Upper Gunnison Valley Winter Visitor Use Report 2019-2020

Introduction

Crested Butte and the Upper Gunnison Valley (UGV) are renowned for backcountry access available to multiple winter recreation groups. Certain characteristics of the valley, including long winters, heavy snowfall, and extremely low temperatures have turned this former mining town into a tourist destination which thrives on its many outdoor opportunities.

Currently, the area's backcountry is regulated by a Winter Travel Management Plan (WTMP), which the United States Forest Service developed and created more than twenty years ago. Since its implementation, the tools available for backcountry access have changed dramatically. These technological changes along with increased visitation to the backcountry have prompted members of the Crested Butte community to express interest in updating the WTMP.

The UGV is not the only community facing these changes. 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 plans to implement changes to the WTMP in order 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 interim, the community aims to study and better understand visitor use patterns in order to inform the planning of the WTMP once the process commences.

A multi-year study, started in 2016, compiles meaningful data that can be utilized by land managers (i.e. USFS, BLM, private land owners, ranchers, etc.) to design policies that maintain or improve environmental quality and optimize backcountry winter experiences for all users. The goal of the study is to gather quantitative data regarding backcountry travel and use in the UGV. The study will increase knowledge of winter travel patterns and enhance stakeholder's ability to aid the USFS in the upcoming decision-making process of a new Winter Travel Management Plan. Data about backcountry winter use has been collected through observations, camera technology, surveys, focus groups, and collaborative data collection. This study is an ongoing collaboration between the Master of Environmental Management program at Western Colorado University, The Center for Public Lands, the Town of Crested Butte, local nonprofits, and numerous private donors. The following presents the results of data collection in the winter of 2019-2020.

Methods

Trailhead monitoring was carried out using trail cameras placed at eight locations in the six major drainages used for backcountry travel in the UGV (Figure 1). In-direct counting takes

place from December to April as the cameras capture images of trail users. For winter 2019/2020, data collection started on December 6, 2019 and ended on April 15, 2020. Images were downloaded from the cameras every 2-3 weeks to ensure the memory cards did not reach capacity, batteries had power, and cameras were oriented correctly. While infrared trail counters can accurately record the number of bodies that pass the counter each day, the photo-capture method has been used in this study to better understand what types of winter recreation is happening on the different trails.

To collect this fine-grained detail, each image captured by the camera is visually examined and categorized based on the type of recreation seen in the photo to identify how many people use a trail each day and quantify their recreational activities. Recreation categories include: walking (including runners, hikers, snowshoers, people walking with sleds), Nordic skiing (including AT skiers, snowboarders, split boarders, cross-country skiers), fat biking (non-motorized), snowmobiling (along with cars/trucks, snowcats, oversnow motorcycles and UTVs, grooming machines), and "hybrid" use encompassing two or more categories. After identifying the method of recreation, each image is categorized into one of three major categories: motorized, non-motorized, and mechanized. The US Forest Service defines a motor vehicle as any vehicle which is self-propelled, other than a wheelchair or mobility device. Mechanized use often refers to bicycles, in this case over-snow bicycles, but the International Mountain Bike Association recognizes that the legal and regulatory definition of mechanized is unclear. In this study, fat bikes were recorded as mechanized. The non-motorized category includes any recreation user who does not use motorized or mechanized transportation. Hybrid users appear to be participating in multiple forms of recreation, typically identified by a snowmobile carrying skis or pulling skiers. If motorized transportation is being used as part of the hybrid recreation, it is categorized as motorized. For this study, motion-activated photography produces accurate total counts of daily use, by recreation type and trailhead locations. Information about direction of movement, method of travel and propulsion, user type, and even group size could be gathered from the raw images, but has not been analyzed for this report. All images are stored electronically should additional analysis be desired.

These methods have been repeated with minimal variation since 2016. The 2019-2020 season very closely followed the previous years in data collection. Out of 130 days of potential data collection, most locations recorded about 86% of utilization. Due to a stolen camera, the Snodgrass Trailhead only had 58 days of data collected, but the rest of the locations had between 105-126 days of data (Table 1). Of note during 2020, the Crested Butte Mountain Resort closed on March 14 due to the coronavirus pandemic, which may have shifted tourist visitation and backcountry recreation patterns. We determined to leave the cameras in place an additional two weeks beyond the usual April 1 study termination, to capture notable changes from the pandemic. Social impacts on the research team due to COVID-19 also delayed the analysis of the images, which must be done by someone who has been adequately trained to ensure coder reliability.

