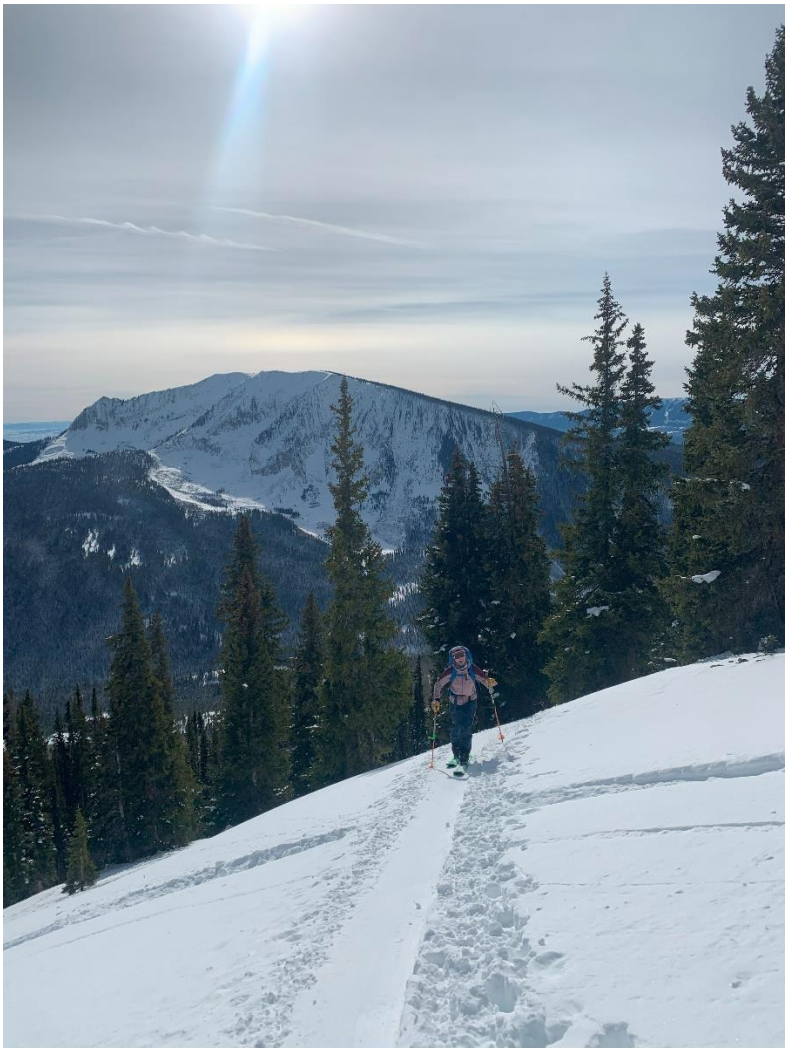
2023/2024 WINTER DATA COLLECTION INITIATIVE



2022/23 Upper Gunnison Valley Winter Visitor Use Report

The town of Crested Butte, and the surrounding Upper Gunnison Valley (UGV), is known throughout the Rockies as a winter recreation destination. This visitor use study aims to provide a database for stakeholders interested in winter recreation patterns in the UGV.

2023/24 Winter Data Collection Initiative

UPPER GUNNISON VALLEY WINTER VISITOR USE REPORT

INTRODUCTION

Considered by many to be one of Colorado's "last great Colorado ski towns" – Crested Butte, is located near the north end of the Upper Gunnison Valley (UGV), in central Colorado. This former mining town is now a travel destination that attracts recreationists year-round, but the long winters, low temperatures, and heavy snowfall are what have built this area's reputation as a winter recreator's dream. The town's location within in the Elk Mountains offers a truly outstanding amount of winter backcountry access within a 30-minute drive from the town. Currently, these popular trailheads in the Crested Butte area are under the regulation of United States Forest Service's (USFS) Winter Travel Management Plan (WTMP), which was created over 20 years ago. Since the agency's plan was developed, technological changes along with observed increased visitation to the backcountry have prompted members of the Crested Butte community to express interest in updating the WTMP. Beginning with former student Doug Shaw's 2017/18 study, graduate students from the Master of Environmental Management program at Western Colorado University have been working in collaboration with The Center for Public Lands to produce an annual quantitative dataset (in addition to a qualitative winter backcountry user survey) regarding backcountry use/travel in the UGV. The goal of this study is to increase knowledge of winter travel patterns and enhance stakeholder's ability to aid the USFS in a winter travel management planning process.

