A Pricing Model for Big Mountain Resort Ticket Prices

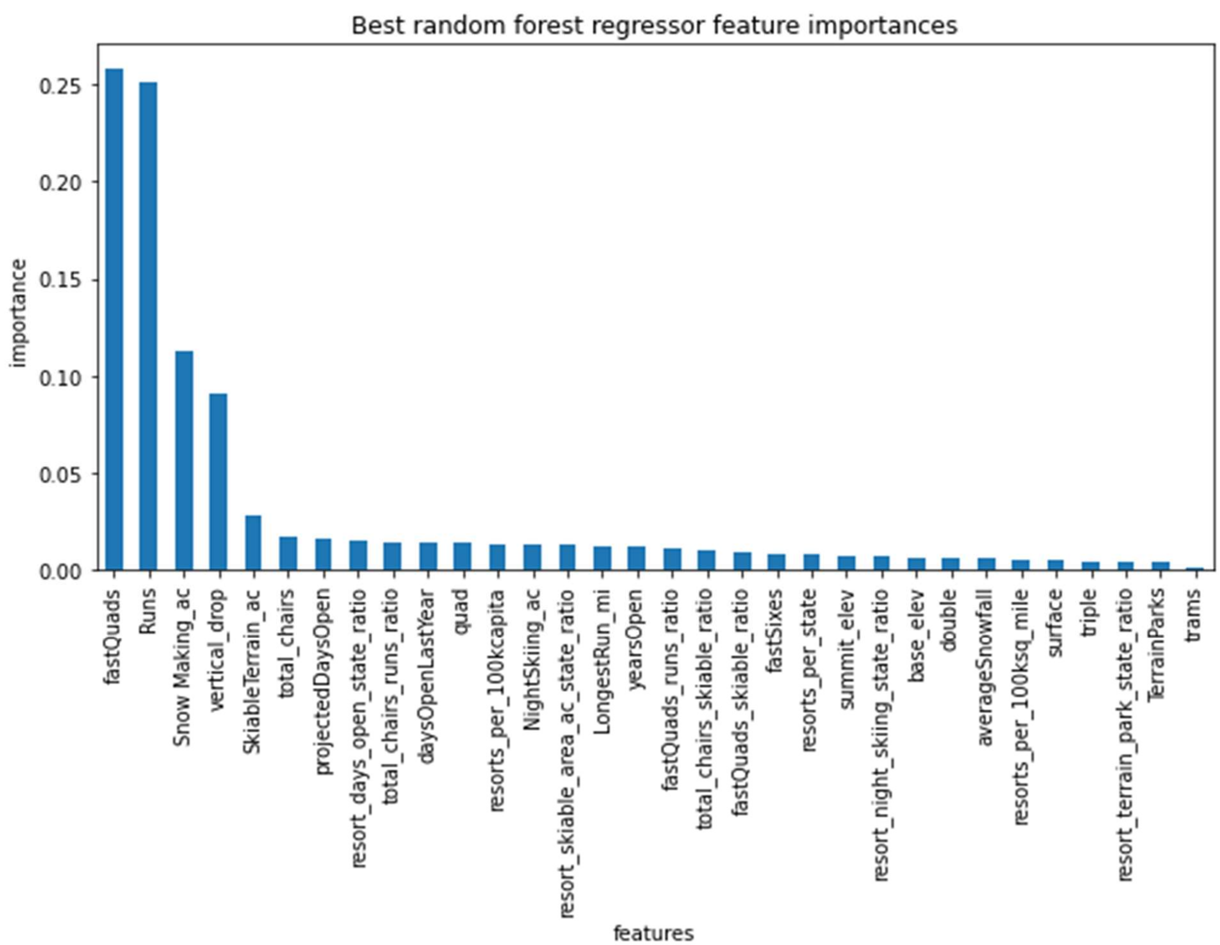
Purpose – Big Mountain Resort in Montana has recently spent $1,540,000 on installation of a new chairlift. They need to make up this amount by increasing their revenue this season. They are looking for a pricing model that would capitalize on their features and facilities rather than their current strategy of simply charging higher prices than their competitors.

