual trail fee	Cyclists N=576	Non-cyclists N=156	Cyclists N=554	Non-cyclists N=151	Cyclists N=540	Non-cyclists N=151	Cyclists N=539	Non-cyclists N=149	Cyclists N=534	Non-cyclists N=150
I would not use state trails at all	7%	15%	15%	25%	30%	41%	47%	56%	59%	66%
I would use state trails less often	9%	11%	18%	21%	29%	27%	30%	26%	20%	17%
I would use state trails the same amount	77%	67%	62%	50%	38%	31%	20%	17%	19%	16%
I would use state trails more often	7%	8%	5%	5%	3%	2%	2%	1%	2%	1%

Note. Percentages may not add up to 100% or exceed 100% due to rounding.

"The state trails should be for anyone, regardless of household income. Putting a price on using the trails would eliminate people who struggle making ends meet. Exercise on the other hand, is a crucial element to all human health and mental well-being. Everyone should have opportunities to use [it for] exercise without a fee attached to it." – Paul Bunyan visitor

"I love having access to the Luce Line! However, I think requiring people to pay for it is not a good idea. If people have to pay, I think there will be a lot less visitors, and we all need to get out more, not less. Personally, I would rather sacrifice facilities that need to be maintained such as drinking fountains and restrooms than pay for a pass. The trail should continue to be funded through tax dollars." – Luce Line visitor

Wilder Research recommendations

In general, visitors to Minnesota state trails felt very positive about their experiences at the trails. They used the trails frequently and would want the state to continue funding and making investments in them. In this section, Wilder Research provides recommendations that are based on the survey findings as well as our knowledge about working with diverse communities in Minnesota.

To attract demographically diverse visitors

- Be intentional when creating more trails, focusing on areas that are more diverse and lack outdoor recreation investments.
- Develop outreach programing for communities of color and low-income communities.
- Provide subsidized or free equipment rentals or passes to younger and lower-income visitors.
- Continue to utilize general tax dollars to care for trail facilities.

We also suggest that the DNR would…

- Advertise in languages other than English.
- Collaborate with partners that focus on diverse groups of people when developing marketing campaigns and advertising strategies.
- Work with school districts and youth organizations to attract younger users (e.g., through DNR programs and field trips to the trails).
- Ensure there is a commitment to hire and retain staff of color at a variety of levels within the DNR to invite a diversity of perspectives.
- Conduct a survey research study to collect data from non-visitors or non-users to understand how to attract new visitors, including more diverse and younger visitors.

To enhance visitor experiences

- Ensure materials and signage from the DNR and on the trail are offered in a variety of languages.
- Invest in trail maintenance, primarily focusing on surfaces to prevent dangerous conditions for visitors.
- Post trail user etiquette signage along the trail.
- Improve availability of drinking water, especially on secondary corridors.
- Continue to partner with towns/cities on or near trails to provide more facilities (e.g., bathrooms, water fountains).
- Even though the share of visitors using information from the DNR website for planning their trip is small, we recommend DNR continue to update and improve on it.

Appendix

Individual comments on ways to improve Minnesota trails

Visitors had the opportunity to provide additional feedback at the end of the follow-up survey on ways the DNR could improve Minnesota state trails. Their answers covered a variety of topics, including trail maintenance, facilities, and pass/fee opinions, taxes pertaining to the DNR and trails, and etiquette issues of other users. Their individual comments are presented verbatim, with slight revisions for clarifications and spelling corrections.

Appreciation of trails

The most common comments were related to the appreciation of the trails and acknowledgement of the DNR's work.

> *"I would bike much less if I didn't have the Gateway trail close by and so **I am very appreciative of it.**"*
> *—Gateway visitor*

> *"Overall the **DNR does a great job** with the resources available to them at this time. The improvements that I would like to see would require funding, and I for one feel it is money well spent. Thank you!"*
> *—Willard Munger visitor*

> *"I grew up in Iowa, which does not have much to offer. The trail system in Minnesota has blown me away; **Minnesota's trails are amazing!**"*
> *—Root River visitor*

> *"I really **appreciate** the Minnesota state trail system. I've used many different paved bicycle trails throughout the state for many years. It is an excellent trail system. I feel fortunate to live near enough to utilize Minnesota's trails. **Thank you Minnesota DNR** and other Minnesota municipalities for such a great trail system."*
> *—Paul Bunyan visitor*

> *"Overall the **trail was very nice and the views were astounding!** Would love to bring my kids here once I settle down cause if you live here in Minnesota it's a must!"*
> *—Willard Munger visitor*

> *"**I love the fact we can ride and drive our horses on this trail** and the fact that it's close to the lake is a huge bonus."*
> *—Sakatah Singing Hills visitor*

> *"The trails provide a convenient, safe, and fun way to exercise. When my family and I walk we see many, many other people also enjoying the healthful activities that the trail system provides, so I feel strongly that **state trails are providing a great service towards better health for the people that use them**. Thank you so very much!!"*
> *—Paul Bunyan visitor*

Trail maintenance

Satisfaction with trail maintenance was largely positive. But some visitors offered comments on how to improve certain aspects of the trails, including the need for better surfaces, eliminating potholes and cracks, and making the trails smooth for better usability. Additionally, visitors mentioned the need for better clean-up on and around the trails. This could include cutting the grass by the trail, maintaining low-hanging trees and bushes, and keeping the trail clean of any debris.