While Crested Butte and the greater UGV are certainly well know places for winter recreation opportunities, they are not the only communities facing changes in winter recreational planning. In 2015, a United States Forest Service ruling declared that "a system of routes and areas to provide for over-snow vehicle use" must be established for all winter use areas across the nation. While the local Forest Service office does plan to implement changes to the WTMP to account for the 2015 ruling, they have not done so yet. There are plans to complete a Forest Plan Revision before considering the WTMP. In the meanwhile, the community aims to study and better understand visitor use patterns to inform the planning of the WTMP once the process commences.

In addition to this report, the Center for Public Lands will be producing a comprehensive, multi-year study, starting from the 2017/18 season, to compile data that can be used by different land mangers (USFS, BLM, private lands owners, etc..) to help inform policies for winter recreation management. The goal of this study is to increase knowledge of winter travel patterns and enhance stakeholder's ability to aid the USFS's Winter Travel Management Plan. This study is an ongoing collaboration between the Master of Environmental Management program at Western Colorado University, The Center for Public Lands, Elk Mountain Backcountry Alliance, and the Town of Crested Butte. The following presents the results of data collection in the winter of 2023-24.

METHODOLOGY

The methods and design of the 2023/24 study have been repeated with minimal variation since the original 2017 study. It is our hope that continuing a similar methodology will produce the most accurate model of recreational usage and represent trends of use over time. Trailhead monitoring occurred via eight remote cameras installed trailheads in the six major drainages used for backcountry travel in the Upper Gunnison Valley. The images are collected from December to April approximately every ten days. Consistent collection of the SD cards reduced data collection error due to snow and human interference. The batteries were also checked each collection and changed out three times throughout the 2023/24 winter season. If the initiative used infrared counters, animals would be counted causing collection error to increase, along with a restricted count on hybrid users. Remote cameras allow for a more defined collection of recreator use types at each of the various trailheads.

Users are categorized in 4 main user types: **non-motorized** (cross-country skiers, snowshoes, backcountry skiers/spilt-boarders, hikers, etc..), **motorized** (cars, snowmobiles, any type of over snow vehicle), **hybrid** (a user encompassing more than one category) and **mechanized** (fat tire bikes, mountain bikes). Motorized users are defined as "any vehicle which is self-propelled, other than a wheelchair or mobility device" by the US Forest Service. Hybrid users appear to be participating in multiple forms of recreation, typically identified by a snowmobile carrying skis or pulling skiers. The counts of users were defined by their "outgoing" characteristic, so users who may have done a point-to-point ski were not counted, such as skiing from Kebler before the camera location up Mount Emmons and ending at the Slate Creek Trailhead.

Figure 1. Location of Trailheads: A – Kebler Pass, B – Washington Gulch, C – Slate River, D – Snodgrass Trailhead, E – Gothic Road, F – Brush Creek Trailhead, G – Brush Creek Road, H – Cement Creek Road (Image: Google Earth, 2018).

RESULTS

The Winter Data Collection Initiative was able to sample a total of 123 days in the 2023-24 winter season, with a total count of approximately 32,734 winter recreational users (December 1st – March 30th) in the Upper Gunnison Valley. The trailhead with the highest recreational use was Kebler Pass trailhead, averaging 123 users daily and a total user count of 9,241 individuals. Kebler Pass also held the largest count of motorized users throughout the season at a total count of 8,072 individuals. This count is twenty-one times greater the size of the next highest motorized count, at Cement Creek. The second most visited trailhead in the 2023-24 winter season was the Snodgrass trailhead. The Snodgrass trailhead brought 7,928 counts to the total recreational users this winter season, with an average daily user count of 66 individuals. Both trailheads have different distributions of user types, Kebler Pass specializing in motorized and hybrid users while Snodgrass attracts non-motorized users. Figure 1 displays the commonality of winter user groups amongst Kebler Pass and Snodgrass, along with the other six trailheads observed.

