

CARE Panel Report 2022

Photo: Andrea Mannberg

Why should we CARE?

90% of all fatal avalanche accidents in Europe and North America was caused by the victim, or by someone in the victim's group. This shows that people sometimes make disastrous decisions in avalanche terrain, but it also means that the problem is in our own hands. This is good, because it means that we can solve the problem, or at least make it less severe.

To improve decision-making in the backcountry, we need to understand *how* people make decisions and *why* mistakes occur. This includes an understanding of how experience – from touring, terrain manoeuvring, group dynamics, avalanche education (courses etc.) and accidents – affect us.

10 000 people
For 10 years

The aim of the CARE panel project is to achieve this. The panel is hosted by Center for Avalanche Research and Education (CARE) at UiT - the Arctic university of Norway. The Swedish EPA is a collaboration partner.
The CARE panel consists of people, who engage in activities in terrain where avalanches may be a concern, and who are willing to share their thoughts and experiences, thereby helping others. We hope to follow a large sample of people, with different skills and experiences, for a prolonged time period.

Following the same people over time is important because it is only if we do this that we can understand how people learn to make good decisions, why they sometimes make mistakes, and how their experiences affect them.

If we only observe individuals once, we can never distinguish cause from effect unless we perform an experiment. An example of this is the effect of avalanche experiences on attitudes to risk. Many studies find that people who have been involved in an avalanche accident are more willing to take risk than people without such experience. Does this mean that avalanche experiences make us think that we are immortal? Not necessarily! It is fairly likely that people who are willing to take a lot of risk have a higher risk of being involved in an avalanche accident. This means that even if accidents can reduce a person's willingness to take risk, it may still seem as if avalanche victims are more risk willing than others.

To understand how people learn, we similarly need to follow them over time. This is both because learning takes time, and because we need to know what the person knew before a certain experience (e.g., a course) and what new knowledge they acquired as a consequence of the course. Ideally, we further need to compare similar individuals who did and did not have a learning experience to rule out that the learning would not have taken place in the absence of the experience.

Taken together, the CARE panel will allow us to produce and convey knowledge that will help people make better decisions in avalanche terrain, minimising accidents and ultimately saving lives.

The CARE panel project is still in an early phase. The panel was first launched in the season 2020/2021. The aim of this report is to provide an overview of the panel as it looks today. The information in the report stems from three different information sources: the recruitment study, the annual follow-up study and a GPS study.



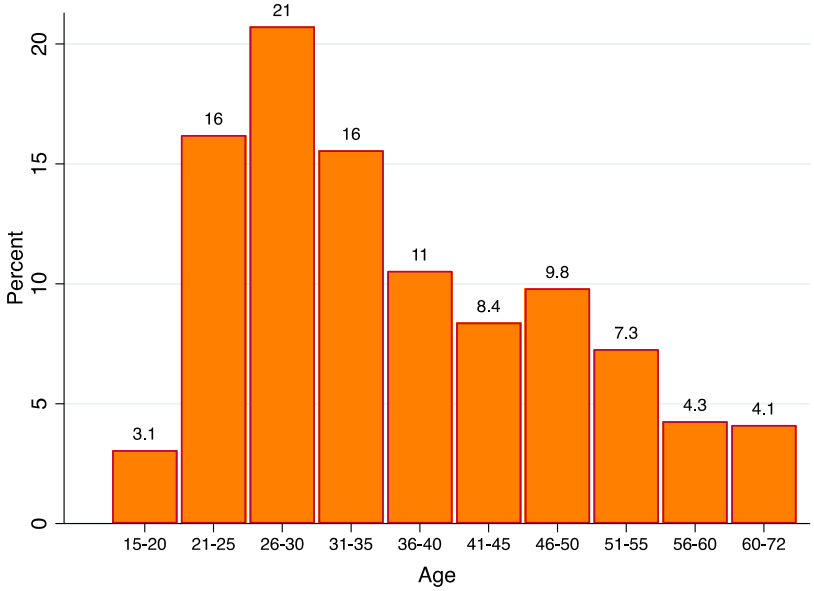
Photo: Andrea Mannberg

Demographics of the CARE panel 2022

There is a broad age demographic between the participants. 53% of the panelists are 21 to 35 years old, 44% are 36 to 72 years old

73% of CARE panelists live in Norway
19% live in Sweden

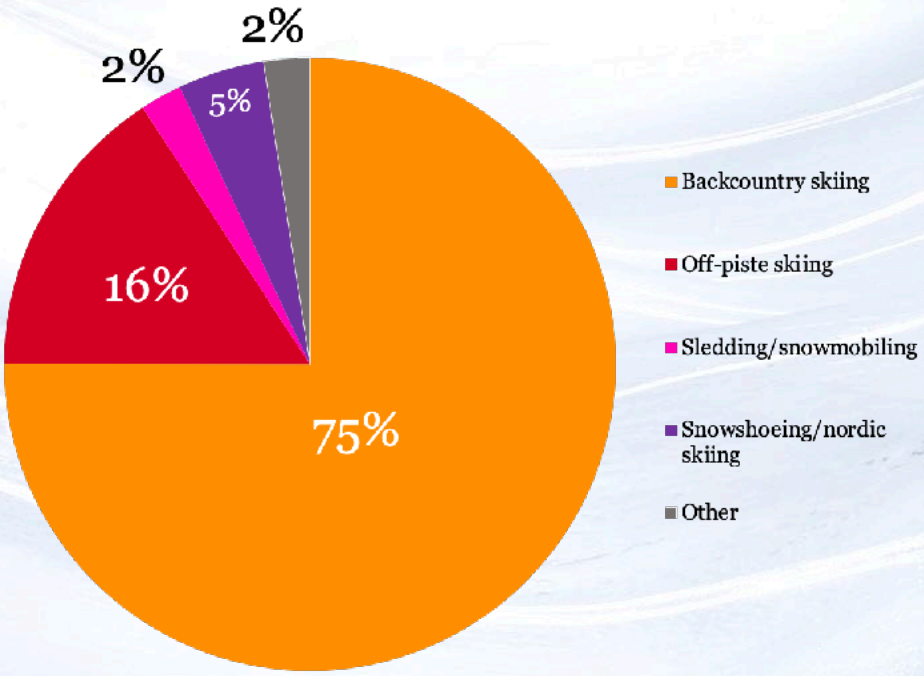
2% live in Finland
6% reside in other countries



Activities and experience of backcountry travel

We asked our participants if they engage in activities that take place in terrain where avalanches may be a concern.

