PRICING MODEL FOR SKI RESORTS

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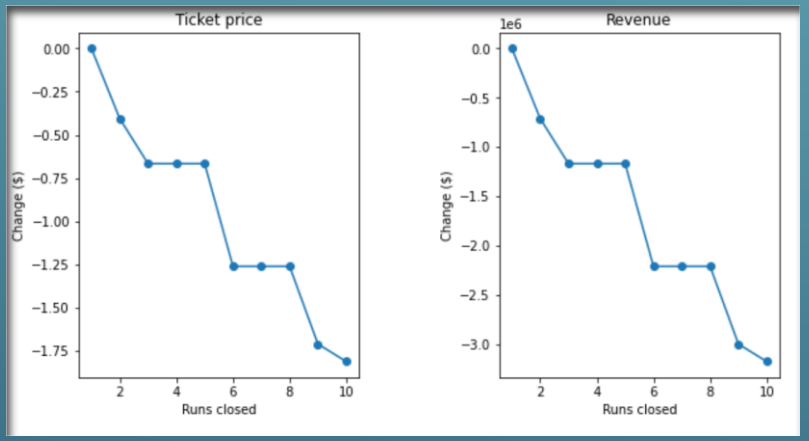
INTRODUCTION

- Big Mountain Resort installed an additional chair lift that increased the operating cost by $1.5 million.
- Big Mountain does not have a strong sense of what facilities matter most to visitors.
- The business has decided to either cut costs or select better ticket prices to maximize its return.
- The purpose is to come up with a pricing model for ski resort tickets in our market segment.
- Aim to build a predictive model for ticket prices based on a number of facilities.
- Will be used to provide guidance for Big Mountains's pricing abd future facility investment plans.