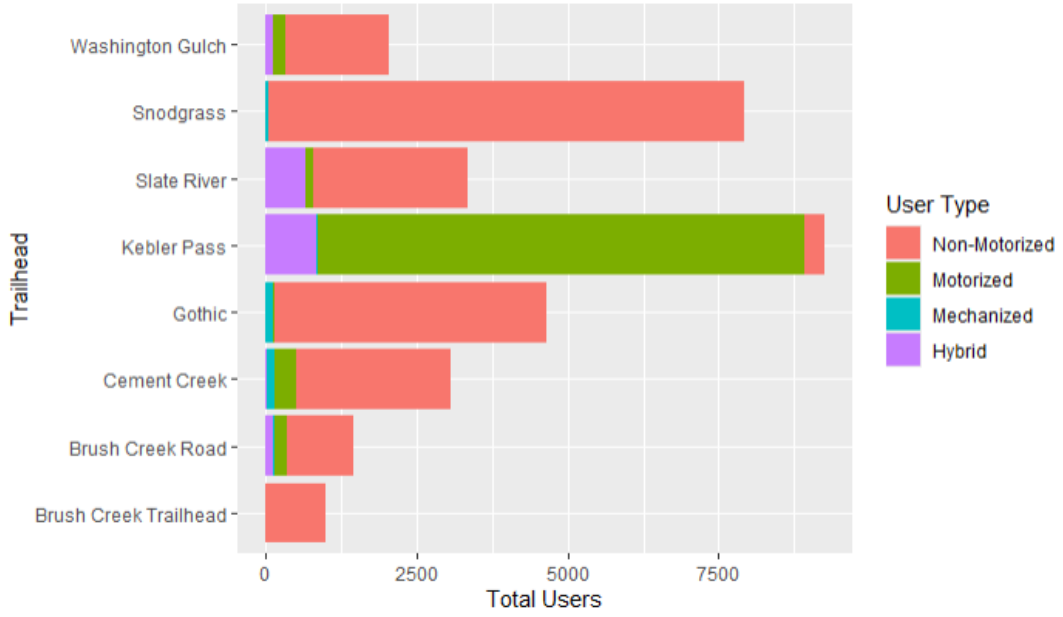


Figure 2. Overall recreation user type percentage for the 2023-24 winter season.

The most common trailhead for mechanized travel was at Cement Creek. The mechanized count for Cement Creek was 123, with a runner up of 114 fat tire bike users at Gothic. A large portion of hybrid user groups were distributed between the Slate River and Kebler Pass trailheads, both trailheads commonly known for their access to skiing in the West Elk Mountains.

The lowest count of winter recreators was observed at the Brush Creek trailhead, total user count at 998 individuals and an average daily user count of 10. This count has been consistent within ~100 users per year since the 2021-22 winter season. Human error was noted at this camera this season due to tampering with the camera position, operation, and theft of an SD. Without the

camera error impacting 25 days of data, the total count would have gone up only approximately 250 users. With the additional 250 users, the total user counts for Brush Creek trailhead would still be the lowest visited site. Table 1 below summarizes these counts by trailhead. The total days with camera failure are also noted on this table.

Table 1. Recreational user totals for the 2023-24 winter season.

Location of Trailhead	Days with Camera Failure	Days with Data	Total Non-Motorized Users	Total Motorized Users	Total Mechanized Users	Total Hybrid Users	Total Users
Brush Creek Trailhead	26	97	993	1	4	0	998
Brush Creek Road	6	116	1,110	200	23	128	1,462
Cement Creek	0	123	2,558	368	135	11	3,072
Gothic	2	121	4,501	31	114	3	4,649
Kebler Pass	48	75	315	8,089	1	855	9,241
Slate River	8	114	2,257	114	14	656	3,341
Snodgrass	3	120	7,876	11	37	4	7,928
Washington Gulch	33	90	1,720	200	8	128	2,052
Combined Total	***126***	***856***	***21,630***	***8,993***	***336***	***1,784***	***32,743***

The average trailhead users count followed a similar pattern to the above figure 1, the higher total user count, the higher the user average per day. The average user data per day is displayed in figure 2. A table below also shows the average user groups broken into user type per trailhead location.