91% of the panelists engage in downhill skiing activities: 75% are ski tourers and 16% use ski lifts to ski off-piste. 2% are sledders.







The average CARE panelist has about 13 years of experience with their preferred backcountry activity, ranging from 0 to 60 years. 30% of panelists have five years or less experience

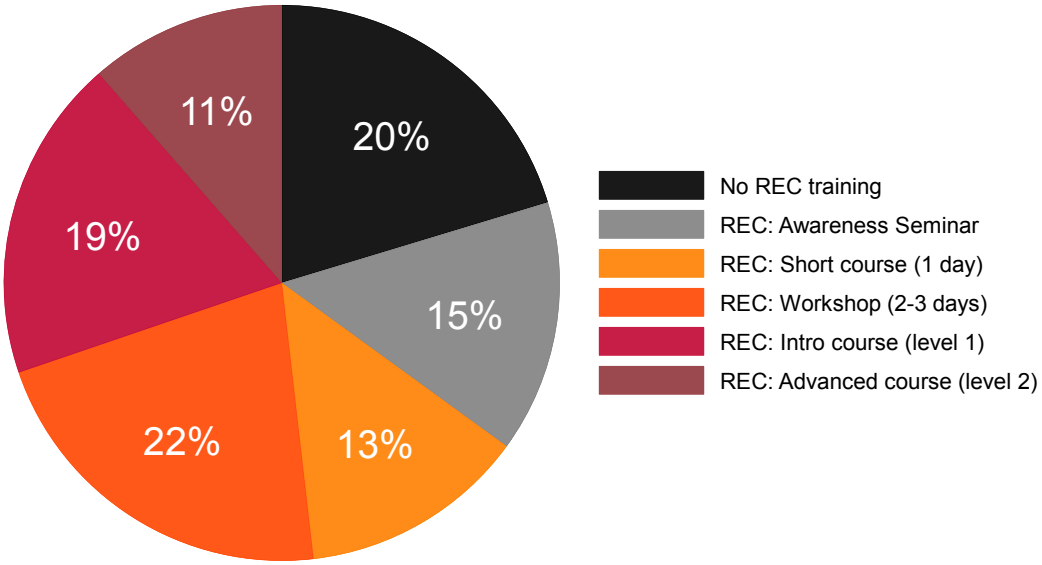
The panelists on average engages in their activities 37 days during a standard season, ranging from 0 to 206 days. and 8% tour 10 days or less during a season.

Photo: Eva-Lina Ytterbom

Skills and training

Recreational avalanche training

80% have participated in some form of recreational avalanche training. 30% of all panelists have formal recreational training. 15% have participated in an avalanche awareness seminar, 13% have participated in a 1-day course, 22% have participated in a field workshop, 19% participated in a REC I course. Finally, 11 percent have participated in a REC II course



Professional avalanche training

12% of the CARE panelists (N = 384) have some form of professional training.