> *"I noticed, as I have in the past, a **lack of trail maintenance**; in some ways I think the **trail is dangerous**; there are quite large gaping holes in the trail (maybe 6 inches across; I saw maybe 5 such holes; but more importantly, the approaches to many of the bridges are not smooth."*
>
> *—Harmony-Preston Valley visitor*

> *"The Sakatah trail is great in some places and not so good in others. The section between Waterville and Elysian is **dilapidated, dangerous, and disgraceful**. It should have a warning sign as to its condition. Fat tire bikes probably would not have too much of a problem, but I ride a recumbent bike and the wheels are quite small. The broken surface and potholes throw me around. I'm sure there are no roller skaters on this section. PLEASE RESURFACE THIS SECTION. Thank you."* *—Sakatah Singing Hills visitor*

> *"Continue to **repair/replace damaged trail pavement regularly**; mark/paint potholes and significant cracks/frost heaves until repairs are made."* *—Root River visitor*

> *"**Keep up on the maintenance**. We all love to build new, but taking care of what we already have can be a challenge."* *—Central Lakes visitor*

> *"Some of the **older sections that have ruts and breaks** (30/35 years old) need replacement or repair, and new construction should be intertwined with this update action."* *—Paul Bunyan visitor*

> *"Clear **poison ivy**."* *—Heartland visitor*

Trail pass fees

Visitors also noted that they did not think the implementation of a trail pass fee was a good idea, with some indicating they would not utilize the trail if a fee were implemented. Visitors also noted that there could be an adverse impact on lower-income people if a trail pass were implemented.

> *"I think trail passes would **discourage the less affluent from using the trails**. General taxes should probably be used to fund trails or an extra tax on bike equipment."* *—Gateway visitor*

> *"**The state trails should be for anyone, regardless of household income.** Putting a price on using the trails would eliminate people who struggle making ends meet. Exercise, on the other hand, is a crucial element to all human health and mental wellbeing. Everyone should have opportunities to exercise without a fee attached to it."* *—Paul Bunyan visitor*

> *"**Do not charge to use state trails!!!!** A family of five who bikes two to three times a year on them for 50.00 each? No!"* *—Paul Bunyan visitor*

> *"**Do not charge** a trail fee."* *—Willard Munger visitor*

However, not all visitors saw a trail fee as a bad idea.

> "*I don't feel that users should have to pay for access to the trails any more than motorists should pay tolls for access to public roads. I understand that trail users are not using taxable commodities (gasoline) to use the trails, but the person who uses the trails and does not also own a car is rare. We are all paying taxes already and the trails should be managed as an extension of road infrastructure (albeit managed by a different entity, DNR rather than DOT). I personally am a frequent trail user and* ***would use the trail about as much even if I had to purchase a pass.***"
>
> *—Brown's Creek visitor*

> "*I love Minnesota state trails. They are super important to me and* ***I am in full support of a yearly pass*** *to use them if that helps in the maintenance and further growth of state trails.*"
>
> *—Douglas visitor*

> "*I think an* ***annual pass would be a good option.***"
>
> *—Paul Bunyan visitor*

> "***I don't mind paying for use of the trail.*** *But if you charge bike and rollers skiers and not others, then I would expect some sort of right-of-way from those who pay nothing rather than equal use and space.*"
>
> *—Gateway visitor*

Funding

Funding was also another topic visitors commented on, with suggestions on where and how to source money.

> "***Collaborate with local municipalities*** *for maintenance. Do not charge annual fees.*"
>
> *—Gateway visitor*

> "***Partnering with community development organizations*** *located along the trails seems to be an obvious income source if not already the case.*"
>
> *—Heartland visitor*

> "*I always support* ***general tax revenue*** *as a funding mechanism for parks and trails. Fees are regressive taxes that adversely impact poor people.*"
>
> *—Gateway visitor*

> "*Use state park funding for trails.* ***Close smaller parks*** *if necessary. I find some parks, like Lake Louise, disappointing and under maintained anyway.*"
>
> *—Paul Bunyan visitor*

> "*I think the* ***DNR should be charging twice as much for nonresident fishing licenses*** *to help build a larger budget for trails, parks, and fisheries. Don't charge people for healthy options like trail riding on bikes, etc.*"
>
> *—Paul Bunyan visitor*

Amount of trails and expansion of systems

Visitors would like to have more trails and expanded trail systems.

