

## CONSIDERING CONSIDERABLE AND OTHER CONSIDERATIONS

Steve Blake\*  
Jasper National Park of Canada, Jasper, Alberta

**ABSTRACT:** Avalanches do not discriminate between backcountry user groups or an individual's experience level. For the purposes of this discussion the population is divided not by the type of activity in which they participate (e.g. skiers, snowmobilers, snowboarders) but by their relative level of experience. The Unaware, The Untrained Recreationalist, the Trained Recreationalist and Avalanche Professionals each have idiosyncrasies in regards to avalanche exposure. Avalanche risk versus avalanche danger, the challenges of "Considerable", experienced based decision making are discussed.

**Keywords:** risk, avalanche danger, accidents

Begin with the concept that many of the world's problems are solved late at night, usually over large amounts of drinks. This is, in fact, where many of the following ideas were hatched. It is important to keep in mind that the content herein is not "new" but it represents a summary of some recurring themes that have been bantered around for decades.

Avalanches do not discriminate between backcountry user groups or an individual's

experience level. In the avalanche community, we need to think of the population not only in terms of the activity in which they participate, but in terms of their level of experience. The general population can be divided into four groups based on experience: The Unaware, The Untrained Recreationalist, which my spell checker maintains is not a word, the Trained Recreationalist and the Avalanche Professional. Each group has its own idiosyncrasies in regards to avalanche exposure.

### THE UNAWARE

In mountainous areas, avalanches are naturally occurring phenomena. The Unaware user group is exposed to this danger most often without realizing it. Urban common sense provides no basis for decision making in mountainous places. What the Unaware do not realize is the thin line between controlled and uncontrolled terrain. Drivers on our highways cruise through serious terrain at breakneck speeds (though they are substantially more at risk of running into an oncoming vehicle than they are of being hit by an avalanche). In areas like the North Vancouver in the lower mainland of British Columbia, a walk out of a

trailhead parking lot can bring you into avalanche terrain before you are out of audio range of your car alarm. At ski areas, often all that separates the Unaware from significant avalanche danger is a few signs and a thin strand of yellow poly-pro rope.

From a Canadian perspective, the Unaware user group is not at significant risk. The message for this group is simple. Avalanches happen. Programs like Snowsmart go great lengths to raise the basic awareness by introducing the core concepts of avalanches at both junior high and high school levels.

## THE UNTRAINED RECREATIONALIST

Differing from the Unaware, the untrained have specific intent to go into the mountains and seek out steep slopes in the pursuit of their recreational goals. This is the yet untapped Recreational Avalanche Course market. Skiers, climbers, boarders, sledders, snowshoers, they are all included.

Because this group has no formal training they frequently miss key natural warning signs. The Untrained will attack slopes adjacent to those, which have slid naturally, because these slopes still have snow on them. At present this segment of the population derives little or no benefit from

### Today's Avalanche Danger

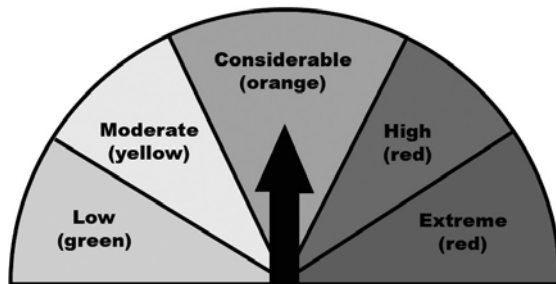


Figure 1.

the public avalanche information systems that exist. I suggest that even if these folks had the wherewithal to access the various public bulletins that the information contained therein would go over their heads.

**Figure 1** illustrates a conceptual avalanche danger sign that could appear on a roadway near you. The avalanche community has long contended that giving the one word danger rating to the passing public is an inadequate means of delivering avalanche safety messages. My thought here is, if you think the one word danger descriptor is adequate to help you make better decisions then you would not understand the contents of a detailed avalanche bulletin in the first place. (This may also serve to increase the Unaware user's basic concept that avalanches happen.)

