# UTAH AVALANCHE FORECAST CENTER USER SURVEY
# AND FORMATS FOR AVALANCHE ADVISORIES

by

Bruce Tremper, Director, Utah Avalanche Forecast Center
Dave Ream, Dept. of Recreation, University of Utah / Alta ski patrol

## Abstract

The Utah Avalanche Forecast Center (UAFC) issues twice-daily recorded avalanche and mountain weather advisories for the Wasatch Range of northern Utah. The UAFC conducted a detailed user survey during the 1987-88 season to study the demographics of the users and to find ways of improving the service.

Survey results show that the average caller is male, between the ages of 25 and 35 and that most are backcountry skiers with high levels of both skiing and avalanche skills. However, most respondents had higher skiing skills than avalanche skills. Only 3 percent indicated they could perform a snow stability analysis based only on snowpit data with a 90 percent confidence level; using all information including snowpit data, only one third indicated they could decide if the slope was safe with 90 percent confidence. Ninety one percent of the backcountry population surveyed carry beacons and shovels, however, they only practice 2-3 times per season. Results also indicate that the average caller often misinterprets the meaning of hazard categories used in the forecast--moderate hazard in particular. A significant percentage enjoy the challenge of traveling in hazardous avalanche terrain.

The respondents overwhelmingly think the avalanche recordings are important service for staying alive in backcountry avalanche terrain, that it is a valuable service, and that they are satisfied with the product. Of those that are less than totally satisfied, the vast majority would like more information or more detailed information.

General suggestions for the format of avalanche advisories are also presented.

## Introduction

The Wasatch Range of northern Utah is world famous for its powder skiing. It also has 12 ski areas and backcountry recreationalists take advantage of the roads to these ski areas as well as the liberal boundary policy at most of the ski areas making unparalleled accessability to the backcountry. Utah has, without a doubt, the largest and most concentrated population of winter backcountry use in the country. In fact, we estimate that on many days, the dispersed backountry use accounts for as many user days as the largest commercial ski areas in the Wasatch. The Utah Avalanche Forecast Center receives 50,000 calls per season to its recorded avalanche advisory--twice as many as any other avalanche forecast center in North America.

This makes Utah an ideal place to survey winter backcountry users. During the 1987-88 season, the Utah Avalanche Forecast Center conducted a detailed user survey. We do this every few years to monitor the demographics of our customers, to see what they like and don't like about our forecasts, but mostly, we want to know how we can improve our product.

This survey differs from several previous surveys in that it was designed to sample people who call the avalanche recorded avalanche advisory, as opposed to sampling winter backcountry users in general. We know from experience and from previous studies that specific populations of backcountry users do not call the avalanche hotline on a regular basis, most notably: snowmobilers, flat-track nordic skiers, and infrequent backcountry skiers (Jenkens, et al., 1988; Bowles and Mathias, 1982; and Riebsame, 1977). We feel that the primary users of our service are the large population of local hard-core backcountry skiers and ,as you will see, the survey results tend to prove this assumption. However, because we conducted the survey toward the end of the season, and also because of the design of the survey, we feel that it may have a bias toward the more hard-core population and that the more infrequent users are somewhat under-represented.

The user survey was completed under the guidance of Dr. Tim Larson, Department of Communications at the University of Utah. We distributed the questionnaires by leaving them under windshield wipers at popular trailheads, at sports shops, and soliciting callers on the recorded public avalanche advisory. In all 154 surveys were included in the analysis; perhaps 20 additional surveys arrived too late or contained useless or illegible data. Dave Ream performed the statistical analyses.

Coincidentally, the Colorado Avalanche Information Center conducted a similar survey during the 1986-87 season. We included some key questions from the Colorado survey--worded identically--so we could make some comparisons between the populations.

## Results and Discussion

The survey produced a wealth of valuable information. As table 1 (Appendix) shows, the average caller is male, between the age of 25-35. We should note that the figure of 20 percent female probably under-represents women in the actual winter backcountry population; Bowles and Mathias (1982) found that their trailhead surveys, as well as other unpublished local surveys, indicated 39 to 44 percent women while their telephone surveys showed a much lower number. Apparently, this trend has continued because although we have no data to support the claim, it appears to us that there are more and more women in the backcountry, yet they were poorly represented in the survey. Unfortunately, backcountry travelers may still view making avalanche decisions as a man's role.

Most are of our users are backcountry skiers, ski area skiers and climbers. Although we know that a sizable population of snowmobilers use the backcountry, almost none of them call the avalanche recording despite repeated efforts on our part to entice them. This, in itself, would make an interesting psycological study.

Of the people who do call, most are quite sophisticated as far as their skiing skills, avalanche skills and their avalanche experience: The average caller has spent 7.4 years traveling in winter backcountry terrain, and 4.5 years calling the UAFC number. In contrast, Bowles and Mathias (1982) found that the majority (62 percent) had 3 or less years of experience, indicating that the population has matured over the intervening years. In addition, ninety two percent consider themselves to be "advanced, expert or extreme" skiers; 65 percent have at least taken a 1-4 day avalanche seminar or equivalent.