> "*I basically use the trail for commuting to St Paul. Occasionally for recreation. We could use* ***more or an expanded system.*** *Extend the Vento! I oppose the proposed bus transit way.*"
>
> *—Gateway visitor*

> "*I feel like* ***more is better****. I'm willing to pay for more trails.*"
>
> *—Gateway visitor*

> "***We need more trails.*** *Connecting trails so you don't have to ride on the streets. It's a safety issue. The more trails the better. Motivates people to exercise and will lower health care costs.*"
>
> *—Gateway visitor*

"*We'd really like to see the **Gitchi-Gami trail completed soon**, especially going south from Grand Marais! Our son is 4 and started riding a bike this year. Would love to be able to take him there in a few years.*"
—Gitchi-Gami visitor

"***More rustic**, remote trails.*" *—Brown's Creek Visitor*

"***Completion of connector trails** is helpful. Small segments need good options for riders to follow to additional segments.*" *—Sakatah Singing Hills visitor*

"*Please work toward **trail connectivity**; county, city, and state. Would like to do longer rides from major urban centers out and between urban centers. Please make sure mowing and brush debris are cleared from trail surface. Sometimes mowed grass and brush make surface unsafe for roller skiing and rollerblading.*"
—Harmony-Preston Valley visitor

Restrooms and drinking fountains

Visitors also wanted more restrooms and more water fountains or drinking stations along the trails.

"*I really enjoyed the area and small towns around with trails. The **bathrooms need more presence** along trails that go for over 100+ miles. Also, the small town people make bikers feel very uncomfortable by posting negative signs for bikers in their businesses. I was shocked by this. Do they not want tourism? Also, please post on maps if there are eating places in these small towns or post by entrances on bike routes. That will help us decide where to go. Keep the trails up please.*" *—Central Lakes visitor*

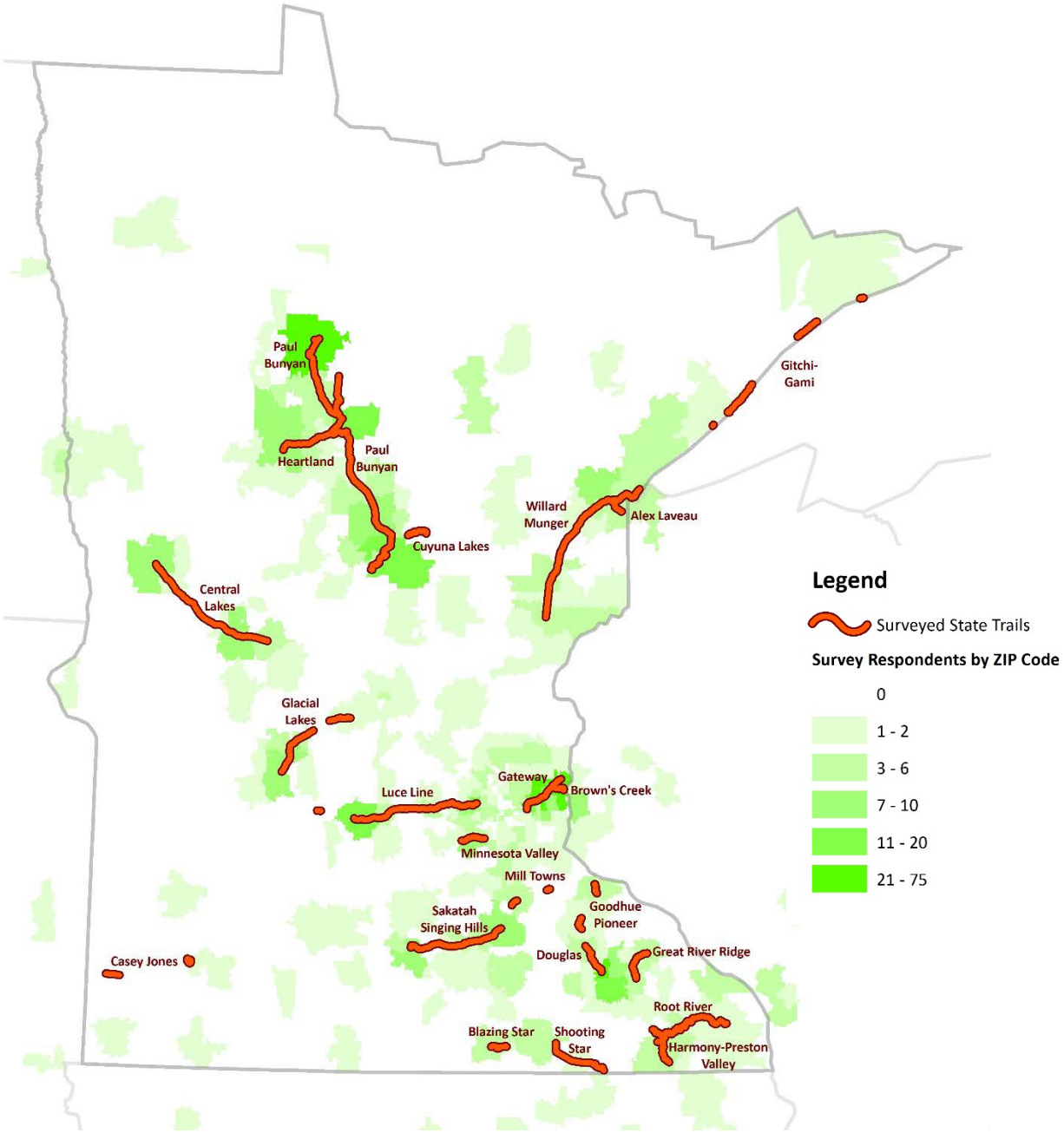
"***Bathrooms**. Seriously, it would improve the experience for women and make it more equitable.*"
—Douglas visitor