14% of these are certified (IFMGA) guides,

23% have some level of training in snow analysis,

38% have training in organised search and rescue, and

28% have some form of instructor training

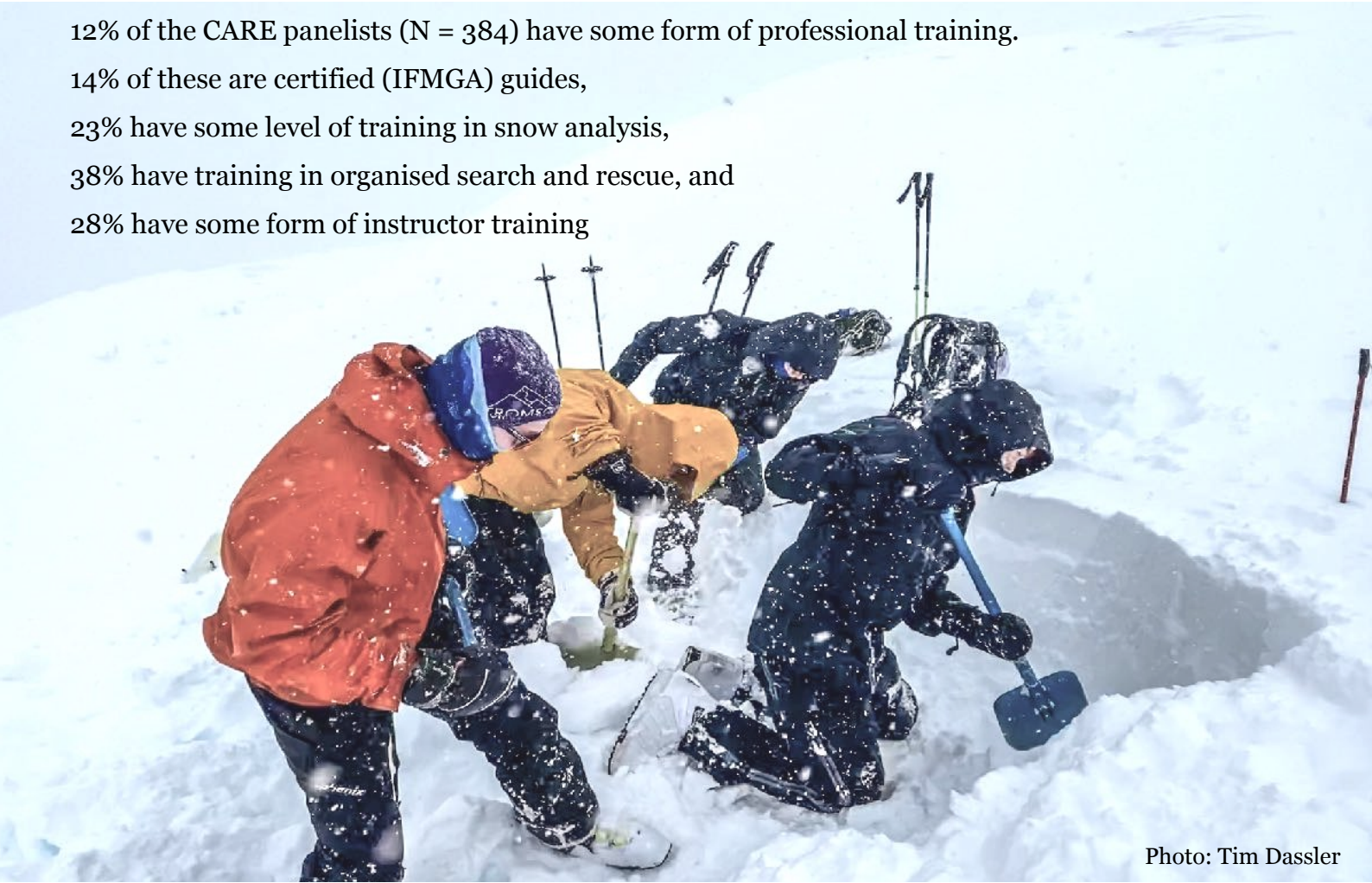
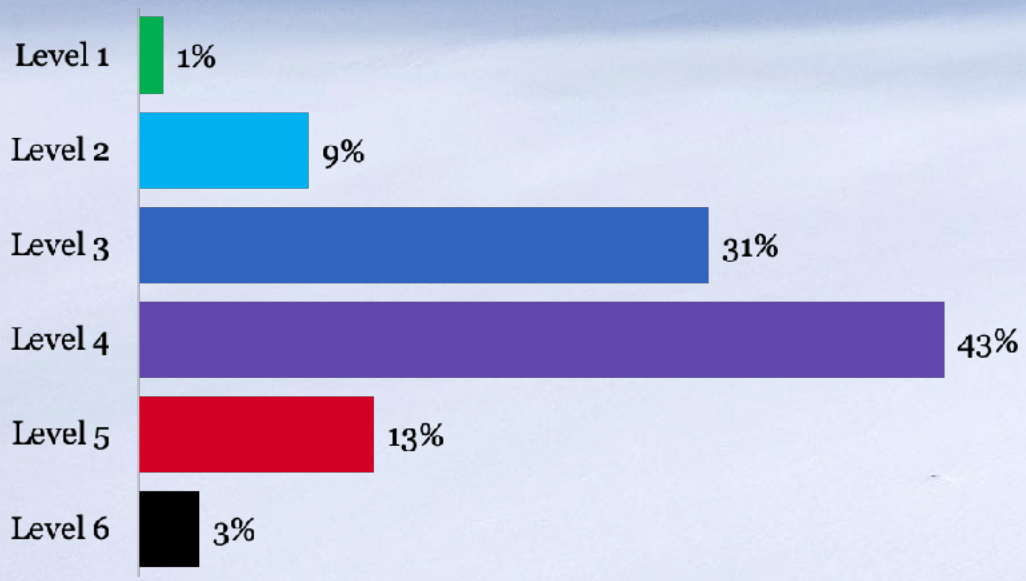


Photo: Tim Dassler

Skills in assessing and mitigating avalanche risk

We asked our participants to assess their skills in assessing and mitigating avalanche risk on a predefined scale from 1 to 6.

Scale for self-assessed skills in assessment and mitigation of avalanche danger	
Level 1	Does not have any experience in, or knowledge of, avalanche danger assessment
Level 2	AWARE that avalanche danger is assessed on a scale from 1 = low to 5 = extreme, and that most avalanches occur in terrain steeper than 30°. KNOWS that fresh avalanches are a sign of avalanche danger.
Level 3	*In addition to level 2:* AWARE of the different kinds of avalanche problems. Can identify key avalanche terrain (start zones, run-out zones, and terrain traps). Knows how to INTERPRET obvious warning signs (e.g., fresh avalanches, shooting cracks, whumpf sounds).
Level 4	*In addition to level 3:* UNDERSTANDS the difference between different avalanche problems. KNOWS and how to respond to these avalanche problems with their terrain choices. Has BASIC knowledge of how weak layers form in the snow. Has BASIC skills in techniques to detect weak layers in the snow, and less obvious danger signs (e.g., wind-loaded snow).
Level 5	*In addition to level 4:* at large UNDERSTANDS how weak layers in the snow are formed and develop over time. Has ADVANCED knowledge in techniques to identify and interpret weak layers in the snow for your immediate surroundings (LOCALLY),and can use the terrain to mitigate these.
Level 6	*In addition to level 5:* Has a PROFOUND knowledge of snow metamorphosis and avalanche dynamics. Is PROFICIENT in using information about weather and terrain to forecast the avalanche danger on a REGIONAL level. In other words, the individual's skills are on par with those of an avalanche forecaster. Can adjust terrain choices to mitigate the avalanche problem, regardless of the avalanche problem.



Self-assessed skill in assessment and mitigation of avalanche danger

90% say that they know how to identify avalanche terrain and can interpret obvious signs of avalanche danger.

59% report that they have basic to advanced knowledge of snow dynamics.