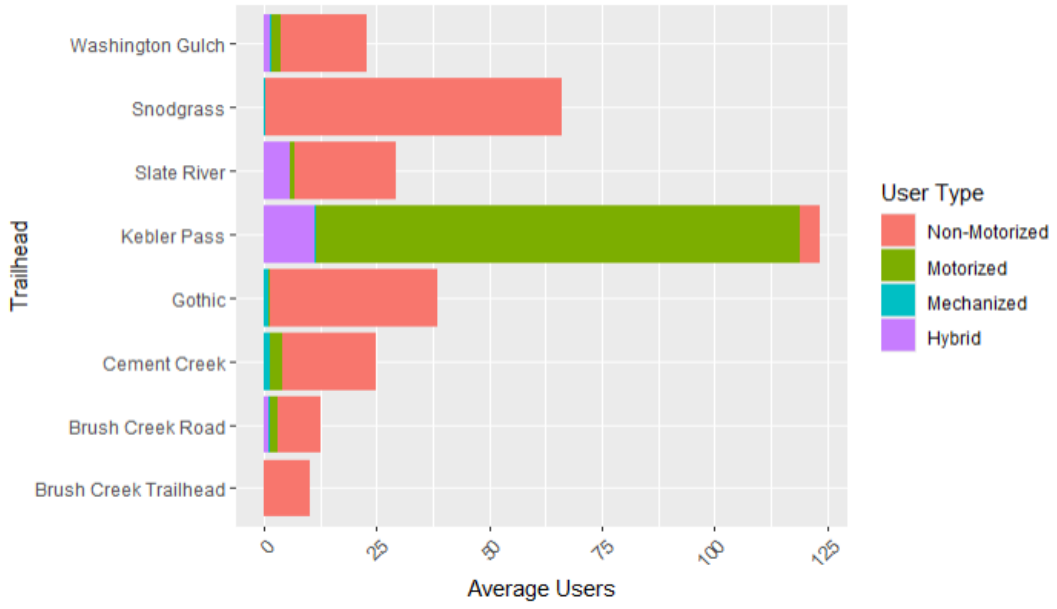


Figure 3. Overall average user count per day for the 2023-24 season.

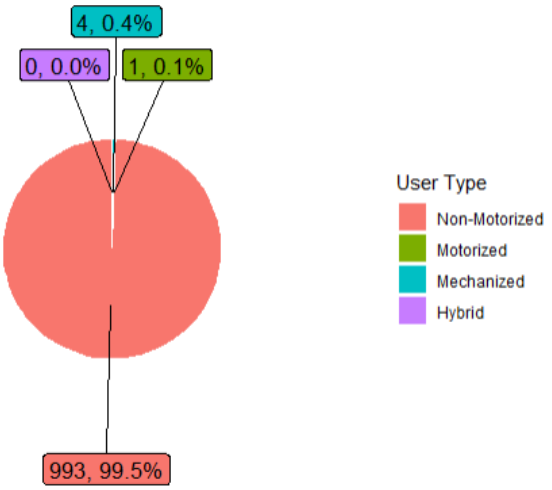
Table 2. Recreational daily average user count for the 2023-24 season.

Trailhead	Average Daily Users	Average Daily Non-Motorized Users	Average Daily Motorized Users	Average Daily Mechanized Users	Average Daily Hybrid Users
Brush Creek Trailhead	10.29	10.24	0.01	0.04	0
Brush Creek Road	12.6	9.57	1.72	0.2	1.11
Cement Creek	24.98	20.8	2.99	1.1	0.09
Gothic	38.42	37.2	0.26	0.94	0.02
Kebler Pass	123.21	4.2	107.63	0.01	11.37
Slate River	29.31	22.43	1	0.12	5.75
Snodgrass	66.07	65.63	0.09	0.31	0.03
Washington Gulch	22.8	19.11	2.18	0.9	1.42
Combined Total	***40.96***	***23.65***	***14.48***	***0.35***	***2.48***

Camera failure this winter season was caused by a multitude of factors including human tampering, snowy/foggy camera lenses and unfortunately corrupt SD cards. There was a total of 6 corrupt SD cards and one stolen SD card throughout the winter season, with one corrupt SD card accidently used twice. The one stolen SD card occurred at the Brush Creek trailhead site. This error limited data collection by a total of 124 days across all eight remote trail camera locations. The Kebler Pass remote camera location held the most days without data, 48 days total without user counts out of 123. Therefore, approximately 40 percent of the collection days in the 2023-24 season at Kebler Pass were unusable due to complications. There were 64 less days of missing data then of the season prior (2022-23 winter season). The conditions at Cement Creek, where much of the error was evaluated last winter season (2022-23), was not a continued issue through the 2023-24 winter season. Cement Creek had the highest number of observed days out of each trailhead location this winter season, 123 observed out of 123 days collected.