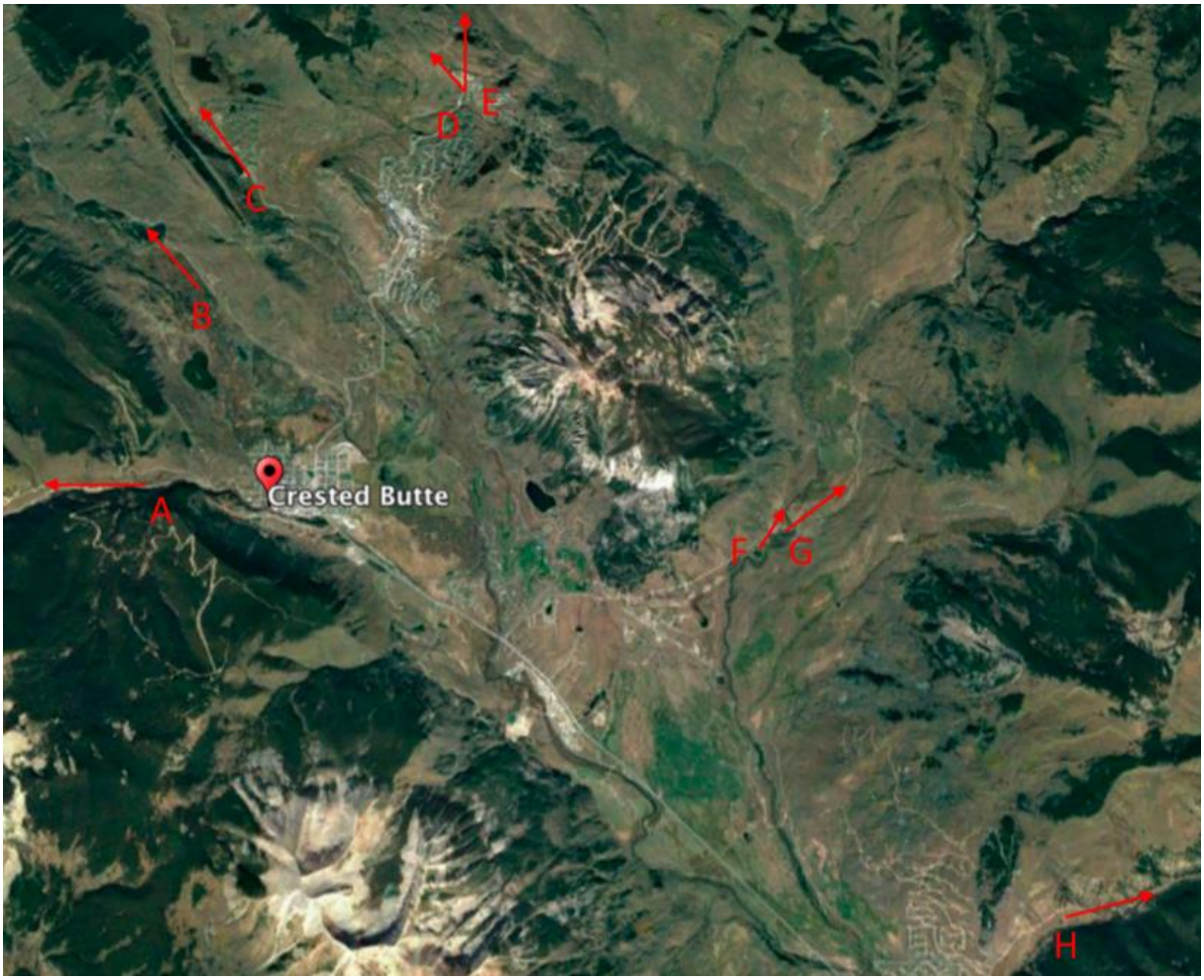

Figure 1: Location of Trailheads; A. Kebler Pass Trailhead B. Slate River Road Trailhead C. Washington Gulch Trailhead D. Snodgrass Trailhead E. Gothic Corridor Trailhead F. Brush Creek Trailhead (not used in 2019/2020) G. Brush Creek Road H. Cement Creek Road Trailhead (Image: Google Earth, 2018).