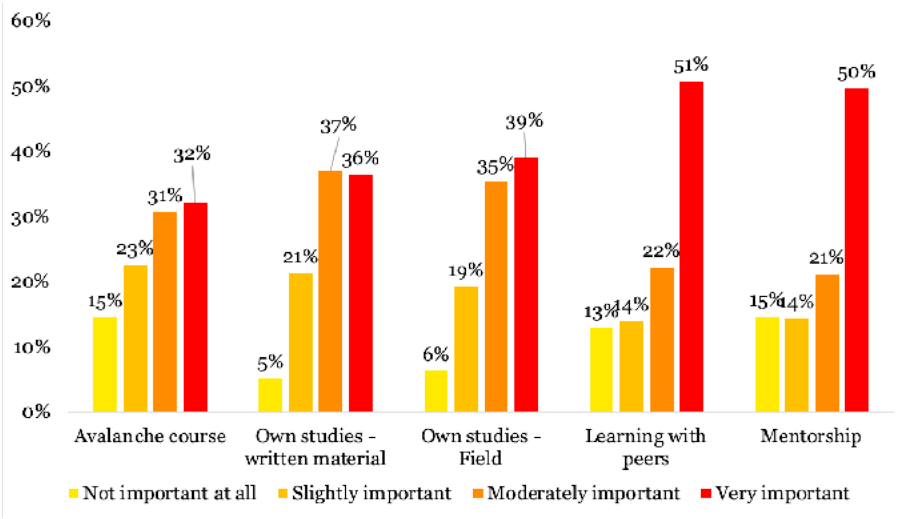
Photo: Andrea Mannberg



Learning resources

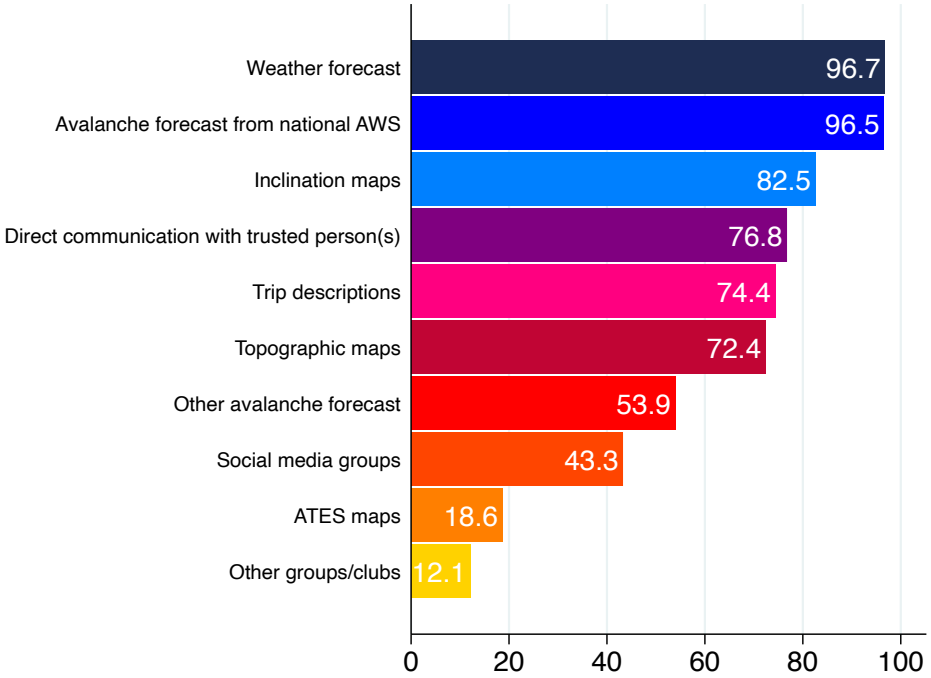
We asked the CARE panelists how important various sources had been for their development of skills in avalanche risk assessment.

About 50% of consider that either interactions with peers on a similar level or with more experienced mentors are very important for their own learning. In comparison, only 32% feel that organised avalanche courses are a very important information source for education.



Information sources

We asked the panelists what information sources they consult or turn to in the planning of a tour



97% of the panelists state that they typically consult national weather and avalanche forecasts when they plan a tour.

Avalanche bulletin user type

We asked the CARE panelists to describe their use of the avalanche bulletin,

Scale for self-assessed avalanche bulletin user type	
A	It is not typical for me to consult avalanche bulletin information (or any other source of information about the avalanche conditions) when making my backcountry travel plans.
B	I typically incorporate the danger rating into my plans to determine whether or not it is safe to travel in the backcountry
C	I typically combine the danger rating from the forecast with knowledge of how avalanche prone an area is to determine where to travel in the backcountry.
D	I typically make a decision about where or when to go based on: (a) the specific nature of the avalanche conditions reported in the bulletin, (b) where they exist in the mountains, and (c) whether I feel that I can manage my travel in the terrain given these conditions.
E	I typically use information about the specific nature of the avalanche conditions as a starting point for continuous assessment to confirm or disconfirm this forecast where I am travelling.

Most of the CARE panelists decide where or when to go based on the nature of the avalanche problem reported in the avalanche forecast, where the problem exists in the mountains, and where they feel that they can manage their travel given the conditions

