Abstract
Professional ski and nature guides, as well as outdoor educators, have a considerable amount of time in exposed avalanche terrain. This paper focuses on the special human factor challenges that these groups face. This ongoing study aims to describe the demands that ski guides experience with commercial groups of clients. Further investigations are taken to demonstrate how human factors complicate decision-making related to avalanche safety and it describes different strategies the guides use to reduce the negative interference.

KEYWORDS: Human factor, guiding, Friluftsliv, avalanche, commercial demands

1. INTRODUCTION
The point of departure is observation of three specific kinds of situations where such demands complicate the safety decision process: A) Client demands: When clients create a pressure to do steep skiing or reach a specific peak under unsafe snow conditions. B) Guide status: Pressure in the guide community to stretch the safety limits in order to establish or increase personal status. C) Profit demands: Many guide companies have low profit, which means that they are dependent on every income activity, and cancellations because of weather and snow conditions are avoided. A theoretical framework is presented, which includes studies and research that address the human factors and decision making. Special attention is put on “friluftsliv” as a Scandinavian concept and the transparent discursive models based in Norwegian friluftsliv tradition. We explain our research methods and present and discuss our preliminary findings.
This study is a part of an ongoing national project aiming to develop a risk management system for nature based outdoor activity businesses in Norway. The project includes approximately ten businesses, five of which have backcountry skiing as an important product.

2. THEORETICAL FRAMEWORK
2.1 Human factors and decision making
Recent year’s studies on the human factors related to avalanche accidents highlight a psychological approach to decision making in avalanche terrain (Tremper, 2011). Traditionally, there are two different perspectives on decision making, which in the next step effect how guides can deal with risk decisions relating to avalanche danger.

2.2 Controlled and rule-based decision making
This classical approach requires that decisions are based only on a rational and cognitive process where the guide analyses the consequences of the alternatives that they face and mathematically locate the alternative where one expects maximum achievement (Beach & Lipshitz 1993). Rule-based methods have been criticized for creating a simplified view of the natural conditions and thus do not assimilate enough information to make a thorough decision. Nature is complex and cannot be simplified into rules without missing important background information to make the right decisions in avalanche terrain (Lundberg 2012).

2.3 Automatic and experience-based decision making
Another approach is that the decisions are made automatically and quickly without using any cognitive resources. The decisions will then be taken on the basis of heuristics: emotion, intuition, previous experience and pattern recognition. This approach to decision-making has been criticized for leading to undesirable biases with a negative impact on decisions. An important clarification is that expertise is a critical factor, whether people make decisions based on an automatic or controlled approach (Tversky & Kahneman 1974). Experts,
such as competent ski guides, carry a unique experience base and knowledge of the subject, meaning situations will then be recognized as patterns for a basis on decision making. A novice can only see what he has in front of him, while the expert will be able to look beyond the surface (Kahneman & Klein 2009).

2.4 Heuristics - mental shortcuts
Heuristics can be defined as methods of arriving at satisfactory solutions with modest computation (Simon 1990). In avalanche context McCammon (2004) describe six heuristics: Familiarity, Consistency, Acceptance, The Expert Halo, Social facilitation and Scarcity. He found that these mental shortcuts applied equally to experts as they do to beginners and works on an automatic level and they can unconsciously cause wrong decisions.

2.5 Risk taking and personality
A study from Utah (Furman et al 2010) on skiers indicates that risk-taking is a factor that has influence on the decision to ski a slope or not, and that it is important for each individual to have an awareness of both their willingness to take risks and how it may affect the group’s decision-making process. Other studies indicate that risk takers being over represented among adventure guides (Cater 2004). This links to another finding indicating that clients seem to be heavily depended on or obedient to guides when they lack skills and/or knowledge about the activity (Rokenes, Schumann and Rose, 2015) meaning that risk decisions may be effected, for example, in relation to the use of mental shortcuts. The extent of mental shortcuts can be minimized through an awareness of decision-making in avalanche education and more knowledge about the evaluation of risk factors in critical situations. In such a way, one can build up a mental defense to go in heuristic traps (McCammon 2004). Ajzen (1991) points out that attitudes and intention can override habit located in heuristics familiarity if they are strong enough. DiGiacomo (2007) draws in the importance of good and communicated values. This paper will investigate the how guides use the transparent discursive models based in Norwegian friluftsliv traditions to meet the challenges of this complicate decision-making related to avalanche safety, and we evaluate in what degree this might reduce the negative interference of these human factors.

