

# Investigating Perceived Resort Sustainability and the Environmental Attitudes of Skiers and Snowboarders

Brittany Chadbourne, Jackson Sweet, Brayden Youngberg, Andrea Wicks

Mentor: Dr. Cass Morgan

## INTRODUCTION

Northern Utah relies heavily on the ski and snowboard industry as ski resorts saw over five million visitors in the 2018-2019 season, and the season before brought over 1.3 billion dollars to the local economy (SkiUtah, 2019). However, the winter sports industry is heavily threatened by the changing climate. A study done in the North Eastern U.S. found that 74% of skiers and snowboarders held snow conditions as the strongest influence of their resort choice (Vivian, 2011); this shows that changes in snow conditions due to climate change could be detrimental to Utah's economy.

This study will specifically look at the differences between skiers and snowboarders and levels of concern with the environmental sustainability of ski resorts and mountain ecosystems. A study done in Germany found that snowboarders have a slightly higher carbon footprint than skiers (Wicker, 2018), so looking at the priorities of each group regarding sustainability and resort choice will further highlight any potential differences. This information can be used to demonstrate the different issues that need to be addressed at our local ski resorts, and possible changes that will bring long-term economic, environmental, and social benefits to Ogden.

## Methods

Participants for the study were mainly chosen out of convenience; the majority of participants were students in ski and snowboard classes at WSU as well as people on the UTA ski bus. The majority of the skiers and snowboarders that took the survey were from the Wasatch Front and they were mostly college age students. Participants were asked if they would be willing to take an anonymous survey pertaining to views and attitudes on sustainability. The survey was 41 items and a combination of questions that were adapted from The New Ecological Paradigm (NEP) (Dunlap, 2000) and questions regarding specific changes that ski resorts could make to be more sustainable (Williams, Reilly, & Haider, 2006). These questions ranged from asking the importance of energy efficient buildings to the importance of stopping night skiing to save electricity. Other questions included asking the most important factors in choosing a resort, specifics about the participants demographic, and what ski resorts can do to be more sustainable

## Objectives

- Determine whether environmental attitudes vary between skiers and snowboarders
- Identify what values and factors skiers versus snowboarders find most important
- Provide some framework for resorts to use when deciding how to market towards snowboarders versus skiers
- Understand how some ski resorts have addressed their environmental impacts

## RESULTS

The total number of surveys collected was 157; 144 of which identified as either male (56%) or female (44%). Out of 152 participants 83 were skiers, 59 were snowboarders, and 10 chose other, for non specified winter recreation activities. The majority (41%) of which ski or snowboard more than 20 days out of the season. The top three most important factors that affect where skiers and snowboarders recreate are the cost of lift tickets (34%), the snow conditions (26%), and the terrain of the resort (13%). The majority (17%) of male participants had a household income of \$100,000 to \$149,999. The majority (32%) of female participant's household income was \$10,000 to \$19,999 or \$150,000+.

The survey was organized into three sections to determine: the difference between skier and snowboarder environmental attitudes; what factors are most important when choosing a resort; and what sustainability practices have the biggest impact on a resort's reputation. Results demonstrate the complex relationship between people's environmental attitudes; their values and perceptions of sustainable practices; and their behaviors. Using a modified New Ecological Paradigm for mountain environments (Williams, Reilly, & Haider, 2006) we found the mean score on the NEP of all respondents was: 3.21 (scores from 3.0-5.0 show a stronger ecocentric viewpoint whereas scores from 1.0-3.0 show a more anthropocentric mindset) (Ogunbode, 2013). As shown in our findings, survey participants have a slight disposition towards a more ecocentric mindset, but not by much. This was further represented in participants answers to the survey. Overall, participant's answers demonstrate a high level of neutrality when it comes to the factors that influence people's choice of mountain resort as well as a high level of neutrality in skier and snowboarder environmental attitudes.