"***More drinking fountains**. More bathrooms.*" *—Glacial Lakes visitor*

"***Increase water stops**. Better signage regarding food, water, and distance involved.*" *—Brown's Creek visitor*

Additional information

A1. Origin of visitors



Source. DNR

Note. 14% of people visited from outside of Minnesota.

A2. Demographics of 2019 state trail visitors in initial and follow-up surveys

Age	Initial survey N=1539	Follow-up survey N=811
18-24 years old	5%	3%
25-34 years old	11%	10%
35-44 years old	14%	13%
45-54 years old	17%	16%
55-64 years old	30%	33%
65 years or older	23%	26%
Gender	**N=1536**	**N=811**
Female	43%	44%
Male	57%	56%
Race/ethnicity	**N=1526**	**N=800**
White	95%	97%
Of color	5%	3%
Educational attainment	**N=1514**	**N=811**
High school graduate or GED	9%	6%
Some college, but no degree	11%	10%
Associate, vocational, or technical degree	13%	13%
Bachelor's degree	36%	37%
Graduate degree	31%	35%
Annual household income in 2018	**N=1335**	**N=811**
Less than $24,999	6%	4%
$25,000 to $49,999	14%	13%
$50,000 to $74,999	20%	18%
$75,000 to $99,999	17%	20%
$100,000 to $149,999	22%	23%
$150,000 or more	21%	22%

A3. Demographics of visitors in 2019 State Trails Visitor Study and previous survey studies

	2019 State Trails Visitor Study	2017 State Parks Visitor Study	2007-13 State Trail Users (Kelly, 2014)
Age	**N=1539**	**N=746**	**-**
44 years or younger	30%	40%	-
45-64 years old	47%	42%	-
65 years or older	23%	18%	-
Gender	**N=1526**	**-**	**N=2565**
Female	43%	-	50%
Male	57%	-	50%
Race/ethnicity	**N=1526**	**N=748**	**N=2565**
White	95%	95%	97%
Of color	5%	5%	3%
Educational attainment	**N=1514**	**N=731**	**N=2565**
Bachelor's degree or higher	67%	58%	63%
Household income	**N=1335**	**N=712**	**N=2565**
Less than $50,000	20%	23%	24%
$50,000 to $74,999	20%	25%	26%
$75,000 to $99,999	17%	20%	19%
$100,000 or more	43%	32%	33%

Source. The Research Edge, LLC. (2017). *2017 Minnesota State Parks Visitor Survey*.
Kelly, T. (2014). *Use characteristics and use trends since the 1990s on paved state bicycle trails*. Minnesota Department of Natural Resources, Operations Services Division. Data are presented for the 2007-13 trail users.

Note. The 2019 state trail visitors were asked to describe their race and/or ethnicity as White, non-Hispanic; Hispanic or Latino; Black or African American; African; Asian; Middle Eastern; Native, First Nation, Alaska Native; Pacific Islander; or Other. Respondents could choose multiple answers. Those who chose White, non-Hispanic only are categorized as White; the remaining are categorized as "Of Color."

A4. Age by race of the visitors

Age	White N=1435	Of color N=81
18-24 years old	4%	14%
25-34 years old	11%	16%
35-44 years old	13%	28%
45-54 years old	17%	17%
55-64 years old	31%	16%
65 years or older	24%	9%

A5. Number of survey respondents by trail and corridor

Primary corridor	N	%	Secondary corridor	N	%
Brown's Creek	118	9%	Alex Laveau	15	6%
Cuyuna Lakes	26	2%	Blazing Star	7	3%
Douglas	66	5%	Casey Jones	7	3%
Gateway	254	19%	Central Lakes	73	31%
Gitchi-Gami	69	5%	Great River Ridge	18	8%
Glacial Lakes	41	3%	Luce Line	102	44%
Goodhue-Pioneer	7	1%	Shooting Star	11	5%
Harmony-Preston Valley	32	2%			
Heartland	92	7%			
Mill Towns	24	2%			
Minnesota Valley	13	1%			
Paul Bunyan	230	17%			
Root River	131	10%			
Sakatah Singing Hills	87	7%			
Willard Munger	138	10%			
Total primary	1328	100%	**Total secondary**	233	100%
Out of the 1561 total visitors		85%			15%

State trail usage

One of the most common questions about state trails is "How many people use the trails?" This section estimates visitation and summarizes general trail use patterns. The DNR works with partners to complete automated trail counts, and the following findings are based on data gathered at over 140 locations between 2015 and 2019. These data were used to determine the sampling strategy for the visitor study.

