BACKCOUNTRY AND SIDECOUNTRY USERS: AN INTERCEPT SURVEY APPROACH

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ABSTRACT: This paper explores the differences in overall preparedness (i.e. equipment, skills, knowledge and awareness) between backcountry, and lift-accessed backcountry terrain. Intercept surveys were conducted in four separate locations in SW Montana that represent these settings. Two of these locations were outside the North and South boundary of Bridger Bowl Ski Resort. These areas are unpatrolled, and without avalanche control. These areas were chosen as they represent heavily used lift-accessed backcountry or “sidecountry”. The other two locations were Beehive Basin and Mt Blackmore, both popular backcountry touring areas with a wide variety of terrain. These areas were chosen due to their popularity with backcountry travelers. They represent easily accessed but remote wilderness terrain.

Our results show that there is a clear contrast in perceptions of backcountry terrain between skiers in lift-accessed backcountry terrain and non-lift-accessed backcountry terrain. Skiers in backcountry terrain appear to be more prepared and also have a common mindset regarding the terrain they are entering. In contrast, skiers in lift-accessed backcountry terrain had a variety of opinions, skills and level of preparedness. These differences support the idea that there is a difference in perception that near boundary, lift-accessed backcountry terrain is somehow safer, thus not requiring the necessary amount of planning, skills, knowledge and equipment that is actually needed to be traveling in a backcountry setting. These findings reinforce the anecdotal experience of many industry professionals and reassert the need to improve education and signage at the exit points of lift-accessed backcountry terrain. This work was undertaken by a sub-set of students as part of a final class project in the 400 level undergraduate capstone courses for the snow science degree option at Montana State University.

KEYWORDS: Decision-making, Recreation, Backcountry, Sidecountry

1. INTRODUCTION & BACKGROUND

The use of the backcountry by winter recreationalists is continuing to increase. This growth in backcountry recreation has been matched with increased efforts by avalanche educators and snow professionals to educate and inform backcountry users. Key messages include raising awareness of the avalanche forecast, use of proper equipment (i.e. transceivers, shovels, probes, flotation devices, AvaLung™) and proper training (i.e. participation in avalanche education programs). Representative of these efforts is the multi-sponsored program “Know Before You Go” (http://kbyg.org/#home). While avalanche fatalities have plateaued in recent years (Birkeland, 2016), they do still occur and exceed the number of deaths out of all other natural hazards in many western states (Tremper, 2008).

Increasingly, avalanche professionals are beginning to understand the human factors and decision-making processes that play a substantial role in avalanche-related accidents (McCammon, 2002; Hendrikx et al, 2016; Zweifel et al., 2016). While backcountry travelers’ mental and technical preparedness has previously been examined in prior studies (Porter et. al, 2013; Hendrikx et al., 2014; Zweifel et al., 2016), the specific case of lift-accessed backcountry travelers (i.e. skiers in backcountry terrain that is accessed from a resort) have not received the same attention in terms of their perceptions and preparedness. This is despite a growing number of ski resorts worldwide offering out-of-bound access to terrain known commonly as “sidecountry” skiing.

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The term “sidecountry” is problematic, as it suggests some level of increased safety while being proximal to a resort boundary. The term describes the fastest growing form of backcountry skiing and riding in the last decade (Shockey, et al. 2013). Sidecountry is generally defined as using ski lifts to get up the mountain, and then leaving the ski area through approved gates to access out of bounds, unmanaged snowfields. Some destinations require the full avalanche safety equipment (i.e. beacon, shovel, probe) to ride a lift that provides access to the exit gate(s) but others simply offer signage that the skier is leaving the bounds of the area. Signs typically indicate that the snowpack is not managed for avalanche hazard and that skiers should manage the area as a backcountry (BC) snowpack. Rescue is typically not the responsibility of the ski area patrol and rapid first aid response is problematic. Sidecountry (SC) skiers and riders are on their own.

Today, most U.S. ski areas that lease or are adjacent to public land have at least one open gate to the sidecountry. In the past, most areas strictly controlled entry and exit but a series of court cases in the last decade have caused most ski areas located on public land to open their boundaries.

Due to its accessibility and popularity, the dangers of lift-accessed backcountry terrain are oftentimes downplayed. However, “sidecountry” terrain is backcountry terrain, and should be treated as such. Ski patrollers and avalanche professionals agree that there is no distinction, and as stated by Bridger Bowl Patrol Director Doug Richmond: “We don’t have ‘inbounds backcountry’. We have backcountry without avalanche mitigation work and without ski patrol rescue.” (Richmond, pers comm., 2015).

The purpose of this study was to conduct the first in-field survey of backcountry skiers and lift-accessed backcountry skiers in Southwest Montana to quantify differences in technical and mental preparedness between the two sample groups.

