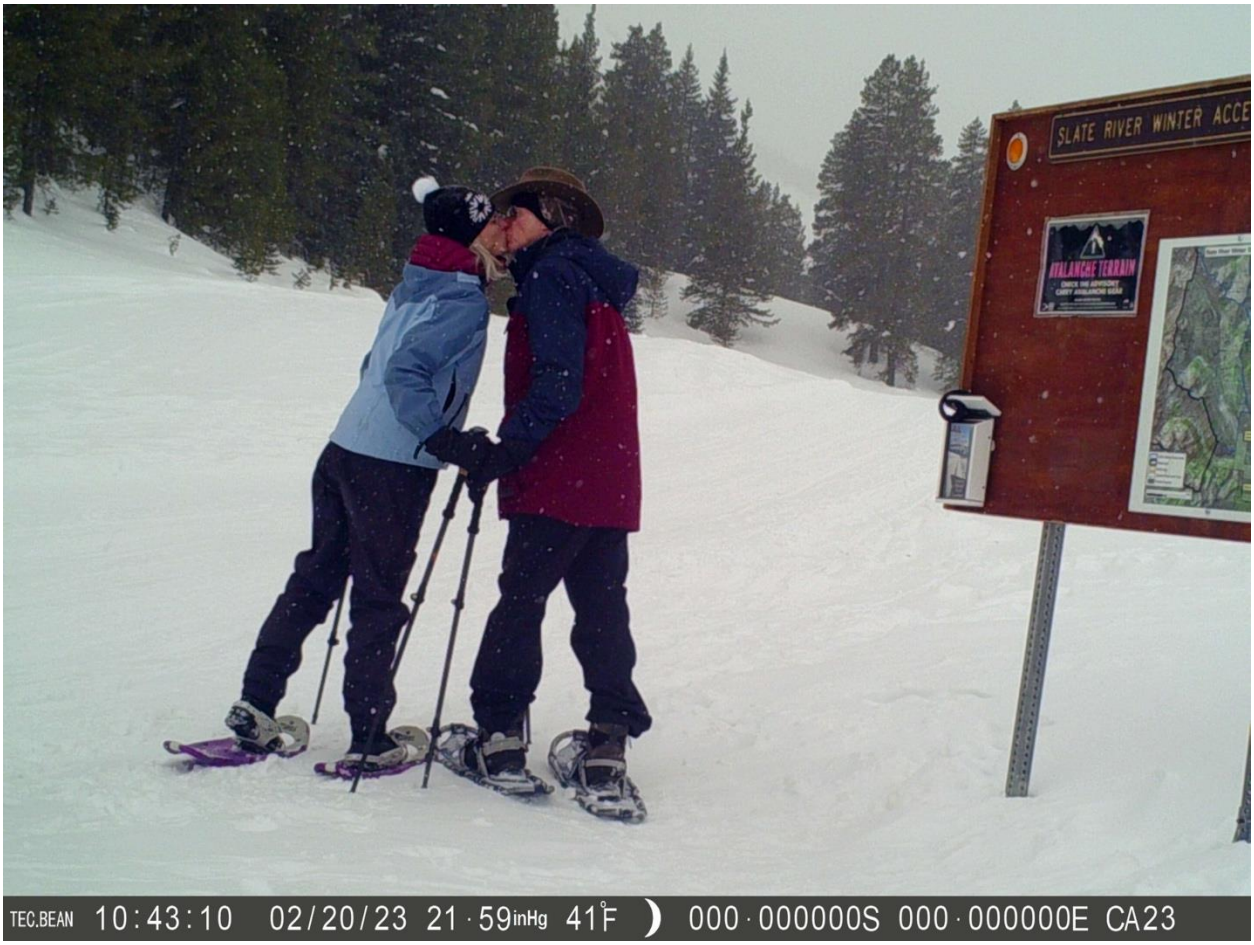
2022/2023 WINTER DATA COLLECTION INITIATIVE



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.

2022/23 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, Silent Tracks, and the Town of Crested Butte. The following presents the results of data collection in the winter of 2022-23.

METHODOLOGY

The methods and design of the 2022/23 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 show any trends or patterns that might emerge 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. Images are collected from December to April and the cameras are maintained once every week or two to retrieve SD cards, ensure proper camera framing and replace batteries if needed. Infrared counters could be used to record number of trailhead users, but the photo-capture mode available on remote cameras allows a better understanding of what type of winter recreation is occurring on the various trailheads.

Users are categorized in 4 main user types: **non-motorized** (cross-country skiers, snowshoes, backcountry skiers/spilt-boarders, hikers, etc..), **motorized** (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. Primarily, we focused on counting "outgoing" traffic, so some users who walked around the camera, were linking trail systems, etc... may have been missed.

