Introduction:

Big Mountain Resort offers spectacular views of Glacier National Park and Flathead National Forest, with access to 105 trails. Every year about 350,000 people ski or snowboard at Big Mountain. The business expressed a desire for some guidance on how to select a better value for their ticket price by considering number of changes hoping to reduce cost without reducing ticket price or increasing ticket price.

Problem Statement and Modeling:

What opportunities exist for Big Mountain Resort to effectively develop and implement a new pricing strategy that can maximize capitalization in their facilities investments to offset their recent additional operating cost by $1,540,000 this season.

According to this heatmap, the features that have the highest positive correlation with price are:

- Fast Quads, Area of Snow Makers, Runs, and Night skiing ratio

After testing each feature individually against price (using one to one scatterplots), the other important features that stood out were:

- Vertical Drop, Total Number of Chairs, Longest Run, and Skiable Area

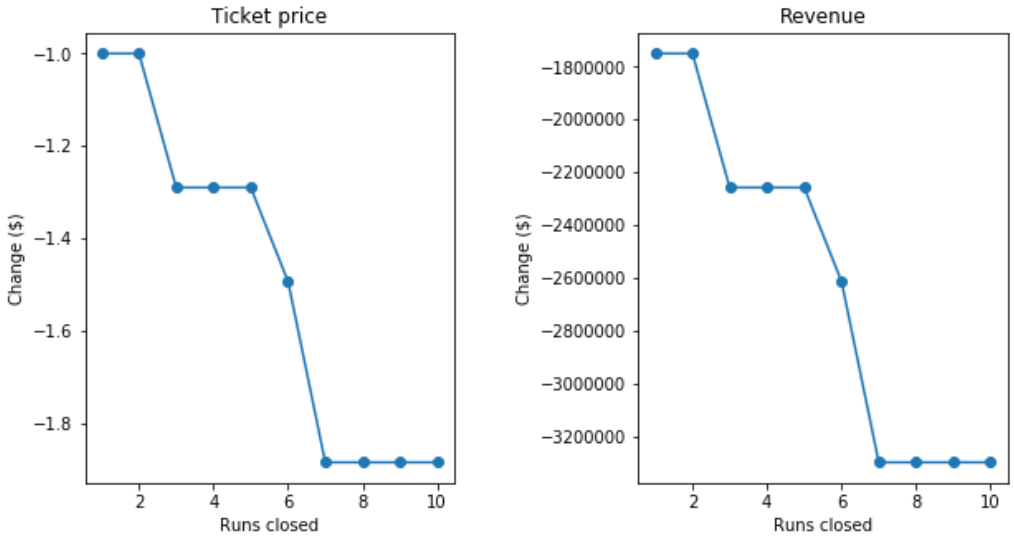
Two different types of models were used, a linear regression imputed with the median and mean values, and a random forest model by adding additional classifications.

- Linear Regression: This model was created by imputing missing values with median and mean values based on the data we had. With the four features from the heatmap used, this model had a Mean Absolute Error of $9 which was much too high for this scale.
- Random Forest Model: When including all eight features, our model was overly sensitive and demonstrated a Mean Absolute Error around $1. However, the random forest model revealed that the top four features to consider are fastQuads, Runs, Snow Making_ac, and vertical_drop, which was what we chose as our final model selection.

Recommendations:

- Our Random Forest Model has Big Mountain Resorts ideal ticket price at $94.22, a significant increase compared to the current price of $81.
- Increasing the vertical drop by 150 ft would increase the ticket price by 10.44% from $81 to $89.46, resulting in revenue increase by $14,811,594.
- Adding 2 acres of snow making would increase the ticket price by 12% from $81 to $90.75, resulting in revenue increase by $17,068,841.
- When it comes to closing up to 10 used Runs, our Model predicted the following:
    - Closing 1 run will have no impact on Ticket price or revenue.
    - Closing 2 runs results in the same loss in ticket price and revenue by $0.4 and $750k respectively.
    - Closing down 3, 4 or 5 results in the same loss in ticket price and revenue by $0.67 and $1.250M respectively.
    - Closing down 10 runs reduces support for ticket price and so revenue by $1.71 and $3M respectively.

- Because we don’t know the operating cost per used run, we can’t determine how much cost saving will offset the loss in revenue after closing more than one run.



Conclusion:

The best scenario where we managed to gain the highest revenue increase possible was by increasing the vertical drop by 150 ft, adding one Chair Lift, adding one run and adding 2 acres of snow making cover. This scenario has increased ticket price by 12% from $81 to $90.75.

Due to lack of data in regards of operating cost per used run and weekdays ticket price, our model cannot recommend closing down used runs or implementing a dynamic ticket pricing.