2. LOCATION AND SETTING

The study was conducted at four locations near Bozeman in SW Montana, USA. Questionnaires were administered at two popular non-lift accessed backcountry areas: Mount Blackmore and Beehive Basin; and two popular lift-accessed backcountry areas from Bridger Bowl Ski area, Saddle Peak and the North Boundary. These locations are shown in Figure 1.

Fig. 1: Locations of survey distribution. Red points are showing non-lift access backcountry, while the purple points are showing the lift-access, or “out of bounds” backcountry.
All four locations provide access to high elevation BC destinations easily reached in a few hours or via ski area lift. The two BC locations (Beehive and Mt Blackmore) are popular with novices and experts alike and both have been the sites of several avalanche related accidents.

In 2006 Bridger installed the Schlasman’s lift – a 500m (1,700 foot) vertical chairlift that expanded their boundary to the south and provided easy access to a large complex of out-of-bound backcountry terrain consisting of chutes, spines, and a substantial expanse of untracked snow on natural/uncontrolled terrain. A working avalanche beacon is required to board the lift. The northern boundary is typically accessed by hiking up to the Ridge and heading north along the main Bridger Range. Multiple steep chutes and gullies that are in-bounds can be accessed from this ridgeline, and these are all controlled by ski patrol. However, once the northern boundary is reached all avalanche control ceases, including the removal of the cornices.

3. METHODS

The survey results were collected from three similar questionnaires created by multiple groups of students as part of a final class project in the 400-level undergraduate capstone course for the snow science degree option at Montana State University in March 2016. Results presented here represent multiple data collection methods that share common techniques and sampling procedures.

A convenience sample of skiers and snowboarders entering uncontrolled avalanche terrain participated in the study at each of the four survey locations. While there were differences between the three methods of collecting survey results (i.e. self-report surveying versus interview-style surveying) and differences in the questions asked to survey participants, each student group questionnaire contained enough similarities to aggregate all survey results and compare a few key parameters. All survey participants reported whether they had read the local avalanche forecast for the day in the area they were travelling (as provided by the Gallatin National Forest Avalanche Center). All participants also reported the type of avalanche safety and rescue gear they carried, and the level of avalanche education they had. Due to differences in the three questionnaires, a majority, but not all participants reported their group size, whether they carried a shovel or probe, and the years of backcountry skiing. A summary of these results are presented below.

4. RESULTS

Over the course of six days at all four locations, a total of 105 backcountry recreationalists participated in the questionnaires. Of these respondents, 40% were in a backcountry setting, while 60% of recreationalists surveyed were in a lift-accessed backcountry setting.

When we reviewed the level of education, as grouped by the backcountry participants compared with the lift-accessed backcountry participants, we observed that nearly 65% of backcountry recreationalists have some level of professional avalanche education (i.e. level 1, 2 or 3). In contrast, only about 55% of the lift-accessed backcountry participants had this level of education, with about 25% having no education at all. These results are shown in Figure 2.

We also examined group size. The biggest difference was in the maximum size of the groups. The largest sized group in the backcountry was only 4 members, and this compared to the largest group of 8 with lift-accessed backcountry recreationalists (Fig 3.). While nearly 15% of backcountry travelers were travelling solo, about 30% of lift-accessed backcountry recreationalists were travelling with-
out a partner. These results are summarized in Figure 4.

One area of divergence in the two groups was between the number of participants that had checked the local avalanche forecast. For the backcountry users only 1 in 5 had not checked the local forecast, but the lift-accessed backcountry users this increased to 1 in 3 (or approx. 33%) that had not checked the forecast. These results are shown in Figure 5.

A compelling result is the incidence of stability test measurements performed by the participants as a function of their setting. 1 in 2 participants in the backcountry had, or were planning, to conduct a stability test of some type (e.g. ECT / CT). In contrast, less than 1 in 10 (6%) were planning to do this in the lift-accessed backcountry setting. These results are shown in Figure 6.

When considering equipment, we observed that almost all participants had an avalanche transceiver regardless of their setting. However, the lift accessed backcountry user was more twice as likely to not have a shovel or probe, when compared to the backcountry group. Specifically, we observed 20% of recreationalists in lift-accessed backcountry terrain without a shovel or probe, compared to 10% of backcountry recreationalists without a shovel or probe.
Finally, many survey participants were asked to report what type of terrain they were traveling in (i.e. backcountry, sidecountry, out-of-bounds, etc.). While a majority of backcountry recreationalists (95%) reported traveling in backcountry terrain, the perception of terrain from lift-accessed backcountry recreationalists was more mixed, with a small percentage (15%) identifying the terrain as backcountry. About 82% of recreationalists in lift-accessed backcountry terrain identified the area as either out-of-bounds, "sidecountry", or "slack-country" terrain. These results are summarized in Figure 7.