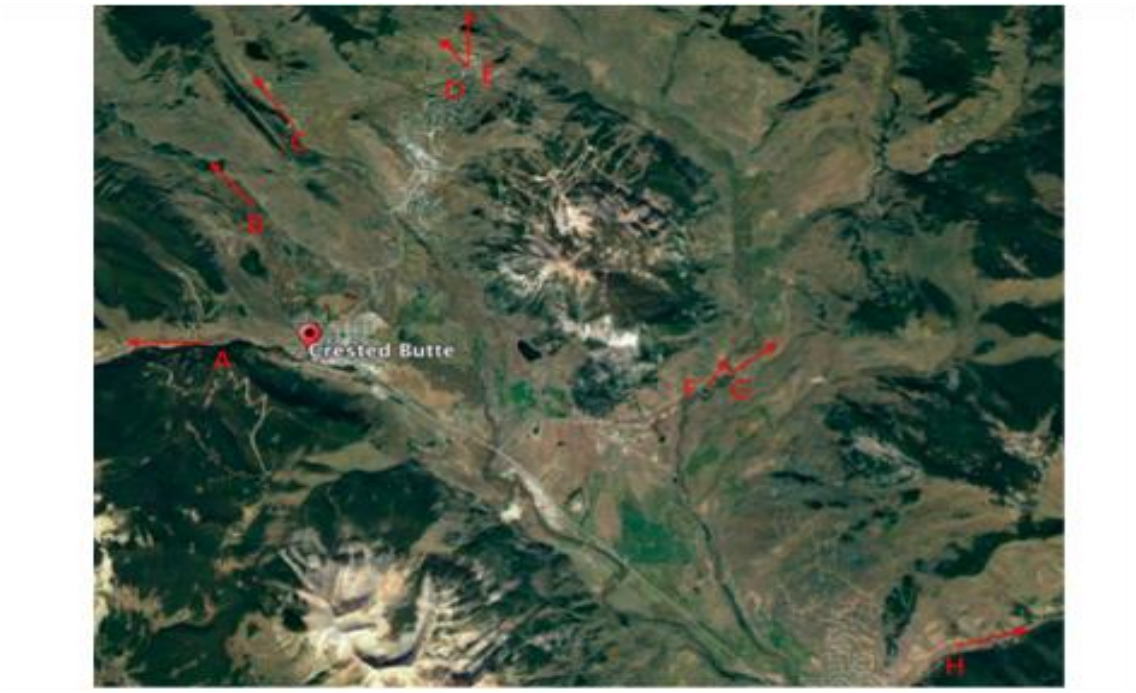


Figure 1: Location of Trailheads: A – Kebler Pass, B – Washington Gulch, C – Slate River, D – Snodgrass, E – Gothic, F – Brush Creek Trailhead, G – Brush Creek Road, H – Cement Creek (Image: Google Earth, 2018).

RESULTS

Our counts show that between December 1st, 2022 and March 30th, 2023 there were at least 28,378 recreational visits that took place on winter trails in the Upper Gunnison Valley (Table 1 and Figure 2). Over the course of the 121-123 day study, Kebler Pass was the most visited trailhead with 8,656 recreators counted, averaging out to around 75 users per day. The overwhelming majority of users counted at Kebler Pass were motorized users, with this category adding up to 6,875 (79% of trailhead total) people, mostly snowmobilers. This could be due to companies guiding snowmobile tours out of the Kebler Pass Trailhead. Hybrid users also visited the Kebler Pass Trailhead more than any other trailhead with 1,385 visits, with Slate River as the second most popular for hybrid users seeing 577 hybrid visits. The other 7 trailheads were primarily used by non-motorized recreators, with only around ~972 strictly motorized visits at these remaining basins through the duration of the study. Snodgrass Trailhead received the 2nd greatest number of visitors, totaling 6,061 users with almost 99% of those being non-motorized users, the highest count of non-motorized users at any trailhead. The Gothic trailhead saw the highest number of mechanized users, totaling 112 fat bikers throughout the season.

The camera with the lowest number of users counted was at Cement Creek, with a total of 644 visits. However, it is worth noting that the Cement Creek camera had 82 days of camera malfunctions despite repeated attempts to fix the issues. The total counts of Cement Creek users from 2021/22 was 2,709, indicating that 644 visits is well below a typical season for this trailhead. The second lowest number of users counted was from the Brush Creek Trailhead camera, with a total of 910 visits. 4 of the trailheads had between 2,633 and 3,585 users for the winter season (Washington Gulch, Brush Creek Road, Slate River, and Gothic, respectively).