Automated trail count methods

Visits to trails are more difficult to count than visits to parks, which have defined boundaries and a limited number of access points. People who visit trails travel different distances on trails and may begin and end their trail visit at any number of access points.

Automated counting across the trail network helps overcome this challenge. The DNR and partners gathered counts using automated trail counting equipment, including infrared and inductive loop sensors. Some of these counters have been permanently installed as "reference sites" that monitor trail use 365 days a year. Most counts were gathered between April and November at temporary count locations over a period ranging from one to four weeks. These temporary counts were extrapolated to seasonal estimates using data from permanent count locations and following accepted and established methodology. Temporary counts completed in the winter have not been extrapolated to annual estimates.

Automated counting and extrapolations provide a measure of traffic and gauge overall trail activity. This process has been adapted from how transportation agencies monitor motor vehicle use. Traffic is commonly reported as average daily traffic (ADT) for a given period of time, like summer. Summer ADT can be interpreted as the number of times someone passes a particular trail segment on an average summer day.

Miles traveled are calculated by multiplying ADT by the number of days in a season and the length of the trail segment. An estimate of visits to each trail is calculated by dividing miles traveled by the median trip lengths reported by bicyclists and other trail users on the survey.

The survey results likely overestimate trip lengths due to several factors, such as the following: people who traveled farther on the trail were more likely to be surveyed; people likely reported miles traveled on non-state trails on the survey; and people have a tendency to overestimate trip lengths. If trip lengths are actually shorter than reported on the visitor survey, then the number of estimated visits would be larger. Using the median trip lengths reduces the impact of outliers, but the visitation estimates likely remain conservative.

How many people use paved state trails?

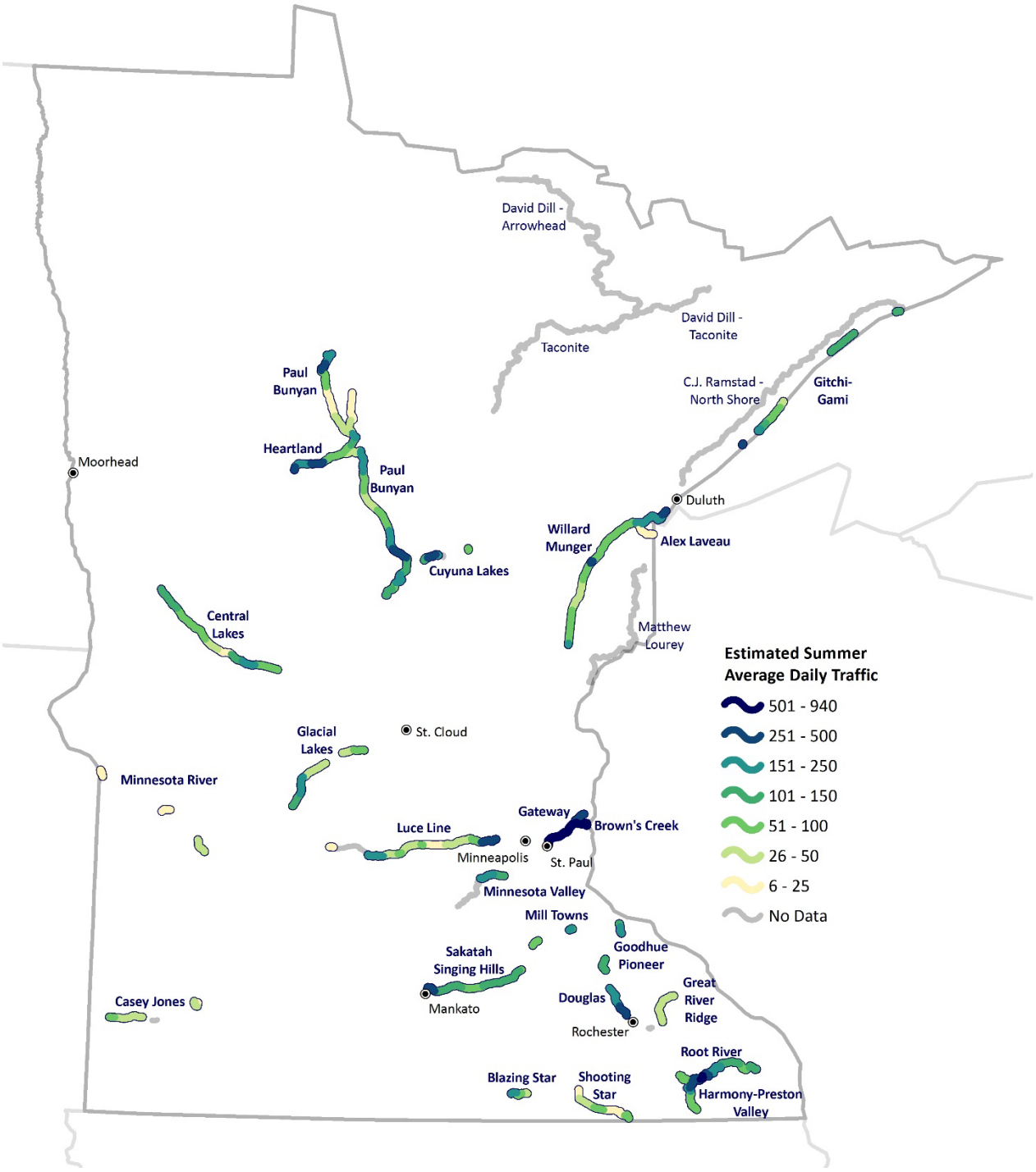
People travel over 13 million miles on paved state trails each warm season (April through November). About 8.5 million of those miles traveled occur in the summer (Memorial Day weekend through Labor Day). This translates to an estimated 2 million visits to state trails during the warm season. About 1.2 million of these visits take place in the summer. These figures do not include use that takes place on natural surface state trails that are used mostly for snowmobiling or motorized recreation.