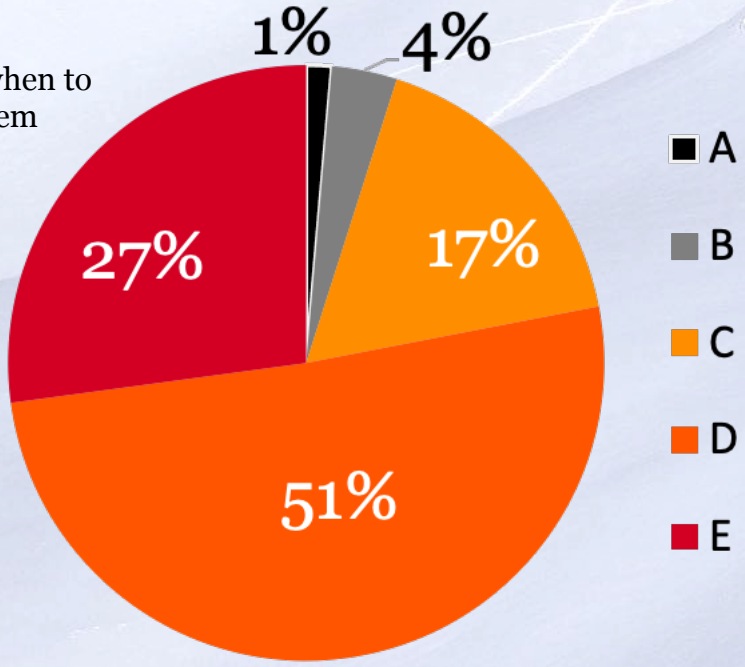


Photo: Andrea Mannberg



Photo: Tim Dassler

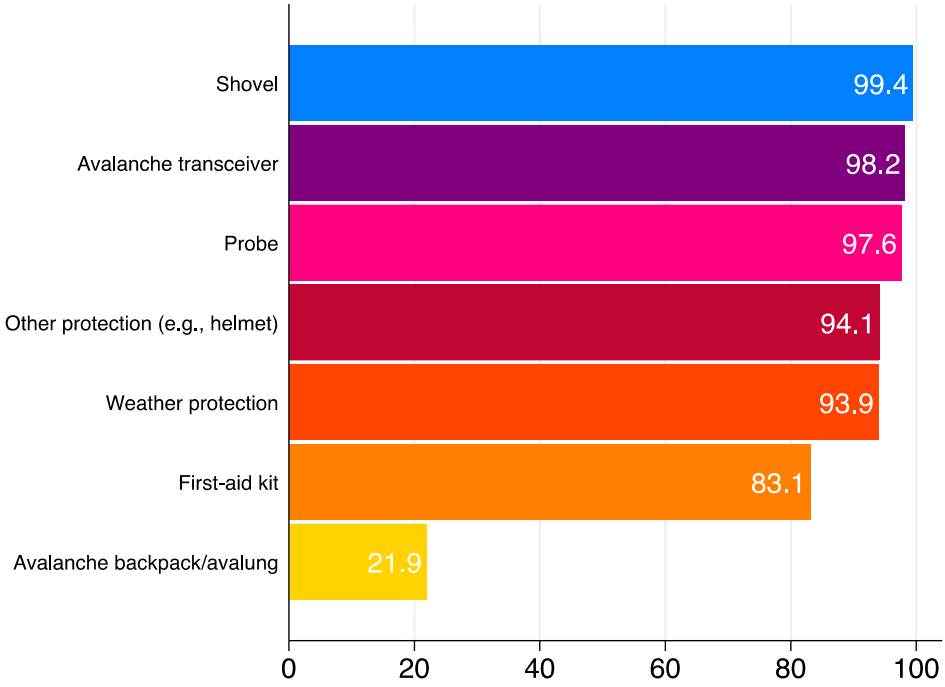
Avalanche equipment

Use of avalanche equipment

We asked the CARE panelists what type of equipment and gear they typically bring along when they go on tours. 1040 panelists answered this question.

Close to all state that they carry standard avalanche equipment (avalanche transceiver, shovel and probe). An overwhelming majority further state that they carry extra weather protection (e.g., extra clothes, wind sacks) and wear other types of protection (e.g., helmet, back protection).

83% carry first-aid equipment and 22% state that they use avalanche backpacks equipped with airbags or an Avalaung.



Practice with avalanche equipment

We asked the CARE panelists how many times they planned to practice with their avalanche equipment in the upcoming season, and how often they had practiced in the past season.

93% said that they planned to practice with their avalanche equipment at least once in the upcoming season. 74% did practice with their equipment during the past season and 51% practiced more than once.

People working in avalanche terrain did practice with equipment more than recreationalists. Overall, we find that higher recreational avalanche training is associated with more practice.



The median participant makes 31-40% of their tours in avalanche terrain.

Photo: Andrea Mannberg

Use of avalanche terrain

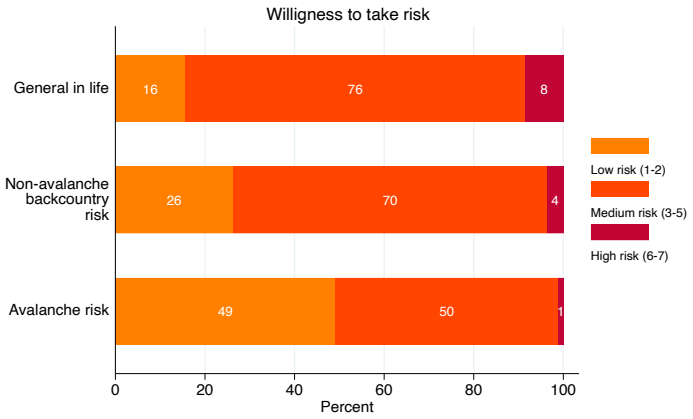
We asked the CARE panelists how often their activities take place in terrain where avalanches can start or that can be reached by avalanches (avalanche terrain).

Nearly all participants say that they make some tours in avalanche terrain during a standard season. 25% make less than 1/5 of their tours in avalanche terrain. 37% make over half of their tours in avalanche terrain. 9% make more than 8/10 tours in avalanche terrain.

Male panelists make a significantly larger share of their tours in avalanche terrain than female panelists do. We find no statistically significant correlation between share of tours in avalanche terrain and time spent in the backcountry (years and days per year).

Willingness to take risk

We asked the panelists how much risk they are willing to take in general in life and when they practice their backcountry activities. We separated backcountry risk into avalanche risk and the risk of having a non-avalanche related skiing accident (e.g., falling or crashing etc.). The scale went from 1 to 7.



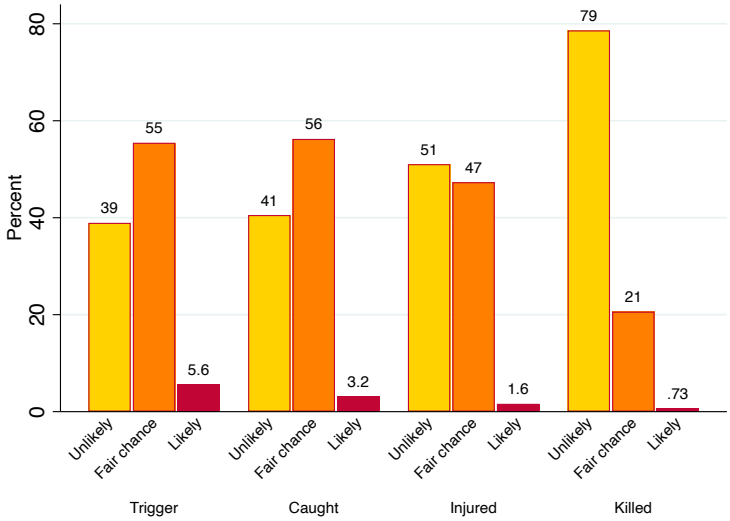
The panelists are significantly less willing to expose themselves to avalanche risk than to other risks in the backcountry. Only 1% say that they are willing to expose themselves to high avalanche risk.

