1. INTRODUCTION

Travelling in avalanche terrain is a complex task involving continuous observation of a diverse array of factors and their integration into ‘Go – No Go’ decisions. Effective decision-making requires the skilled prioritizing of one’s limited attention to the most relevant factors at the time.

While modern avalanche research can offer some insights about this from slowly uncovering the secrets of the avalanche phenomenon, mountain guides have been navigating safely through avalanche terrain for centuries. Surprisingly, this comprehensive body of knowledge has largely been untouched by the scientific community.

The goal of this study was to quantitatively examine the assessment expertise of mountain guides as the foundation for the development for tangible decision-making guidance for winter backcountry recreationists.

2. METHODS

The controlled environment of an online survey was used to present participating mountain guides with a series of hypothetical but realistic combinations of field observations and terrain characteristics (Figure 1). In each scenario, survey participants were asked to

a) evaluate the seriousness of the terrain and field observations separately,
b) rate the relevance of individual observations for their assessment,
c) estimate the likelihood of triggering an avalanche and the seriousness of potential consequences given the combined profile, and
d) indicate how they would approach the given slope in a guiding situation.

Ordinal and multinomial logistic regression models were used to comprehensively examine survey responses.

3. RESULTS AND DISCUSSION

The dataset collected in this survey consisted of 2513 complete assessments from 63 mountain guides with extensive field experience.

The derived ordinal regression models for the individual assessment of terrain characteristics and field observation exhibited the expected pattern confirming the suitability of the online survey environment for this study.

The distinct patterns observed in the assessment models for individual avalanche characters (Atkins, 2004; Statham et al., 2010) strongly highlight the importance of this concept.

The analysis of the relevance rating task provides a complete importance ranking across all observation types and individual observation values (e.g., different snowpack test results). Importance rankings of individual observation values are commonly asymmetric with values indicating increased hazard ranking significantly higher. Similar to the

* Corresponding author address:
Pascal Haegeli, Avisualanche Consulting, 3261 W 21 Ave, Vancouver BC, Canada, V6L 1L3
Phone: +1 604 773 0854;
Email: pascal@avisualanche.ca.

$ NOTE:
A complete manuscript of this study is currently in the final stages for submission to a peer-reviewed journal. Please contact the corresponding author to receive a copy of the accepted manuscript.
assessment models, patterns of importance rankings are distinct for different avalanche character types.

Likelihood of triggering, potential consequences and most appropriate approach to enter slope were examined as functions of the terrain and field observation assessments. Observed patterns highlight the strong influence of terrain in the final decision process.

4. CONCLUSION

The derived statistical models provide meaningful insights into the assessment expertise of avalanche professionals.

The controlled environment of the survey allowed the collection of a comprehensive dataset that avoids some of the shortcomings frequently encountered in avalanche related datasets.
The present results offer a useful reference for training purposes and an important benchmark for the development and evaluation of decision aids, such as the Avaluator V2.0 (Haegeli, 2010).

REFERENCES