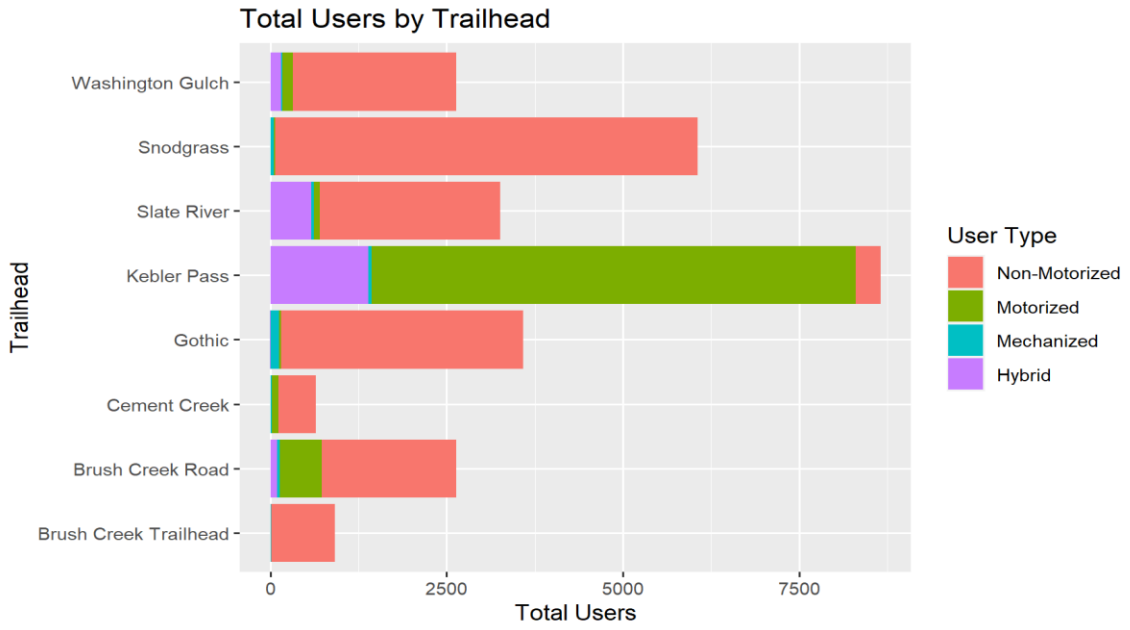


Figure 2: Proportional use of recreation type for each trailhead.

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	31	90	903	0	7	0	910
Brush Creek Road	0	121	1904	597	38	95	2634
Cement Creek	82	39	529	95	17	3	644
Gothic	14	107	3435	32	112	6	3585
Kebler Pass	7	116	348	6875	48	1385	8656
Slate River	8	115	2557	80	41	577	3255
Snodgrass	17	106	5998	17	46	0	6061
Washington Gulch	29	94	2311	151	22	149	2633
Total	**188**	**788**	**17985**	**7847**	**331**	**2215**	**28378**

Table 1: 2022-23 Totals, including number of days data was collected, days with camera failures, total recreation visits, and total number of visits by category for each trailhead.

Consistent with the total user data, Kebler Pass and Snodgrass had the two highest daily averages at around ~75 and ~57 users respectively. While Brush Creek Trailhead, Cement Creek, and Brush Creek Road averaged the lowest daily number of users, with ~10, ~17, and ~22 average number of users per day. Again, it is worth noting that user counts from Cement Creek are not indicative of typical counts due to a high number of camera malfunctions. The remaining 3 trailheads (Washington Gulch, Slate River, and Gothic) averaged between ~28 and ~34 users per day. See Table 2 and Figure 3.

