HOW COVID AFFECTED BACKCOUNTRY SKIING IN THE 2020 – 2021 SEASON

David C. Fiore MD[1]*, Andrew P. Cobourn BS[1], Spencer J. H. Trivitt BS[1], Jordy Hendrikx PhD[2], Jerry D. Johnson DA[2], Esteban A. Valle MD[1]

[1] *University of Nevada, Reno School of Medicine. Reno, Nevada*
[2] *Montana State University. Bozeman, Montana*
[3] *University of Arizona College of Medicine – Tucson*

ABSTRACT: Introduction: Following the restricted operations and closure of many ski resorts due to the Covid pandemic there were many anecdotal reports of a surge in backcountry skiing and riding. This study attempted to quantify this and identify motivations for new backcountry skiers. Methods: Self-identified backcountry skiers and snowboarders in the United States completed an anonymous 29-question online survey distributed by regional avalanche centers, education providers, and skiing organizations (n=4792). Respondents were stratified by backcountry experience, defining "newcomers" who began backcountry skiing from 2019 to 2021, coincident with the COVID-19 pandemic. Results: Of established skiers, 81% noticed more people in the backcountry and 27% reported increasing their own use. Participants reported spending more of their days in the backcountry during the COVID-19 pandemic, with newcomers increasing their time spent by 36% and established skiers increasing their time spent by 13%. Of newcomers, nearly one-third cited the COVID-19 pandemic as motivation to enter the backcountry and one-quarter lacked formal avalanche education, which is significantly higher than the 14% of established skiers. Conclusions: Influenced by factors related to COVID-19, backcountry use increased during the pandemic. Newcomers had a lower level of avalanche education and less confidence in evaluating terrain. Because 80% of participants were recruited from avalanche safety or education websites, this likely underestimates skier lacking avalanche awareness or education and is further limited by the nature of online surveys.

Keywords**:** Covid, Skiing, Backcountry, Survey

1. INTRODUCTION

Ski areas across the northern hemisphere closed, or severely limited, operations in the latter half of the 2019 - 2020 season due to the SARS-CoV-2 pandemic (COVID-19). In the US, the National Ski Area Association reported

that 93% of US ski resorts closed operations in March 2020. This continued into the 2020 - 2021 ski season, with ski areas in limited operation. In Europe, despite an excellent snow season, many resorts were shut down. As a result of this turmoil and these restrictions, many resort skiers looked to the backcountry to continue their sport.

Backcountry skiing has been the most rapidly growing snow sport, increasing 8-fold from 1995 to 2017 (Birkeland 2017). There is concern that many of these newcomers may not have the requisite gear and training to safely enter the backcountry. The American Avalanche Association defines education standards for avalanche safety and rescue courses and recommends purchasing relevant safety equipment, such as an avalanche beacon, probe and shovel, and obtaining at least Level 1 certification, before entering avalanche terrain (Van Tilburg 2017).

* Corresponding author address: David C. Fiore, MD, FAAFP, FAWM UNR Reno, School of Medicine Reno, NV 89519, dfiore@med.unr.edu

Media reported a surge in backcountry use and concerns of a commensurate increase in backcountry avalanche incidents and fatalities (Mander 2021)]. Our study was undertaken to help quantify that perception, and to assess how those first entering the backcountry during the pandemic differ from experienced backcountry skiers.

2. METHODS

Methods are described in detail in “Perceptions of Backcountry Skiers” in *WEM* Dec 2022 (Valle 2022)

In summary, the data collection instrument was an anonymous cross-sectional online questionnaire with 29 items incorporating multiple choice, numeric, Likert-type items, visual-analog scales, numeric sliders, and free text entry responses.

Participants were recruited via online postings by regional avalanche centers, avalanche education providers, winter sports news sites and storefronts, and personal social media including Facebook and Instagram.

