Big Mountain Resort Pricing Strategy Report

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Introduction and Problem Statement

Big Mountain Resort's current pricing strategy is to charge a premium above the market averages. The company knows that there are limitations to this approach and feels that this does not provide an accurate sense of how important some facilities are compared to others, which hampers investment strategies. We will be looking at how Big Mountain Resort can create a competitive pricing model that allows the resort to benefit from the different facilities it offers while maximizing revenue over the season.

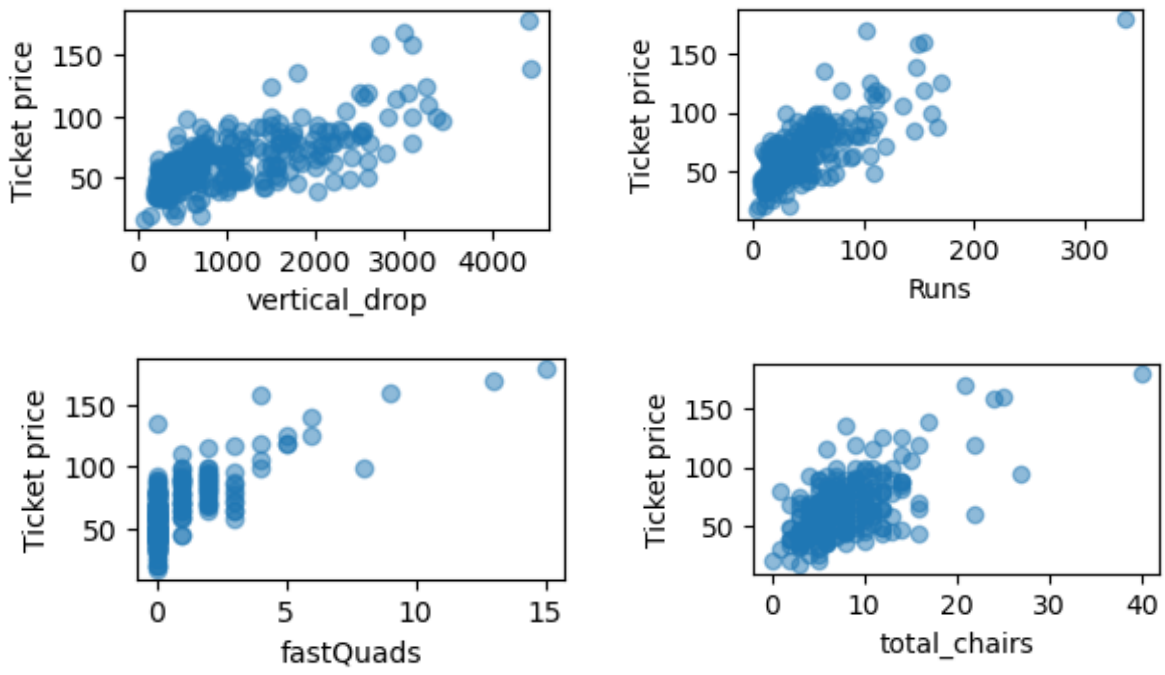
Data Collection

The dataset provided originally started with 330 rows of data. To make the data more useable, we had to remove two columns and 14% of the rows. The column fastEight was missing half of its values and the ones provided were set to 0, which provided no useful information. One row was dropped because the amount of years open was set to 2019 years. The 14% of rows that were removed were dropped because they lacked information in the AdultWeekend and AdultWeekday columns. Lastly, AdultWeekday was dropped because it had similar values to AdultWeekend, and weekend prices had fewer missing values.

The original data set was then cleaned, and then summary statistics for the different U.S. states were gathered and cleaned to join with the ski resort data during the exploratory data analysis phase. At the end of this process, we are left with 277 rows of data to analyze to come to our conclusion.

Exploratory Data Analysis

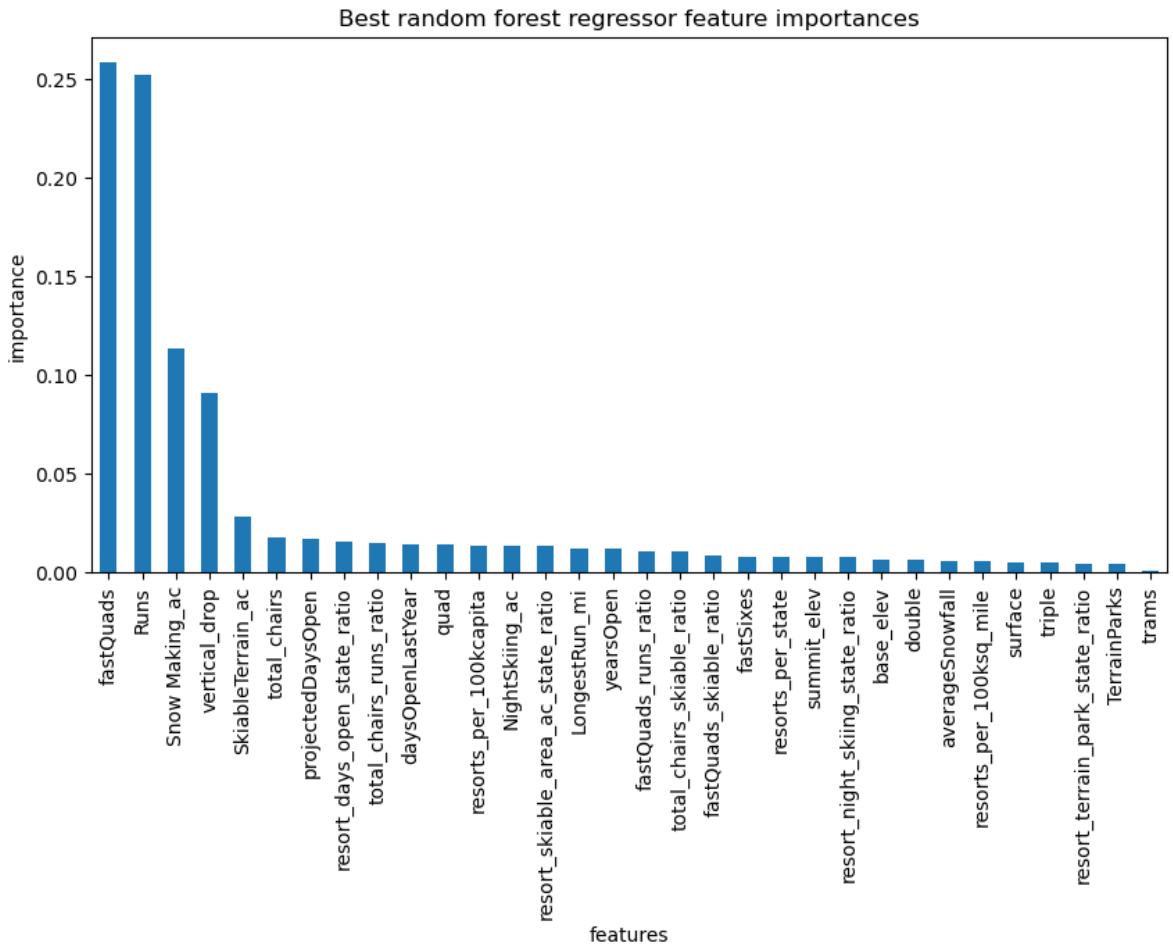
While analyzing the data, it was found that all states can be treated equally and do not have a significant impact on ticket prices. After combining the state data with the resort data, it was found that there is a positive correlation between price and four other factors. These factors include vertical_drop, runs, fastQuads, and total_chairs (see figures below).