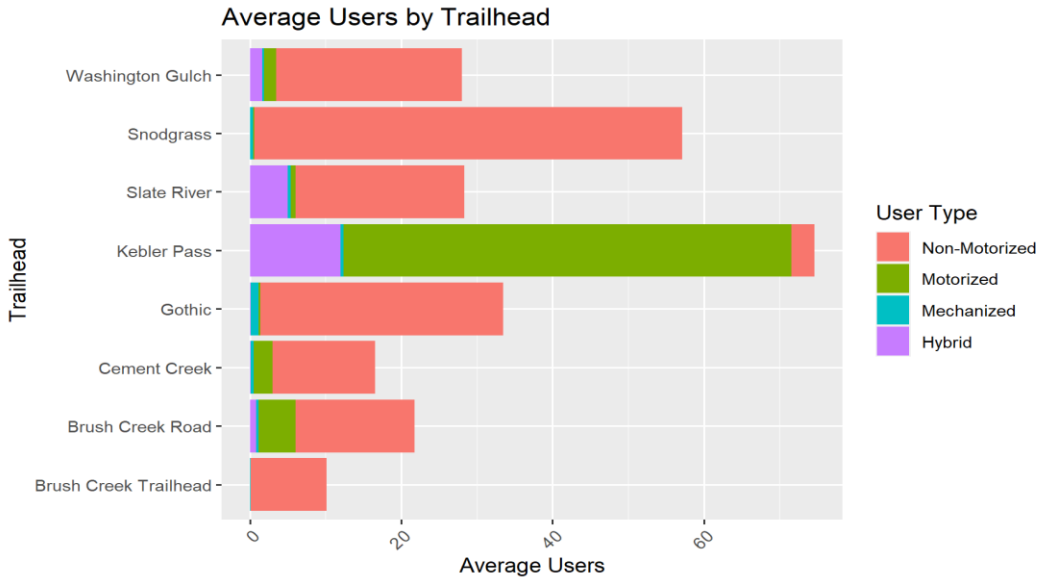


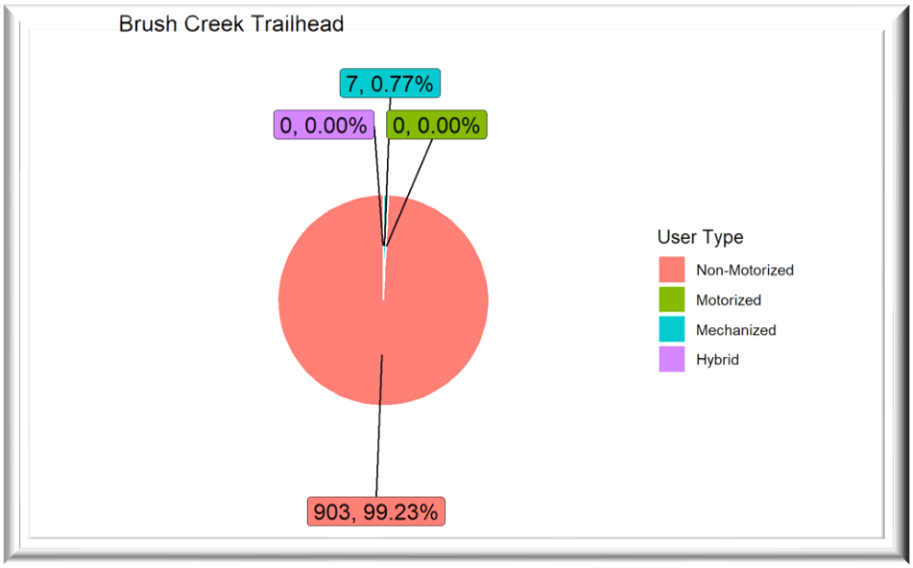
Figure 3: Bar chart showing daily average number of users at each trailhead.

Trailhead	*Average Daily Users*	*Average Daily Non-Motorized Users*	*Average Daily Motorized Users*	*Average Daily Mechanized Users*	*Average Daily Hybrid Users*
Brush Creek Trailhead	10.11	10.03	0	0.08	0
Brush Creek Road	21.77	15.74	4.93	0.31	0.79
Cement Creek	16.51	13.56	2.44	0.44	0.08
Gothic	33.5	32.1	0.3	1.05	0.06
Kebler Pass	74.62	3	59.27	0.41	11.94
Slate River	28.3	22.23	0.7	0.36	5.02
Snodgrass	57.18	56.58	0.16	0.43	0
Washington Gulch	28.01	24.59	1.61	0.23	1.59
Total	**33.75**	**22.23**	**8.67**	**0.41**	**2.43**

Table 2: 2022-23 averages, including total valley vide daily use and user averages by category for each trailhead.

BRUSH CREEK TRAILHEAD

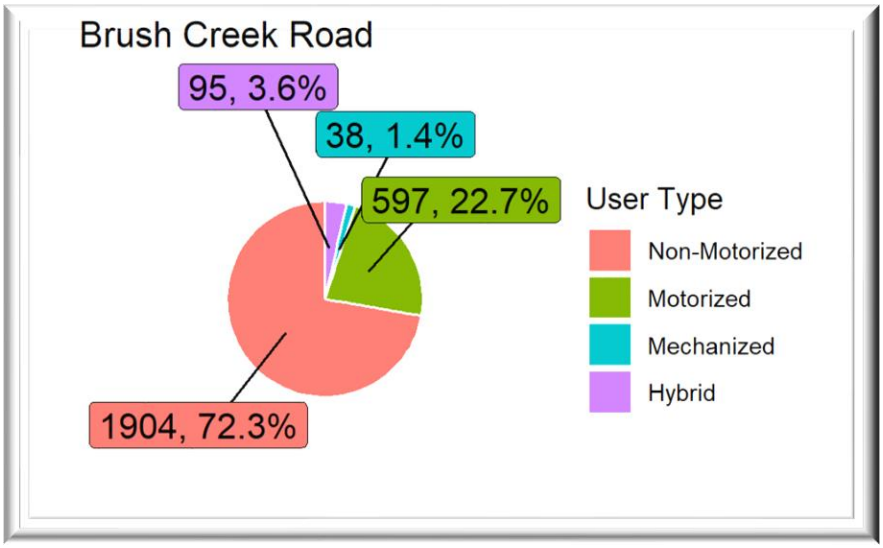
Total # of visitors = 910
Average # of visits per day = 10.11



The 2022-23 study collected data at the Brush Creek Trailhead for 90 days, 74% of the 121 days of camera installation. Despite having collected data for 26 days less than the 2021-22 study, the total number of users only decreased by 59 users from 969 to 910, while the average number of daily users increased by 1.76 users per day. The 26% of days without data could be explained by the low placement of the camera on the trailhead sign. This allowed the camera to be covered or blocked by snow. Additionally, the camera tended to fall forward between field visits, interrupting the proper field of view. Nearly 100% of observed users were non-motorized users (cross country skiers, snowshoers and dog walkers), with only 7 recorded visits of mechanized users (fat bikes).