However, even though they have both good skiing and avalanche skills, when asked to rate their skills in both areas, almost everyone ranked at least one notch higher in skiing skills than avalanche skills (figure 1). In other words, the majority of people's avalanche skills are not keeping up with their skiing skills--and there lies the problem.

I'm assuming the reasons for this are because improving on ones skiing skills is fun while improving on avalanche skills takes a certain amount of discipline. Southerland and McPherson (1987) found somewhat the same relationship in their survey of Canadian backcountry users. "Even the skiers ...with the best risk assessment skills... often lacked the knowledge to accurately assess the avalanche risk". They also reported that most skiers tended to overestimate their avalanche skills.

So it's no wonder that 76 percent of the Utah respondents indicated that they have been involved with an avalanche sometime in their life. Also, the average person has witnessed 5.2 human triggered avalanches, has triggered 2.6 avalanches, been caught and carried in .408, been partly buried in .2 and totally buried in .008 avalanches. It seems that most of the people have been learning about avalanches through trial and error--and living to learn from their mistakes.
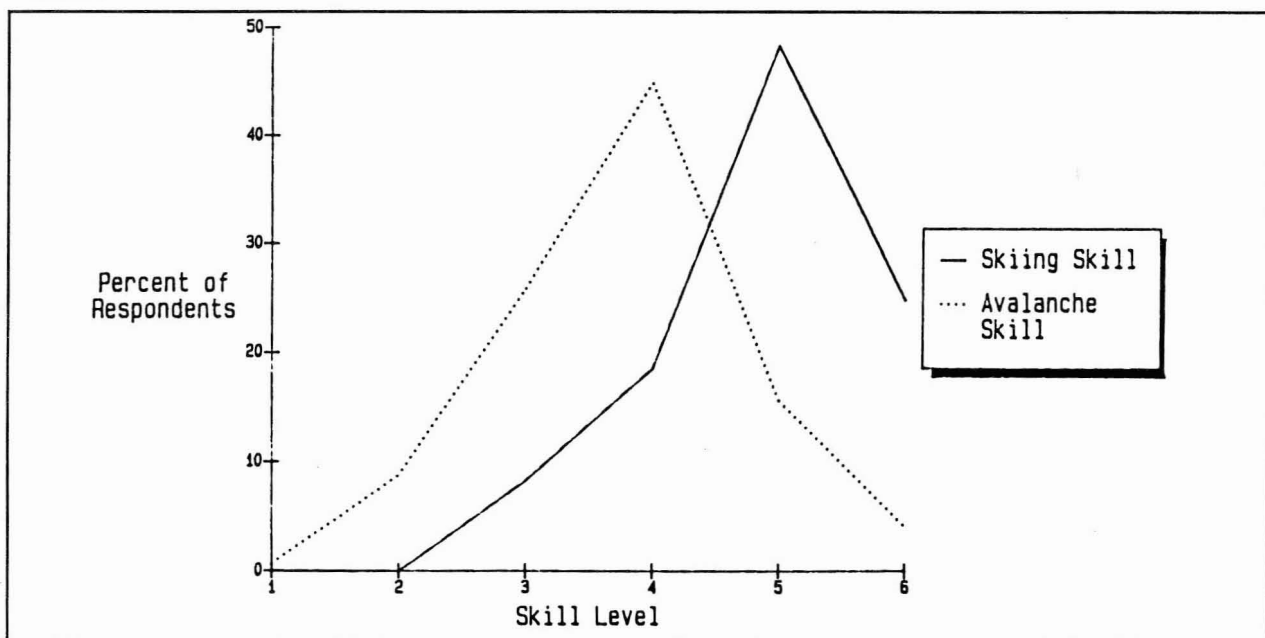


*Figure 1. Skiing skills compared to avalanche skills. The average respondent ranks at least one notch higher in skiing skills than avalanche skills.*

Apparently, that is the way they do snow stability analysis too. Based only on snowpit information from the slope in question, only 3 percent said they could decide if the slope was safe with a 90 percent confidence level. Then, based on all the information available to them including snowpits, only one third of the respondents indicated they could decide if the slope was safe with 90 percent confidence.

Even though the level of avalanche awareness and education is quite high, only a small percentage feel confident doing their own snow stability analysis. Since the fatality rate is disproportionly low for the very large population of backcountry travelers in Utah, we can only assume that most people's sole source of snow stability information comes from the UAFC recording. This puts a tremendous burden on the UAFC staff. Luckily, most of the backcountry use is concentrated into a small area near Salt Lake City. We spend two thirds of our time skiing and digging snowpits in backcountry avalanche terrain, and we have a well-developed network of volunteer observers. Because of these luxuries, our forecasts are very accurate. In fact, 72 percent of the respondents felt that the snow and avalanche information on our forecasts were accurate either "almost always or always".

