

# Risk Compensation Leads to Lost Lives

A Sociotechnical Research Paper  
presented to the faculty of the  
School of Engineering and Applied Science  
University of Virginia

by

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April 6, 2021

On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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## **Risk Compensation Leads to Lost Lives**

Participation in outdoor activities across the United States is rising due to social distancing regulations required in response to COVID-19 (Brassil, 2020). While this is an effective way to stay active and safe during the pandemic, the wilderness poses other dangers. From 1985 to 2017, the number of search and rescue (SAR) cases called in to the U.S. Coast Guard decreased by 74 percent. Yet within the same time frame, the “lives lost” count has only decreased by 54 percent (BTS, n.d.). This discrepancy begs the question: What is limiting reduction of the number of “lives lost”?

Though SAR capabilities steadily improve, the number of calls and operators needed continues to rise (Brown, n.d.). Hikers’ perceived risk may vary widely from their actual risk. When hikers are aware of safety measures, they perceive less risk. Hikers tend to compensate by taking greater risks, a behavioral response that negates some of the benefit of the safety measures. This effect is called *risk compensation* (Lund & O’neill, 1986). As hikers’ perception of risk goes down, decisions they would have regarded as rash become regarded as reasonable. To members of the outdoors community, safety is but one value in competition with others. Among hikers, the experience of natural majesty is worth risk (Parmeter et al., 2018), and to some, risk itself is an attraction.

Participants include two main classes of adventurers: thrill seekers and the risk-minded. Thrill seekers are often prone to taking risks and braving dangerous conditions because “they had committed to making it all the way through” (Hanks, 2014). The risk-minded are more likely to take measured risks and rarely overestimate their abilities. In a risk-minded hiking guide, Montem (2018) recommends that prospective hikers “think carefully about your capabilities

before selecting the best trail.” To the risk-minded, hikers must not exceed their capabilities; thrill seekers strive to increase their capabilities by exceeding them.

This leads to difficulty in assigning responsibility for hikers’ safety; park authorities want hikers to be responsible for themselves while hikers want others to protect them. Among hikers, the appeal of risk and the improving capacities of digital navigation and search-and-rescue techniques may motivate dangerous actions. Consequently, hikers and park authorities must compete to establish worthy and unworthy hiking risks, as well as responsible and irresponsible hiking practices. In an effort to prevent injuries or fatalities in the outdoors, park authorities are working to shift responsibility for safety to hikers. However, some efforts to encourage safe behavior may encourage more risk-taking among specific hiking groups.

## **Review of Research**

Researchers have studied risk taking and risk compensation extensively. Lund and O'Neill (1986) found that as safety features in cars increase, so do the risks drivers are comfortable taking. 11 years earlier, in a 1975 work, Sam Peltzman came to a similar conclusion when he found “...the only response of drivers to safety regulation has been to have more severe accidents...” A direct parallel can be drawn between this finding and the question at hand for hiking safety. The more SAR and other safety measures are developed, the more extreme risks adventurers take. This leads to a risk compensation problem, where extra measures need to be employed to impress responsibility for safety back onto hikers.

She et al. (2019) studied how hikers’ perception of risk influenced their choice of routes, finding that perceived physical risk often deterred hikers, but that psychological feelings, like fear and danger, are attractive. These feelings are amplified by risk-takers in the hiking

community and social media audiences rewarding risk taking among outdoor adventurers (Brassil, 2020). According to Young (2018), “Once danger is perceived, how people react varies”. This leads some hikers to retreat from danger and others to embrace it.