We have data on location and feature statistics of resorts in the US. Our goal is to build a predictive model for ticket prices based on how much each facility could contributes to ticket price. In doing so, we are assuming that ticket prices for all resorts in our dataset are determined by the free market.

Results – We developed two models (excluding our baseline model of the mean): a linear regression model and a random forest model. We then chose the latter for its better performance on our test data.

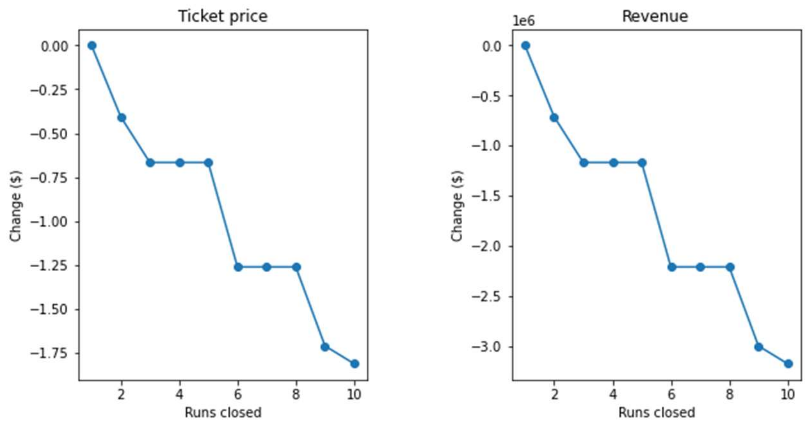
According to our random forest model the ticket price for Big Mountain Resort should be $95.87 (with an expected mean absolute error of $10.39). Their current price is only $81.

The distribution of each feature and Big Mountain Resort's relative location within that distribution elucidates why such discrepancy exists: according to these distributions, Big Mountain Resort ranks very high in snow making area, number of chairs, fast quads, number of runs, longest runs and skiable terrain area (they also have a relatively high vertical drop). During our modeling (for both random forest and the linear models) we discovered that most of the above features are among the most important in determining ticket price and Big Mountain Resort has clearly not been capitalizing on their potential.



The business also wishes to test four scenarios which they hope will either cut costs and/or increase revenue. We assume that there will be around 350,000 visitors and, on average, visitors ski for five days.

Scenario 1- Close up to 10 of the least used runs: The model suggests that closing only one run makes no difference but closing 2 and 3 successively (and beyond) would support a cheaper price and lower revenue.



Scenario 2 and 3 - Add a run, increase vertical drop by 150 feet, and install an additional chair lift (with or without adding 2 acres of snow making): These two scenarios both support an increase in ticket price by $1.99. Over the season, this could be expected to amount to $3,474,638 of additional revenue.

Scenario 4- Increase the longest run by 0.2 miles and add 4 acres of snow making to guarantee snow coverage: This scenario makes no difference in our ticket price because our random forest model chosen has the longest run feature way down in importance (see figure on page 1).

Recommendation – Our result above shows a discrepancy between modelled price ($95.87 MAE $10.39) and current price $81 and considering their high ranking for numerous important features, we recommend a ticket price increase.

Furthermore, for any future actionable scenario, we recommend the second scenario above: increasing the vertical drop by adding an additional run and lift. This scenario provides the best support for a price increase. Over the season this scenario is estimated to bring in an amount of $3,474,638. Our initial problem was to off-set an additional cost of $1,540,000. This will bring in more than twice the amount we need and will only raise each ticket price by $1.99.

Note – A correction of note was made during the data cleaning stage that must be communicated to the client to be corrected in the original dataset. The skiable terrain for Silverton Mountain in Colorado was changed to 1,810 acres (from 26,819).