Factors Contributing to Backcountry Avalanche Fatalities in Canada and How these Events are Portrayed by the Media

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Backcountry Recreation

The participation in winter backcountry recreation has significantly increased in Canada. Despite this, snow avalanches still remain a considerable hazard that causes an average of 14 fatalities annually (Haegeli, Haider, Longland, & Beardmore, 2010). The terrain, snowpack, climate, and human interaction combine to create a high degree of avalanche risk to those in the area (Parks Canada's Backcountry Avalanche Risk Review, 2003). It has been estimated that 85% of fatalities are from human-triggered avalanches in high risk locations (Schweizer & Jamieson, 2001; McClung, 2002). For this reason, human error has been blamed for underestimating the degree of risk, resulting in poor decision-making on the slopes. The interaction between humans and their environment has been neglected in avalanche research and needs to be addressed in order to correct the various errors being made when assessing risk in Canada's alpine backcountry. Research for this project includes a review of academic literature, fatality reports and Canadian media coverage of avalanche fatalities.

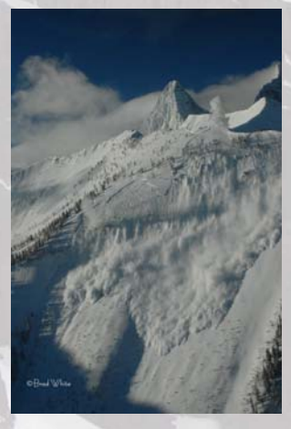

Image 1 (above) Dry Slab Avalanche. Image courtesy of Parks Canada
http://www.pc.gc.ca/progs/np-pn/sp-ps/sec4/sp-ps4a_e.asp
Image 2 (Right) Snow Avalanche. Image courtesy of Parks Canada
http://www.pc.gc.ca/progs/np-pn/sp-ps/sec4/index_e.asp

Avalanche Risk

Unlike other natural hazards, the exposure to avalanches when participating in backcountry recreation is entirely voluntary. Backcountry recreationalists are aware of the risk when entering these areas, although the degree of risk people are willing to take varies from person to person. The risk of experiencing a fatal avalanche can be increased by poor decision-making concerning appropriate terrain, weather, and snowpack conditions (Avalanche Accidents in Canada, 1996). Since most fatal avalanches are triggered by the victim or a member of their group, the impact human error has on decision-making and assessment needs to be addressed. Most accidents occur because the victim had either underestimated the risks or overestimated their skills to avoid it (Stethem, Jamieson, Schaerer, Liverman, Germain, & Walker, 2003). Human factors in avalanche risk are the errors made by the participant when assessing risk. The types of human error can be loosely classified into three categories.

Regional Overview of Avalanche Hazards

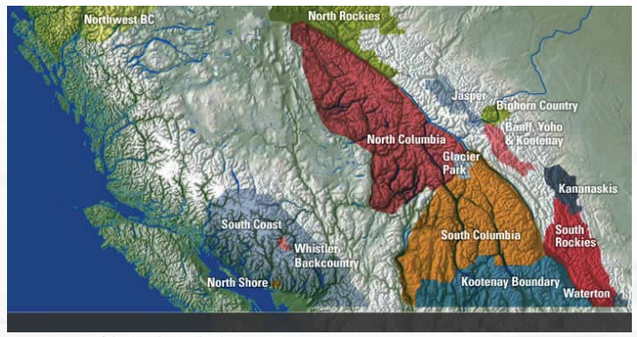

Image courtesy of The Canadian Avalanche Association
http://www.avalanche.ca/cac/bulletins/regions

Three Types of Human Error

Type 1: Lack of Education and Experience

Lack of education or experience pertains to backcountry recreationalists who do not have the practical or the theoretical knowledge that would allow them to make a proper evaluation of risk (McClung, 2002). Being able to judge if a snowpack is unstable, as well as, the ability to utilize rescue techniques in an emergency is crucial in reducing risk of injury or death.

Type 2: Desire for Challenging Terrain

The opportunity to enjoy fresh snow and challenging terrain can overcome caution, even in high-risk locations that are probable to avalanche (McCammon, 2004). Bright, clear skies can draw recreationists to high-risk areas, who are more focused on maximizing their experiences than being vigilant to hazards (Parks Canada's Backcountry Avalanche Risk Review, 2003; Haegeli, Haider, Longland, Beardmore, 2010). Individual recreationalists are known to take uncharacteristic amount of risk in order to be the first to access these excellent conditions (McCammon, 2004).