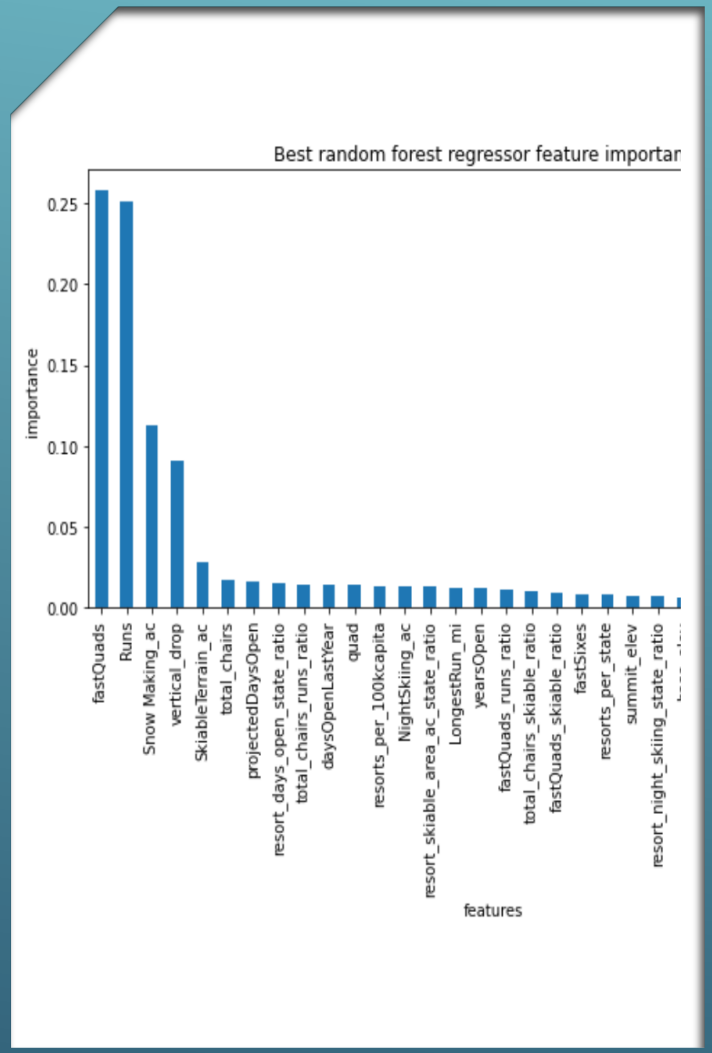
RECOMMENDATION

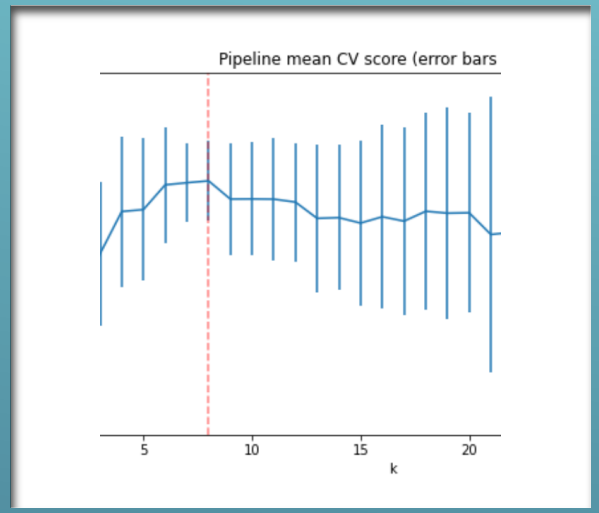


- According to the model, ticket price should be ~ $95.87 in our market segment.
- Some of the most important features that are observed are fast quads, vertical drop, total chair lifts, runs, and area covered by snow making machines.
- The best recommended scenario is adding a run, increasing vertical drop by 150 ft, and adding 1 chair lift.
- This scenario increases ticket support by $1.99, and over the season it is expected to amount to $3,474,638.
- Closing 2 and 3 runs reduces support for ticket price and so revenue.
- Closing 4 or 5 brings no further loss in ticket price and closing 6 or more leads to a large drop.

MODELING RESULTS AND ANALYSIS

- Heatmap was created to find the correlation between ticket prices and other features. Some of the reasonable correlations were, fast quads, runs, snowmaking area, total chairs and vertical drop.
- Mean as the predictor for the price.
- Created 2 models: linear Regression and Random Forest