Results

TOTAL COUNTS 2019-2020[1]

The results from winter 2019-2020 data collection show that at least 22,313 recreation visits took place on Upper Gunnison Valley winter trails between December 6, 2019, and April 15, 2020 (Table 1). In terms of users per trailhead, Kebler Pass had the most recreationists by an overwhelming total of 8,154 users or 36.5% of all users (primarily snowmobiles). That 36.5% is comprised of 7,233 motorized users, which means 83.1% of the total motorized users were

[1] Note that the data record separate recreation visits not numbers of unique users. Thus, someone who recreates on a trail on Friday, Saturday and Sunday is counted three times in the study. Each visit is counted in the total and average user data presented here. The number of unique trail users is not captured in this study, but in this report we use the term "user" to stand in for the more specific "recreation visit."

found at Kebler Pass. The remaining six trailheads had the most non-motorized users with a combined percentage of 93.3% of total non-motorized users (Figure 2).

Five other sites ranged from 2,355 to 3,661 recreation visits each; Brush Creek had the fewest visits with 979 users or 4.4% of total users. Snodgrass Trailhead had the second most total visits at 3,661, or 16.4%, with 3,574 of those being non-motorized, 87 mechanized users, and with no observed motorized users. The number of recreation visits in Cement Creek, Gothic, Washington Gulch, and Slate River in 2019-20 was very close (+/- 50) to 2,400 visits per drainage.

TRAILHEAD	Days with Data	Total Users	Non-motorized	Mechanized	Motorized
Brush Creek	112	979	954	23	2
Cement Creek	114	2,391	1,927	117	347
Gothic	117	2,402	2,167	152	83
Snodgrass	58	3,661	3,574	87	-
Washington Gulch	105	2,371	1,920	19	432
Slate River	108	2,355	1,726	21	608
Kebler Pass	126	8,154	885	36	7,233

Table 1: **2019-2020 Totals,** including number of days when data were collected, total recreation visits for the season, and number of recreation visits by category for each trailhead.

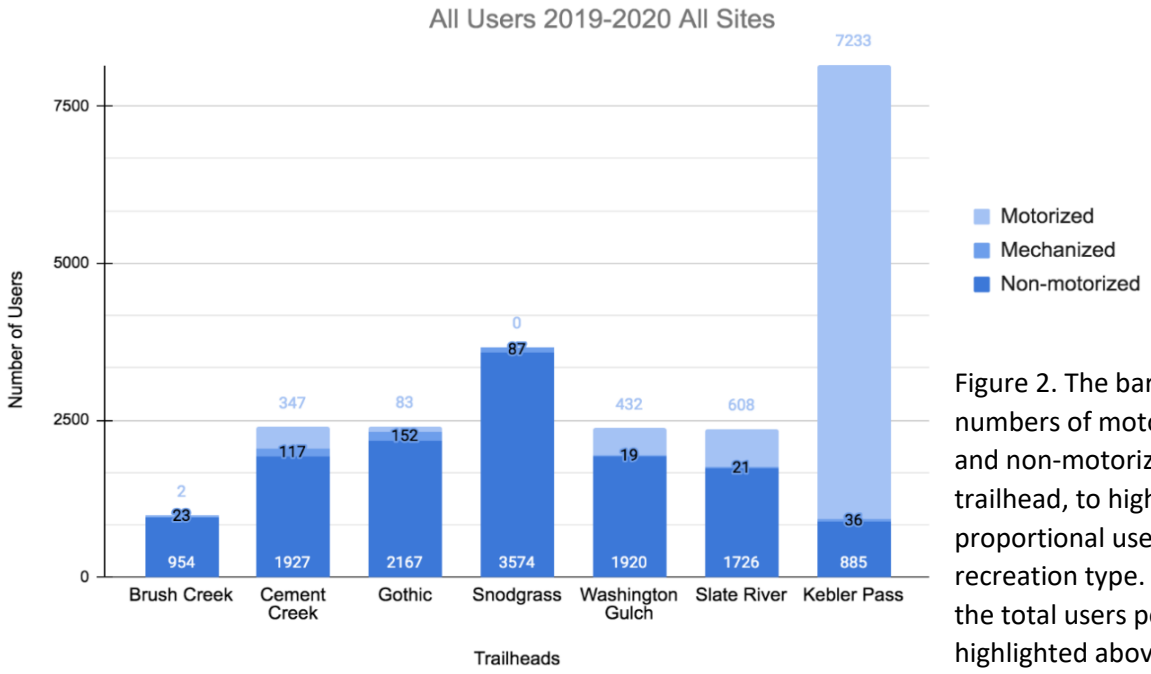

Figure 2. The bar chart presents the numbers of motorized, mechanized, and non-motorized users on each trailhead, to highlight the proportional use of each trail by recreation type. Each bar adds up to the total users per trailhead highlighted above.

