Big Mountain Resort---Pricing Study

In this report we analyze the pricing landscape for ski passes in the US, with the goal of understanding Big Mountain’s relative market position (based on its ticket price and facilities. In addition, we model price drivers and build a pricing model which will allow executive leadership to make data-driven strategic choices by quantifying how changes in the resort facility will most likely impact ticket pricing and revenue. Thus the model can be used to guide both pricing and facilities investment planning.

We used pricing and facilities data from some 330 US ski resorts, supplemented by state size and population data (excluding Big Mountain, which we used later to predict optimal prices. The data support a price increase of up to $10 for Big Mountain without changes in facilities.

Overview of model preparation and data analysis

Most resorts in the data set contained both (adult) weekday and weekend prices; we examined these to decide which to model. Comparing weekday and weekend prices by state we saw:

A graph of different colored and black lines

Description automatically generated with medium confidence

Note that most prices fall within a $25 to $75 band, with weekday and weekend prices often the same, with differences occurring more frequently for weekday prices under $100. We proceeded with modeling Weekend prices, as we had more data for these. In further exploring the price drivers, we found strong correlations between price and vertical drop, fastQuads, runs and snow making\_ac. These stood out in our overall heatmap of correlations. Note that we investigated many features, including some engineered features such as ratios of data per 100k capita and per state area so we could have comparable data across different size states with different populations.

After a few sanity-checks, we more closely examined correlations after imputing values that were missing, then training and testing; this was automated so we could first check the results of different models. The goal was to select the most informative features for the dataset by cross validation (we did an optimization to find \*how many\* features was optimal). After comparing our results to a Random Forest Model, we chose the latter, which had lower error rates. The results are shown below:

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Conclusions

Based on the model, the expected price for Big Mountain the actual price would be $92.50, about $11 greater than the current price.

Some scenarios were run to predict the impact on price/revenue. Closing runs: closing one run should have no impact on revenue; closing 2 or 3 has the same impact as closing 4-5, beyond which the price drops. Scenario 2 revealed that increasing the vertical drop by 150 feet and adding a chair lift would support an increase in price of $1.36 and $2.3 million in annual revenue. Scenario 3 includes the former plus adding 2 acres of snow making, but does not change the $1.36 increase. Scenario 4, in which the longest run is increase, has no impact on price whatsoever.

Future work might include adding GIS data to assess the impact of competing resorts by proximity, which was not examined in this report.