

Executive Summary

This project was conducted in association with NENSA, US Ski and Snowboard Association, the Loppet Foundation and students from the Tuck School of Business at Dartmouth. The primary objectives of this study were to understand factors that predict attendance at cross-country skiing (XC skiing) events and learn more about the target population's preferences as it relates to these events. This executive summary focuses on managerial implications of our study. What follows this summary is a technical report that explains our methodology, helps the reader interpret complex statistical analyses and outlines the limitations of our research.

The students at the Tuck School designed and distributed a survey to more than 8,000 NENSA members to solicit input on individuals' skiing ability, what they value at skiing events and their current level of engagement in XC skiing. The data collected ultimately allowed us to determine what drives individuals' decision to attend the 2020 Nordic Skiing World Cup. Several key insights were gleaned from this survey and these findings are divided in three broad determinants of attendance: demographic, skiing habits and event-specific factors.

One of the biggest demographic drivers of attendance is age. In fact, a one-year increase in age reduces the likelihood of attending the XC world cup by almost 6%. In other words, younger audiences are more likely to attend the world cup. This finding is encouraging for the future of the sport, where younger, more engaged skiers have a greater "lifetime value" for the growth of the sport.

On a related note, another important demographic variable is marital status. Relative to would-be attendees that are single, those that are married are 80% less likely to attend the event. This finding, which could be overstated based on our sample size, is consistent with our finding on age: individuals who are young and single have more flexibility to attend events. The onus to attract families then falls on the actual activities at the world cup.

We found that younger families with kids aged 6-14, are more likely to attend the world cup than older families (potentially where the respondent was a grandparent). To this end, we learned that one of the greatest drivers of attendance was having games during the world cup that entertain kids. Another key determinant of attendance was having some form of amateur ski racing, which could be for both children and their parents. The combination of these two findings can be an interesting marketing campaign that targets the entire family.

In terms of event-specific drivers of attendance, the presence of Kikkan Randall and / or Jessie Diggins has the largest impact. Managerially, designing programming that includes interaction with these Olympians would theoretically drive attendance to this event more than any other event-specific factor (such as games for kids). Lastly, our analysis also revealed opportunities for efficient resource allocation. Food vendors and live music are important drivers of attendance whereas product demos, apparel vendors

and ski lessons are not. This insight allows the committee to ensure resources are allocated to activities that attendees care about.

Perhaps more interesting from a marketing standpoint is targeting individuals that have a ski pass. Relative to an average would-be attendee, those individuals that have a ski pass are 40% more likely to attend the world cup. Our survey finds that these individuals also tend to spend more money each year on ancillary skiing activities such as buying new equipment, waxing etc. We hope that our analysis lays the groundwork for the Loppet foundation's marketing strategy to attract residents in the Twin Cities area to the 2020 World Cup. The rest of this report dives into the specific data analysis that underpin our insights and recommendations.

Cluster Analysis

Based on the analysis we have conducted, there are some variables that are significant in the two models used whereas some that are unique to each. We experimented with several clusters to see the type of separation we would get and settled on 5 clusters. The output of this analysis is found below. A few clear segments jump out based on the data we reviewed:

- ***“The Young Guns”***: These individuals are single, very young, do not have kids and are interested in buying only general admission tickets. Based on their characteristics, they are generally neutral towards having kids' games.
- ***“The Retirees”***: With an average age of 66.88, this group of individuals are most interested in paying for bleacher and VIP seats. They don't consider kid's games as integral to the World Cup, most likely because their kids have moved out and are adults
- ***“The Family Upstarts”***: This cluster has an average age of 33 and view kids' games as the most important out of any group. They are likely to buy only general admission tickets. They are also more likely than not to have a ski pass and are thus going to be most engaged out of any group
- ***“The Middle-Aged Family”***: Similar to the family upstarts cluster, this group values kids games highly too but are slightly older in age. In other words, this group has kids that are likely 9-14 years old. The important insight here is that to engage the kids, the organizing committee needs to factor in a wide variation of age.

Recommendations

While formal recommendations for this project require parley with the Organizing Committee, based upon our analysis, we have the following recommendations:

- **Attract hard core skiers**: Those individuals that have a ski pass, those that ski daily if they can and those that have indicated that they want to participate in a ski race are much more likely to attend the event and be engaged with it.
- **Kids games are key**: For those groups that consider kids games important (young married couples and those with kids between ages 9-12) are much more likely to attend if they can get programming that keep their kids busy. This is particularly important as odds of attendance versus not are 5x.

- **Attendees want to ski:** Based on both our models, attendees in all tiles have indicated they'd want to either recreational ski or race during the event. This is a "one of a kind" offering that does not exist at many ski festivals across the globe
- **Age is big factor:** The likelihood of attending the event drops precipitously with age, with 1 added year in age reducing the probability of attendance by 6%. This is good for the sport as engaging young skiers results in higher lifetime "value". By focusing on this segment, the organizing committee can set the foundation for years to come. As a corollary to this point, single individuals are also more likely to attend the event, which probably explains an interaction between the two terms
- **There are opportunities for efficient resource allocation:** Food vendors and live music are important whereas product demos, apparel vendors and ski lessons are not. This insight allows the Organizing committee to ensure resources are allocated to activities that will drive attendance

Conclusion

This independent study allowed us to learn advanced market segmentation techniques using cutting edge tools such as logistic regression and random forests. We got the unique opportunity to apply classroom concepts to a real-world setting. In addition, while most classes at Tuck provide us with pre-processed data, our project allowed us to design a survey, send it to a real audience, "clean the data" and make it ready to analyze. This exercise itself was extremely valuable because we had to deal with nuances in real-world data that do not exist in a classroom setting.

We uncovered several business insights that we have discussed throughout this paper that we think that the stakeholders will find valuable as they plan this event.

Ultimately, our course brought together concepts from several marketing classes at Tuck, which reinforced the concepts we learned in those core courses and electives. These include but are not limited to Marketing Research, Customer Analytics, Statistics, Core Marketing and Consumer Insights. We look forward to continuing to apply our learnings to events outside the XC Skiing World Cup.