- An Independent Samples T-test was conducted to determine any differences between environmental attitudes of skiers and snowboarders. Results found that there was no significant difference ( $p > .05$ ) in their overall environmental attitude scores. However, on average, skiers had a slightly higher pro-environmental NEP score  $N=68$  ( $M=3.23$ ,  $SE=.05$ ), than snowboarders  $N=51$  ( $M=3.13$ ,  $SE=.06$ ). Interestingly enough, our results did find a significant difference ( $p < .05$ ) in DSP scores (score measuring more anthropocentric mindsets on the NEP) between skiers and snowboarders. This is interesting to note, because despite the significant difference in DSP score, there was no significant difference in overall NEP score.
- When it comes to which factors are most important when choosing a mountain resort destination, our data shows that the cost of lift tickets, terrain, and snow conditions were the three most important factors for both skiers and snowboarders. However, when examined more closely, we found that this data contradicted respondents' self-reported values of environmentally sustainable practices like public transportation and carpooling (see figure 1).
- Our research also investigated which factors had the biggest impact on a resort's reputation. The top three factors for skiers, were: wildlife sensitive ski trail maintenance systems, Vegetation sensitive ski trail systems, and public transportation access to the destination. Similarly, snowboarders valued wildlife sensitive ski trail maintenance systems, and public transportation access. However, unlike skiers, on-site energy efficient buildings was seen as more important than vegetation sensitive ski trail maintenance systems (see figure 2).

Figure 1

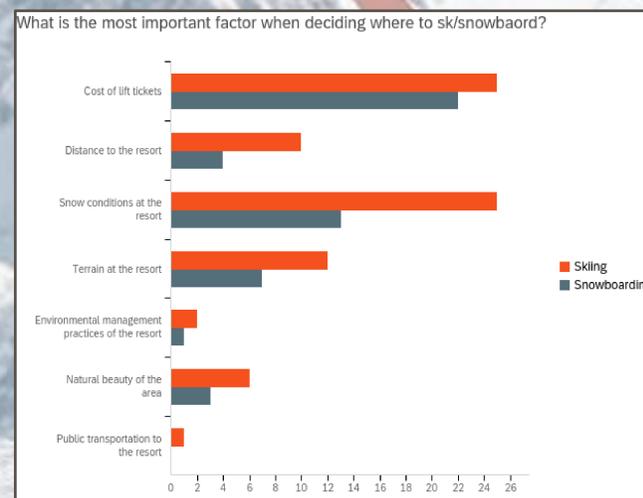


Figure 2

How important are the following when choosing a mountain resort destination? (1 - Extremely Important, 5 - Not important at all)	Skiers	Snowboarders
Low density visitor accommodation facilities	2.39	2.47
On-site energy efficient buildings	2.06	2.37
On-site solid waste recycling systems	2.31	2.66
On-site water conservation systems	2.61	2.81
Pre-trip information concerning the destinations environmental initiatives	2.65	2.60
Public transportation access to the destination	1.72	2.05
Vegetation sensitive ski trail maintenance systems	1.89	2.47
Wildlife sensitive ski trail maintenance systems	1.84	1.98

How important are the following environmental efforts to a destination's reputation? (1 - Extremely Important, 5 - Not important at all)	Skiers	Snowboarders
Minimizing energy consumption for lifts	2.17	2.47
Minimizing energy and water consumption for snow making	2.16	2.19
Minimizing environmental effects of transportation to and from the ski hill	1.95	2.19
Minimizing the environmental effects of ski run construction (rock blasting and slope grading)	2.02	2.63
Mitigating any effects of ski run construction on the vegetation, mostly visible during the summer	1.98	2.54
Minimizing energy and water consumption of food services on the mountain	2.23	2.74
Reducing energy consumption by not providing night skiing opportunities	3.32	3.86

## DISCUSSION

As shown in the results of the study, there was no overall significant difference between the environmental attitudes of skiers and snowboarders. However there are some differences in their preferences for ski resorts and the factors that drive their decision in choosing which resort to recreate in. These factors are important to note for resorts to determine how to market to different audiences and promote their sustainability practices.