BRUSH CREEK ROAD

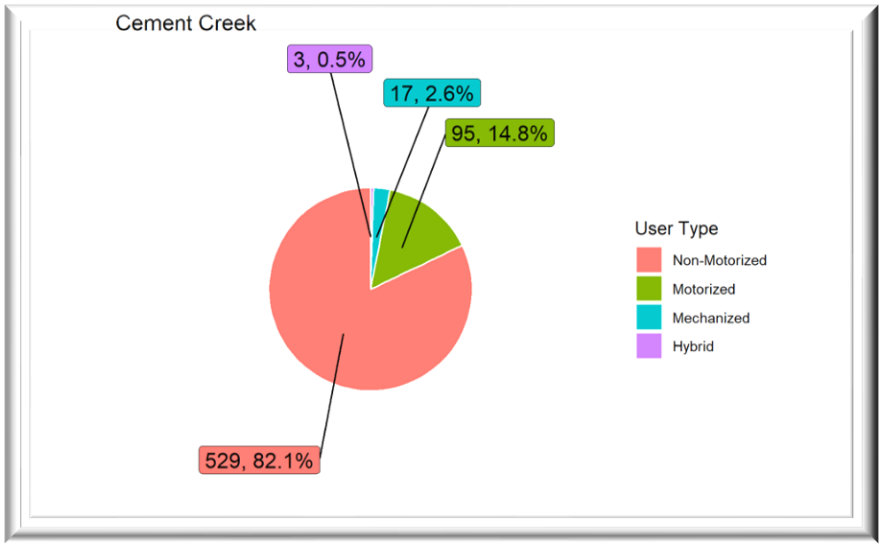
Total # of visitors = 2,634
Average # of visits per day = 21.77



The camera placement at Brush Creek Road was ideal, with 0 days of camera failure. The camera was placed high on a ***yield*** sign on the left side of the road a few hundred yards down from the Brush Creek Trailhead turnoff, allowing a wide view with no snow blockage. The 2021-22 study had issues with camera location, so comparison of both studies would be inaccurate. 72% of users for the 2022-23 study were non-motorized users, while motorized users accounted for 23%, putting Brush Creek Road in 2nd place for highest number of motorized users. While hybrid users only accounted for 3.6% of total users at Brush Creek Road, these 95 hybrid users put Brush Creek Road in 4th place for hybrid users of all 8 trailheads.

CEMENT CREEK

Total # of visitors = 644
Average # of visits per day = 16.51

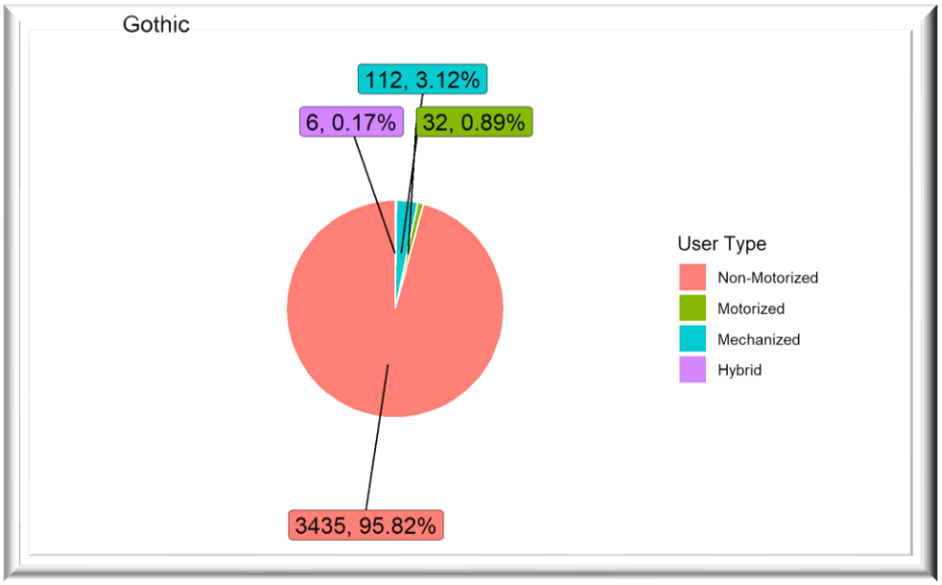


The 2022-23 study had many issues with the Cement Creek cameras, with 68% of the total days of camera installation having camera malfunctions resulting in only 39 total days of data collection. Mid-January 2023, the camera was not taking photos at all, so we replaced the camera. The new camera worked well for two weeks with

proper motion sensing taking photos of users, but starting in February, the motion senser seemed to malfunction repeatedly, resulting in hundreds of photos but none with users. During each site visit the batteries were changed and the camera positioned properly, but the issue persisted. We did not have a different camera to put in its place. Of the data collected, when compared with the 2021-22 study, average daily users decreased by 6.64 users. The 2021-22 study showed Cement Creek as having the 2nd highest total and average number of users with the 2nd highest number of motorized recreators, so certainly the camera malfunctions explain the unusually low counts for the 2022-23 season.