In this survey, we not only wanted to define the target audience, but to identify the high risk group. First, we already know that because of advances in avalanche zoning and control over the past 30 years, it has become very rare for a person to get caught in an avalanche that comes down from above. Rather, our statistics, along with those compiled from other areas around the globe, indicate that about 95 percent of the people who get caught in avalanches trigger their own avalanches. Therefore, a forecaster must address the people who travel in avalanche starting zones. These include backcountry skiers, snowboarders, climbers and an increasing number of snowmobilers. Most avalanches, as well as avalanche accidents are triggered on starting zones usually between 35-45 degrees in steepness--about the same steepness as "advanced, expert and extreme" slopes at ski areas. Therefore, a backcountry traveler must rank in the upper skill levels of their respective sport to access avalanche starting zones.

The survey results support this assumption. We conducted a cross tabulation between skiing skill versus the percentage of people of each ski skill that were caught and carried by at least one or more avalanches. As figure 2 shows, the greater the skiing skill, the greater the chance that person has been caught in an avalanche.

Since so many people seem to be triggering avalanches, we were pleased to see that 82 percent of the respondents said they "always or almost always" carried beacons. If you exclude the people who said they only skied at ski areas the percentage goes up to 91 percent. In contrast, the Colorado Avalanche Information Center estimates that only about 40 percent of their users carry beacons.

However, one of the most frightening statistics is that the average respondent only practices with their beacon 2-3 times per season. Actually this doesn't surprise us. In our avalanche talks, we always preach about the importance of practice. For example, professional patrollers usually practice once per week; It is a skill which must be refined to be useful, as a buried victim dies rather quickly. So although most people carry beacons, we suspect that most could not find their partner in time to save their life. We will continue to preach about practicing with beacons.
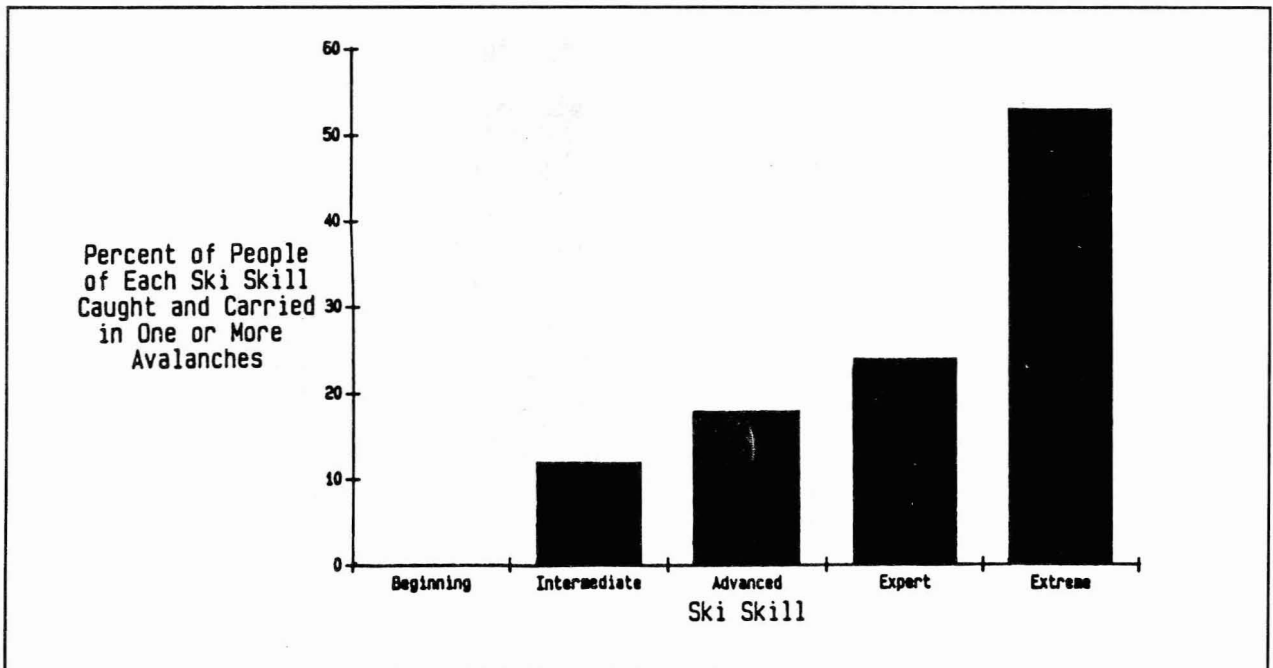


*Figure 2. Skiing skill plotted against the percentage of the people in each skill who have been caught and carried in an avalanche. Notice that the greater one's skiing skill, the more likely that person has been caught in an avalanche.*

One of the main reasons we wanted to conduct the survey was to illuminate people's perceptions of the various hazard ratings, low, moderate, high and extreme. We have always suspected that people had a fuzzy understanding of these ratings--moderate hazard in particular.

We feel this way because, statistically, most avalanche incidents occur in areas rated as moderate hazard (figure 3). In low hazard areas, even with a lot of people in the area, few human triggered avalanches occur. In areas rated as high or extreme, the terms seem self-explanatory enough and we notice that they are often completely deserted. It is in the vast middle ground of moderate hazard where there is a maximum interaction between people and instability.