Public health campaigns are familiar to the outdoor community, so several studies have been conducted to test their effectiveness. A study by Girasek (2019) explored their effectiveness by putting up a sign deterring hikers from entering a dangerous river on alternating weekends. This sign threatened a \$200 fine for violating its rule, and it was observed to reduce the number of people who entered the river by 63% compared to a standard warning sign. Signs like this appeal to the fear of repercussions in the visitors that see it, and it resulted in a statistically significant reduction in people who entered the river. In another study, Winter (2006) compared types of messages used to keep people from hiking off-trail. They found that when people were presented with an injunctive-proscriptive sign, indicating incorrect behavior, 5.1% of people ventured off trail, compared to 30.9% during the control scenario when no sign was used. This sign fits the “self-efficacy” category of public health campaigns, where the participant is given all necessary information to make the correct decision. It was more effective than the other signs used, which fit the “social-norms” campaign, where the participant is encouraged to behave as members of a selected group do. However, during a social-norms campaign, it is more effective to state that others do some action than to say that others don’t do it. This study focused on conservation of the sequoia trees in Sequoia & Kings Canyon National Parks, but the findings on types of messages are equally valid in terms of safety. Self-efficacy resources are commonly made available for hikers and would-be hikers, with information like the weather forecast, trail difficulty, and recommended gear for a particular adventure.

## Fear Appeal

Parks currently employ a variety of fear appeal campaigns in an attempt to make parks safer. An example that parks have utilized for decades is warning signage. The sign pictured in Figure 1 informs hikers of previous hiking fatalities on Precipice Trail in Maine and encourages



Figure 1. A warning sign at the Precipice Trail trailhead in Maine (Westrich, 2019).

them to approach the trail with caution. This kind of signage is common on strenuous hikes. They encourage prospective hikers to consider the risks they're taking, as well as their own abilities and limitations. There are also published lists of the most dangerous parks or hikes in the country and the world. The national magazine, the Sierra, posted a list of the top six most dangerous hiking trails in America (Johnson, 2015). This serves a double purpose. The primary purpose for this particular magazine is to recommend extremely challenging, but rewarding, hikes to expert hikers who subscribe. The secondary purpose is to inform their less-experienced patrons of the dangers these hikes pose and encourage them to leave these hikes for experts.

Dangerous park lists are often supplemented by death statistics either on-trail or in national parks. These lists are available to the public and keep them informed, since “the well-loved parks can prove dangerous to visitors who don’t take danger seriously” (Goldstein, 2021).

One way that the danger of hikes can be reinforced is by creating a reputation of danger or accomplishment for completing these specific types of hikes. Examples of this would be Acadia National Park’s ‘iron rung routes,’ or Colorado’s ‘fourteeners.’ Both of these are considered the best category of trails in their respective parks, but also not recommended for inexperienced hikers due to their challenge. One of the many dangers of Colorado’s ‘fourteeners’ is altitude sickness, which is “brought on by a lack of oxygen to your body and a failure to acclimate to air that has less oxygen.” (CTLC, 2020). An inexperienced hiker would have no prior exposure to similar conditions, and would probably have to end their adventure prematurely due to the risk of permanent damage or death. By making these hikes a known challenge and emphasizing these dangers, the general public is less likely to attempt them.

Thrill-seeking hikers encourage people to behave dangerously by glorifying risk-taking. According to the Los Angeles County Sheriff’s Department Search and Rescue team, “missions have increased by 38 percent over the last five years” (Siler, 2018) which they attribute to people sharing photos and videos of their dangerous activities online. In a similar vein, some very dangerous national parks are also considered top-tier attractions for hikers. According to Forbes (Goldstein, 2021) the top two deadliest parks in the US are Grand Canyon National Park and Yosemite National Park. These parks are also numbers two and five respectively on the National Park Service (NPS) list of top 10 most popular National Parks. While some of these deaths can be attributed to high hiker traffic, there are also hazards at these parks that are not present in the majority of National Parks, like falling into the Grand Canyon. There is also the notion among

the thrill-seeking hikers that the danger of a hike makes it worth doing. A popular media outlet, Men's Journal, posted a list of 10 deadly hikes around the world where "...views from the top make the treacherous journey worth every grueling step" (Ng, 2017). Outlets like these contribute to the perception that a hike is more worth doing if there is a substantial challenge to the hiker.

Utilizing a fear appeal campaign can work against Park Authorities' goal to promote safety. She et al. (2019) found that hikers like psychological feelings such as fear and danger. This means that making a hike seem more dangerous by frightening the hiker can make some more likely to brave it.