AVERAGE DAILY VISITS 2019-2020

Consistent with the total user data, Snodgrass Trailhead and Kebler Pass had the two highest daily averages at 63 and 64 users respectively, and Brush Creek had the lowest daily average of about 9 visits per day. The remaining 4 trailheads had a range of 20-22 daily average recreation visits.

Trailhead	Average Daily Users	Non-motorized	Mechanized	Motorized
Brush Creek	8.70	8.52	0.21	0.02
Cement Creek	21.00	16.90	1.03	3.04
Gothic	20.50	18.52	1.30	0.71
Snodgrass	63.10	61.62	1.50	0.00
Washington Gulch	22.60	18.29	0.18	4.11
Slate River	21.80	15.98	0.19	5.63
Kebler Pass	64.70	7.02	0.29	57.40

Table 2: **Average daily recreation visits.** Average daily use was calculated by dividing total annual visits by number of days data were collected. These numbers will be more accurate in comparing years, due to the fact that camera failure can lead to inconsistent numbers of days where data are collected each year.

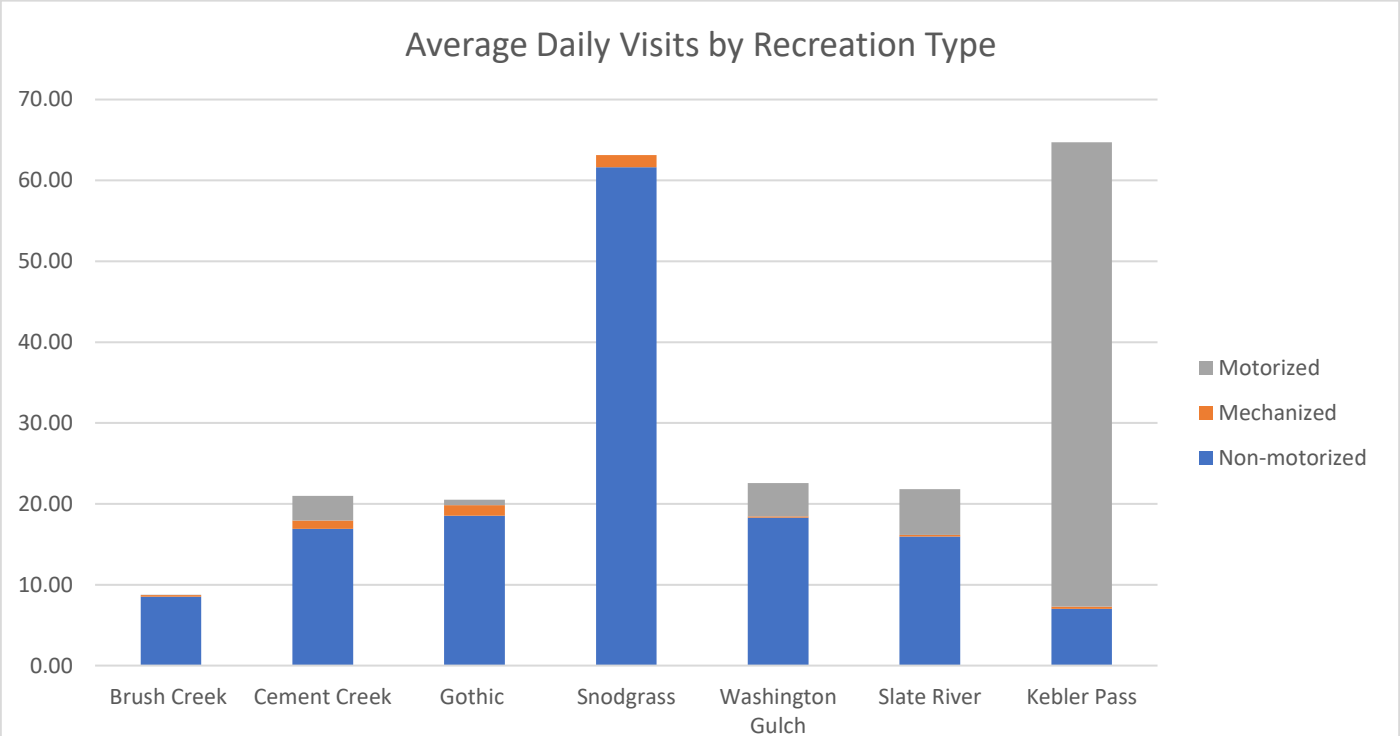

Figure 3. The bar chart illustrates the proportional use of each trail by motorized, mechanized, and non-motorized users, based on average daily visits. Totals and number values for each recreation type are shown in Table 2 (above).