BRUSH CREEK TRAILHEAD

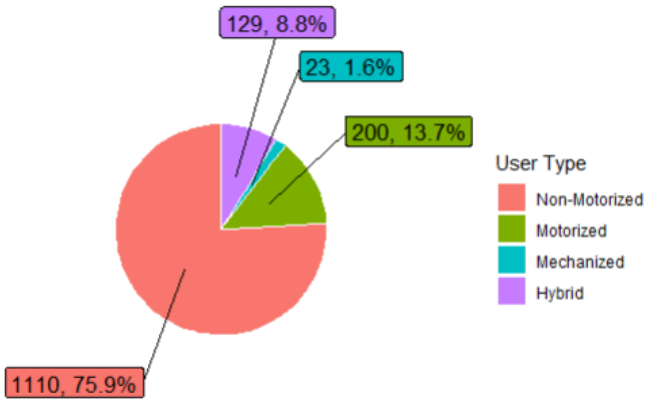
Total # of visitors = 998
Average # of visits per day = 10.22



In the 2023-24 winter season, observations were collected for ~ 80 (approximately) percent of the Brush Creek trailhead camera installation time. This camera placement faced the largest amount of human tampering. The camera was tampered with on three occasions: one stolen SD card, camera shutoff and SD card ejected and a repositioned camera (limited view/recording window for successful data retrieval). The total user count increased by ~ 100 users. The rounded average number of visitors per day did not change from the 2022-23 winter season collection. Mechanized use was 0.3 percent higher the year before, only observed three less users all season. One notable event this winter season was the use of a motorized snow bike, this was the only motorized user observed since the 2020-21 winter season. Overall, the Brush Creek trailhead comprised of ~ 99 percent non-motorized users (cross-country skier, hiker, backcountry skier) in the 2023-24 winter season.

BRUSH CREEK ROAD

Total # of visitors = 1,462
Average # of visits per day = 14.14

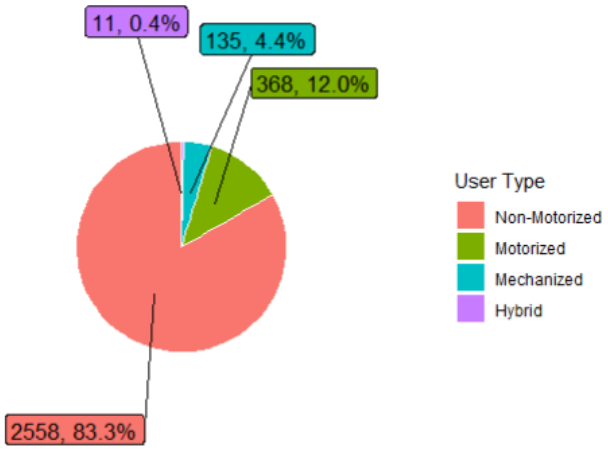


The Brush Creek Rd camera location was changed to a new location this winter, on a private property up the road from the previous used *Yield* sign. Permissions was obtained by the landowner to use their cattle fencing for the camera placement. There was a total of 6 no-data days, primarily based on snowy conditions along the roadside. This location saw an overall decrease in numbers of users from

the past 2022-23 winter season with ~ 1,100 less users than the winter before. The user group distribution was similar, though there was a five percent increase in the hybrid user count total from last season. This increase could have been identified by an event staging out of the trailhead for two days for The Grand Traverse race that occurs every winter in the early spring. This winter the race was turned back due to conditions, causing a reroute of the course through this trailhead site. The racers were arriving from deeper in the Brush Creek basin, therefore they were not counted as "outgoing".

CEMENT CREEK ROAD

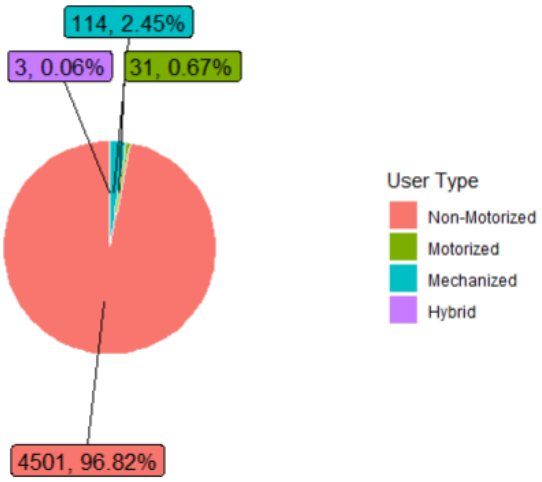
Total # of visitors = 3,072
Average # of visits per day = 24.9