When asked to check what they felt the probability of triggering a slide for the various hazard categories, figure 4 shows that there is a large scatter of answers especially for moderate hazard. If anything, people's perception of the human triggered potential seemed too high. In other words, most people chose higher probabilities than we, as forecasters, would have chosen. For example, in polling the UAFC forecasters, we would guess that low hazard would be less than 5 percent probability of human triggered release, moderate 5-20, high 20-40, and extreme about 40-80. The customers response seems to match the forecasters perception more closely in the low and extreme catagories, and less so in moderate and high.

In another question on moderate hazard, we asked the respondents to tell, in their own words, what moderate hazard meant to them. I subjectively ranked each response into one of four catagories: 1) underrating the danger, 2) about right, 3) overrating the danger, and, 4) a category I called "way off base".

We were relieved that 50 percent were about right, 4 percent underrated the danger and 14 percent overrated the danger. We were surprised at the number overrating the danger because our gut feelings told us told us just the opposite. Perhaps the reason we felt this way is illuminated by the fourth category, way off base, in which 32 percent of the responses unfortunately fell. In other words, 32 percent of the people filling out the surveys did not have a clear enough perception of what moderate hazard means to adequately verbalize it.

Finally, when asked how important the adjectives are in describing avalanche hazard (low, moderate, high and extreme) although the majority (52 percent) said they were "very important", a sizeable chunk were more lukewarm. 48 percent picked "somewhat, neutral or mostly"--not a resounding support for the hazard categories. In a similar question on the Colorado survey, only 33 percent indicated they were "absolutely helpful" and 50 percent checked "mostly helpful".
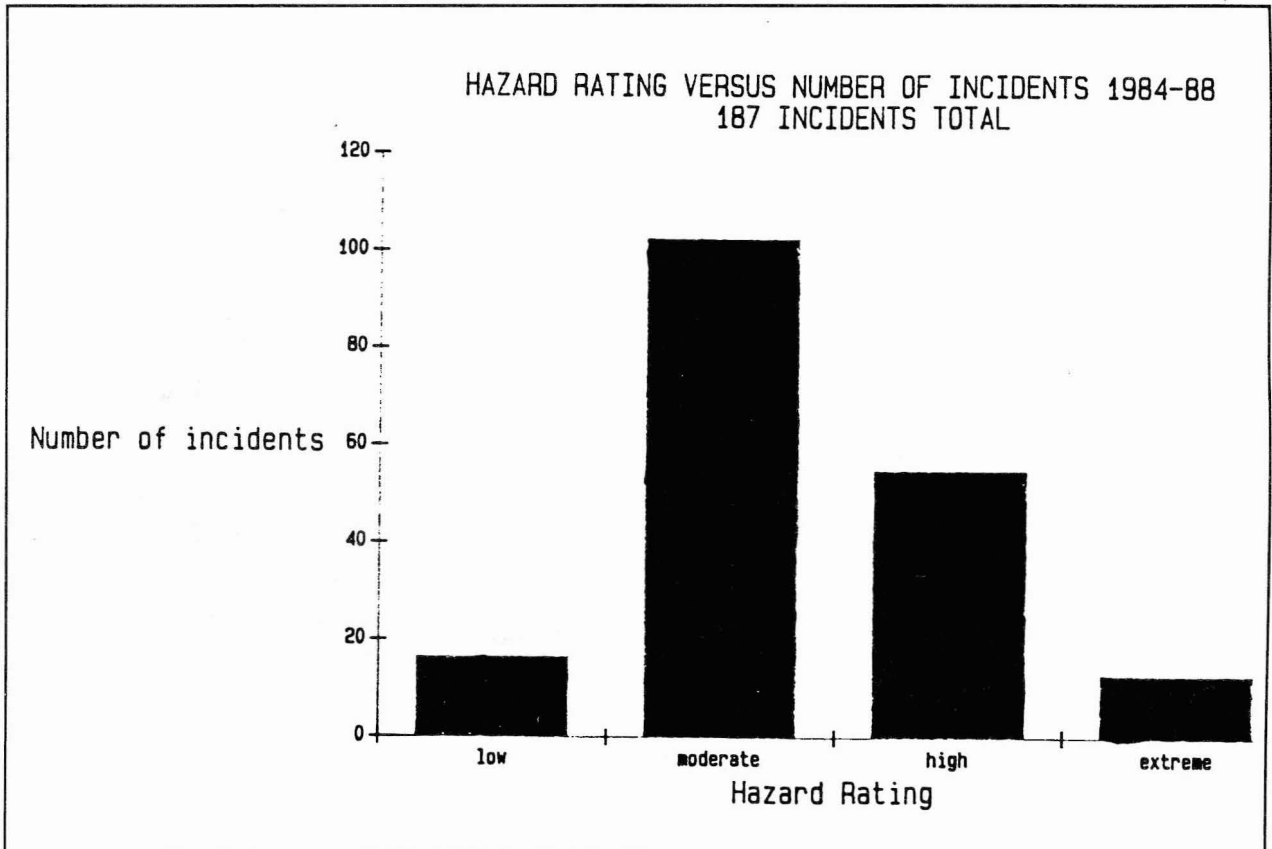