Perceived risk exposure

We asked the panelists how likely they think that themselves, sometime in the future, will trigger, get caught, be injured/fully buried, or killed in an avalanche (scale 1 = Very unlikely to 7 = Almost certain).

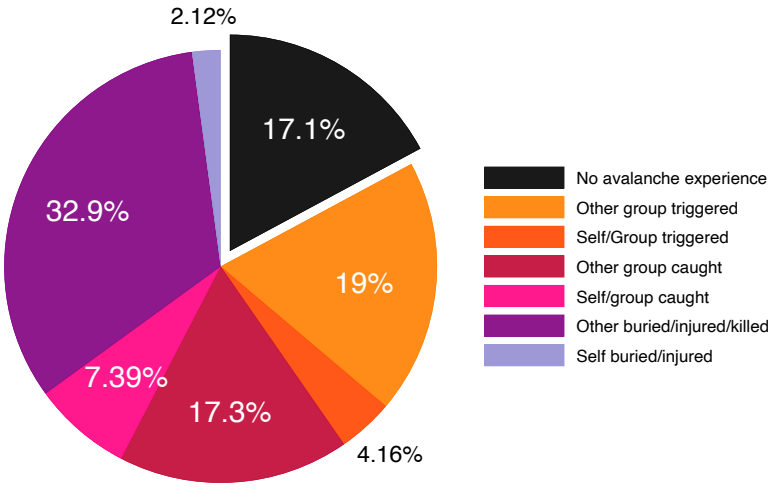
About 50% of the panelists thinks that there is a fair chance (scale levels 3 - 5) that they will trigger, get caught or injured in an avalanche.

Few participants think that it is likely (scale levels 6 - 7) that they will be involved in an avalanche incident



Experience of avalanche incidents

2449 participants have provided detailed information about their avalanche experiences.



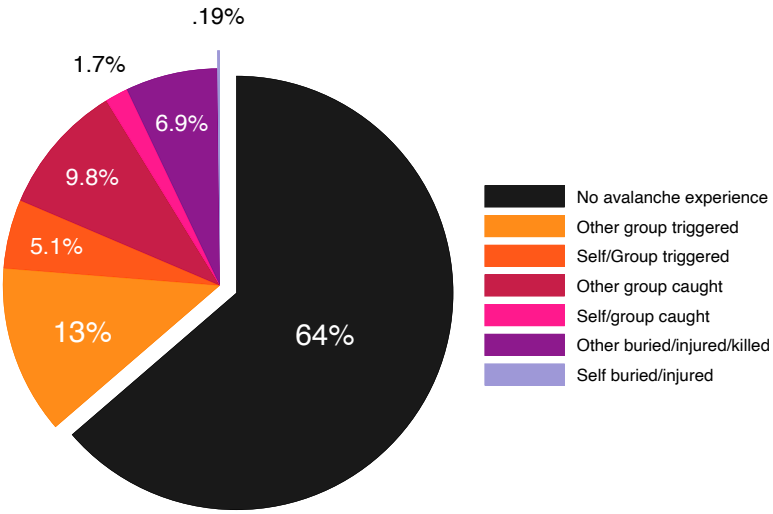
Avalanche experience during lifetime



83% of the participants have some form of experience of avalanche incidents

26 % of the participants have been in a situation where they, or someone in their group, triggered or were caught in an avalanche. 33% knows someone or have been on a tour where someone was buried, injured or killed in an avalanche. 2% have personally been buried or injured.





Avalanche experience during 2020/2021 season

36% had experiences of avalanches during the 2020/2021 season

1049 panelists have provided information about their avalanche experiences during the 2020/2021 season. 36% of these had some form of avalanche experience during the season. Two of the panelists were injured in an avalanche.