The Cement Creek camera had a total of 3,072 users this winter season, with 83 percent of the total using on-foot methods of travel. This user count is ~ 2,000 users higher than the previous years data observations. This change in user count could have been influenced by the camera difficulties Cement Creek had the previous winter season, resulting in 39 days of data. The 2023-24 winter season at Cement Creek had a total of 123 observed days, the highest count out of all trailheads this winter. The Cement Creek camera count did face a slight bias due to the inability to count specific motorized machines moving past the camera. Through observations, most rooster tails from snow disturbance point to these snow machines moving towards the trailhead and not "outgoing", therefore not observed as a visitor to the trailhead. This location is groomed on occasion and holds residential camps off the "outgoing" trail, observations showed a large majority of the non-snowmobile motorized users moving to and from the trailhead daily, though not observed as a specific count. This variable could be useful to observe overtime to get an estimate of visiting vs residential use of this specific trailhead during the winter season.

GOTHIC ROAD

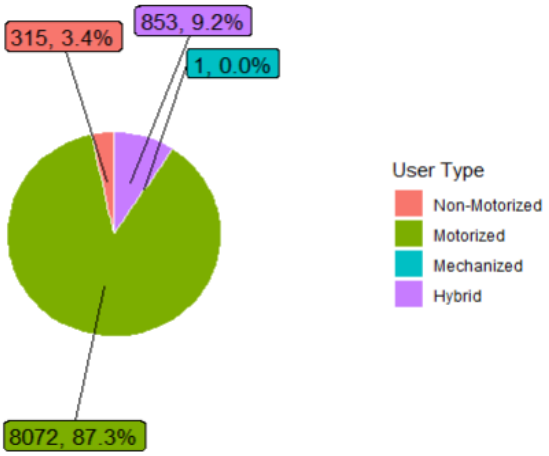
Total # of visitors = 4,649
Average # of visits per day = 38.42



The Gothic Road user count was the third highest out of the eight remote camera locations recorded this winter season, total number of visitors equaled 4,649. The primary use of recreation used in this corridor is by non-motorized users (cross-country skier, hiker, dog walker, backcountry skier). This corridor is heavily used for backcountry skiing, hut stays and a location of science discovery which leads could lead counts to be higher than other trailheads such as Brush Creek trailhead. Count error is possible in small durations when these larger groups of huts staying individuals or backcountry users pass by the camera. This issue will be described further in conclusion section of the report. Overall, these sites average daily user count was four users higher than the previous winter season, showing a similar distribution of user type throughout the collection. The total user count jumped 29 percent higher then the previous winter season.

KEBLER PASS

Total # of visitors = 9,241
Average # of visits per day = 38.42

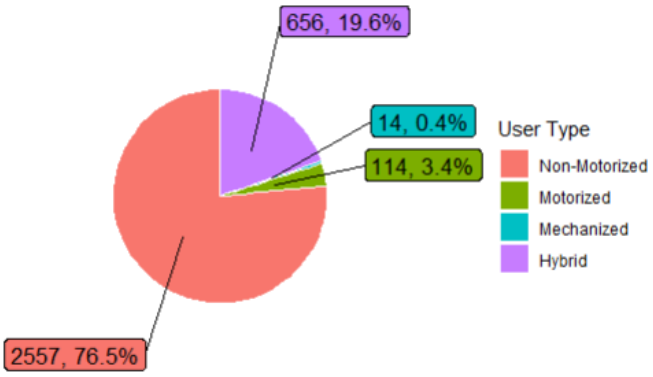


The Kebler Pass trail camera had the highest count of users this winter season, following a similar count the year before. The total visitor count was 9,241, with the largest motorized count out of all sites at 8,072 users and hybrid users at 853. Kebler Pass, again, showed the highest user counts in all motorized use type throughout the 2023-24 winter season. This trailhead location is an important hub for multiple permitted guide operations, primarily motorized focused, as well as individuals who live remotely at the Irwin

townsite in the winter season. Along with the above recommendations looking at residential vs visitor use in Cement Creek, this trailhead would benefit from looking at counts driven by these guide operations and individuals who travel up this corridor daily as residents of Irwin. There is slight discrepancy with the camera location at this trailhead this winter, due to the speed and close travel to another motorized user, the camera had a hard time picking up each individual user. Photos were closely examined to estimate the correct number of users per capture and pulse of users on the pass. Lastly, Kebler Pass trailhead faced the largest amount of corruption error throughout the winter season with SD cards used for photo collection. The trailhead missed 48 days of observed data out of 123, rounding out to be 40 percent of collection days unavailable for review.