GOTHIC

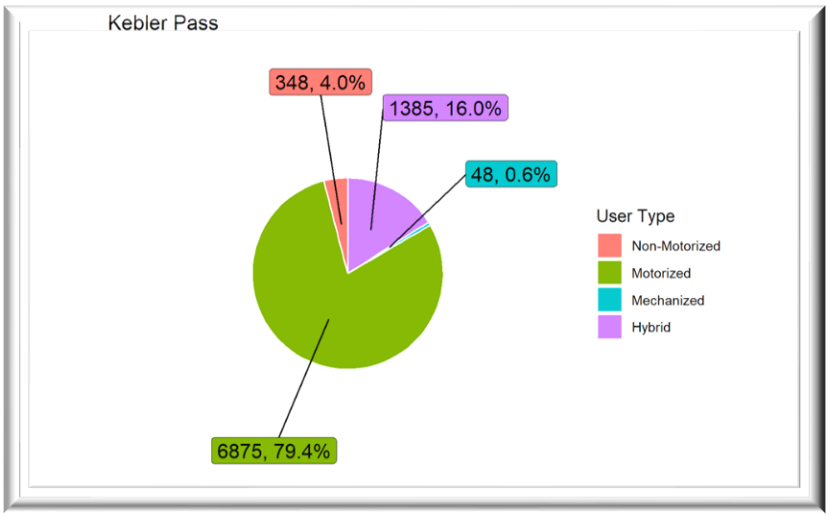
Total # of visitors = 3,585
Average # of visits per day = 33.50



The numbers between the 2021-22 study and the 2022-23 study for Gothic stayed relatively the same with only 3 fewer days of collected data this year. There were 321 fewer total visitors and only a decrease of 0.95 daily users. Gothic had the highest number of mechanized users of all trailheads and 2nd highest number of non-motorized users. The camera placement could be moved somewhere higher and with a wider view to limit snow blockage and maximize the camera frame.

KEBLER PASS

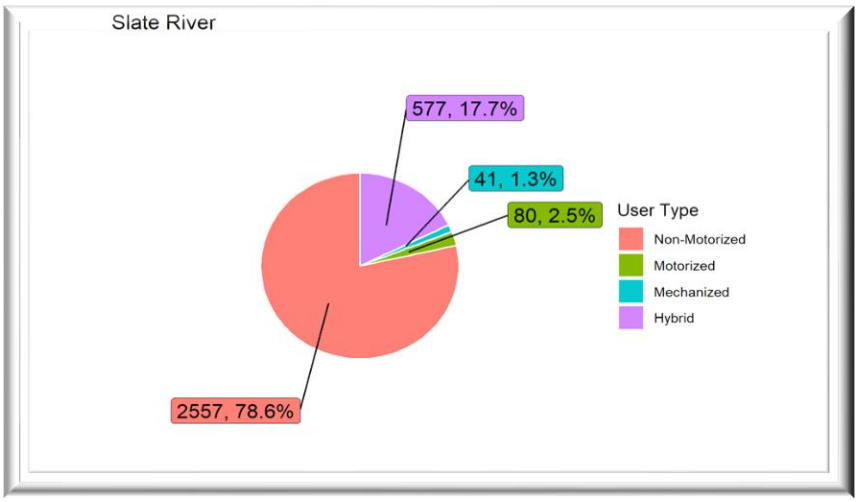
Total # of visitors = 8,656
Average # of visits per day = 74.62



With over 8,500 visitors observed over the course of the 2022/23 WDCI season and averaging almost 75 users per day, Kebler Pass is again the busiest trailhead researched in this study. 79% of users at Kebler Pass were motorized and 16% were hybrid, making Kebler the most popular trailhead for any form of motorized use of the trailheads studied.

SLATE RIVER

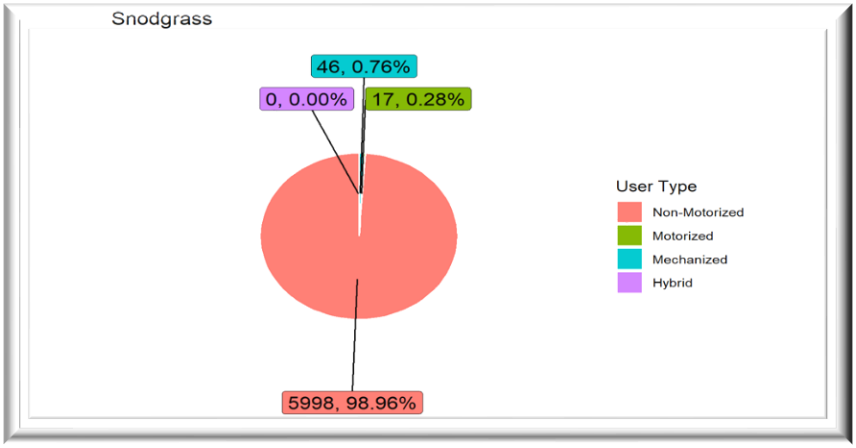
Total # of visitors = 3,255
Average # of visits per day = 28.30



This season's study saw a 23% increase in total users when compared to last year's study. The most notable difference was an increase of mechanized users from 11 to 41. Slate River saw the 2nd highest number of hybrid users than any other trailhead in this study.