5. DISCUSSION

While there are limitations to making conclusive statements from this sample population, some general themes can be extrapolated from the general trends exhibited in the results.

When considering avalanche education levels in this sample (Fig 2.), 64% of backcountry recreationalists have an education level of an Avalanche level 1 or greater, while 55% of lift-accessed backcountry recreationalists have an Avalanche 1 or greater. Furthermore, 17% of backcountry users had no formal avalanche education, compared to 25% of non-educated lift-accessed backcountry users. Comparison of these results to the wider population of BC travelers is problematic, due to limited data on this community. However, when we compare this to the data presented by Hendrikx et al., (2014) we see broadly similar results, with a majority of sampled users having an Avalanche level 1 or above. Where larger datasets are available (e.g. Procter et al., 2013), direct comparison remains problematic due to the differences in avalanche education cultures and programs in the USA and Europe.

In terms of group size, most lift-accessed backcountry and backcountry users traveled with partners (Fig 4.). The biggest difference is in the maximum size of the groups. The largest sized group in the backcountry was only 4 members, and compared to the largest group of 8 with lift-accessed backcountry recreationalists (Fig 3.). Zwiefel et al., (2016) recently pointed towards the increased hazard of traveling in larger groups; these results present cause for concern for lift-accessed backcountry user group size. The lift-accessed backcountry user group traveled solo 15% more frequently than classic backcountry users, as shown in Figure 4. Further, large groups may create an over-reliance on social norms with respect to skiing sidecountry. This may be particularly true where the individuals involved have little experience dealing with complex terrain (e.g., Hogarth et al., 1980; Kahn and Baron, 1995; Sunstein, 1996). This may be the case in Saddle Peak sidecountry where the ski population is comprised...
of many with little to no experience in the area; many who ski Saddle Peak are university students who may have arrived only recently.

Lift-accessed backcountry users had 14% fewer recreationalists checking the avalanche report, (produced by the Gallatin National Forest Avalanche Center) before entering avalanche terrain compared to the classic backcountry user, as shown in Figure 5. This result was surprising considering that daily avalanche forecasts are posted in lift lines and at exit gates at Bridger Bowl; this may indicate that many lift-accessed backcountry users are not aware that avalanche mitigation efforts do not occur in out-of-bound areas.

Encouragingly, most travelers carried avalanche transceivers. However, 20% of lift-accessed backcountry recreationalists traveled without a shovel or probe, compared to 10% of backcountry users who also traveled without a shovel/probe. This data points to a persistent lack of proper avalanche equipment education among some backcountry users, in which a beacon is rendered useless without a probe or shovel.

Finally, we were most surprised by the differences in terrain perceptions of the two settings. Almost all of the users headed into non-lift accessed backcountry settings correctly identified the area they were using as backcountry terrain. However, lift-accessed users had a wide variety of responses, represented by 5 different terms (sidecountry, slackcountry, out-of-bounds, in-bounds, backcountry), with only 15% noting they were indeed entering backcountry terrain (Fig 7). The diverse responses also present cause for concern in that each term has different connotations and therefore not all lift-accessed backcountry users view the terrain similarly.

A clear limitation in the analysis of these results was due to differences between the questionnaires in each group. For example, while some student groups collected demographic data (gender, age, etc.) other groups choose not to include basic demographic questions in their survey—so no statements regarding the sample population’s demographic make-up could be made. Furthermore, while a majority of student groups included certain questions in their survey (i.e. traveled with a partner, years of experience, etc.) very few questions contain responses from all skiers, making it difficult to make any conclusive statements. Therefore, only the data that was consistent between the groups has been represented here.

6. CONCLUSION

While the data collected in the study points to key concerning differences between skiers in non-lift accessed backcountry and skiers in lift-accessed backcountry, we cannot draw comprehensive conclusions regarding the differences in mental and technical preparedness between the two groups. However, the study results do suggest what ski and avalanche professionals commonly observe: Lift-accessed backcountry skiers approach the terrain with a more cavalier approach compared to the non-lift accessed backcountry user, which carries serious implications in terms of the safety of lift-accessed backcountry users. This illustrates the need to improve communication and education to lift-accessed backcountry users, and continue to convey the message that “sidecountry”, “out-of-bounds”, and “slackcountry” areas are indeed backcountry terrain, without ski patrol rescue and avalanche control measures. These results are suggestive that these terms are potentially misleading and/or dangerous to recreationalists in terms of their overall preparedness.

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REFERENCES