SLATE RIVER TRAILHEAD

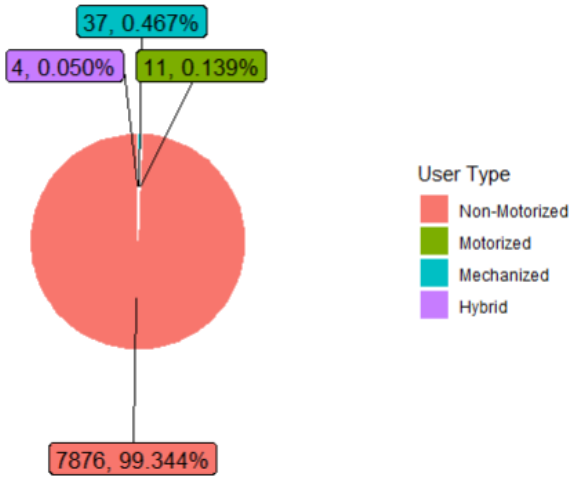
Total # of visitors = 3,341
Average # of visits per day = 29.31



The Slate River remote camera location was upheld in the same location as the previous year, on a leg of a trailhead sign. The site was the fourth most visited trailhead site of the 2023-24 winter season, at a user count of 3,341 visitors. The Slate River location counted the highest percent of hybrid to total users at a site this winter season, 19.6 percent were of hybrid user type. Average daily users were on par with last season, with user count growth two percent higher than last winter's data collection. Compared to the change in user count between the 2021-22 and 2022-23 season at 21 percent user increase, this 2023-24 season was on par with the prior seasons usership as well. Due to the location of the camera, there is a possibility of recreators avoiding or going around the camera on the right side of the trailhead, this discrepancy was not managed this winter season. One event took place at this trailhead this winter, as a finish line to the Gothic Mountain Tour ski-mo race. The racers were not "outgoing" traffic at the trailhead and not considered in the number of visitors at the Slate River trailhead this winter season.

SNODGRASS TRAILHEAD

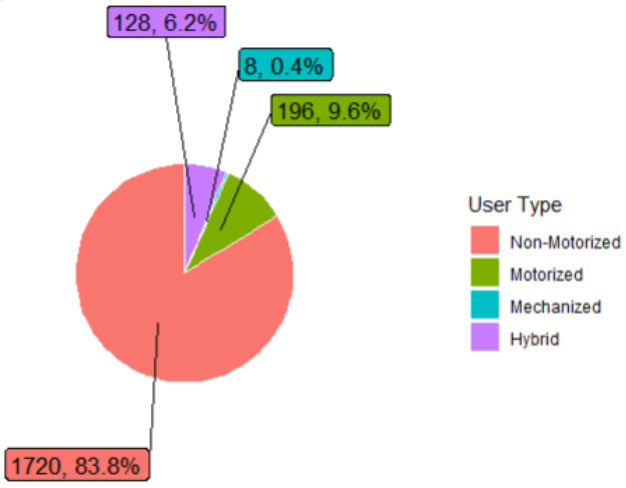
Total # of visitors = 7,928
Average # of visits per day = 66.07



The Snodgrass trailhead camera location was again the second busiest trailhead location, following the years prior visitation trend. The users on Snodgrass are made up of 99 percent non-motorized recreators. This trailhead had limited use by other users types due to trailhead construction and location. A search and rescue event late winter was a primary contributor to the user count in all motorized types this winter season. Overall, the total number of visitors to the Snodgrass trailhead this winter was 30 percent higher than the count of the 2022-23 season. There was also a notable resident fox caught on this camera every night.

WASHINGTON GULCH

Total # of visitors = 2,052
Average # of visits per day = 22.8



The Washington Gulch trailhead saw a ~ 22 percent decrease in trailhead visitation compared to the previous 2022-23 winter seasons observed count. Washington Gulch saw each method of over-snow recreation but had the second largest percentage of missing data out of the 8 trailheads observed in the 2023-24 winter season. The Washington Gulch site missed 26 percent of the camera installation period, 33 days' worth of observed data, due to SD card corruption.