Bicyclists are responsible for a majority of miles traveled because they travel much farther per visit than people who walk or participate in other activities. However, non-cyclists make up a majority of trail visits. The median trip distance for bicyclists is 20 miles per visit and the median for other visitors is three miles. Over the summer, pedestrians make an estimated 880,000 visits, compared to 290,000 bicyclist visits. Pedestrians and cyclists make 1.6 million and 430,000 visits, respectively, over the entire warm season. Survey responses confirm that many state trail visitors are repeat users, so the number of unique people who visit trails is lower than the total number of visits.

Most state trails are maintained for snowmobiling between December 1 and April 1 of each year, as snow conditions permit. The DNR has gathered some information about winter trail use. However, more research is needed before making system-wide estimates of winter visits or winter miles traveled because use patterns are significantly different between winter and summer activities.

Which trails do people use?

A6. Traffic flow



Source. DNR

Summer ADT is a measure of the intensity of use on a given state trail segment, while summer visits are an estimate of total use of the entire trail. The Brown's Creek and Gateway state trails are the most intensely used and see traffic of more than 500 on an average summer day. An average paved state trail segment has summer ADT of 151 visits. Even though it is not used as intensely, the Paul Bunyan State Trail sees about the same number of visits as the Gateway State Trail because it is much longer trail.

There is a tremendous amount of variation in use levels across the state trail system. The most popular section of the Brown's Creek State Trail is more than 100 times busier than some remote segments of other state trails. Even along a single state trail, use is concentrated on popular segments. The busiest state trail segments tend to be located near large population centers. Traditional tourist destinations, near state parks and resorts, are also associated with higher trail traffic. Figure A7 shows the summer state trail visitation and the number of surveys collected in 2019.

A7. Summer state trail visitation and 2019 survey

State trail	Trail length (miles)	Average summer ADT	Summer miles traveled	Summer visits	2019 surveys	% of visits	% of surveys
Paul Bunyan	115	122	1,191,000	164,000	230	14%	15%
Gateway	19	598	1,187,000	164,000	254	14%	16%
Root River	42	240	883,000	122,000	131	10%	8%
Willard Munger	72	139	757,000	104,000	138	9%	9%
Heartland	47	132	527,000	73,000	92	6%	6%
Brown's Creek	6	852	494,000	68,000	118	6%	8%
Luce Line	51	88	480,000	66,000	102	6%	7%
Central Lakes	55	90	468,000	64,000	73	6%	5%
Sakatah Singing Hills	39	120	466,000	64,000	87	6%	6%
Douglas	13	317	373,000	51,000	66	4%	4%
Gitchi-Gami	29	122	305,000	42,000	69	4%	4%
Glacial Lakes	30	97	293,000	40,000	41	3%	3%
Harmony-Preston Valley	18	158	275,000	38,000	32	3%	2%
Minnesota Valley	10	180	185,000	26,000	13	2%	1%
Cuyuna Lakes	8	157	159,000	22,000	26	2%	1%
Goodhue-Pioneer	9	137	123,000	17,000	7	2%	<1%

Source. DNR

A8. Summer state trail visitation and 2019 survey (continued)

State trail	Trail length (miles)	Average summer ADT	Summer miles traveled	Summer visits	2019 surveys	% of visits	% of surveys
Blazing Star	7	101	77,000	11,000	7	1%	<1%
Shooting Star	25	34	74,000	10,000	11	1%	1%
Casey Jones	18	38	68,000	9,000	7	1%	<1%
Mill Towns	5	136	57,000	8,000	24	1%	2%
Great River Ridge	13	40	53,000	7,000	18	1%	1%
Minnesota River	12	19	27,000	4,000	0	<1%	0%
Alex Laveau	9	14	13,000	2,000	15	<1%	1%
System Overall	**652**	**151 (mean)**	**8,500,000**	**1,200,000**	**1,561**	**100%**	**100%**

Source. DNR
Note. Percentages may add up to more than 100% due to rounding.

