Big Mountain Resort Pricing Strategy

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Problem Identification

Big Mountain Resort installed extra equipment that increased the operating costs by $1.54 million. Now, they must come up with a pricing strategy for the tickets to increase the revenue by more than the additional operating costs. Two options are to cut costs without undermining the ticket price or find facility capitalization that will support a higher ticket price.

So how can Big Mountain Resort increase its revenue with a new ticket pricing strategy in order to account for the additional $1.54 million operating cost this season?

The measurement of success will be either of the two following goals:

- Increase in revenue by more than $1.54 million for this season while maintaining the number of visitors through increasing price tickets
- Decrease in costs by at least $1.54 million for this season by finding ways to capitalize facilities optimally

Prediction models will be created with the CSV file of resort details from database manager .

Recommendation and Key Findings

It is recommended to find any outside factors that may affect the pricing of resorts. The main outside factor analyzed for a relationship with the price is the state location and details. An analysis later showed that there is not a direct correlation between the price and state. Thus, it is decided to treat all state equally and focus on the resort features for building future models.

With the previous finding in mind, a correlation between all the resort with the price are analyzed to decide which features to consider making the prediction models. Based on the heatmap of all the features shown on the right, the following features seem the most “vertical drop”, “fastQuads”, “runs”, and “total chairs” as well "resorts per 100k capita."

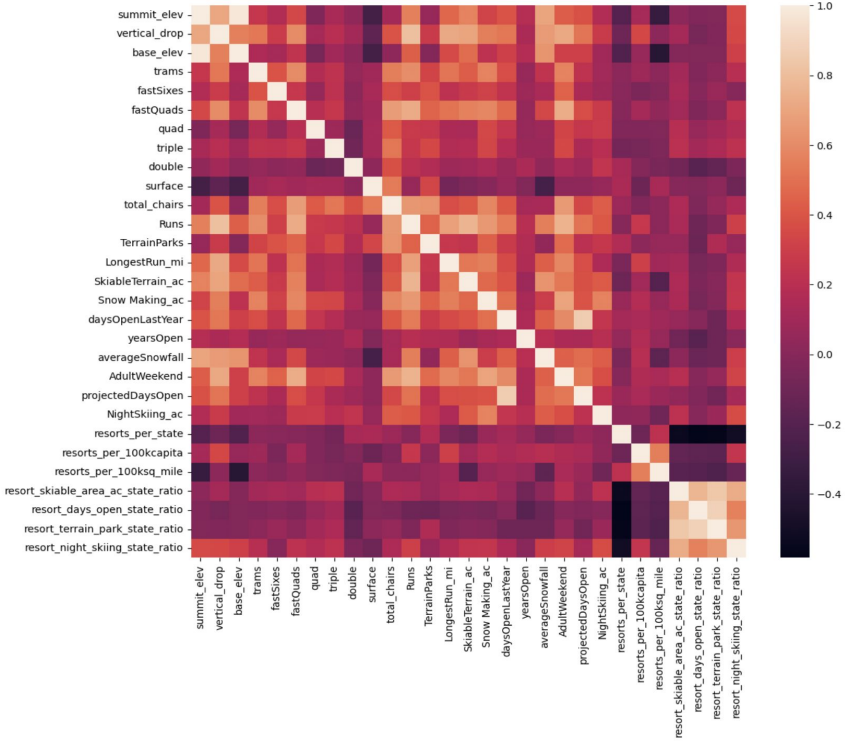

Figure 1: Heat Map of Feature Correlation

Linear Prediction Model

One of the prediction models created to find a suitable price for Big Mountain Resort based on the details of other resorts is the Linear Model.

The model imputed the missing data with the median value of the attribute. After conducting a hyperparameter search for the most optimal number of attributes, it is shown that eight attributes fits the data best as shown in the figure below. The eight attributes focused by the model are vertical_drop, snow making_ac, total chairs, fastQuads, runs, longest run_mi, trams, and skiable terrain_ac.