## THE TRAINED RECREATIONALIST

These are the folks with avalanche awareness training of various levels, which in Canada are referred to as RAC and ARAC. This segment of the population is most at risk during periods of Considerable avalanche danger.

**Figure 2** illustrates a bell curve of avalanche accidents and how it relates to the various

danger ratings. The Considerable rating is when the bulk of fatal accidents occur. This graph is meant to illustrate the concept but if you were to take the actual number for the 2002-2003 winter, you would see an even more significant spike in the Considerable range.

## Avalanche Accidents By Danger Rating

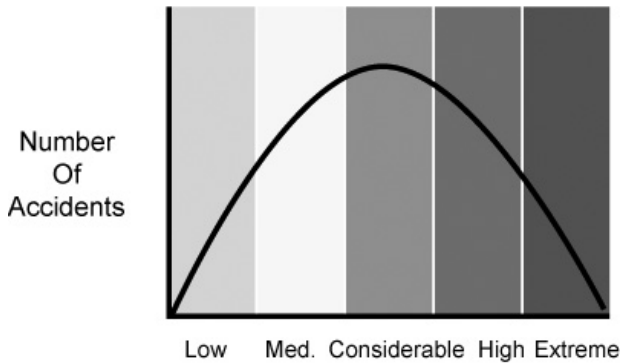


Figure 2.

Figure 3 illustrates the same point relating the danger scale on the left to a relative “Risk” scale on the right. Through the spectrum of danger ratings and individual’s risk actually decreases after Considerable.

### Danger Rating vs. Risk

Extreme	Low
High	Moderate
Considerable	High
Moderate	Moderate
Low	Low

**Danger Scale**
**Risk ‘Scale’**

Figure 3.

Another dilemma the Trained demographic face is the quantity of information. Figure 4 and 5 show the **Discussion** section of two actual avalanche bulletins produced weeks apart in the same winter. Figure 4 is quite clear and concise and was posted during a

period of high/extreme danger. Figure 5, an example of a Considerable discussion, clearly demonstrates that while the **quality** of the product may be good the **quantity** of information is awry. This discussion covers off most of the considerations regarding

snow stability evaluation. Snowpack structure, crystal structure, the effects of temperature, wind, sun and aspect as well as triggers, avalanche types, terrain and field tests are all mentioned. But the bottom-

line? The important nuggets? The final decision, that is *your* decision, will depend on how this information is processed in regards to your personal biases, your training and experience.

Widespread natural avalanche activity has continued at all elevations and on all aspects throughout the forecast area. Many of these avalanches are stepping to the ground and are running full paths to valley bottom. All backcountry travel should be limited to low angle terrain well away from avalanche path runouts.

Figure 4. A High/Extreme avalanche bulletin discussion.

Very cold temperatures are providing a temporary stabilizing influence in the upper portion of the snowpack. The cold weather doesn't benefit the snowpack in the long run however, as the strong temperature gradient causes faceting and restricts snow settlement. The Alpine has a hard windslab formed on lee features and various layers of weaker facets in the midpack are still present. Stability tests continue to demonstrate that the 40cm of depth hoar crystals near ground is the layer most prone to collapse. This indicates that any slide triggered could start in, or step down to, these basal facets and have large snow volumes associated. The right trigger, possibly a backcountry traveller, would be sufficient to propagate a slab moving on these lower weaknesses. Conservative terrain selection is still very important. **This time of year allows strong, direct sun effect on Southerly aspects. Loose snow avalanches are still being triggered from rocks and ridgelines from strong solar radiation despite the cold air temperature. Don't discount this danger even though your hands may be freezing to your ski pole or ice tool!**

Figure 5. A Considerable avalanche bulletin discussion.

