Big Mountain Resort Ticket Price Modeling

Prepared by Vincent Tolentino

Identifying our Problem

What is the current ticket price for Big Mountain Resort? How do you come up with that price point?

$81

A premium added to the average price of resorts in its market segment determines current ticket price

- Not sustainable
- Limitations (like relying on ticket prices of other resorts)
- Potentially losing out on revenue
- Not capitalizing the numerous facilities BMR has to offer
- Hampers investment strategy

The Solution to our Problem

We must value the ticket price not only based on the average ticket price of the market, but on the unique features of Big Mountain Resort, with respect to other resorts within its market segment

Analysing and modeling our given data will yield a more precise ticket price prediction

1. Utilize various features found in BMR and other resorts to account for ticket price discovery
2. Reduce the lost revenue from arbitrary ticket price placement
3. Open up access to explore and process scenarios that alter various features of BMR
4. Support an investment strategy for future feature investment

Recommendation

Our recommendation from our modeling suggests an *increase in ticket prices is justified*. With an expected number of visitors at 350,000, and an average 5 day ski trip for each of those visitors, an increase in ticket price could generate additional millions in revenue. Our current model based on ticket price alone indicates an increase to **$95.87**. Within our market context, our model indicates additional features like a vertical drop and chair lift would warrant an increase in ticket prices by $1.99, which is enough to cover the costs of the addition.

Key findings

- Big Mountain Resort ranks among the highest in many features among the 300+ other resorts
- Correlations between features were discovered that shed insight into the resorts
  - More night skiing found in more densely populated areas
  - Visitors value guaranteed snow over total terrain area
- Linear Regression Model suggests vertical drop as the biggest positive feature
- Random Forest Model suggest fastQuads and runs as the biggest positive features

Linear Regression Model Results

Is this the best model?

Linear regression model showing the most positive features of our dataset

```
vertical_drop          10.767857
Snow Making_ac          6.290074
total_chairs            5.794156
fastQuads               5.745626
Runs                    5.370555
LongestRun_mi           0.181814
trams                  -4.142024
SkiableTerrain_ac      -5.249780
dtype: float64
```

Vertical drops, by far, have the most positive effect on ticket prices for our resort

Analysis

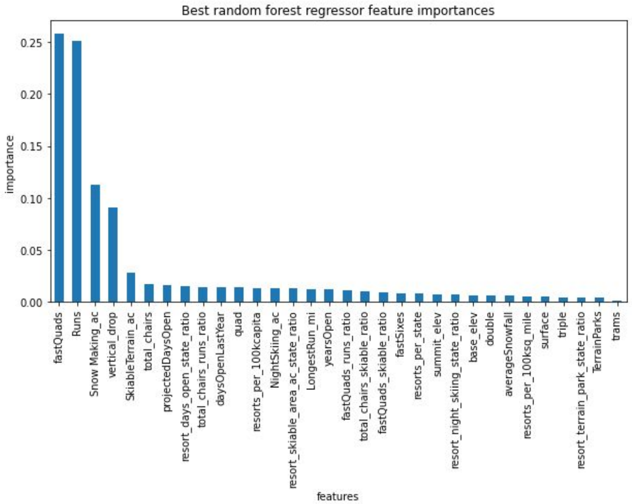
Our Linear Regression Model was able to produce a cross-validation mean absolute error of **10.50** and a standard deviation of **1.62**

These values seem okay, however, there is another model that we can test using our data that may prove to be a much better fit.

Random Forest Model Results

Let’s try this model

Random forest model showing the most positive features of our resort



This indicates the top two positive features are fastQuads and Runs for our resort

Analysis

Our Random Forest Model was able to produce a cross-validation mean absolute error of **9.64** (as opposed to 10.50 from the LR Model) and a standard deviation of **1.35** (as opposed to the 1.62)

The random forest model has a lower cross validation MAE and less variability, making it the best model of the two for predictions on price, which was why it was used to determine the solution to our pricing problem.

Summary and Conclusion

Amongst the over 300 resorts in our dataset, Big Mountain Resort boasts a high position in most features

With this in mind, it is logical to include these features in our determination for ticket prices for future sales

Raising the ticket price is not only rational, but can be backed with modeling data that has been provided

Our modeling through the Random Forest Model can predict changes in these features, with respect to ticket prices, with minimized variance

Implementing additional data (i.e. ticket sales information and operating costs) can further pinpoint better price strategy for the future market of Big Mountain Resort

Final Thoughts / Questions?