Big Mountain Resort Pricing Investigation Report

- **Problem Statement**

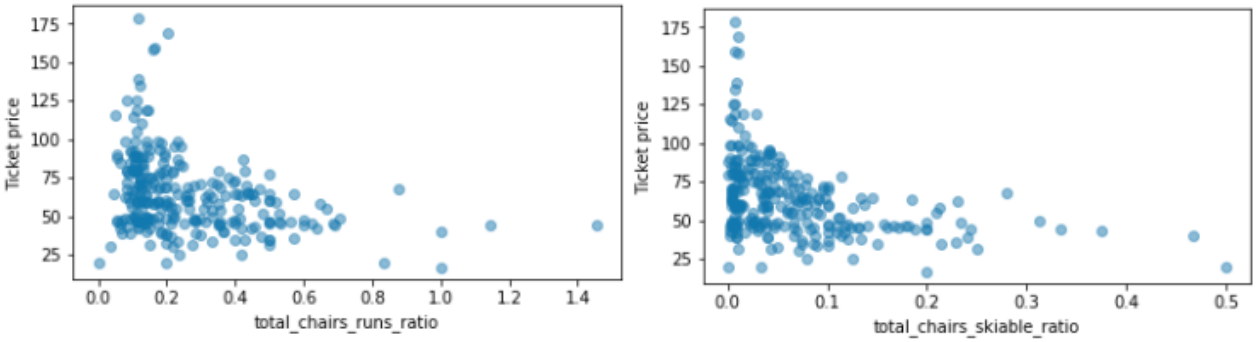
  Big Mountain Resort is a ski resort located in northwestern Montana that has been open since 1947. The resort offers 105 trails that are serviced by 11 lifts, 2 T-bars, and one magic carpet. Recently, the resort installed an additional chair lift to increase the distribution of visitors across the mountain, which increased the operation cost of the lift by $1,540,00 this season. Big Mountain Resort needs to find a way to increase profit margins by cutting costs, if possible, and making better use of its already facilities to justify higher ticket prices by the end of this ski season.

- **Data Wrangling**

  Data Wrangling revealed that the 'AdultWeekday' prices have the most missing values in the original data, and therefore this data was dropped from our pricing model. Thus, we focused on 'AdultWeekend' prices as the best data for determining a target ticket price.

- **Exploratory Data Analysis**

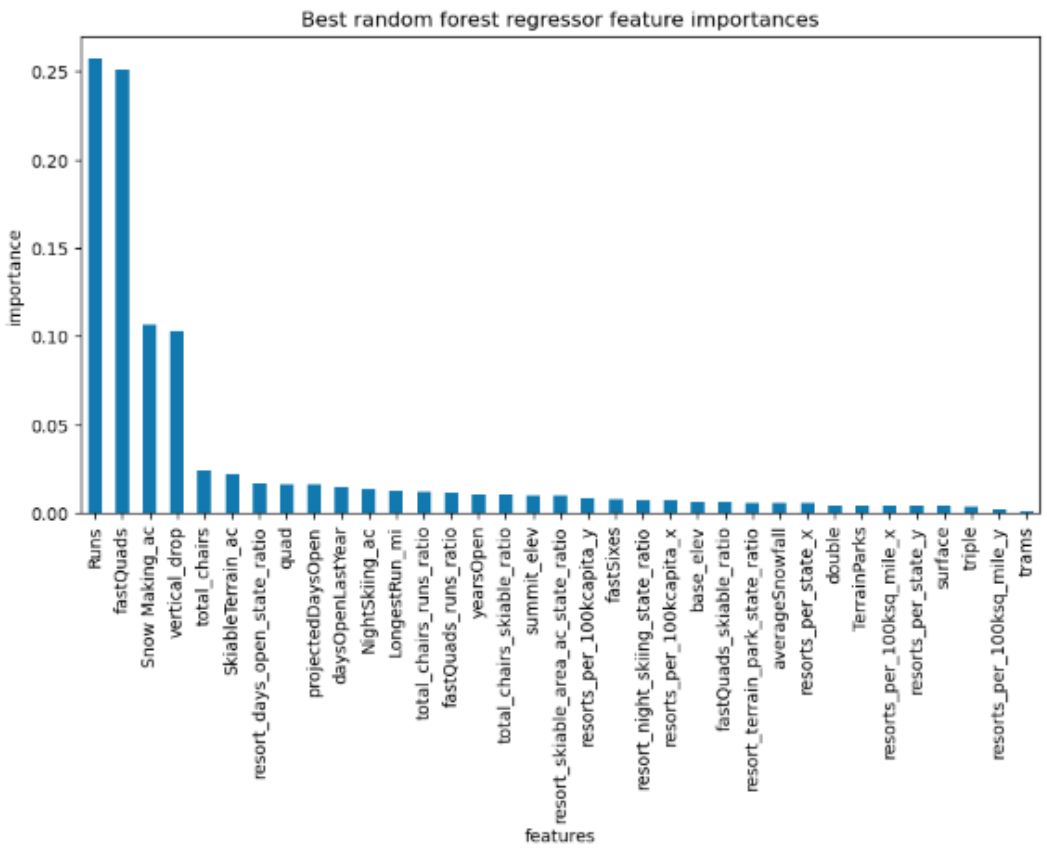
  During the Exploratory Data Analysis, we see a variance of 77% between state and ticket price, which does not demonstrate any clear pattern or grouping between state and ticket price. **However, we do see a high degree of correlation between total runs and total chairs and the target value of the ticket price.**



- **Model Preprocessing with Feature Engineering**

  In the Model Preprocessing phase, linear regression and random forest models both demonstrate that the top four features highly correlated to the target price are **Runs, fastQuads, Snow Making_ac, and vertical_drop**, which is also confirmed by the EDA test data. The random forest model demonstrates less variability than the linear model, and has lower

cross-validation mean absolute error by almost $1, proving to be the more efficient model for predicting target price.



- **Pricing Recommendation**

Big Mountain Resort currently charges $81 USD for their Adult Weekend ticket. Our modelling suggests a ticket price of $97.96USD. Four different scenarios have been inputted into our model to test support for increasing the ticket price. Among the four different scenarios analyzed by our model, Scenario 2 proposes that we add one additional run, which would increase the vertical drop by 150 feet, and install an additional chair lift, which would be a one-time cost. This scenario increases support for ticket price by $2.22, and over the season, $3,888,889 USD could be expected in revenue.

- **Conclusion and Future Scope of Work**

When we compare Big Mountain's and its facilities with other resorts with relatively similar facilities, and the average prices of these competitors, the data tells us that Big Mountain is most likely undercharging for it's tickets in comparison to its competitors with similar facilities in the marketplace. For future analysis, access to historical information about revenue and facilities would be very useful for the model for predicting the target price.