When do people use trails?

The following observations are drawn from nine permanent counting locations across the state trail system. When installing these counters, consideration was given to select locations that represent different usage patterns across the state trail system. However, because of the size and complexity of the state trail system, these nine locations may not be representative of overall use. Count data has shown there is a large amount of variability in use levels and patterns between and along state trails. Use of paved and hardened state trails in Minnesota generally aligns with the following use patterns by seasonality, month of year, and day of week.

State trail visitation is concentrated in the summer, with 63% of use occurring between Memorial Day weekend and Labor Day at seven permanent counting locations (Figure A9). Winter, from December 1st through April 1st, makes up 8% of annual use at these nine trail locations. The shoulder seasons have 29% of use, with 12% in the spring and 17% in the fall. Note that these seasons are not of equal length.

Not surprisingly, trails with snowmobiling see a larger share of traffic in the winter (in 2019, most of Minnesota received enough snow for good snowmobiling conditions in February and into March).

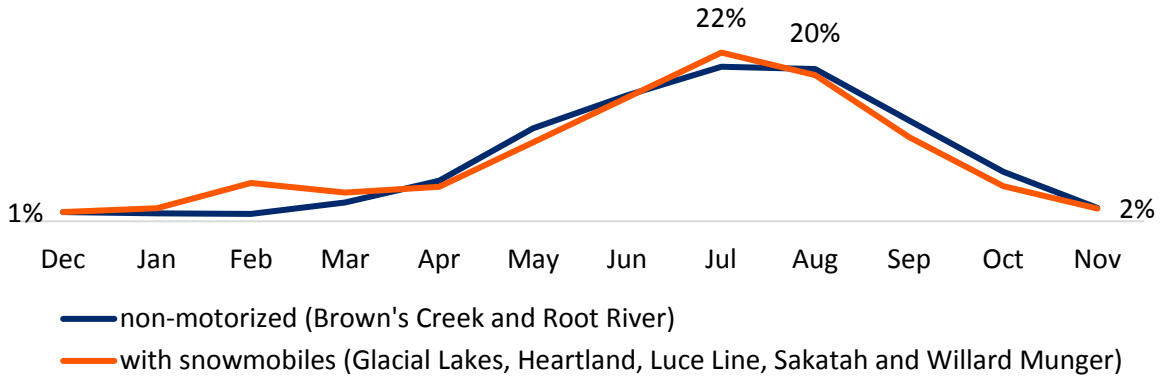
A9. Season of year

Season	# of days	% of annual use	ADT
Winter (12/1/2018-4/1/2019)	122	8%	37
Spring (4/2/2019-5/24/2019)	53	12%	121
Summer (5/25/2019-9/2/2019)	101	63%	351
Fall (9/3/2019-11/30/2019)	89	17%	110
Shoulder seasons (spring and fall)	142	29%	114
Annual (12/1/2018-11/30/2019)	365	100%	154

Source. DNR

Note. The Douglas and Paul Bunyan locations were excluded from the seasonality analysis because of lack of winter data due to equipment malfunctions.

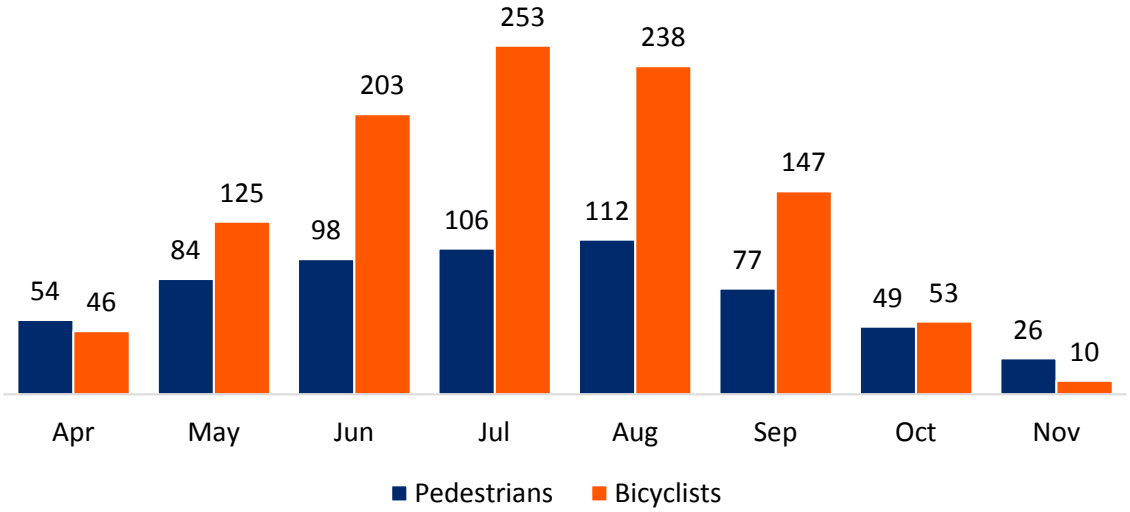
A10. Monthly percent of annual traffic (average of seven permanent counters)