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Out[90]: 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
```

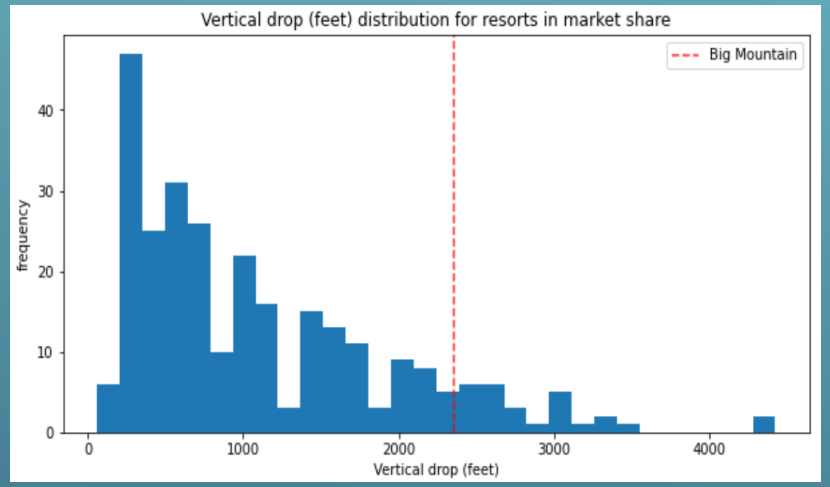
LINEAR REGRESSION AND RANDOM FOREST MODEL

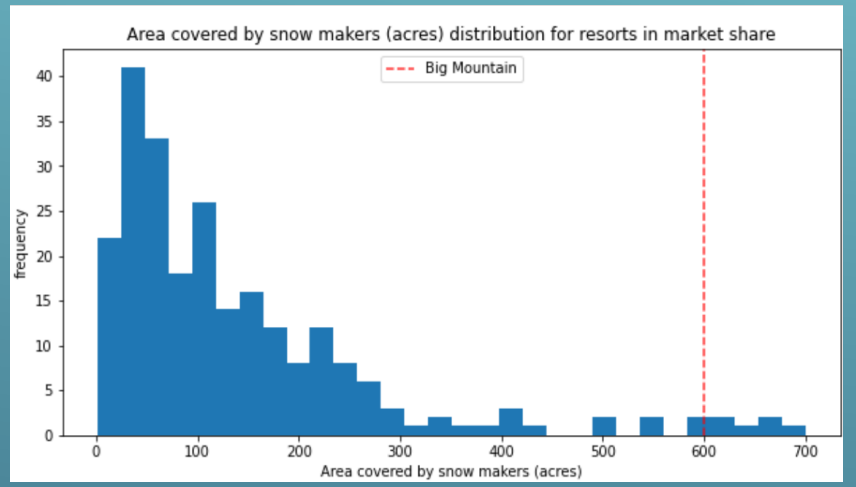
- Our Linear Regression model uses 8 features. Biggest positive feature is vertical drop.
- In Random forest Model, dominant top 4 features are fast quads, runs, snow making area and vertical drop.

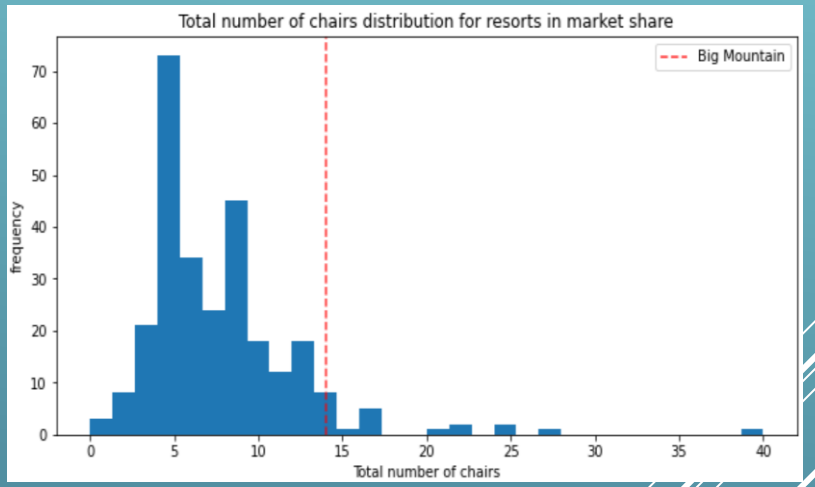
COMPARING MODELS

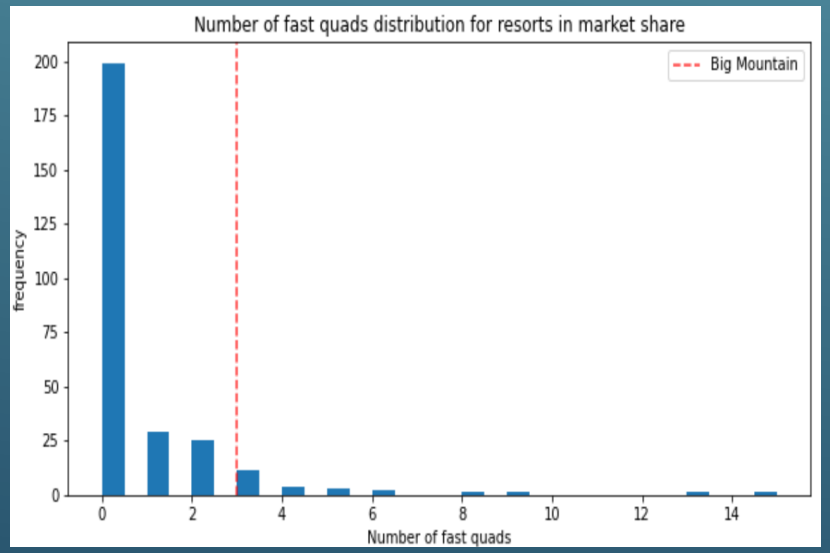
- Calculated mean absolute error using cross-validation.
- The Random Forest model had lower MAE by almost $1.
- Exhibited less variability.