*Figure 3. The number of avalanche incidents in Utah for a 4-year period plotted against the hazard rating used in the area where the incident occurred. Most avalanche incidents occur in areas rated as moderate hazard because that is where there is a maximun interaction between people and instability.*
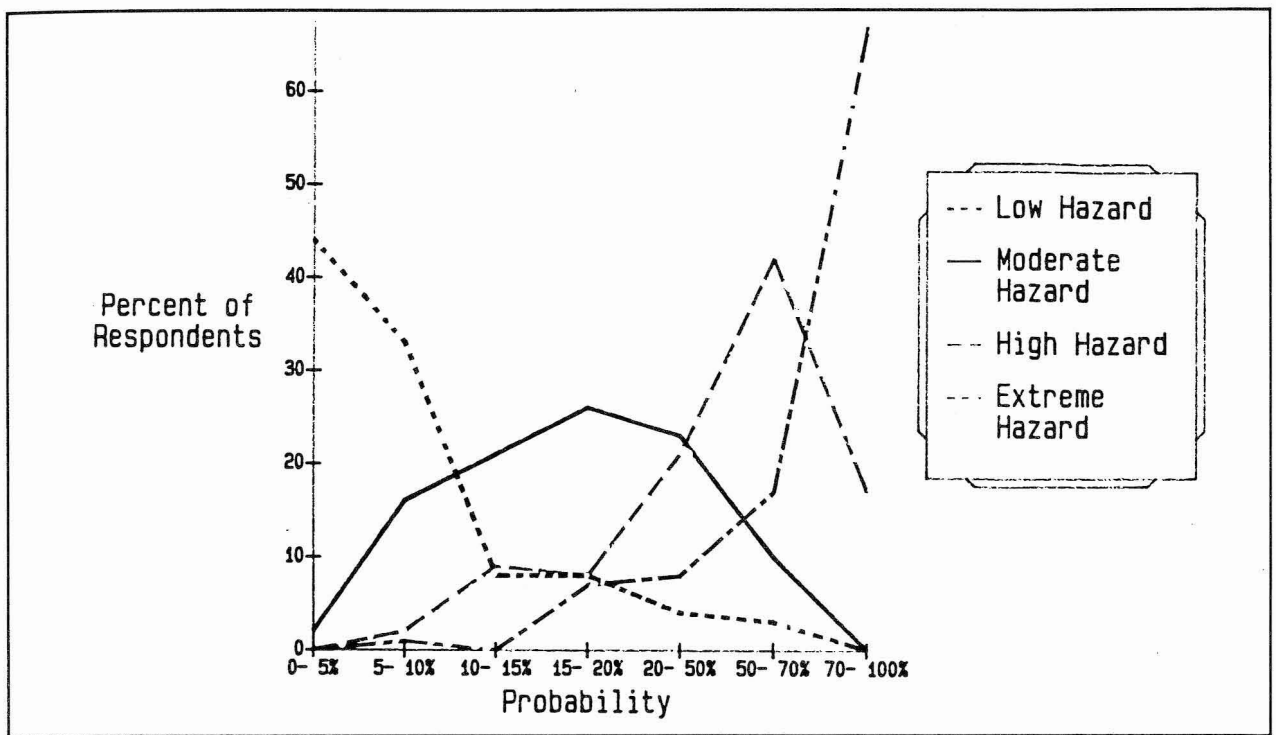
*Figure 4. The survey participants were asked to rate what they felt the probability of triggering an avalanche for each of the four hazard categories. Notice the wide scatter of answers for moderate hazard (solid line).*

For these reasons, among others, we still feel that avalanche hazard categories are far from perfect for describing avalanche danger. In the future, we would like to explore other, more effective ways to communicate avalanche information; but we do not want to use them in the public forecast until they have been proven on a test audience. Since we have no other feasible alternatives, we continue to use them but try to bury them in the general discussion in order to force people to pay attention to the more important details and not to make simplified decisions based on simplified categories.

We have considered using probabilities of human triggered release in the forecast instead of hazard categories. The National Weather Service has had good success with this approach. However, most of the time, we would be dealing with fairly small numbers, and since the survey respondents seemed to overrate the hazard in terms of probabilities, using them might lead the public into a trap.

No matter how you boil it down, we feel that the public needs to know three basic types of information when traveling in avalanche terrain: 1) the degree of instability, 2) the pattern distribution of the instability, and 3) the size of an expected avalanche. Hazard categories attempt to be a simplification of these three pieces of information. However, they are often misinterpreted and poorly understood. The arguments for continuing to use hazard categories include: 1) People with low avalanche skills can understand the forecast more easily because of its condensed, simplified form. 2) they have a long historical precedence. 3) There are few workable alternatives. We use them but do not like them.

We have found that the worst way to use hazard categories is to use the broad brush approach, that is, labeling a large geographic area, such as an entire mountain range, with a single hazard rating. Instability varies markedly not only across a mountain range but across a single mountain and even across a single slope on that mountain. Rather instability correlates most closely with aspect, elevation and slope steepness. So success in using hazard categories depends on providing a high level of detail by using them within the parameters of aspect, elevation and slope steepness.

