

# Opportunities for Snowmobile Avalanche Education: An Exploration of the Current State of Snowmobiling in the Backcountry

**Proposal of Final Project by Miranda Murphy**  
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## **Project Summary**

In the past few years, the rates of avalanche involvement and fatalities have followed an interesting trend. While there are steadily lower numbers of skier avalanche fatalities, the numbers of snowmobilers have risen higher than ever before. Intercept research has shown trends of snowmobilers holding lower levels of avalanche education and being less likely to carry transceivers, probes and shovels. However there is a significant lack of research focusing on the snowmobilers themselves and learning about where they come from in terms of avalanches. By exploring the attitudes and perceptions snowmobilers hold about avalanches and learning about the community and cultural background from which they grow, much stands to be discovered about snowmobilers as a collection of people.

This proposal sets out to explore, from a grounded theory perspective, what factors exist that create barriers for snowmobilers in terms of their avalanche preparedness. When completed, this research should provide a base of understanding about snowmobilers and their perceptions of avalanche safety, which will allow the community to develop awareness programs and educational initiatives more suited to snowmobilers' needs.

## Literature Review

At this point in avalanche research, there has been much exploration in terms of snow science, the formation of avalanches, the observation of weather phenomena and the application of effective rescue techniques. Although the quantity of research in terms of the physics and science of avalanches is often overwhelming, the relatively new study of the human factors in avalanche accidents is quickly becoming of great concern.

Human factors research is growing with good reason. In a study by Laura Adams, avalanche professionals identified human factors and choice of terrain as the two primary causes of recreational avalanche accidents (2004). This is concerning when taken in context of McCammon's results, where even individuals with high levels of training were observed making simple, heuristic based judgements instead of using more complex, knowledge based strategies in situations that led to avalanche accidents (2002). Avalanches are very complex phenomena and there are many physical, environmental and human factors that go along with their formation, which makes them very difficult to reliably predict for people in the field. This difficulty is evidence of the importance of education and training, hazard communication and decision support in avalanche safety and awareness. However, there is still not much research that explores the actual behaviour and decisions of the recreationalists themselves. "Human sciences research focusing on qualitative methods of study offers great potential in the avalanche industry for the effective reduction of human involvement in avalanche accidents, e.g. studying people's perceptions, identifying the factors that influence their decisions and developing an understanding of the meanings they ascribe to situations when traveling in the winter backcountry" (Adams, 2004). This type of focus would help to create a firsthand knowledge base on what is actually happening in the minds of those involved in recreational avalanche accidents.

The approach to research when studying the perceptions of individuals is very important to consider as well. Adams believes that when looking at complex systems such as human involvement with avalanches, it is important to take on a holistic approach (2005b). By breaking each factor down and considering it separately, the relationships between the factors are essentially ignored. By developing a qualitative process that allows the relationships to not only emerge, but drive the direction of the research, the actual perceptions and decisions of recreationalists can be used to recreate avalanche safety and education.

One relevant study, by Laura Adams, uses grounded theory research to explore the knowledge and experience of avalanche professionals and have them apply them to education, decision support and accident prevention for backcountry recreationalists (Adams, 2004). The professionals brought forth some excellent ideas on which to base education targeting and training; however, there is still much left unexplored due to the focus on avalanche professionals. Exploring how recreationalists look for training, what sources they frequent and what type of resources exist that direct the culture of the sport and the actions of individuals would bring a greater knowledge of where and how to present this information to gain the maximum benefit. While the grounded theory direction of this study was an excellent beginning, it would be beneficial to consider further studies using more diverse sources to concatenate and expand the beginnings of theory that were developed.

One further study brought in the perspectives of snowmobilers as well as skiers in a demographics survey and discrete choice experiment that allowed the researchers to investigate the prominent motivations, perceptions and decision making of recreationalists (Longland, Haider, Haegeli and Breadmore, 2005). This study was able to add to the knowledge of the demographics of skiers and snowmobilers and provide valuable insight into the factors in which they take into account when choosing when and where to recreate in the backcountry. However valuable, the discrete choice experiment structure of this research project creates some limitations in the use of the data. It gives an interesting perspective into the decisions of recreationalists; however it is difficult to generalize the discrete choices to the complexity found in real life recreational situations. The factors involved in the choice are presented in a visual format in front of the participant, removing the actual field observation and data collection that is equally important in decision making. Although the choices made point to why they made these decisions, it cannot explain how they came to value these variables in their decision making.