- Our data shows that, even though skiers and snowboarders showed a slightly more eco-centric score on the New Ecological Paradigm (Dunlop, 2000), environmental efforts done by resorts are not as much of a priority to riders when compared to other factors. Things such as cost of lift tickets and snow conditions played a much larger role to riders than public transportation to the resort and other environmental efforts. A possible solution to this problem would be to run a campaign focusing on how sustainability in ski resorts is crucial to the future of winter sports. The threat of climate change is looming over the ski industry, and it is up to the users to demand more sustainable management practices.

One limitation of this study was our convenient sample and sample size. Future research should investigate a more general sample and have a larger sample size. One area of research that we did not look at in this study would be looking at the environmental attitudes of off-piste (backcountry) skiers and snowboarders. Future research could look at the differences between off-piste skiers and snowboarders, versus resort/front country skiers and snowboarders. Another factor that was not fully explored in this study, was the knowledge of sustainable practices at ski resorts. When looking at responses to the question: "What is the most important thing that ski resorts can do to promote sustainability?" it became evident that respondents may not know about existing sustainability practices of the resorts that they recreate in. Further research could examine ski and snowboarder knowledge of sustainability practices.

## References

- Conserve and Preserve. (n.d.). Retrieved February 2020, from <https://www.sundanceresort.com/conserve/>
- Alta Environmental Center. (n.d.). Sustainability Report 2019. Retrieved from [https://res.cloudinary.com/altaskiarea/image/upload/v1574106979/resources/Alta-Environmental-Center/PDFS/Reports/SustainabilityReport\\_19\\_V11.pdf](https://res.cloudinary.com/altaskiarea/image/upload/v1574106979/resources/Alta-Environmental-Center/PDFS/Reports/SustainabilityReport_19_V11.pdf)
- Pintaldi, E., Hudek, C., Stanchi, S., Spiegelberger, T., Rivella, E., & Freppaz, M. (2017). Sustainable Soil Management in Ski Areas: Threats and Challenges. *Sustainability*, 9(11), 2150. doi: 10.3390/su9112150. <https://www.mdpi.com/2071-1050/9/11/2150/htm>
- Ogunbode, Charles. (2013). The NEP scale: Measuring ecological attitudes/worldviews in an African context. *Environment Development and Sustainability*. 15. 1477-1494. doi: 10.1007/s10668-013-9446-0.
- Olson, L. E., Squires, J. R., Roberts, E. K., Ivan, J. S., & Hebblewhite, M. (2018). Sharing the same slope: Behavioral responses of a threatened mesocarnivore to motorized and nonmotorized winter recreation. *Ecology & Evolution* (20457758), 8(16), 8555-8572. <https://doi.org/10.1002/ece3.4382>
- Roux-Fouillet, P., Wipf, S., & Rixen, C. (2011). Long-term impacts of ski piste management on alpine vegetation and soils. *Journal of Applied Ecology*, 48(4), 906-915. <https://doi.org/10.1111/j.1365-2664.2011.01964.x>
- Ski Utah. (2019, 21 May). "Utah Sets Record For Skier days in 2018-19." SkiUtah.com. Retrieved from <https://www.skiutah.com/news/authors/pr/utah-sets-record-for-skier-days-in>
- Vivian, K. A. (2011). "Behavioral Adaptation of Skiers and Snowboarders in the US Northeast to Climate Variability and Change." University of Waterloo. Retrieved from <http://hdl.handle.net/10012/5980>
- Wicker, P. (2018) "The carbon footprint of active sport tourists: an empirical analysis of skiers and boarder." *Journal of Sport & Tourism*, 22(2), 151-171, doi: 10.1080/14775085.2017.1313706
- Williams, P., Reilly, J., & Haider, W. (2006). Destination branding and skier environmental attitudes. In P Keller and T. Beiger. *Marketing efficiency in Tourism: Coping with Volatile Demand*. (P. 81-92).