Type 3: Heuristic Traps

Heuristics are cues we gain through life experiences that help us make decisions (McCammon, 2004). However, using these cues in the backcountry to assess avalanche risk is fundamentally dangerous. Conditions in these areas are constantly changing and decisions made one day cannot be deemed safe the next. People may gain an inaccurate perception of risk due to factors including familiarity, presence of an experienced leader, and social facilitation. These heuristic traps may lead people to over emphasizing their ability to identify and react to risk.

Mountain Rescue

Above: Image courtesy of Parks Canada
http://www.pc.gc.ca/progs/np-pn/sp-ps/images/sp-ps3.jpg

Above: Image couresty of Parks Canada
http://www.pc.gc.ca/progs/np-pn/sp-ps/sec3/index_e.asp

Current Mitigation Methods

To reduce to risk of a fatal avalanche, the Government of Canada along with the Canadian Avalanche Association (CAA) work together to create an avalanche advisory that is updated daily on the conditions of different backcountry areas (Canadian Avalanche Association, n.d). The Canadian Avalanche Danger Scale is consistent with international scales and contains five classifications ranging from low to extreme. The Backcountry Avalanche Advisory (BAA) provides a more simplified view of the avalanche conditions for amateur recreation and is related to the avalanche danger scale. This Scale is updated daily during the avalanche season to prepare users on how to act in the specific conditions.

Rescue services are provided in Parks to assist anyone in need at no cost, however the Parks Canada Agency states that while you are in the backcountry you are first and foremost responsible for your own actions and rescue (Parks Canada Agency, 2010). In most cases professional rescue services will not be able to arrive in time to save a buried victim. Groups are cautioned that their best chance of surviving an avalanche is by being prepared and educated on proper rescue techniques and equipment.

Media Coverage

The media is the publics' main source of information on avalanche incidents, fatalities, and trends. How the media reports on these incidents will ultimately shape how the public frames the seriousness of the situation. Canadian news articles range from focusing on human impacts, personal memorials, economic impacts, and calls for investigation and increased regulation (Parks Canada's Backcountry Avalanche Risk Review, 2003). In a review of Canadian news articles from 1999-2010 on specific fatal avalanche fatalities, several key themes were noticed.
In general it was rare for an article to outwardly blame the victim. However, articles did mention that recreationalists knew the risks and that according to avalanche bulletins the areas were considered probable or certain for human triggered avalanches. Furthermore, the articles repeatedly report that experience and being prepared does not make you infallible to injury or death. In articles that took a more human centered approach to reporting mentioned the victim's passion for the outdoors, almost giving justification for their actions or representing them as a role model. In this case, media seems to take an empathetic approach in reporting, allowing the victims to relinquish responsibility for their death. Highly publicized avalanche events do occasionally call for change in policy, nonetheless most incidents seem viewed as an accepted part of Canadian winters.

Amount Themes Were Mentioned in the Media
Entered a Risky Area 65%
Were Experienced 33%
Avalanche was Human Triggered 33%
Were Prepared 28%
Had a Passion for the Outdoors 22%

Avalacnhe Hazard Map for the Connaught Creek Area

Image courtesy of Parks Canada http://www.pc.gc.ca/~/media/pn-np/bc/glacier/pdf/a-i/Connaught.ashx

Conclusion/Recommendations

Poor-decision making in backcountry locations, as well as not heeding warnings posted about hazardous areas, can be blamed for many avalanche fatalities in Canada. Since many fatalities are caused by self-triggered avalanches more research needs to be done on how to improve human perception of risk and decision-making. One recommendation would be to make registration for backcountry users mandatory, which includes promoting the completion of a backcountry avalanche education program. All users should be advised to sign in prior to entering the backcountry, indicating how long their trip will be, as well as, which area they will be entering. This will make rescue efforts more efficient and possibly help warn recreationalists of risky conditions and terrain. Hopefully by pointing out high risk locations people will either postpone their trip or increase their vigilance on the slopes. Educational programs should also continue to be promoted, as well as traveling with commercial groups with a trained professional. Educational programs that include multiple trips to the backcountry will help transfer theoretical knowledge into practical and increase backcountry experience.

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