Although there is not much research in the area of human factors as they apply to real behaviours of recreationalists in the field, much of the existing research points directly to a need for this type of study. From this review, it is quite evident that the vast majority of research has been conducted on the decision making of avalanche professionals and mainly skiers. By proposing a research study that focuses on real field behaviours and decisions made by snowmobilers, a large step is being taken into understanding why snowmobilers continue to be involved in avalanche accidents, and acting towards preventing these accidents in the future.

## **Project Description**

Learning about avalanche safety is a complicated process that can be approached from many angles. Current research is very limited; therefore there is not much of a base from which to follow when determining the angles for education and awareness. The proposed project is to be conducted in a grounded theory methodology. Grounded theory uses exploration and open data collection to allow the direction of the research to be determined by the research itself. In this way, snowmobilers and members of the community and culture can be interviewed and allowed to express their own ideas and feelings about avalanche safety and awareness.

In previous coursework, I performed a preliminary grounded theory study that made use of internet resources to begin work towards a theory concerning the rise in avalanche fatalities of snowmobilers. This study compared resources targeted towards skiers to those targeted towards snowmobilers and highlighted the differences in these resources that could lead to differences in avalanche fatality rates. It was found that snowmobiling resources contained a culture of commercialized action and thrill, an attitude of external locus of control, a strong community of safety and recreation, but a low awareness and salience of avalanches in that community. These preliminary findings will be used as a building point on which the current research will begin from, in order to work towards the creation of a theory of avalanche education.

To begin, the interviews will focus on the following group of key research questions:

- What do people know about avalanches and where do they find their information?
- What is the influence of the snowmobile community and peers on their knowledge, attitudes and behaviours about snowmobiling in avalanche terrain?
- What attitudes do people hold towards avalanches and safety?
- How are they motivated to snowmobile and what reservations hold them back?
- How comfortable are they with risk exposure and how is it evaluated and transferred into behaviour on their snowmobiles?

## **Methods**

The proposed methods of this study are to intercept snowmobilers at popular backcountry access points for interviews, as well as contacting and interviewing snowmobile professionals, sales representatives, AST instructors, outfitters and club executives.

Snowmobilers will be asked to partake in a short interview running from about 15 minutes to 30 minutes depending on the answers given by the participant. The interviews will focus on the key research questions outlined for the study. However, the interviewees will be encouraged to express ideas, concepts and opinions that fall outside the planned structure to accommodate the flexibility and exploration expected in grounded theory.

Survey participants will be recruited to complete the questionnaire at popular exit points for backcountry travel, for example at Boulder Mountain and Quartz Creek, and the range of points used will be limited by travel costs and time necessary for travelling these distances. Interviews will be completed at these sites over the course of a few months on randomly selected days. Participants will be offered coffee and a snack and information about Avalanche Skills Training, decision making aids and avalanche bulletins will be readily available on site to ensure the promotion of safe backcountry practices.

### **Equipment and Resources**

As this project is being completed as part of a degree program final project (MA-IS at Athabasca University), Miranda Murphy will be the sole researcher undertaking this project, under the supervision of Mark Durieux. There will be limited resources required, mainly travel costs and interview supplies, which will be supplied by the researcher. However, any further help in the form of avalanche safety literature, training and course brochures and prizes for participant incentive draws would be graciously accepted.

### **Biography**

*Miranda Murphy* is a student in the Master of Arts – Integrated Studies program at Athabasca University focusing in Adult Education, but she is pursuing distance education as a result of her roots in Revelstoke, BC. As a backcountry skier and snowmobiler, her BA in psychology led her curiosity towards the complex psychosocial factors that come into play in avalanche awareness and backcountry travel. She has done some preliminary coursework focusing on snowmobiling and avalanche education, however this will be her first venture into participant research.

## References

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