SNODGRASS

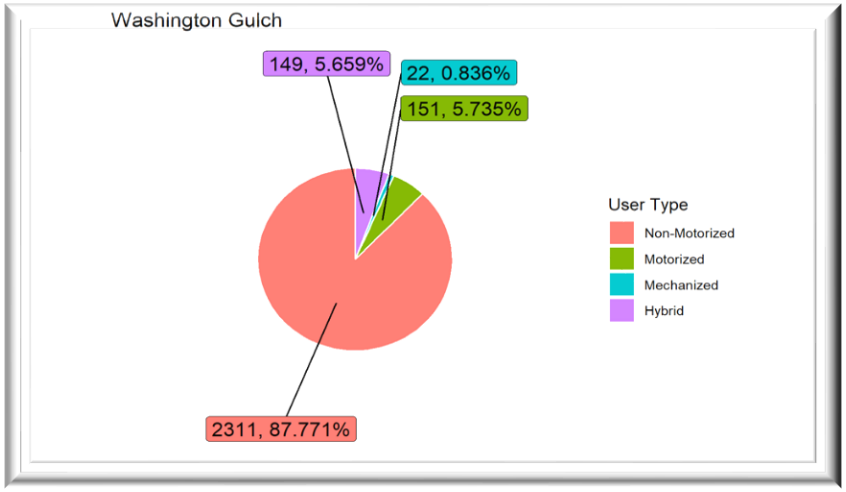
Total # of visitors = 6,061
Average # of visits per day = 57.18



Snodgrass Trailhead was again the second busiest trailhead, with over 6,000 visitors counted this season, an increase of 1,000 total visitors from last year's study. The overwhelming majority of users were non-motorized hikers, skiers, sledders, and dog walkers, however the 46 counted mechanized users put Snodgrass in 4th place for mechanized users amongst all the trailheads in this study.

WASHINGTON GULCH

Total # of visitors = 2,633
Average # of visits per day = 28.01



Despite having fewer days of data than last season, the total number of visitors at Washington Gulch for the 2022-23 season increased by 658 users and the average number of daily users increased from 19 to 28 daily users. Washington Gulch saw the 3rd highest number of hybrid users and 3rd highest number of motorized users.

CONCLUSIONS

There was a small increase of 1,098 total number of users between the 2021/22 and 2022/23 Winter Data Collection Initiative season, while the average number of daily users stayed the same at 34 users per day. This year's study had only 3 fewer total days for analysis, but 22 fewer days with data than the 21/22 study. This minor decrease in days with data most likely did not impact the overall trends too much. Overall, the trends remained relatively the same, with Kebler being the most heavily trafficked trailhead, followed by Snodgrass and Gothic. Brush Creek Trailhead remained the least visited location, typically reserved for dog walkers and the occasional beginner Nordic skiier. Had there been an equal number of days with data, I believe the numbers would have been even more similar from last season to this season. See Table 3 and Figure 6.

The two trailheads with significant changes in user counts were the Cement Creek Trailhead, which decreased by over 2,000 total users, and Brush Creek Road, which increased by over 1,800 total users. These discrepancies can be attributed to poor camera placement and camera malfunctions during last season and this season. Outside of these two anomalies, total user visits decreased by 6% at both Brush Creek Trailhead and Kebler Pass and decreased 8% at Gothic Road. Total user visits increased by 20% at Snodgrass, 22.5% at Slate River, and 33.3% at Washington Gulch. Last year's study demonstrated a significant decrease in all numbers but was mostly attributed to unusually high numbers during the COVID-19 pandemic in 2020. Without any significant events or infrastructure changes, it is not surprising that numbers have stabilized from the 2021/22 season to the 2022/23 season. I have a few theories on why user visits increased at Snodgrass, Slate River and Washington Gulch. First, Snodgrass and Washington Gulch provide excellent opportunities for lower avalanche risk backcountry travel, making these trailheads popular for beginner backcountry skiers. Given that most users were non-motorized at these locations, an increase in backcountry skiing interest could certainly explain the increase of visitors. Slate River and Snodgrass are also popular destinations for sledding and walking around. I counted many large groups of users at these trailheads simply enjoying the space more than any other trailheads.

I have a few recommendations for next year's study. First, I recommend replacing at least the camera at Cement Creek, if not replacing all of them, if budget allows, to ensure highest accuracy. Additionally, camera placements should be reconsidered to allow for best functioning of the motion sensors. When the cameras are placed too close to the trailhead, the range is too narrow, and the cameras are not triggered appropriately. The photos also end up very zoomed in, making it difficult to accurately count users. For camera locations that are missing another mounting option, perhaps a metal pole mounted in concrete could be used to get the camera higher, assuming permission from the Forest Service. The Brush Creek Trailhead camera needs to be further from the trail and up higher. The Brush Creek Road camera should stay in its location high on the yield sign on the left side of the road a few hundred yards down from the Brush Creek Trailhead turnoff. The Cement Creek TH camera was decently placed but needs to be facing far enough up the road to maximize its view. The Gothic camera could use a new placement as the location this season was awkwardly downslope of the trail, and too low,

eventually becoming either buried in snow or blocked by snowbanks from the plow. Gothic would be a good use of a taller pole to mount a camera. The Kebler Pass camera location was good but buried in snow by the end of the season, so I suggest placing it higher up to start, and making sure to bring a shovel to site visits. The Slate River camera should remain on the metal pole sign but be facing the trailhead bulletin. There were minor issues with public tampering, turning the Slate River camera 180 degrees away from the trailhead. This is easy to manage with regular site visits. The Snodgrass camera was in a great location until later in the season when the snow was deep enough to bury it. Perhaps using a mounting pole at Snodgrass would eliminate this issue. Lastly, the Washington Gulch camera location was good, but should be installed as high as possible, managed for snowbank blockage throughout the season, and aimed far enough up the trail to capture more than one small segment of trail.

