**Big Mountain Resort Report**

Big Mountain Resort is a Montana ski resort with 105 trails. It receives 350,000 people every year and accommodates all levels.

Big Mountain Resort needs to increase revenues or decrease operating costs due to the acquisition of a new chair lift that increases operating costs by $1,540,000 for the season. In addition, management has the perception that they are not capitalizing on its current facilities so their price strategy should be re-examined.

Data was provided for 330 different ski resorts across the US with 27 different features that was analyzed to generate the optimal price model. We incorporated state population and state area into the data to add robustness to our analysis. We performed data wrangling to clean and improve the data usability. Then the data was explored by applying different techniques and we found that there wasn’t a clear pattern with price data at the state level so we focused at the resort level across the different features.

A picture containing diagram

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By looking at the scatter plots generated comparing to prices across resorts there were high visual correlations that stand out like vertical drop, fast quads, total chairs, runs, longest run, skiable terrain, snow making and projected days open. This was very useful information to potentially use as variables for our price model.

We then processed and built models trying three different types: the simplest was taking the average price, then a linear regression model and finally a random forest model which basically creates subsets of the dataset to arrive at the best subset of features. By using a validation technique we concluded that the random forest model was the best one with the lowest errors and less variability. The most important features for estimating ticket price were fast quads, runs, snow making and vertical drop.

The model predicted a ticket price for Big Mountain Resort of $95.87 and the current price is $81.00. The fact that the modelled price was well above the current price could be due to that Big Mountain resort ranked high among other US resorts when comparing the different features. I think that the current price was that level because of the comparison to other resorts in the same state of Montana, where this resort is already at least $12 more expensive. Also, by comparing all the different features across the US, it was clear that Big Mountain resort could charge a higher price comparing to its market segment that includes ski resorts outside of Montana.

Here is how Big Mountain Resort compared in prices to the rest of the US ski resorts (Big Mountain is represented with the red dotted line):

Chart, histogram

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**What’s next?**

Once we had the selected model, we were able to create different scenarios. These considered closing runs, opening runs, increasing the vertical drop, installing an additional chair, increasing snow making or increasing the longest run. So, as we changed these different features the modelled price increased or decreased depending on the scenario. It would be **extremely useful to develop a program or app** for the business management to be able to run scenarios on their own by changing the different features such as, vertical drop, snow making, longest run, etc. The output would be the new price and increased or decreased revenue considering the costs. To explore this option, we would need the cost information of snow making per acre, grooming per acre and any other additional costs of creating newly skiable acres.