Photo: Martin Stefan

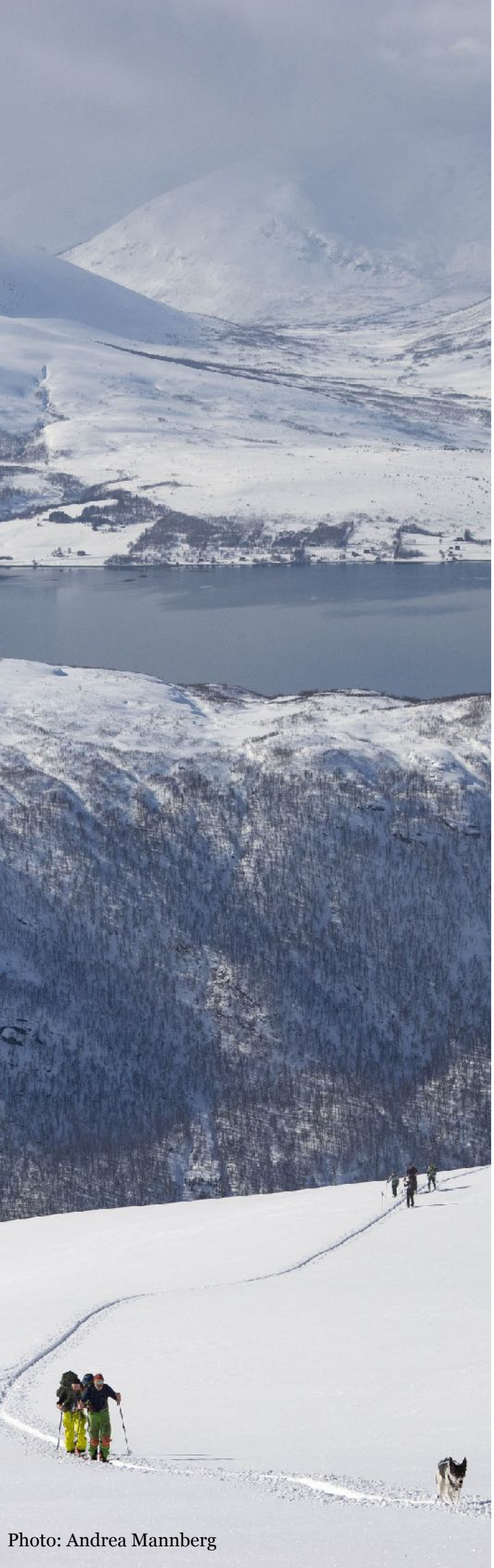


Photo: Andrea Mannberg

GPS-study

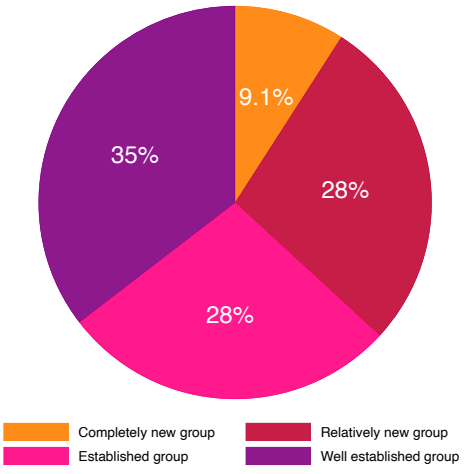
444 panelists logged 607 tours during the season 2021/2022. We have valid GPS tracks from 320 tours.

Most of the participants logged backcountry ski tours. Five of the tours represent free riding on snowmobiles.

The median tour logger is a male who assess that he can handle steep terrain in almost all snow conditions and has basic skills to detect weak layers in the snowpack.

There is a substantial spread in both self-assessed avalanche and travel skills among the people who logged their tours.

There is also a large spread in group composition. Nearly 40% of the tours represent groups with little or no previous experience of travelling in the backcountry together.



People who logged tours usually travelled in groups of 1 to 4, but about ten tours were made in groups of 10 or more. One group had 27 members.

We asked the participants to guess the time they had spent in start zones for avalanches.

For participants who sent in GPS tracks, we can compare this guess to the time actually spent in start zones.

None of the tours with GPS tracks avoided start zones altogether

The median tourer spent 30 minutes in start zones for avalanches during a tour.

Groups with little experience of touring together spent equally much time in start zones as relatively established groups.

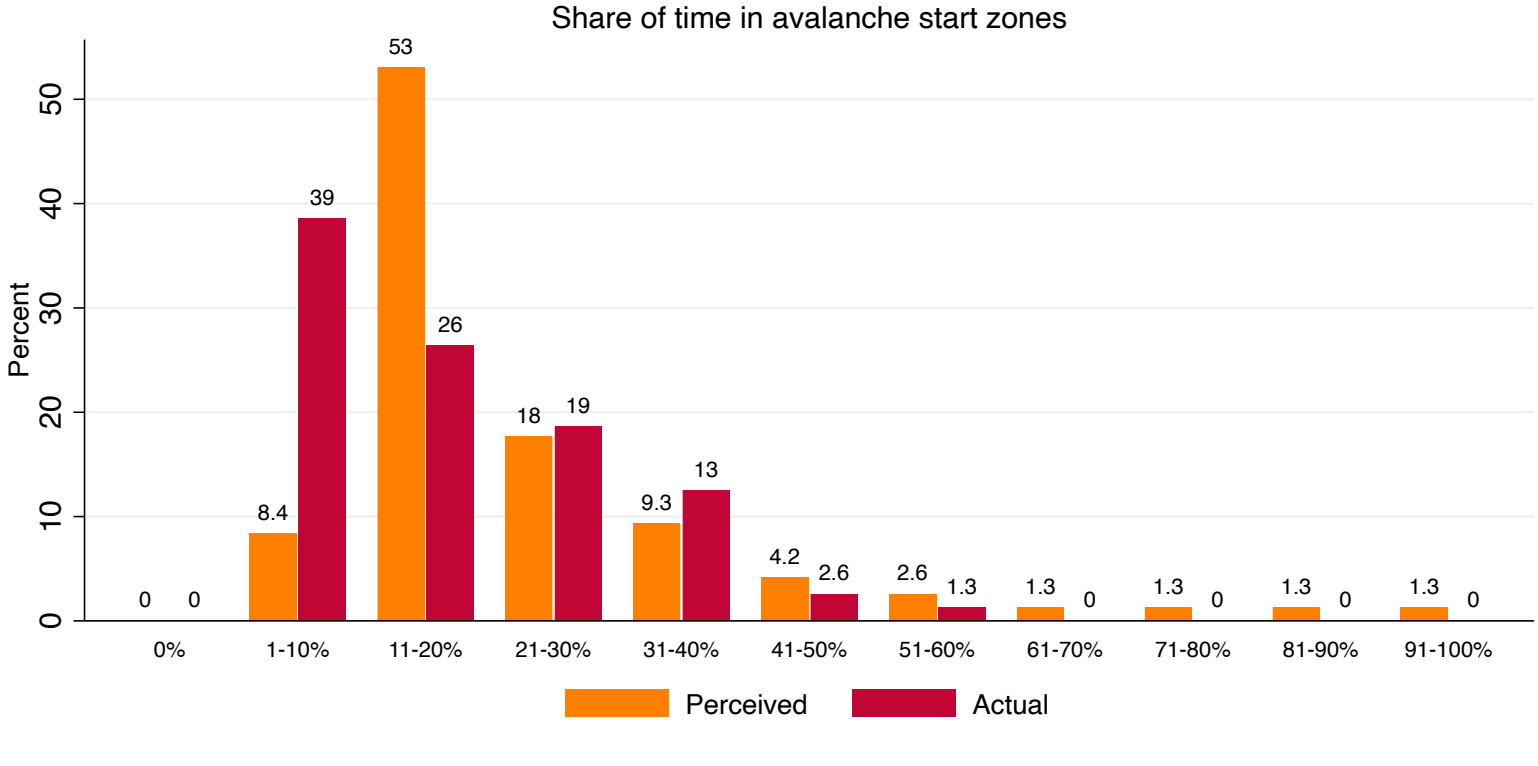
We find no correlation between group size and time in start zones.

17% correctly assessed the time they spent in start zones.

51% overestimated the time they spent in start zones.

32% underestimated the time they spent in start zones.