For example, a forecast might read:

"Today we feel there is a high hazard of human triggered releases on north and northeast facing slopes above 10,000 feet steeper than 35 degrees, especially along ridgetops and areas with recent accumulations of wind drifted snow. Low hazard areas include all south facing slopes and all slopes less steep than 30 deg. with a moderate hazard in all other areas. Since the snow is very good on south facing slopes today, there's no sense in risking your life in the more unstable areas."

245

We feel that the success of an avalanche advisory lies in providing <u>useful</u> information to the high risk group--the skilled backountry traveler. Useful information includes very detailed, up to date, and accurate data and recommendations which will aid backcountry travelers in making routefinding and snow stability decisions. Also, the smaller the forecast area, the more useful detail the forecasters can provide. Therefore the worst scenario is for an understaffed forecast center to issue advisories for a large geographic area by issuing blanket hazard categories. It provides little useful information. Unfortunately, many centers have a low level of funding combined with large geographic responsibilities, and blanket hazard categories become the only feasible solution.

This brings us to one of the most interesting question on the survey; we asked how often the respondents would call a 5-minute recording containing more detailed avalanche and mountain weather information if it was available. (The standard public recording is between 2 and 2 1/2 minutes.) Only 6 percent said they would call less often than "sometimes", and about half of the people said they would call "almost always or always", indicating a strong support for providing more detailed information.

In the past, a 5-minute recording has been available, but it was designed only for use by the ski areas, and consequently we did not publicize the number. Because of the strong response, in the future, we plan on publicizing the 5-minute recording, so people can use it in addition to, or in leu of, the standard 2 1/2 minute recording. With greater detail of information, using simplified summaries such as hazard categories may not be necessary--at least on the 5 minute recording.

In the past two seasons, we have tried to make the forecasts more entertaining by including humor where appropriate, using active voice instead of passive voice, and including analogies where possible. In this way, the forecast became more human and sounded less like a "government recording". Our call statistics indicated that people called more often and we feel this is an important step in avalanche education; we have more opportunities to "preach the avalanche gospel" and callers tend to follow the evolution of the snowpack day by day.

We became concerned that we had become "too entertaining". So in the survey we asked the question, "Is the survey too entertaining, not entertaining enough or just right." We were relieved that the vast majority of the survey respondents said that the forecast was just right, and over twice as many people said that we were not entertaining enough rather than too entertaining. In fact, in the comments section, many people said they loved the humor and the personal touch. So we plan on continuing the entertainment but not at the expense of more important information.

Another interesting question was "Do you enjoy traveling in hazardous avalanche terrain?" Almost half of the people chose "sometimes, often, almost always or always". In other words, there is a significant number of people who enjoy the factor of risk, probably the same way a rock climber enjoys pitting his or her skills against the very inflexible rules of nature with similarly inflexible consequences for mistakes.

This finding is supported in a recent survey conducted by Mike Jenkins et al. (1986) of Utah State University. They surveyed 200 backcountry skiers at trailheads near Logan, Utah. The results indicate that although most of the skiers were beginners or intermediates in skiing skill as well as avalanche skill, 34 percent felt that risk enhanced their experience and 10 percent considered risk to be a major factor in their enjoyment of skiing and they look for opportunities to encounter it. These "dragon hunters" as we call them, have needs that need to be addressed. They desperately need very detailed information which will aid in routefinding and snow stability decisions.

A key question on the survey was "What is your present level of satisfaction with the content quality and accuracy of the forecast?". I was originally disappointed to find that only 58 percent were totally satisfied and 36 percent were moderately satisfied. But the good news is, of all of the Utah respondents who indicated they were less than totally satisfied, the lion's share of them (77 percent) said their chief complaint was that they wanted more information; 8 percent said they wanted more afternoon updates (we issue them only when conditions have changed from the morning advisory); 7 percent said they wanted earlier forecasts (we issue them by 7:30 am). One of our concerns was that we were presenting a higher level of detail and information than most people could absorb. However, the survey results indicate just the opposite: that too much information is better than not enough. In the final analysis, the people indicate that they like what we are doing but they simply want more of it.

Conclusions

In past years, avalanche education as well as avalanche advisories often adopted the strategy of frightening people into avoiding avalanche terrain altogether. And for those who chose to travel in avalanche terrain anyway, their only source of snow stability information came from blanket hazard ratings issued for large geographic areas. Those days have long since come to an end.

In Utah, our customers are obviously very skilled backcountry travelers and have quite sophisticated avalanche skills. A significant percentage enjoy the risk of traveling in avalanche terrain. The backcountry of the Wasatch has become very crowded. We notice that after a storm nearly every reasonably accessible slope gets skied, except those we are warning people to stay away from. Although their avalanche skills are not keeping up with their skiing skills, and most are not confident of their snow stability decisions, the routefinding and snow stability decisions they do make

are literally of life and death importance.

Therefore, it has become essential that avalanche advisories address this audience by passing along useful detailed information which will aid in routefinding and snow stability decisions. The information should include:

1) A discussion on the reasons for expected instabilities (kinds of weak layers, etc.)
2) the degree of instability.
3) the distribution pattern of the instability.
4) the expected size of avalanches.
5) past avalanche activity including dimensions, aspect. elevation, and slope steepness.
6) the expected future trends.