Source. DNR

A11. Average daily traffic by month (average of nine permanent counters)

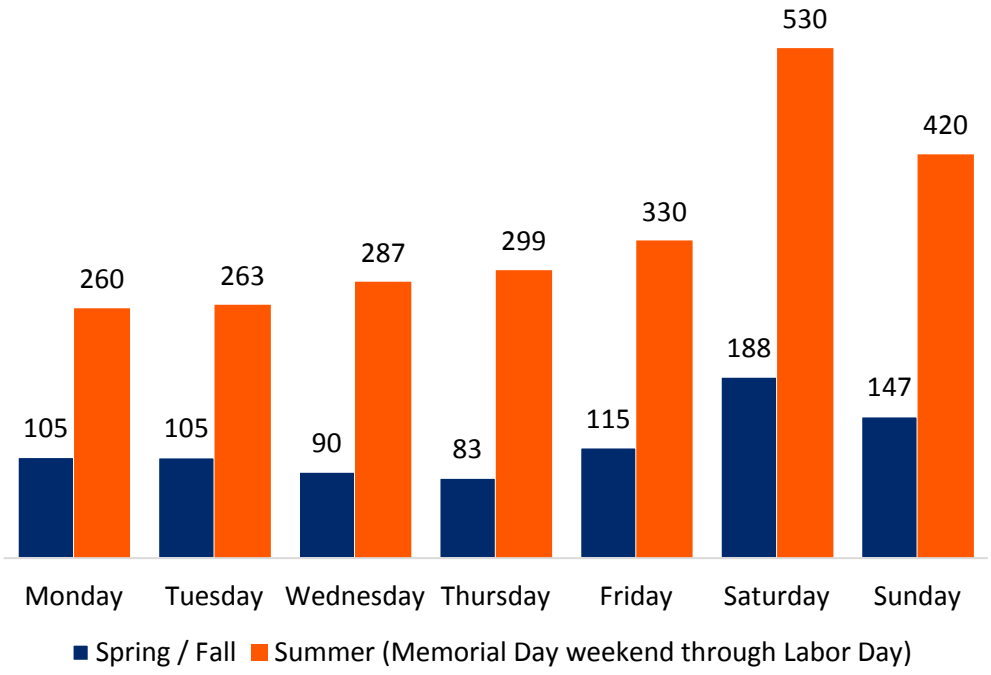
Trail use increases in the summer, with ADT in June, July, and August more than three times that of April and October. Bicyclists make up 69% of trail use over the summer, but only 54% in the shoulder seasons. Pedestrian use is much more stable throughout the year while bicycle traffic increases substantially over the summer months.



Source. DNR. December-March data is intentionally excluded.

A12. Average daily traffic by day- of week (average of nine permanent counters)

State trails are used much more heavily on weekends. About 40% of all traffic occurs on either Saturdays or Sundays. Saturdays are nearly twice as busy as typical weekdays, while Sundays are about 1.5 times busier. Pedestrian use is more consistent across days of the week than bicyclist use. Across these nine locations, bicyclists comprised 61% of all traffic on weekends and holidays, but only 52% of all weekday traffic.



Source: DNR

A13. Permanent counter statistics

State trail (Count location)	Winter ADT	Non-winter ADT	Summer ADT	July ADT	Summer weekend/holiday ADT	Percent bicyclists	Percent pedestrians
Brown's Creek (Stillwater)	94	607	940	1,008	1,314	62%	38%
Douglas (Rochester)	a	304	445	396	489	53%	47%
Glacial Lakes (Spicer)	29	131	219	253	276	48%	52%
Heartland (Nevis)	43	134	263	333	347	74%	26%
Luce Line (Hutchinson)	23	102	155	156	161	59%	41%
Paul Bunyan (Brainerd)	a	116	189	210	227	58%	42%
Root River (Lanesboro)	17	314	548	521	897	78%	22%
Sakatah (Morristown)	17	80	128	124	191	76%	24%
Willard Munger (Mission Creek)	37	119	202	229	285	75%	25%

Source. DNR

[a] The Douglas and Paul Bunyan count locations lack winter data due to equipment malfunctions.

Counting sites on the Brown's Creek, Douglas, and Root River state trails are for non-motorized traffic only. The other locations are all open for snowmobiling during the winter, from December 1 through April 1 of each year. The DNR has gathered snowmobile counts on the C.J. Ramstad-North Shore, David Dill-Arrowhead, David Dill-Taconite, and Taconite state trails but those locations are not included in this table because the counts do not include year-round use.