The instrument assessed several target areas of our study, including the participant’s self-reported skiing/riding ability level, the impact of COVID-19, level of avalanche education, comfort with risk, and confidence in assessing avalanche terrain. These questions, where applicable, were modeled after items in prior studies, which have demonstrated a high degree of content validity (Mannberg 2021, Johnson 2021).

For brevity, the term ‘skier’ was used throughout the text to refer to both backcountry skiers and snowboarders.

3. RESULTS

The survey produced a total of 5,674 raw responses over the survey period of March 1–31, 2021, with 4,792 responses after eliminating 882 who only responded to a couple of questions. By recruitment source, the largest group of responses (49%, n=2338) was from organizations in backcountry and avalanche education, followed by avalanche centers (31%, n=1494), and media or social media websites (16%, n=746). Respondents were predominantly young males, as visualized in Figure 1, and mostly established backcountry skiers (84%), with over 10 years of resort experience and 4–6 years of backcountry experience. They reported spending an average of 15 days in the backcountry and 20 days at resorts in a "typical season."

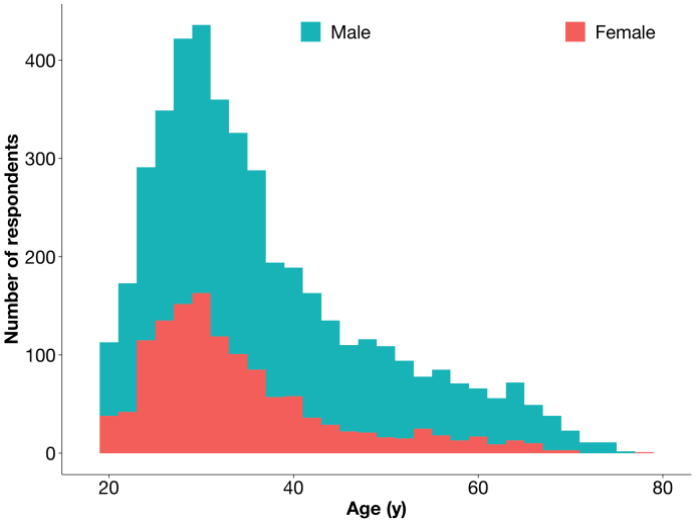

Figure 1: Age of respondents by sex and age

Since the onset of the COVID-19 pandemic, survey participants reported spending a significantly higher proportion of their time in the backcountry instead of at resorts (Figure 2). Overall, since COVID-19 began, participants reported spending 17% more of their ski days in the backcountry.

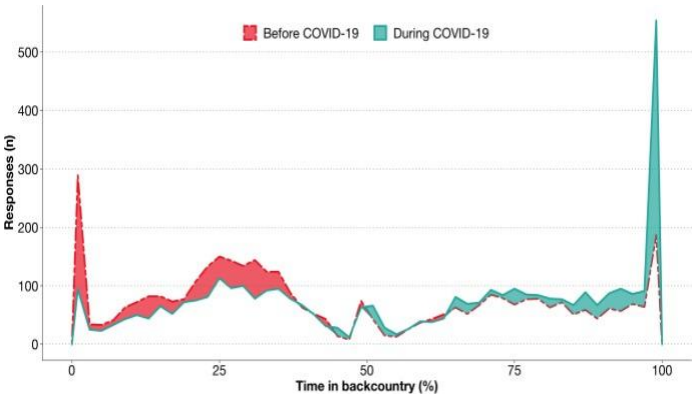

Figure 2: Increase in backcountry versus resort days during COVID-19

In addition, during COVID-19 one-fifth of all participants reported spending almost all (95% or more) of their time in the backcountry, twice the rate of those who did so before COVID-19. When asked about their perceptions of overall backcountry use, 81% of established skiers reported noticing more people in the backcountry during COVID-19 (n=3898).

When surveyed on whether COVID-19 had influenced the frequency of their backcountry use, 27% reported more frequent use, 56% no change, and 17% less frequent use (n=4026).