2.6 The philosophy of Scandinavian friluftsliv

Friluftsliv is loosely translated to an experience-oriented activity in a natural environment. It also represents a continuation of an older harvesting tradition involving activities such as hunting, fishing, and berry collecting (Faarlund 1974). In friluftsliv, the nature experience itself is the central goal, and has remained salient in Norwegian and Scandinavian culture. To some degree, it can be contrasted to outdoor activities or adventure education in many other western countries where activity skills are more focused. To be more specific, friluftsliv is outdoor activity put into an eco-philosophical context as a deliberate pedagogical means of achieving a life in harmony with nature (Haslestad 2000). From an eco-philosophical perspective, the human soul is slowly integrated with the soul of the natural surroundings (Ness, 1991). In Norway “friluftsliv” is referred to as a separate discipline, an activity, a teaching and learning method, and a pedagogical tool (Haslestad 2000). Friluftsliv is integrated in formal education in Norway. In elementary schools, the aim of teaching friluftsliv is to develop a nature friendly lifestyle whereas in higher education, friluftsliv has existed as an independent subject educating friluftsliv (outdoor activity) teachers since around 1970. The last decades, many candidates with formal friluftsliv competence are also recruited for jobs within tourism and rehabilitation.

2.7 Transparent discursive models based in Norwegian friluftsliv traditions
The overall objective of the health, safety and environment work (HSE) is to control or manage risk. Traditionally HSE work has had a technological and instrumental base where risks are identified, analyzed, and in the next step, it is developed to standard operation procedures or rules to lower or even avoid the risk. In some contexts, this stands in contrast to the friluftsliv approach of risk. Safety and the environment are key issues in friluftsliv, but handling risk is concentrated around active participation of all members, and knowledge based discussions that deal with the high complexity and large number of variables that affect risk. This transparent discursive leader model aiming for safe leadership has some important elements that affect how guiding can be performed and will be further presented in the text.

2.8 Inclusive tour planning “Ferderåd”
The guide gathers the guests in a circle where they are involved in trip planning and the guide’s decisions. The guests are included and made
aware of their personal responsibility through a transparent and open form of decision-making by the guide. This is done not only to look at what route the group should follow and what equipment is needed, but also to try to create an insight into the “totality” one could be in during the guided trip. Guests also receive the opportunity to present themselves and express their expectations for the trip, thus group interaction gets a good start.

2.9 Group interaction and involvement

A good group interaction can be important for safety to prevent wrong decisions related to the human factor (Tversky & Kahneman 1974). The guide must be able to understand group processes and how they work in relation to a group on the tour to go smoothly. The involvement of participants or clients throughout the day is common practice, where both the experience element and the risk element is discussed in the group (Faarlund 1973, Andersen & Rolland 2016). In this connection, it is important to talk about responsibility limits between the group and the leader (Andersen & Einang, 2015). Leaders of groups in nature have a responsibility as long as participants follow the normal procedures and precautions that are communicated. An example of this is the cornice accident on Storhaugen in Nordreisa winter 2013 (NGI). The backcountry skiing guide had perceived that there was a cornice, but it was too weak to ski over. This was communicated to the guests, and the guide marked the cornice up at the top. One guest did not follow the guide’s limitations, and ended up dead due to the collapse of the cornice. Despite the guide’s clear warning, the guest broke the routine and thus had a responsibility for putting himself in danger.

2.10 Experience and competence

The guide with safety responsibility for groups in nature must continuously assess the situation and rapid situation changes. This requires skills to recognize and act right in the situations that arise. The leader must not only understand individual risk factors, but also the totality of the situation. There are not satisfying answers in any book or blueprint on the different situations a guide will meet in nature. The best answers are found in the experience the guide has, his ability to see and perceive a complex situation and the ability he has to make the right decisions (Andersen & Einang, 2015).

2.11 Action Competency “Handlingskompetanse”

The guides profession is complicated in the meeting of diverse nature and different people from different cultures. Competence requirements should therefore be open and dynamic, with a focus on that the competence appears in action. Action Competency could be an appropriate term for this safety expertise of a guide. Action Competency can be understood as the competence to act right in relation to established knowledge and rules, but also have the ability to act properly in a situation where “normal procedures” and “old competence” do not work. An important part of friluftsliv competence is for the guide to constantly and instinctively analyze the situational risks and consequences. The guides have to ask themselves, what could happen, what are the consequences and what will I eventually do (Tordsson 2005). A definition that also represents this approach to leadership competence is found in the Organization for Economic Co-operation and Development (OECD) project DeSeCo (Definition and Selection of Competencies). Here they describe competence as “the ability to master a complex challenge or perform a complex activity or task” (DeSeCo, 2002 s3). Similar views are found in Report. no. 30 ”Culture for learning” that relies on the same approach to the concept of competence. “Competence is understood as what you do and get in the face of challenges” (Report no. No., 30 (2003-2004), p 31). Here it is primarily highlighted on the expertise they have in the face of challenge, consisting of a set knowledge, attitude and skill.