## PROFESSIONALS

This general class includes the avalanche professionals themselves. To complete the picture of this user group the professionals as well as the people they care for must be considered. Highway avalanche workers look after the safety of the motoring public, ski areas avalanche control teams care for lift ticket holders and guides are responsible for their clients' safety.

### Scale

A large number of "professional" level accidents are the result of avalanches propagating larger than expected. "I'm not surprised that it slide but the size is what shocked me", may be the related quote. Most accidents in this class see the professional worker with extensive knowledge of the snowpack and local terrain. The suspect sliding layer(s) has usually been identified and tracked over time.

### Experience

In January 1996 the Parker Ridge area in the north of Banff National Park received 205 cm of snow during a single storm that lasted several days. The excited junior forecaster asked the well-seasoned senior forecaster what happens next? The veteran, perhaps in an effort to quell the youngster's enthusiasm or maybe with true profundity in mind says simply, "I don't know. I have never seen a storm like this." Wise words indeed.

Figure 6 plots years of experience versus height of snow (as one example of a temporal variable). In the highlighted five-year period it is apparent that this individual has 5 years of experience within an "average" set of conditions. It is incumbent on us as professionals to recognize this limitation. In subsequent years when snow pack depths range outside of the average by half or twice as much, this person will be in a "new place" in regards to conditions. As a group, professionals are good at maintaining a healthy respect for new places. We need to adopt this approach for new temporal places as well.

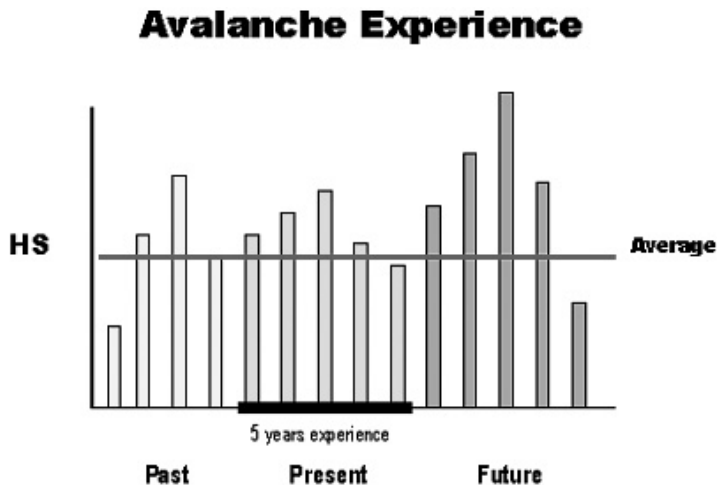


Figure 6.

Caution must also be exercised in regard to an “organizational experience” (a.k.a. corporate knowledge) level as well. In 2002 a park warden was killed on duty at Parker Ridge in the north of Banff National Park. The Avalanche fatality report begins with a sentence that states “. . . park wardens have been using this area for 20 years for the purpose of snow observations.” Since this was true, this may have contributed to

an overly comfortable approach to this particular terrain. This corporate “comfort” must be carefully evaluated as to how it relates at a given time. One thing for sure, the “corporate” feel for a place like Parker Ridge has changed. After this lesson the area is certainly being be considered a serious place where it wasn’t before. But what has changed?

## SUMMARY

In summary, we must recognize that social science compliments snow science and a qualitative personal context must be considered in chorus with the quantitative technical approach to the avalanche industry. There are many ways to identify an “at risk” population, be it by age, user group, gender or experience. When using relative experience as a means to classify different groups it becomes obvious that certain levels of experience lend themselves to higher accident rates, especially during certain conditions. This being said, no groups of backcountry users are immune to avalanche accidents. With this in mind, the broader avalanche community we must consider at all times:

- Our audience. We must understand to whom we are speaking.
- The clarity of messages. We must be clear about what we are saying.
- The scale of terrain. It seems size does matter!
- Any personal knowledge/ experience gaps that may exist. This occurs through a process of continuous self-evaluation.