THREE SEASON COMPARISON (2017/19-2019/20)

Over three years of data collection there are a few trends that can be identified for each trailhead as well as across different user groups. Kebler Pass saw an increase of total recreation visits from 5,022 in 2017-18 to 8,145 in 2019-20. The four trailheads north of Crested Butte and Mount Crested Butte—Gothic, Snodgrass, Washington Gulch, and Slate River—had a decrease in users over the three years.

	Total Days with Data			Total Users			Total Non-motorized Users			Total Mechanized Users			Total Motorized Users		
Trailhead	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20
Brush Creek	90	108	112	1412	905	979	1,392	888	954	18	9	23	2	8	2
Cement Creek	44	120	114	773	2,501	2391	557	1,905	1,927	30	106	117	186	490	347
Gothic	84	121	117	3,427	3,132	2402	3,187	2,914	2,167	216	205	152	24	13	83
Snodgrass	103	94	58	5,776	5,180	3661	5,629	5,024	3,574	120	118	87	27	38	-
Washington Gulch	113	85	105	4,004	2,298	2371	3,222	1,946	1,920	47	5	19	735	347	432
Slate River	112	118	108	3,465	3,173	2355	2,514	2,379	1,726	111	24	21	840	770	608
Kebler Pass	60	110	126	5,022	6,635	8154	372	260	885	10	24	36	4,340	6,351	7,233
TOTAL	606	756	740	23879	23824	22313	16873	15316	13153	552	491	455	6154	8017	8705

Table 3. **Three-year comparison of total users.** This table presents the total numbers of users in each year of the study. It is highly important to consider the total days with data shown in the three leftmost columns of data. In 2017-18, data were collected on just 606 days, compared to about 750 days the following years. The total number of users has not been adjusted according to number of days data were collected. Thus, the decline in total users shown each year (2017-18: 23,879, 2018-19: 23,824; 2019-20: 22,313) is particularly notable given that in 2019-20, 134 more days of data were collected than in 2017-18, yet 1,566 fewer visits were recorded. Also note how this specifically impacted variations by trailhead. Noticeable visitation increases in Cement Creek, for example, must be considered alongside the increase in data days from 44 to 120, then 114.

Comparing the average use from 2017-2019 there is a decline in average daily users from 280 in 2017-18 to about 222 in 2018-19 and 2019-20. This decline was largely driven by drops in visitation to Kebler and Gothic, at about 20 users per day each. Brush Creek, Gothic, and Kebler Pass declined in 2017-18 and 2018-19 but they held steady for 2019-20. Motorized use dropped about 25 people per day from 2017-18 but was steady with last year. Mechanized use remains small with a decline of about 1 person per day since 2017-18 (to 5 per day).

	Average Daily Users			Non-motorized			Mechanized			Motorized		
Trailhead	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20
Brush Creek	15.69	8.38	8.70	14.97	8.22	8.52	0.19	0.08	0.21	0.02	0.07	0.02
Cement Creek	17.57	20.84	21.00	12.66	15.88	16.90	0.68	0.88	1.03	4.23	4.08	3.04
Gothic	40.8	25.88	20.50	35.81	24.08	18.52	2.43	1.69	1.30	0.27	0.11	0.71
Snodgrass	56.08	55.11	63.10	48.95	53.45	61.62	1.04	1.26	1.50	0.23	0.40	0.00
Washington Gulch	35.43	27.04	22.60	35.43	22.89	18.29	0.41	0.06	0.18	6.34	4.08	4.11
Slate River	30.94	26.89	21.80	21.67	20.16	15.98	0.96	0.20	0.19	7.24	6.53	5.63
Kebler Pass	83.7	60.32	64.70	6.2	2.36	7.02	0.17	0.22	0.29	77.33	57.74	57.40
TOTAL	280.21	224.46	222.4	175.69	147.04	146.85	5.88	4.39	4.7	95.66	73.01	70.91

Table 4. **Three-year comparison of average daily users.** Average daily use was calculated by dividing total annual visits by number of days data were collected.