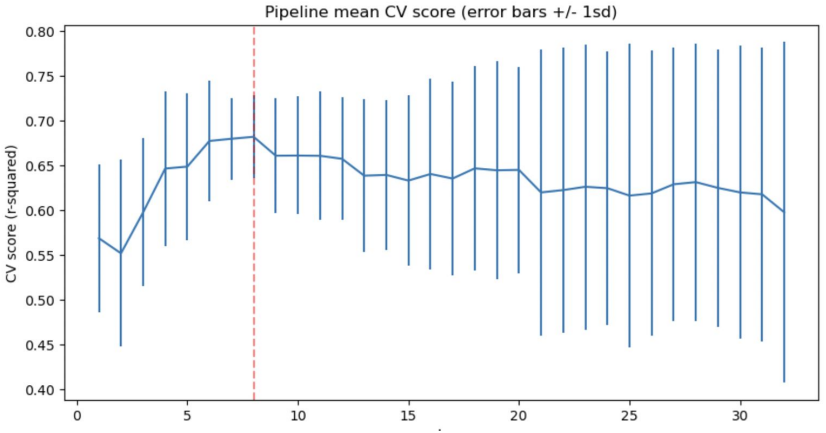

Figure 3: CV Score of Optimal Features

Random Forest Model

Similar to the linear model, the missing values are imputed with the median value. However, the random forest model only takes into account four features from the resort. So, there will be less variability with the result using this model over the linear model. Additionally, the random forest model showed a lower cross-validation mean absolute error by $1. Based on these two factors, the random forest model has a better chance of accurately predicting a proper price for the Big Mountain Resort. The model predicted the proper price for the resort is $95.87 when the actual price is $81.

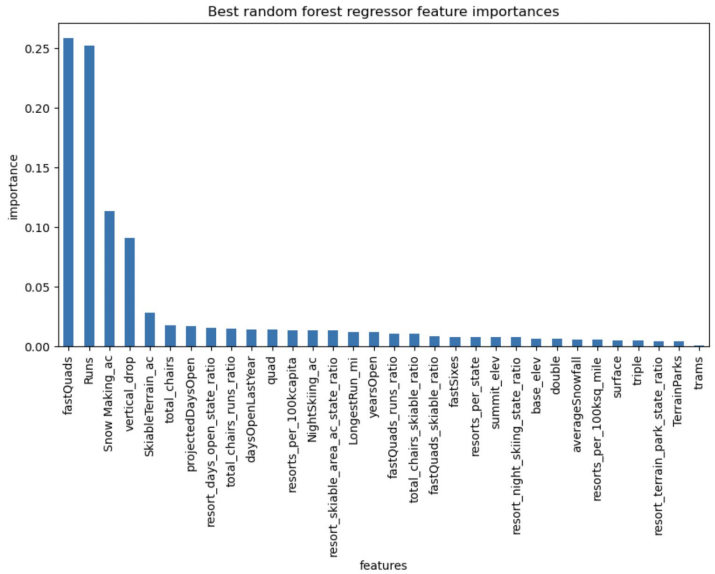

Figure 3: Best Four Features of RF Model

Potential Actions Based on Modeling Results

There are four recommended scenarios after knowing that the model predicted the price to be much higher than the actual price:

1. Permanently close 10 of the least used runs
2. Increase the vertical drop by adding a run and installing an additional chair life without additional snow making coverage
3. Similar to scenario 2 but with additional 2 acres of snow coverage
4. Increase the longest run by 0.2 mile to boast 3.5 miles length and adding 4 acres of snow making coverage

The model predicts that scenario 1 would lead to a decrease in price. Scenario 2 would support a $1.99 increase in price. Despite the additional snow coverage, scenario 3 does not support anything different from scenario 2. Lastly, scenario 4 makes no change in the price based on the model. Thus, it is recommend to proceed with either scenario 1 or 2. However, certain missing information such as the operational cost of maintain runs and fees for increasing the vertical drop are needed to confidently decide which of the two scenario could help meet the success criteria of making up $1.54 million from the new installations of equipment.

Summary and Conclusion

With the goal of balancing the cost of $1.54 million from new equipment installation, a random forest prediction model is built from other resort details to predict a new potential price for Big Mountain Resort. There are two potential actions to achieve this goal: permanently close 10 of the least used runs or increase the vertical drop by adding a run and installing an additional chair life without additional snow making coverage. While there are missing data to properly decide between the two, the overall result is definitely a positive one since the model supports a high increase in the ticket price for the resort. After collecting the necessary details to decide on one action, Big Mountain Resort could potential balance the cost of the new equipment installation.