To build this competence to act right, it is essential to have experience gained from various situations. These are skills that cannot be taught theoretically, but instead requires experience from a variety of situations under different conditions in the field, where one has learned to see the situation and to see possible alternatives for action. This implies having the ability to choose an action that would be correct, or best, given the risk situation. Central to the guide’s expertise must be to learn to not lock themselves in advance with scheduled form and procedures, but rather practicing to see possible solutions in new situations. This is in order to make the best actions in critical situations (Andersen & Einang, 2015), Andersen & Rolland, 2016).

3. METHODE

The data collection is done by participating observations, case studies and workshops where guides
and business managers discuss and share experiences. In addition, interviews have been done with guides and clients.

4. PRELIMINARY RESULTS AND DISCUSSIONS.

Our data indicates that three different kinds of pressures are present and to different degrees affect the decision making process.

A) Demands from clients
All the guides that have been talked to recognize this form of demands, and they have thought through how to deal with it. Some reports indicate that client demands are more common when there are different views on simple disputable matters compared to knowledge demanding matters such as avalanche safety. In most cases, clients accept the guide’s knowledge and want the guide to make safe decisions, and give them a relief from the responsibility of being part of such a critical and complex matter. On the other hand, one guide mentioned an interesting phenomenon. In backcountry skiing, the client, especially an experience one, tends to oversee the guide’s directions and forgets situational agreements; for instance, where to stop during downhill skiing and in which order to ski. This means that the skier’s eagerness to experience fun skiing overrule safety and guide directions, meaning that guides must be very clear in their communication in order to avoid unwanted behavior. Some guides reported that the feeling of responsibility and their awareness of the danger forms a much stronger kind of pressure compared to the pressure the get from clients demanding to ski steeper. Thus, they tend to act more conservatively than the objective information about avalanche danger indicate. Interviews also prove that there is another kind of pressure that is sometimes more important than client demands — the pressure they put on themselves relating to the goal of giving clients a peak experience. Many guides get the feeling of mastery when they observe that their own guests get peak experiences. Guides tend to take risky decisions to achieve this goal, even though the clients do not claim or signalize specific demands. Other factors worth mentioning at this stage are indication of men being more demanding than women are, and experienced/skilled skiers are more demanding than beginners.

B) Guide status: Pressure in the guide community to stretch the safety limits in order to establish or increase personal status
Not surprisingly, it was more difficult to document this kind of pressure — it is harder to admit. The guides recognize the problem, and they admit that it creates a good feeling when you are the first to take clients through a difficult ski line or chute. They agree that it creates status. On the other hand, it is argued that it is more important for a guide’s status and self-picture to never bring clients into an avalanche incident. If that happens, the guide himself or the company are out of business. This means that the fear of making the wrong decision and the strong feeling of responsibility affect the decisions stronger than the wish to increase their own status.

C) Profit demands: Many guide companies have low profit, which means that they are depended on every income activity, and cancellation because of weather and snow conditions is avoided. Data indicates that this is a less important factor relating to what is creating guide pressure. Some guides report missing investment in safety equipment. One guide said that he does not demand beacons to sign up for tours, but in such cases he will not take the clients into dangerous terrain. This means that profit demands may do not affect safety, but it might affect decisions related to accept a tour request. It has not been documented clearly that profit demands affect safety decision making, but there are still some indirect indications of this being a problem. A Norwegian guide told a story from a guided tour in the European Alps. These guides did not know that some clients spoke their language and they had an internal discussion where it was very clear that the conditions were unsafe. They considered cancelling, but to the clients they said it was undoubtedly safe and the tour was accomplished. We have also been told that many guides have long working hours and some companies hesitate to employ extra people because of profit demands. This can affect decisions at least in two ways. First, it can complicate the situations because guides have to handle bigger and more heterogeneous groups. Second, the guides can be tired and less able to make wise decisions in critical situations. In other words, lack of surplus.

The guides participating in the workshop claimed an interest of meeting other guides to discuss safety issues. Pressure from risk willing guests is clearly addressed as an issue, as well as how different risk taking profiles of guides affect decisions. Lastly we will mention that many of the guides we have talked to, claims that there is a culture difference between guides from different countries operating in the same mountain areas doing backcountry skiing. This means that we in our future work have to take a closer look at this variable.
4.1 Handling strategies and solutions

In general, the Norwegian ski guides are using an approach to risk, safety and HSE based on the transparent discursive models based in Scandinavian friluftsliv traditions. Possibly the most important in relation to not let the pressure from clients, profit demands and hunt for status influence safety decisions is “inclusive tour planning ("ferderåd")” and transparent guiding. Specifically, this means that the clients are involved in the decisions, and thereby made responsible for personal safety and awareness. Through the feedback from the guests in the case study of Lyngen, one can observe that this does have a risk reducing effect. After the trip, the guests explicitly mentioned that inclusive tour planning and clarification of experiences at the start of the trip was valuable. They also claimed that involvement and transparency related to the different decisions during the day and the choice of route made them feel safer. This was on a fairly challenging day with poor visibility and skiing a long route in sometimes complex terrain. The guide is steering the discussion through his competence and makes the safe decisions obvious. In addition, he is transferring knowledge and ensuring the clients fully understand and support the decision that he made before the meeting. Through the discussions and transfer of knowledge, the safety decisions become more binding and legitimate compared to one-way guide instructions. In many ways, it eliminates possible conflicts and ad-hoc demands that otherwise may occur up in the mountains.