Last year's report mentioned a few issues with batteries. I found the lithium batteries only needed to be replaced about once every 6 weeks, which had a positive impact on the budget for batteries. I brought a battery tester to each site visit and checked each individual battery. If the battery read in the green, I did not swap it out for a new one. I did not have any issues with batteries dying. Camera malfunctions were mostly due to snow blockage and malfunctioning motion sensors.

	17-18	18-19	19-20	20-21	21-22	22-23
Brush Creek TH	1,388	911	979	1,998	969	**910**
Brush Creek RD	538	ND	ND	1,542	762	**2634**
Cement Creek TH	780	1,890	2,418	4,615	2,709	**644**
Gothic RD	3,457	3,083	2,400	4,445	3,906	**3,585**
Kebler Pass	5,388	7,064	8,154	11,882	9,241	**8,656**
Slate River RD	4,130	4,042	2,355	4,726	2,657	**3,255**
Snodgrass TH	5,776	5,203	3,661	10,364	5,061	**6,061**
Washington Gulch TH	4,355	2,450	2,371	4,781	1,975	**2,633**
Total Days for Analysis	718	952	924	1,029	979	**976**
Total Days with No Data	71	34	197	40	169	**188**
Total Days with Data	647	918	727	989	810	**788**
Avg Users/Day (Total Users/Total Days with Data)	40	27	31	45	34	**34**
Total Users	25,812	24,643	22,338	44,293	27,280	**28,378**

Table 3: 6-year comparison chart, showing total counts and overall average users observed per day.

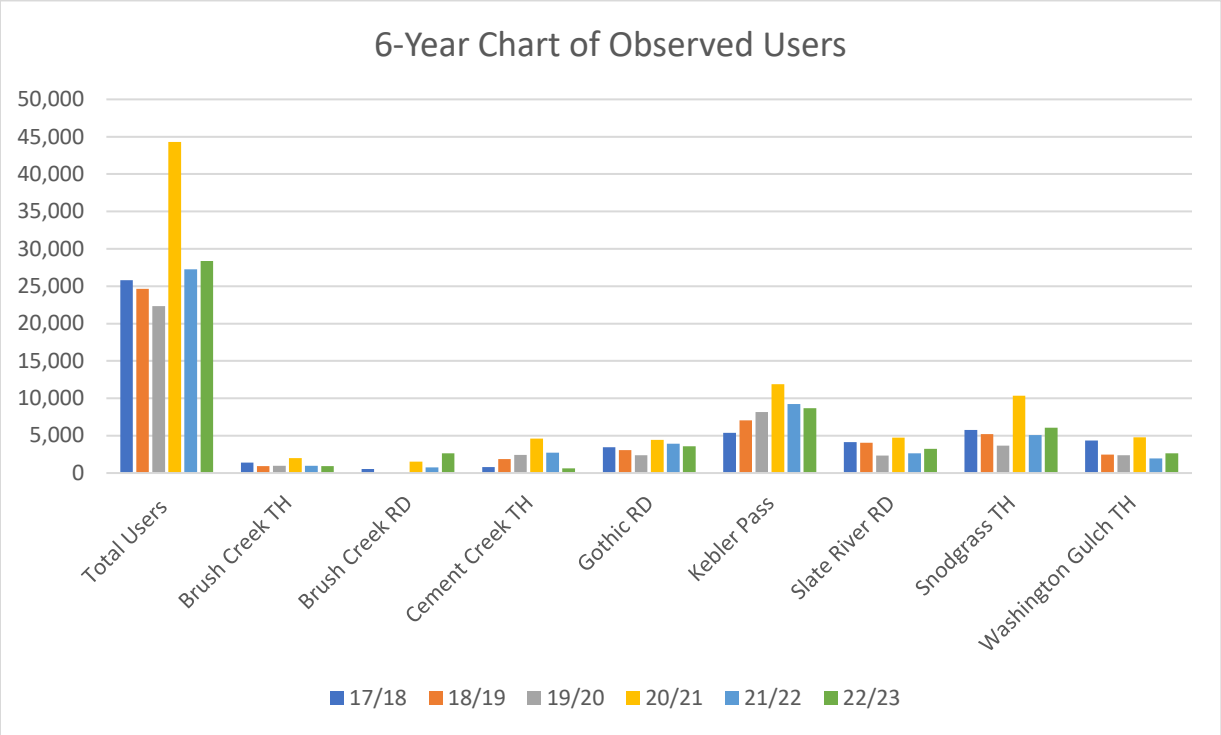


Figure 6: 6-year comparison chart, showing total number of observed recreation visits for each site during 6 WDCI seasons.

ACKNOWLEDGEMENTS

Thank you to the multitude of stakeholders that all play a role in making the Winter Data Collection Initiative possible. I would like to thank 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. I also would like to thank our partners at Crested Butte Land Trust and Silent Tracks for your support and your continued goal of making recreational opportunities more sustainable, accessible and enjoyable. In addition to all the stakeholders, I would like to extend my gratitude to all the community members and winter backcountry visitors who participated in the 2022/23 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 intern, Jack Fanselow, for all his 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.