Newcomer cohort respondents (n=572) were surveyed about whether certain consequences of COVID-19 were important in their decision to first enter the backcountry. Between one-quarter to one-third of participants agreed or strongly that resort closures (27%), uncertainty about resort operations (26%), and limited resort access (35%) impacted their decisions.

The majority (91%) of respondents felt that they had a higher chance of getting COVID-19 at a resort (n=4224). Conversely, 72% of the newcomer cohort felt that they were more likely to get injured in the backcountry, significantly higher than the of established skiers (56%) who shared this belief.

Although most respondents reported having formal avalanche training (Level 1 or higher), 24% of the newcomer cohort lacked any formal avalanche training, compared to 14% of the experienced skiers. Ninety-seven percent of participants reported carrying appropriate avalanche safety equipment (avalanche beacon, probe, and shovel).

When surveyed on their willingness to accept risk in the backcountry on a 1–10 scale (from completely unwilling to very willing to take risks), the newcomer cohort reported a willingness of 2.8±1.7 to take risks, compared to the established cohort at 3.4±1.9. As shown in Figure 3, the newcomer cohort also reported feeling less comfortable assessing avalanche risk in various conditions and terrain than the established cohort, but 73% of newcomers reported confidence in assessing "simple conditions and terrain" with another 23% reporting confidence in "moderately complex conditions and terrain." In comparison two thirds of the established cohort were confident in complex and all conditions and terrain.

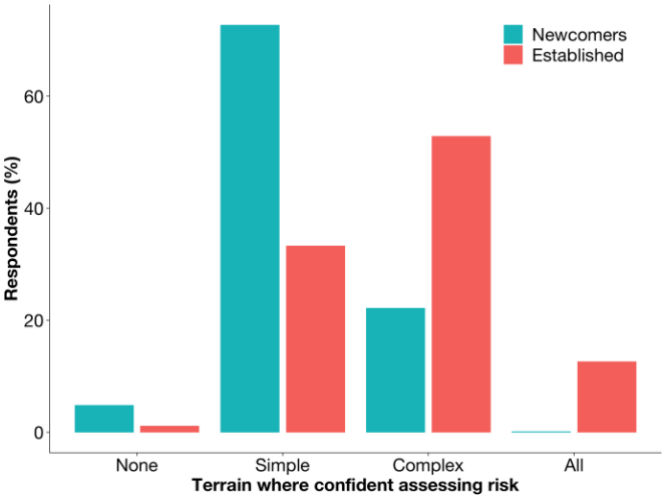

Figure 3: Confidence in assessing avalanche risk in various conditions and terrain.

4. DISCUSSION

This study attempted to assess how the changes in ski area operations during the initial Covid pandemic affected backcountry skiing. Key findings of this study include confirming that there was an increase in backcountry skiing, by both new and experienced users; changes in ski area operations and concerns about COVID-19 fueled at least some of this increase, new backcountry skiers were less confident in their ability to assess avalanche terrain (but probably greatly overestimated this ability) and were less comfortable taking risks, both groups felt the risk of injury was higher in the backcountry than at resorts (with newcomers judging this risk higher than established users), and lastly, almost one-quarter of newcomers did not have any formal avalanche training. New backcountry skiers reported feeling less confident about their ability to assess avalanche terrain than experienced skiers, but given their lack of experience, they still seemed surprisingly confident. This may reflect the Dunning-Kruger effect, where they just don't know what they don't know, and overestimate their ability. The very high confidence in assessing terrain of the established cohort also merits attention, especially since this cohort seems to be over-represented in avalanche fatalities. (Beekman 2021)

The winter of 2020–21 was unique not only due to COVID-19, but also because of the persistent and widespread unstable snowpack across the wider US Mountain West. This, unfortunately, was reflected by a historic number of avalanche fatalities (Peitzsch 2020). Contrary to popular belief, the US Forest Service notes that most of these recent avalanche fatalities (amongst all types of backcountry users, including snowmobilers) were experienced recreationalists (Peitzsch 2020, Mueller 2019). This may reflect the self-described differences in ability and risk perception reported by the more experienced established cohort.