Photo: Andrea Mannberg



Avalanche incidents

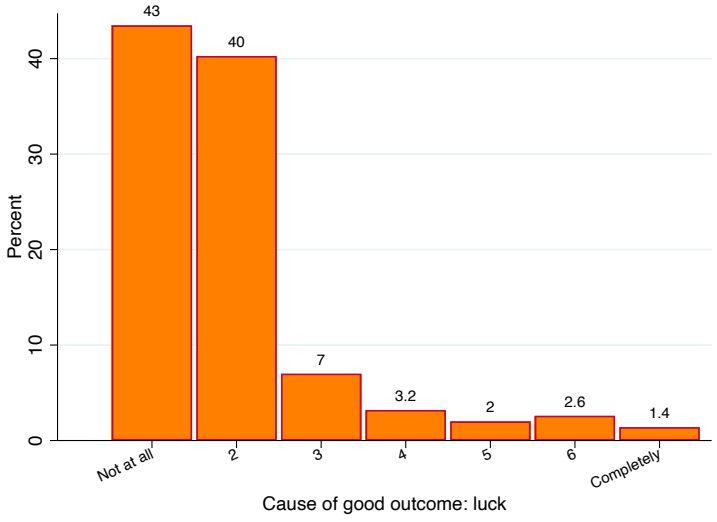
Very few tourers experienced avalanche incidents on their tours.

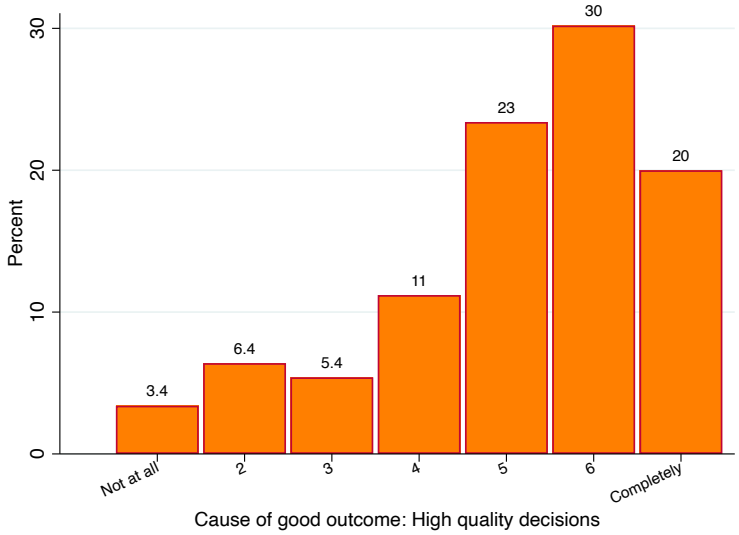
Avalanche incidents, where someone in the group trigged an avalanche, occurred on 12 tours. Two groups saw other groups who triggered avalanches. One of the participants in the GPS-study got injured in an avalanche accident.

97% did not experience any avalanche incidents during the tour

Skill or luck?

Most of the participants, who did not experience an avalanche incident, attribute the outcome to skill. Very few attribute the outcome to luck





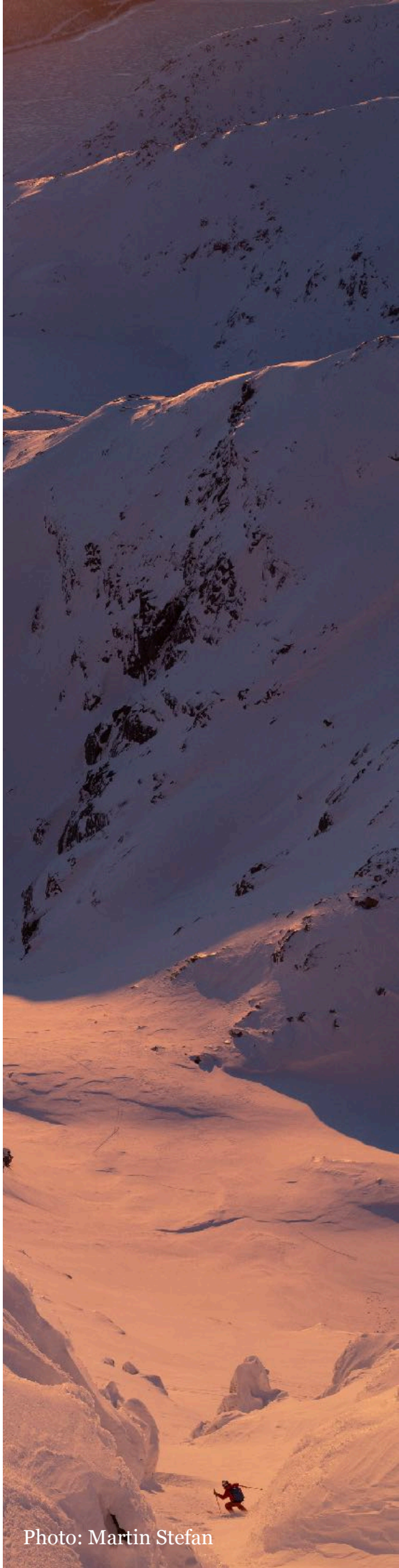


Photo: Martin Stefan



Summarizing the CARE-panel

The CARE panelists span from beginners to very experienced riders, and the demographics amongst the participants are broad. The variation in age, experience level and activity days per season is significant. Although the CARE panel includes a diverse participant group, it is not conforming as representative sample of the backcountry community at whole.

A big share of the participants has some form for recreational avalanche training, as well as 90% state that they interpret signs of obvious avalanche danger. Considering that most panelist tours are done (at least part of) in avalanche terrain, the answers indicate that the CARE-panel in general is confident in their self-assessed skill perception. The tour characteristics from the GPS-study substantiates this.

The answers presented, suggests that a relatively large share of the CARE panelists have experience of avalanche incidents, and that a fair number of participants experience avalanche incidents each season. This (surprisingly?) high number may be due the selection into the panel and should not necessarily been seen as representative for the backcountry community at large.

Photo: Andrea Mannberg