CONCLUSIONS

Overall, there was a 15 percent increase in total recreational users in the Upper Gunnison Valley's winter season in 2023-24, compared to last year's Winter Data Collection Initiative report. Since the Winter Data Collection Initiative started in the 2017-18 winter season, there has been over 204,245 users' total. The average daily visitation for all combined trailheads for the 2023-24 winter season was 41 users, this average grew 20 percent from the previous winter of 2022-23's average of 34 users per day. The total days of camera failure was 126, this count includes every trailhead so counts may show twice if two cameras did not operate on the same day, which would count as two days. The amount of camera fails last winter (2022-23) were 32 percent higher than this year. The type of error that caused these days to persist were different to last year's complications. The camera error throughout the 2023-24 season caused all but one site to have discrepancies within their dataset.

Though the style of camera error was different then years previous, camera discrepancy persists. The camera error this season caught the Winter Collection Initiative research lead and undergraduate employees off-guard. The users responsible for the theft and tampering of the Brush Creek trailhead camera were identifiable through the photos caught on cameras prior and had caused the Center for Public Lands to place a lock on the camera for the remaining month of observation after the tampering occurred. Due to the hot debate in the valley and nation about recreation and the restriction management possible, it is recommended to continue using camera locks for the future collection of these sites. The locks could be substituted by battery funding in the coming budget, as the battery life this season persisted over three months, much longer than the 11-day replacement from previous years. Otherwise, more discrete location set-up for future camera locations is also recommended. This winters snowpack grew taller than three site installments, both Brush Creek locations and Snodgrass, this issue was mitigated by moving the camera onto a metal rod staked into the snow. This method of camera installment worked great until the end of the season, when snow started to melt. The melting snow caused these rods to tilt in positions inhibiting precise observation of user numbers at all three sites. The tilt issue did not cause a no-data day but did slow processing for data observations.

The trends shown in the results section of this report follow previous years data collection closely, with little anomalies shown in the above data distribution for each site. Kebler Pass continues to hold the largest distribution of winter recreation out of the eight sites, with Snodgrass following in the second highest user count. The 23 percent user growth Snodgrass saw this winter, in comparison to the previous winter user counts, could be contributed to the increased overall number of recreators moving into up-hill access skiing within the state of Colorado. A notable 29 percent increase in user count was seen in Gothic Road as well. Though this is not backed by significant statistical analysis in this report, backcountry set-ups are becoming more accessible and equitably priced. The approach to Snodgrass is simple and limited in intimidation, causing Snodgrass to be the perfect location for beginner backcountry skiers. As for the increased Gothic percentage of user, theory of increased cabin rentals in the Gothic townsite or increased avalanche courses out of the trailhead could be the culprit.

Three key takeaways from the 2023-24 Winter Data Collection Initiative data analysis include:

- An increase in regional winter recreation is exemplified through the 15 percent overall user growth from the previous year.
- Camera placement error is inevitable, learning how to reduce human tampering is important for further data collection.
- Using the remote camera's recommended SD card brands is necessary to decrease the chance of SD card corruption and loss of photos.

The 2023-24 winter season saw increased user counts at six out of eight remote camera sites. The improvements recommended from last years data report allowed for this year's data collection to persist without the overuse of batteries at each camera by adding a battery tester. Camera locations for the following winter should stay consistent with the 2023-24 winter season's locations. Moving forward, the Winter Data Collection Initiative is set up for success with continual improvement in the methodology of the initiative each winter season.

ACKNOWLEDGEMENTS

Thank you to the multitude of stakeholders that all play a role in making the Winter Data Collection Initiative possible. Thank you, Western Colorado University, the Center for Public Lands, and the Gunnison Ranger District of the United States Forest Service for this opportunity to contribute to their ongoing research. Also, the Winter Data Collection sends thanks to Crested Butte Land Trust and Elk Mountain Backcountry Alliance for your support and your continued goal of making recreational opportunities more sustainable, accessible, and enjoyable. In addition to the above stakeholders, the Winter Data Collection Initiative extends its gratitude to all the community members and winter backcountry visitors who participated in the 2023/24 Gunnison Valley Winter User Survey.

Thank you to Dr. Melanie Armstong for jumpstarting this project before your departure from the Center for the Public Lands. Thanks to Paul Rivera for your guidance and expertise in figuring this project out together. Thanks to our research lead Marissa Charlebois and for the statistical analysis provided by Tim Andrews. Much thanks to the Center for Public Lands interns, Jack Fanselow and Logan White for all their help with counting the user photos and accompanying us on our site visits. Thank you to all the previous research leads and assistants, and to Doug Shaw, for your work designing the original study and providing guidelines for this year's report.