The forecasters should present this information in a clear, entertaining format that does not sound like a "government recording". Techniques for doing this include:

1) Using active voice to not bore the listener.
2) Using analogies to aid in retention of the information.
3) Be entertaining, when appropriate.
4) Read in a clear, practiced "broadcaster's" style. (No monotone voice; You should not sound like you are reading from a script, even if you are).

We feel that using blanket avalanche hazard categories to communicate this information is less than adequate. Modern backcountry travelers have a high level of sophistication and they need very detailed information to help them make their routefinding decisions. Also, hazard categories in general are poorly understood and often misinterpreted. If they are used, they should be used to describe the avalanche hazard within the parameters of aspect, elevation and slope steepness, rather than to describe a large geographic area.

Our surveys have shown that most people require a very high level of detailed information. Therefore, we provide both a 2 1/2 minute synopsis as well as a 5 minute more detailed recording.

References

Bowles, D. and Mathias, B., 1986, "Backcountry Skier Attitudes and the Utah Avalanche Forecast Center", Paper presented at the International Snow Science Workshop, Bozeman, Montana, October, 1982.

Jenkins, M., Schreyer, R. and Kobe, K., 1988, "Hazard Perception and Preparation by Backcountry Skiers in Utah", To be published in The Avalanche Review, November, 1986.

Riebsame, W., 1977, "Ski Tourers and the Avalanche Hazard", Great Plains-Rocky Mountain Geographical Journal, Vol. 6, No. 2, December, 1977.

Southerland, L. and McPherson, H., 1986, "Avalanche Risk Assessment by Backcountry Skiers, Avalanche Formation, Movement and Effects (Proceedings from the Davos Symposium, September, 1986). IAHS Publ. No. 162, 1987.

# APPENDIX

Table 1   Portions of the 1988 Utah Avalanche Forecast Center User Survey

**Gender:** _80%_ Male  _20%_ Female
**Age:** _1%_ 0-18  _8%_ 18-25  _68%_ 25-35  _19%_ 35-45  _3%_ 45-55  _1%_ 55-65  _0%_ 65+

**Indicate the number of days each month you typically spend doing the following activities::**

_5.3_ backcountry skiing                          _4.7_ Ski area skiing
_.07_ backcountry snowboarding          _.07_ ski area snowboarding
_.16_ backcountry snowmobiling           _2.4_ mountaineering/climbing
_1.2_ X-C skiing on gentle slopes          _.65_ Other backcountry recreation

How many years have you been using this service? _4.5_
How many years have you been traveling in winter backcountry avalanche terrain? _7.4_

Have you been involved with an avalanche? yes _76%_ no _23%_
If yes, please indicate the number of times you have been involved in each of the following:

HUMAN TRIGGERED AVALANCHES
_5.2_ witnessed a triggered avalanche
_2.6_ triggered an avalanche
_.41_ been caught and carried
_.2_ been partially buried
_.01_ been totally buried

NATURAL (SPONTANEOUS) AVALANCHES
_4.3_ witnessed a natural avalanche
_.04_ been caught and carried
_0_ been partially buried
_0_ been totally buried

Rate your skill level. Can you comfortably and consistently ski or snowboard on a backcountry slope of equivalent steepness as:
_0%_ less than a beginner hill at a ski area or do not ski
_0%_ a beginner slope at a ski area (10-25 degrees)
_8%_ an intermediate slope at a ski area (25-30 degrees)
_19%_ an advanced slope at a ski area (30-35 degrees)
_48%_ an expert slope at a ski area (35-40 degrees)
_25%_ extreme skiing (40 +)

Rate your level of avalanche education and/or skill:
_1%_ have no knowledge of avalanches
_9%_ have some knowledge of avalanches but not read books or taken classes
_26%_ have read at least one avalanche book and/or attended a 1 hour avalanche awareness talk.
_45%_ have read several avalanche books and/or have taken a 1-4 day seminar from a reputable
    instructor, or equivalent
_16%_ have taken a week-long course or equivalent
_4%_ feel comfortable being an instructor for a multi-day avalanche course.

If you only had information available to you from one or more snowpits from the slope in question, check the percent of time you could give an accurate stability analysis?
_0%_ 100% _3%_ 90-100% _14%_ 80-90% _21%_ 70-80% _23%_ 50-70% _19%_ 30-50% _20%_ 0-30%

Based on all the information available to you, if you decide to cross a slope, what percentage of time are you confident that the slope will not slide.
_3%_ 100% _30%_ 90-100% _27%_ 80-90% _19%_ 70-80% _11%_ 50-70% _5%_ 30-50% _5%_ 0-30%