- Performance on test set consistent with the cross-validation results.

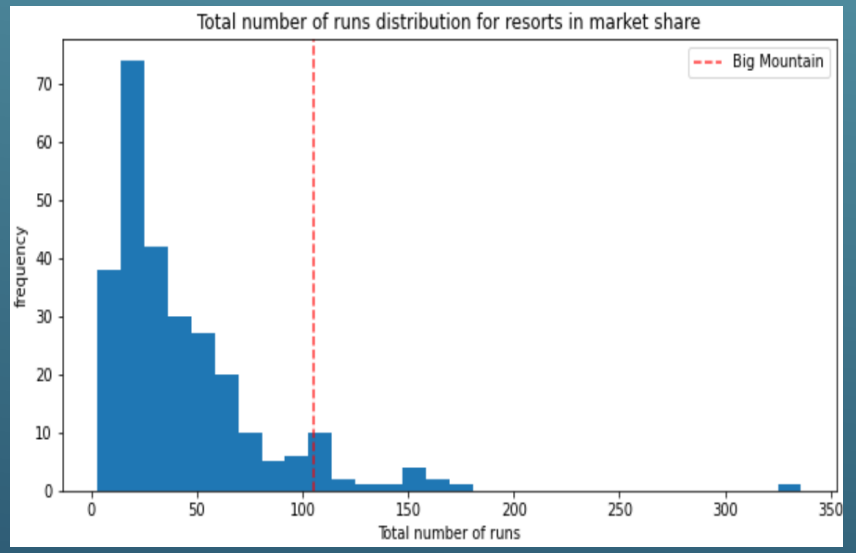
COMPARISON BETWEEN DISTRIBUTION OF FEATURES

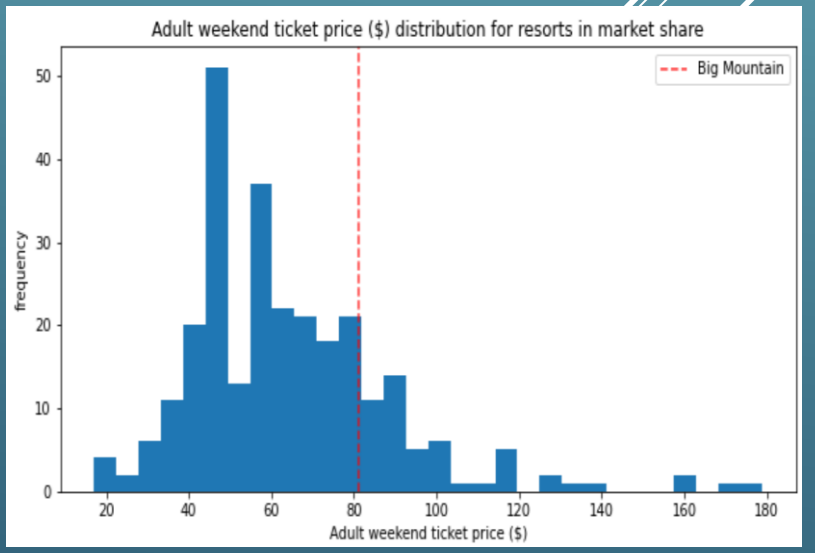












CONCLUSION

- Random Forest Model was selected to predict the ticket prices for resorts.
- The top features that seem to matter most are fast quads, total chair lifts, runs, vertical drop and snow making area.
- Big Mountain seems to be undercharging by ~ $14, relative to its position in the market, for their tickets according to our model.
- Recommended scenario to Big Mountain for future consideration is adding a run, increase vertical drop by 150 ft, and adding a chair lift.