Some adventurers are also often willing to break rules in search of an adrenaline high. Extreme athlete Dean Potter, would go to great lengths for this adrenaline high. Potter was known for climbing to scenic points and base jumping with only a wingsuit and small parachute, often illegally (Salahi, 2015). The danger is what drives people like this to risk their lives for



Figure 2. Skiers cross ski boundary ignoring warning sign (CTV News, 2016)

adventure, so fear appeal would have little to no effect on them. This can be seen in Figure 2, where skiers blatantly ignore a sign intended to warn them of dangers associated with crossing the ski boundary.

### **Self-Efficacy**

Self-efficacy campaigns are actively used to preserve wildlife, as well as encourage safety in outdoor environments. Smokey Bear is one such campaign, utilized by the U.S. Forest Service to prevent forest fires. His slogan, “Only you can prevent wildfires” (smokeybear.com, n.d.) has become iconic since his conception in 1947, and he has been an icon in wildlife protection and conservation for decades. This campaign seeks to educate the public on how to use fire safely in the wilderness and gives tips on campfire safety, backyard debris burning, and equipment use and maintenance (smokeybear.com, n.d.). While Smokey is not directly related to SAR, he is extremely effective in his own sphere of influence: wildfire prevention. “By 2011, the average number of acres burned by wildfire each year had dropped from 22 million in 1944 to just 6.6 million” (Bourgon, 2019). Smokey is proof that open-minded people in the public can be taught to be more responsible. Arsonists are not likely to be swayed by an icon like Smokey, but people whose ignorance or carelessness are the main problem, can be helped.

Within the realm of hiking safety, gear lists and park alerts are both self-efficacy campaigns utilized by the public and park services to promote safety and preparedness. The NPS and private journals both compile gear lists and make them available to the public, since “When things go wrong, as they often do, this can mean the difference between a minor inconvenience and a dire result” (Collins, 2018).



Park alerts are another way to keep the public informed and encourage safe behaviors. Alerts include dangers, closures, caution, and information alerts, each with their own purpose and criteria (NPS, n.d.a). All of these alerts and more are available to the public through the NPS, where they are detailed and easy to locate. In case that hikers do not have cell phone service while on-trail, there are also park rangers posted throughout many popular hikes in national parks and at entrance gates, who keep potential hikers informed. These resources cannot force anyone to be safer, but they shift the responsibility to hikers for their own safety.

People who require search and rescue often make unsafe decisions based on their refusal to accept their limits or take risks seriously. “Part of the problem stems from a false sense of security” (Mercer, 2019) that comes with carrying a cell phone. Hikers feel invincible because they think that they can make a call and get themselves out of any situation. They will bring a cell phone, but leave out other crucial gear that any seasoned hiker would know to bring. According to rangers, “not having a headlamp is among the most common mistakes they encounter when they are rescuing hikers.” (Mercer, 2019) This is a simple piece of gear but can be overlooked due to the versatility of modern smart phones combined with a desire to pack light. Another issue is weather. When hiking “the different ranges in elevation or temperature throughout the day can lead to abrupt weather changes,” for which hikers may not be prepared (EMS, n.d.).

Hiking alone also leads to casualties. According to Lisa Hendy, a Yosemite National Park emergency services program manager, “the most common mistake made by experienced hikers is taking off alone without notifying anyone” (Sierra, 2021). This is in stark contrast to media outlets like REI encouraging “more women to reap the rewards of solo adventuring, fears must be confronted and centuries-old social norms must be broken” (Littleton, 2020). This

message makes the issue of hiking alone into a social statement, where hikers need to break social norms to prove their capabilities, while the real dangers of hiking alone come from getting lost or injured and no one knowing where to find you. Examining 2,308 SAR cases from Yosemite National Park, “Nearly two thirds of the searches were for one subject.” (Doke, 2012).

On top of this, many SAR calls are a result of the hiker being unprepared. New Hampshire Fish and Game’s Lt. Jim Kneeland is seeing record-setting numbers of SAR calls due to the number of novice hikers hitting the trails amid COVID-19. He states “We’re not trying to stop people from going into the wilderness, but it’s better to do it prepared so they don’t need our assistance” (Howard, 2020). Failure to plan hikes correctly includes timing not being accounted for properly. “All things being equal, you should be hiking at daybreak. Everything is easier and safer with more time and more sunlight” (Jenkins, 2016). Hikers trekking early morning or late evening to catch a sunrise or sunset respectively is very common, but can lead to injuries or potentially more SAR calls if precautions are not taken.