If the Avalanche Forecast Center gives a hazard rating for a certain type of slope in a particular area, what do you feel is the probability of triggering an avalanche if you crossed that slope: (feel free to check more than one box if appropriate.)
LOW HAZARD:
_44%_ 0-5% _33%_ 5-10% _8%_ 10-15% _8%_ 15-20% _4%_ 20-50% _3%_ 50-70% _0%_ 70-100%
MODERATE HAZARD:
_2%_ 0-5% _16%_ 5-10% _21%_ 10-15% _26%_ 15-20% _23%_ 20-50% _10%_ 50-70% _0%_ 70-100%
HIGH HAZARD:
_0%_ 0-5% _2%_ 5-10% _9%_ 10-15% _8%_ 15-20% _21%_ 20-50% _42%_ 50-70% _17%_ 70-100%
EXTREME HAZARD:
_0%_ 0-5% _1%_ 5-10% _0%_ 10-15% _7%_ 15-20% _8%_ 20-50% _17%_ 50-70% _67%_ 70-100%

**On an average-sized avalanche path, what do you feel is the probability of being killed or injured in:**

a 6 inch deep sluff:
_40%_ 0-5% _25%_ 5-10% _19%_ 10-15% _9%_ 15-20% _4%_ 20-50% _2%_ 50-70% _2%_ 70-100%
a 6 inch deep soft slab breaking 100 feet wide:
_4%_ 0-5% _17%_ 5-10% _19%_ 10-15% _20%_ 15-20% _25%_ 20-50% _11%_ 50-70% _4%_ 70-100%
a 1 foot deep soft slab breaking 100 feet wide:
_0%_ 0-5% _3%_ 5-10% _11%_ 10-15% _13%_ 15-20% _32%_ 20-50% _27%_ 50-70% _14%_ 70-100%
a 1 foot deep hard slab breaking 600 feet wide:
_0%_ 0-5% _0%_ 5-10% _4%_ 10-15% _8%_ 15-20% _12%_ 20-50% _36%_ 50-70% _41%_ 70-100%
a 2 foot deep hard slab breaking 600 feet wide:
_0%_ 0-5% _0%_ 5-10% _0%_ 10-15% _4%_ 15-20% _5%_ 20-50% _18%_ 50-70% _72%_ 70-100%

**If the Avalanche Forecast Center says "moderate hazard" for a particular type of slope, what does this mean to you?**
*Underrate the hazard --3.6%*   *About right----50.0%*
*Overrate the hazard---14.5%*   *Way off base --31.9%*

**Do you travel alone in the backcountry?**
_24%_ never _27%_ almost never _15%_ seldom _21%_ sometimes _9%_ often _3%_ almost always _0%_ always

**Do you carry an avalanche rescue beacon and a shovel?**
_10%_ never _3%_ almost never _1%_ seldom _1%_ sometimes _3%_ often _17%_ almost always _65%_ always

**How many times per season do you practice with your beacon?____**    *mean= 3.3*
    *mode= 2.0*

**So you camp overnight?**
_20%_ never _19%_ almost never _28%_ seldom _26%_ sometimes _7%_ often _0%_ almost always _0%_ always

**Do you dig a snowpit to see if the slope is safe?**
_12%_ never _14%_ almost never _12%_ seldom _27%_ sometimes _21%_ often _10%_ almost always _3%_ always

**Do you avoid avalanche terrain?**
_1%_ never _3%_ almost never _7%_ seldom _25%_ sometimes _28%_ often _30%_ almost always _6%_ always

**If there were no risk of avalanches, would you enjoy the backcountry more?**
_5%_ never _1%_ almost never _4%_ seldom _20%_ sometimes _18%_ often _18%_ almost always _34%_ always

**Do you enjoy the challenge of travelling in hazardous avalanche terrain?**
_19_ never _9_ almost never _12_ seldom _32_ sometimes _18_ often _7_ almost always _2_ always

**Please check which of the following subjects you would like to hear about in more detail, even if it makes the message a little longer?**
_57%_ mountain weather information (temp. wind, clouds, precipitation, etc.)
_76%_ snow stability information (layering, weak layers, distribution, etc.)
_86%_ avalanche information (types, where, why, dimensions, etc)

**Is the message:**
_0%_ too long   _0%_ too complicated   _4%_ too "entertaining"
_27%_ too short   _20%_ too simple   _10%_ not "entertaining" enough
_73%_ just right   _80%_ ust right   _86%_ just right

**How important are the adjectives used to describe the avalanche hazard (low, moderate, high and extreme)?**
_0%_ not important _7%_ somewhat _13%_ neutral _28%_ mostly _52%_ very important

**What is your present overall satisfaction with the content, quality, and accuracy of the message?**
*0%* totally unsatisfied
*1%* moderately unsatisfied
*5%* neutral
*36%* moderately satisfied
*58%* totally satisfied

**How important is this service to you for staying alive in backcountry avalanche terrain?**
*1%* not important *7%* somewhat *7%* neutral *25%* mostly *60%* very important

**What is your overall opinion of the value of this service?**
*0%* worthless *1%* poor *1%* fair *12%* good *86%* excellent

**What can be done to improve the service?**
*These free-form answers generally fell into the following categories:*
*More information or more detailed information---67.7%*
*Earlier forecasts---------------------------------------11.5%*
*Say where the helicopters are skiing ----------------4.2%*
*Poor recording quality--------------------------------4.2%*
*More afternoon updates------------------------------2.1%*
*Talk too fast--------------------------------------- --1.0%*
*Other--------------------------------------------- ----9.4*