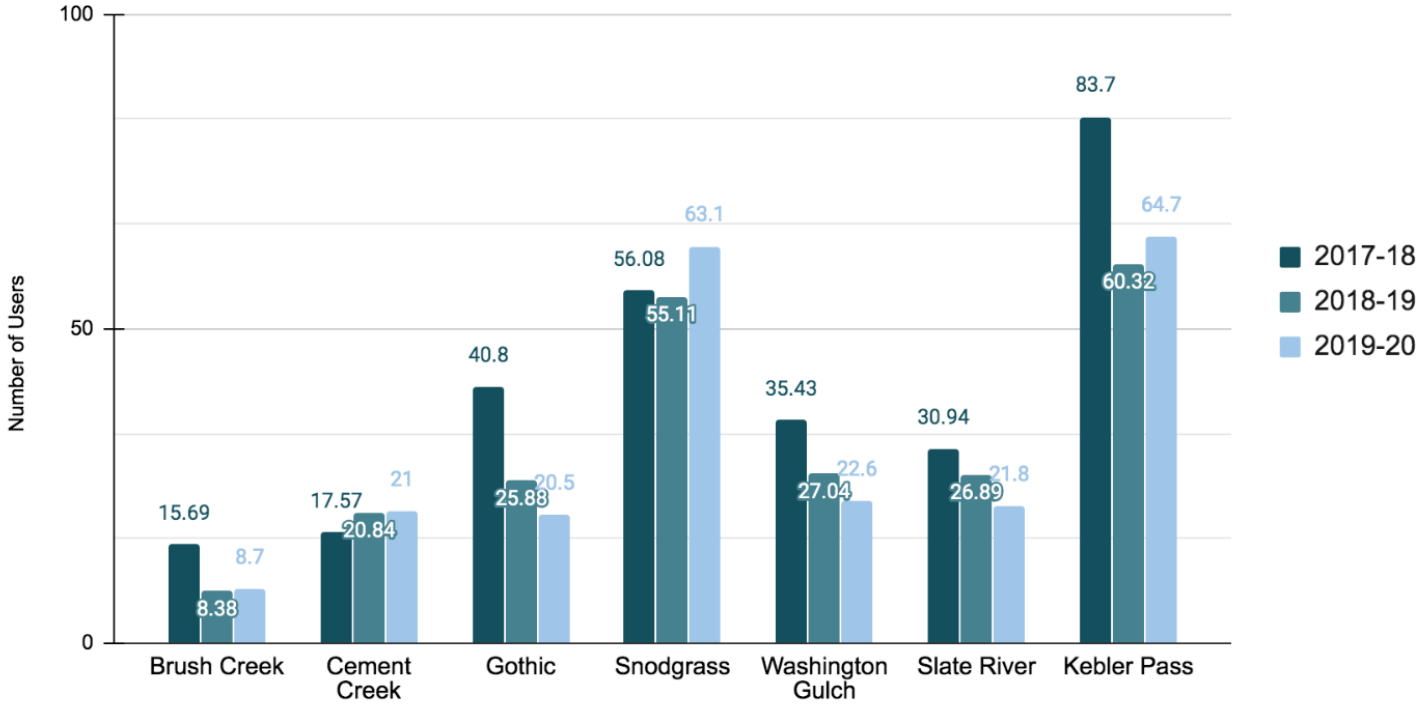

Figure 4. The bar chart illustrates the average daily recreation visits for each site during the three years of data collection.

Discussion

While trends for each trailhead differ from year to year, the numbers recorded for each user group have been consistent with the previous year, establishing a baseline and trends to watch in the upcoming years. There is a decline in total average daily use over three years, though with a small margin between the last two seasons there could be potential in the next three years for the average to level out.

Although mechanized users have become a newly distinguished group in backcountry use over the last few years, their use has remained relatively low in comparison to other user groups. Contrary to proposals that "new uses" are on the rise, the recorded average daily use by mechanized fat bikes shows a slight decline over three years.

Also of note, hybrid users are being counted among the motorized users so there are people doing multiple activities in the backcountry. This may beg the question of how many of those motorized users are considered hybrid.