The guides were also communicating from the very start that the aim of the tours is not a specific summit, but rather to follow what the nature gives, seeking good snow, pleasurable experiences and the feeling of being connected to nature. This approach requires less goal orientation, and for some guests, a process of changing the focus from getting there to being here is highly beneficial when following the friluftsliv philosophy of being one with nature (Haslestad 2000, Ness, 1999). For the skiing guide, this was a preventive measure to reduce the risk pressure, as well as an aim bigger than reaching the summit, but rather to follow what the nature gives. This approach requires less goal orientation, and for some guests, a process of changing the focus from getting there to being here is highly beneficial when following the friluftsliv philosophy of being one with nature. The aim of convey the philosophy of friluftsliv and use the guide situation as an opportunity, is to cautiously connect the guests closer to nature, the landscape and the traditions of the region. The group staying with the ski guide for several days adapted to this approach and after the trip claimed that this philosophy (as the guests called it) was one aspect of the guiding that they appreciated. The clients respected the approach of letting nature and conditions govern the choice of route and daily plan. They liked that the guide in front had introduced the guests to safety thinking in a broader, slightly more philosophical anchoring.

This approach to the skiing guest did seem to serve as one strategy of safety that could reduce the demands from the guests and also provide an additional and unexpected client (customer) value. This approach to nature and goal of the guided tour also has a link to McCammons heuristic trap related to consistency where lack of flexibility may lead to unsafe decisions because new information during a tour are neglected (McCammon 2004). On the other side this approach can be seen as an opposition to the very nature of offering commercial guided trips, were the product the guide is selling is safety in complex situations. With this approach, the guide could meet challenges of status among other guides, lose clients and have economic difficulty. In this case, there were no indications for this happening, but the guide did also underline that this method requires that, if the nature allows good weather and snow conditions, they would aim for more challenging skiing. In other words, the guide will be sensitive and positive to client demands (wishes), if it is safe.

Tour and guest’s capability is an important matter in commercial context. Many guides define this as one of the biggest challenges, because they do not have control of who will participate on a tour (Vold 2015). Very often, they experience group heterogeneity in relation to both skills, fitness and attitude towards risk, which in the next step creates various client demands and in fact, a situation where what is safe varies from client to client. Since safety also is dependent on skills and fitness, this increases the complexity in safety decisions. The observed strategy for handling this problem is to first, analyze the diversity of the clients before the trip. Guides do client tests early on the tour (get an overview of skill level), spend time during the tour to teach the clients important skills (as kick turns when climbing steep terrain) and sometimes split the groups during the tour to create two homogenous groups (Rokenes et al. 2015).

Handling demands from clients is most commonly effected by the guide’s knowledge, experience and action competence. So far, the observed guides along with the others interviewed, have all extensive experience. This means that there is lack of information about how fresh guides are effected by the demands and how they deal with them. An-
other point of interest for further studies is how action competency is adequately developed among professional guides.

5. CONCLUSIONS

This paper does emphasize an approach to safety used by multiple ski guides in Norway, but also uses some observations and interviews collected in USA, France and Canada. The paper claims that this (Norwegian) approach is built on the safety values and methods from the Scandinavian Friluftsliv tradition. From our field studies, it is revealed that this approach does have some strategies of safety that could, in some degree, meet the human factor points of client demand, guide status and profit demands. So far, our field studies and interviews indicate that client demands, status and profit demands are relevant for the guide’s decision-making. However, it does not indicate clearly that they have a substantial effect because guides are aware and they have made necessary precautions to prevent this from affecting safety. On the other hand, also other driving forces effect safety both negatively and positively. For instant some guides feels that their own wish to give the clients a peak experience forms a kind of pressure that may lead to unsafe decisions. At the same time, the strongest and present demand is related to the feeling of responsibility and fear of accidents. Obviously, this field of study is still very much unrevealed and needs more investigations.

REFERENCES


Andersen, S. & Einang, O. 2015: Risiko og Læring i Isbjørnmøte. Kroppsøving (3) s. 18-21


DESECO., 2002: Definition and selection of competencies (DESECO): theoretical and conceptual foundations. Directorate for Education, Employment, Labor and Social Affairs, Education Committee, OECE.