The final point from our study that merits discussion is that nearly one in four new backcountry skiers did not have any formal avalanche training. Many avalanche safety course providers reported being overwhelmed with clients during the latter half of the 2019-2020 and the entire 2020- 2021 season, which likely contributed to this issue. Looking forward, if this cohort continues to ski without this training, their risk-taking behaviors are likely to increase with more comfort in the backcountry environment, and positive reinforcement from each run completed without consequences—despite having made potentially dangerous choices (Johnson 202)]. It will be important to determine if those who continue backcountry skiing will seek out the appropriate training.

5. LIMITATIONS

This study has several limitations, including those common to all survey-based studies, including such biases as; sampling, selection, non-response, social desirability, acquiescence, anchoring, and recall. Additionally, s since most respondents were recruited from avalanche educators and forecast centers, there was likely a bias towards persons already engaged with avalanche safety. Lastly, our study was only intended to assess subjective changes in backcountry use and perceptions and was not designed nor able to assess the quantitative growth, or exactly how many new backcountry skiers COVID-19 has created compared to baseline.

6. CONCLUSIONS

With over 4,000 responses, we found support for the media reports that backcountry use increased substantially during the COVID-19 pandemic, and that COVID-19 was influential in some people's decision to first enter the backcountry. We also found that while backcountry novices were less willing to take risks in the backcountry and (appropriately) had less confidence in their ability to assess avalanche terrain, both newcomers and experienced backcountry skiers may have overestimated these abilities. Lastly, it is concerning that one quarter of new backcountry skiers did not have any avalanche training. Ongoing research should be undertaken to determine if this is a trend, and if so, how to reach these newer backcountry skiers.

Financial/Material Support Statement: None.

REFERENCES

Beekman K. Avalanche fatalities, COVID, and backcountry skiing: the real story behind a historic season. Avalanche Rev. 2021;40(1):34-35.

Birkeland KW, Greene EM, Logan S. In response to avalanche fatalities in the United States by Jekich et al. Wilderness Environ Med. 2017;28(4):380-2.

Johnson J, Hendrikx J. Using citizen science to document terrain use and decision-making of backcountry users. Citiz Sci Theory Pract. 2021;6(1):8-23.

Johnson J, Mannberg A, Hendrikx J, Hetland A, Stephensen M. Rethinking the heuristic traps paradigm in avalanche education: past, present, and future. Cogent Soc Sci. 2020;6(1):1807111.

Mander B. Ski in the Wild. Wall Street Journal. November 28, 2020; Branch J. Virus rules may factor into avalanche deaths. New York Times. February 10, 2021. B:8

Mannberg A, Hendrikx J, Johnson J. Risky positioning– social aspirations and risk-taking behaviour in avalanche terrain. Leis Stud. 2021;40(4):495-512.

Mueller T, Ruedl G, Ernstbrunner M, Plachel F, Fröhlich S, Hoffelner T, Resch H, Ernstbrunner L. A Prospective Injury Surveillance Study on Ski Touring. Orthop J Sports Med. 2019 Sep 12;7(9):2325967119867676

Peitzsch E, Boilen S, Logan S, Birkeland K, Greene E. Research note: how old are the people who die in avalanches? A look into the ages of avalanche victims in the United States (1950–2018). J Outdoor Recreat Tour. 2020;29:100255.

Valle EA, Cobourn AP, Trivitt SJH, Hendrikx J, Johnson JD, Fiore DC. Perceptions among backcountry skiers during COVID-19: avalanche safety and backcountry habits of new and established skiers. Wilderness Environ Med. 2022

Van Tilburg C, Grissom CK, Zafren K, McIntosh S, Radwin MI, Paal P, et al. Wilderness Medical Society practice guidelines for prevention and management of avalanche and nonavalanche snow burial accidents. Wilderness Environ Med. 2017;28(1):23-42.