Data Preprocessing and Feature Engineering

Baseline data was taken before feeding the information to two different models, the linear regression model and random forest model, to check for consistency. The linear regression model found eight features of importance, with two of them showing a negative impact on pricing. The negative features seemed odd, and more data is necessary to determine if this relationship is valid. This model's cross-validation performance highlights that assessing model performance is inherently open to variability.

After working with a linear regression model, the random forest model was attempted. A much better cross-validation result was found using this method over the linear regression model. The random forest model found that fastQuads, Runs, Snow Making_ac, and vertical_drop were features of importance, and this was consistent with their performance on the test set (results below).



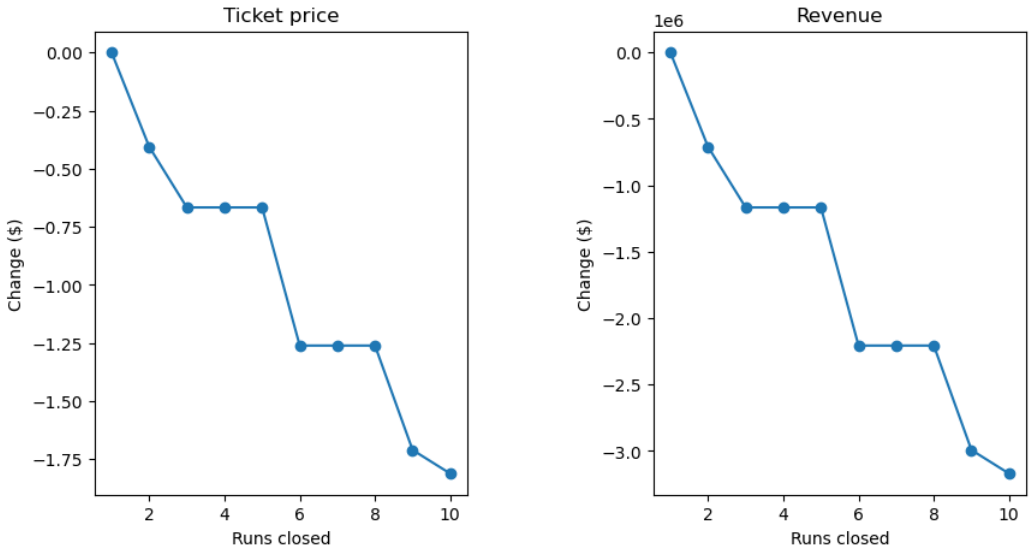
Modeling Results

Currently, Big Mountain Resort charges $81.00 for their adult weekend tickets. The model suggests that Big Mountain Resort could increase its price to $95.87. This is an optimistic number, but the expected mean absolute error is $10.39, which suggests that there is room for a price increase.

Recommendations and Conclusion

It is recommended that Big Mountain Resort adds a run that would increase the max vertical drop by 150 feet. This supports a ticket price increase of $1.99, which is expected to increase profits by $3.47 million over the season. The resort could also add snow making machines to cover an additional 2 acres for this run and expect the same profit. This change would cause a new chair lift to be installed, which would increase operational costs. The last chair that was installed increased the operations price $1.54 million, but the new profits from the added run are expected to be double the operational cost.

Another possible route would be to close less popular runs, resulting in a decrease in operational costs. Closing one run would not decrease profits, but any amount after that would be associated with a decrease in ticket price and revenue over the season, based on predictions (as seen below).



Future Scope of Work

More information would be useful to allow our model to be more precise when deciding on pricing for Big Mountain Resort's tickets. The information provided has Big Mountain Resort assuming that other resorts are setting optimal prices for themselves. This has led to Big Mountain Resort being undervalued, especially based on the facilities that it has to offer. Knowing the operational costs for the different resorts would be useful for comparing all the resorts and knowing the number of visitors per resort would have allowed the use of other features that were ruled out during the exploratory data analysis phase.