In a hiking guide, Montem (2018) recommends that prospective hikers “think carefully about your capabilities before selecting the best trail.” However, a survey of people hiking the Appalachian Trail found 19.7% of participants had no experience or only day hiking/car camping (Mariposa, 2019). The 2,190-mile trail has a daunting reputation, which encourages many would-be hikers to prepare themselves before embarking on such a journey. “Each year, thousands of hikers attempt a thru-hike; only about one in four makes it all the way” (ATC, n.d.). With statistics and trail information like this available, hikers who are likely to know their limits will not take the risk of hiking this trail unprepared. However, these statistics and recommendations are not influencing underprepared risk-taking hikers who relish the thrill and potential danger this experience would offer them.

## **Social Norms**

Social norms campaigns have been used to influence the outdoor community in the past. According to their Facebook page, the American Hiking Society “promotes and protects hiking trails, their surrounding natural areas” (AHS, 2021). This group promotes a constructive community, encourages patrons to participate in community service and trail upkeep, and publishes information for safe hiking. These include “tips for hiking with families, gear checklists, finding the best trail for you, and more” (AHS, 2021). With a published 558,708 volunteers in the organization, a massive number of people promote trail conservation, service, and safety outdoors. This puts pressure on others to follow their rules and have similar values, ultimately having a positive impact on the welfare of the hiking community.

According to National Social Norms Central, “The effectiveness of social norms marketing interventions can be enhanced if the norms that are promoted reflect a group that the individuals closely identify with” (Nsnc, 2019). This makes the American Hiking Society more effective, as many people who hike think of themselves as conservationists or nature activists, which are values promoted by the society.

The subject of conservation is also a common field for testing social norms campaigns. Arizona State Researcher Robert Cialdini, PhD, tested different methods of encouraging conservation among hikers. “In the Petrified Forest National Park in Arizona, he found that fewer people stole petrified wood from the park when signs indicated the appropriate behavior” (APA, 2005).

Thrill-seeking hikers are influenced by the other risk-takers in the hiking community into practicing unsafe hiking behaviors. For many, dangerous or impressive hikes are attractive since they provide an opportunity for the hiker to prove their worth as a hiker to the community, even if it's unsafe for them. A travel Blogger named Jon Barr with a YouTube following of almost 200,000 people, posted a video describing his climb of Mount Pico in Portugal, where he described it as "one of the most incredible and gratifying travel experiences I've ever had" (Nate, 2019). This is despite Mount Pico being the tallest mountain in Portugal, and being "deceptively difficult to conquer which leads to many failed climb attempts" (GeekyExplorer, 2017). Influencers like Barr lead people to take unnecessary risks and put their safety in jeopardy to feel accepted. Many thrill seekers strive to increase their capabilities by exceeding them, because this is what their community tells them to do. Many, like the avid adventurer and blogger Nature Nerd, use quotes like "Push your limits- enjoy your journey" (NatureNerd, 2017). While they also stress the importance of safety and knowing your limits, it's clear that the community encourages adventurers to push their limits to the extreme to fit in.

## **Conclusion**

Of the public health campaigns used to shift responsibility to hikers for their own safety, the fear appeal and self-efficacy campaigns have been the most used by organizations. The fear appeal and self-efficacy are likely to have a positive effect on prudent hikers, and occasionally self-efficacy messages also draw on fear. This can be seen in gear lists that explain the consequences for hikers who were unprepared in the past. Fear appeals and social norms campaigns are the most likely to have an undesired effect on thrill-seeking hikers. The reputation and allure of danger of certain hikes and parks make them popular within the hiking

community, so many thrill seekers feel like they need to experience them. The danger of these hikes is irresistible to such people, and, while identifying dangers and recommending courses of action can help them stay safe, ultimately, they will pursue the dangerous course anyway.

While social norms and self-efficacy are the most utilized by the hiking community, park authorities tend to only use fear appeal and self-efficacy. In the future, they should experiment with increased use of social norm campaigns to counteract negative pressures in the hiking community. Additionally, because the hiking community is very close, more voices urging caution and safety would help many hikers make better informed decisions.

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