For the 2019 -2020 season, a quick assessment of weekend visitation was conducted, and it was found there was about twice as much average daily use on the weekend (63%) compared to weekdays (37%). A similar trend was noted for weekend non-motorized use (67%) and mechanized use (65%); however, weekend use was more evenly distributed for motorized use (54%). The consistent daily distribution for motorized use was strongly driven by the near equal, and heavy, day use on Kebler Pass during holiday periods. From a resource impact perspective, about 40% of impacts occurred on weekends with about half attributed to non-motorized (45%) and mechanized (42%) use. Only about a third (32%) of the daily motorized use occurred on the weekend, and this was strongly influenced by Kebler where there was almost no variation in the average day use. Not surprising, of the weekdays, Fridays were generally the busiest.

In order to gain a better understanding of conclusions from three years of data, a broader view must be taken on outside factors affecting winter travel and backcountry use. Two corresponding factors are snowfall and avalanche risk levels. Avalanche risk levels can change day to day throughout the winter season depending on snowpack, snow type, and temperature trends. There could be correlation between the amount of snowpack in a season and day to day snowfall to the level of all types of backcountry use.

Future Analysis

This study has transitioned over the last three years from a one-year baseline study to a multi-year study. At this point, it is important to look towards the future. Our plan is to increase the value of the data collected by adding comparisons to additional information, including avalanche risk levels and snowfall/snowpack data.

The Colorado Avalanche Information Center (CAIC) collects data during the winter and publishes an annual report on statewide snowfall patterns and avalanche and accidents. The Crested Butte Avalanche Center (CBAC) also collects local and regional avalanche data and reports on avalanche risk levels throughout the season. Data from these sources that can be used for comparison to winter travel to help answer the "why" question about patterns in backcountry use. For example, taking the snowfall patterns recorded in nearby Gothic that change month to month and comparing them with the change in number of total users month to month can supply a bigger picture to winter travel in the UGV (Table 5).

	Location	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Total Snow (in)	Gothic	41	39	58	46	95	34
Winter Travel Users (visits)	Kebler Pass	-	2419	1499	1465	2360	361

Table 5. Sample table placing snow data alongside recreation use. For illustration only.

In the coming months, Dr. Zachary Treisman, a mathematics professor and statistician at Western Colorado University, will assist with refining the data analysis process. With his oversight the data from all three years will be standardized and moved into the statistics software, "R". This software will allow us to 1) run statistics-based tests on the current data to garner more significant conclusions and 2) merge data with environmental condition factors, illuminating new aspects of the dataset. Additionally, more complete data on daily, weekly, and monthly use could allow for randomized data collection and the ability to focus in on significant trends and occurrences.

Recently, parking lot usage has been of interest to planners and decision makers, and although the cameras used in this study do not capture parking lot activity there are other aspects of the pictures taken that could be taken into consideration. For example, we are currently looking at details regarding length of time users are spending at the Slate River Trailhead which can assist decision makers working to determine trailhead and parking layout.

Finally, additional information to better understand the data trends could come from visitation estimates from Gunnison County and more data about out-of-area visitation. Conclusions from the survey, discussed below, as they overlap with the data collection, could be informed by outreach to non-resident backcountry users

Community Survey

A survey about winter recreation was distributed through the Gunnison Valley in 2017 and 2020 via Survey Monkey. By marketing the survey with stakeholders, community groups, backcountry user groups, and local news sources, we aim to reach as many winter backcountry

participants as possible. The survey consists of 20 questions that cover types of backcountry use, amount of use, locations of use, trends in visitation, and perceptions of current use, current management, and future management. The survey also gathers some personal information including age brackets (under 18; 18-24; 25-30; 31-40; 40-60; 60+), and general location of primary residence (Gunnison, Crested Butte South, Crested Butte, Mount Crested Butte, other in Gunnison; other in Colorado, out of state).

This season's survey was open April-May 2020 and only garnered 39 participants. Due to the larger number of respondents (313) in 2017, comparison between the two surveys is not reliable. Limited public marketing and the timing after the winter season garnered more localized responses, largely from frequent backcountry users (i.e. likely members and supporters of recreation user groups who shared the survey with their constituents.) Moreover, the 2020 survey was available during a time when people's daily patterns were likely altered due to the coronavirus pandemic. To amplify the dataset, we plan to administer the survey again in 2021, towards the end of the winter recreation season from mid-March to early-April, using a robust marketing plan targeting both locals and visitors to Gunnison County.