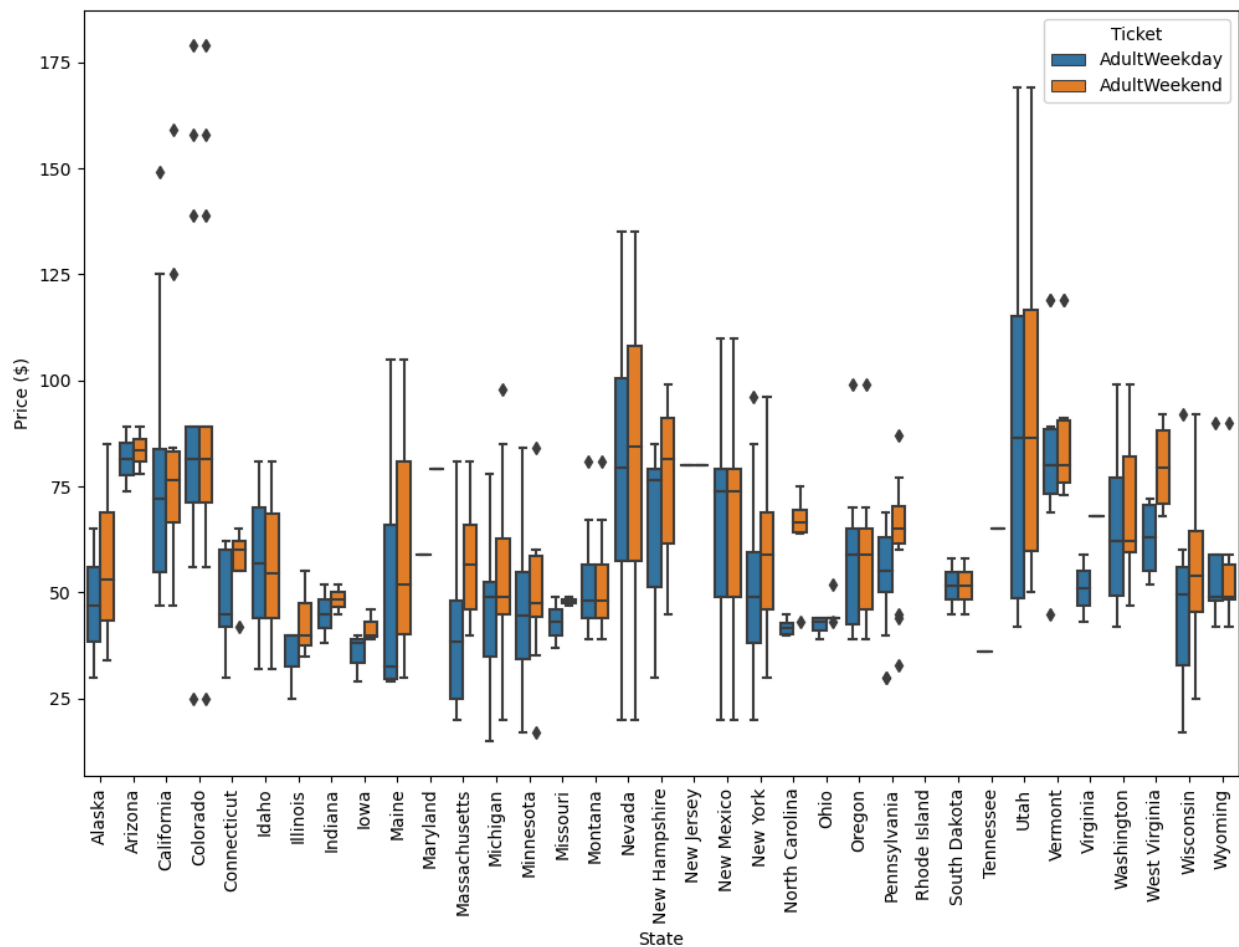


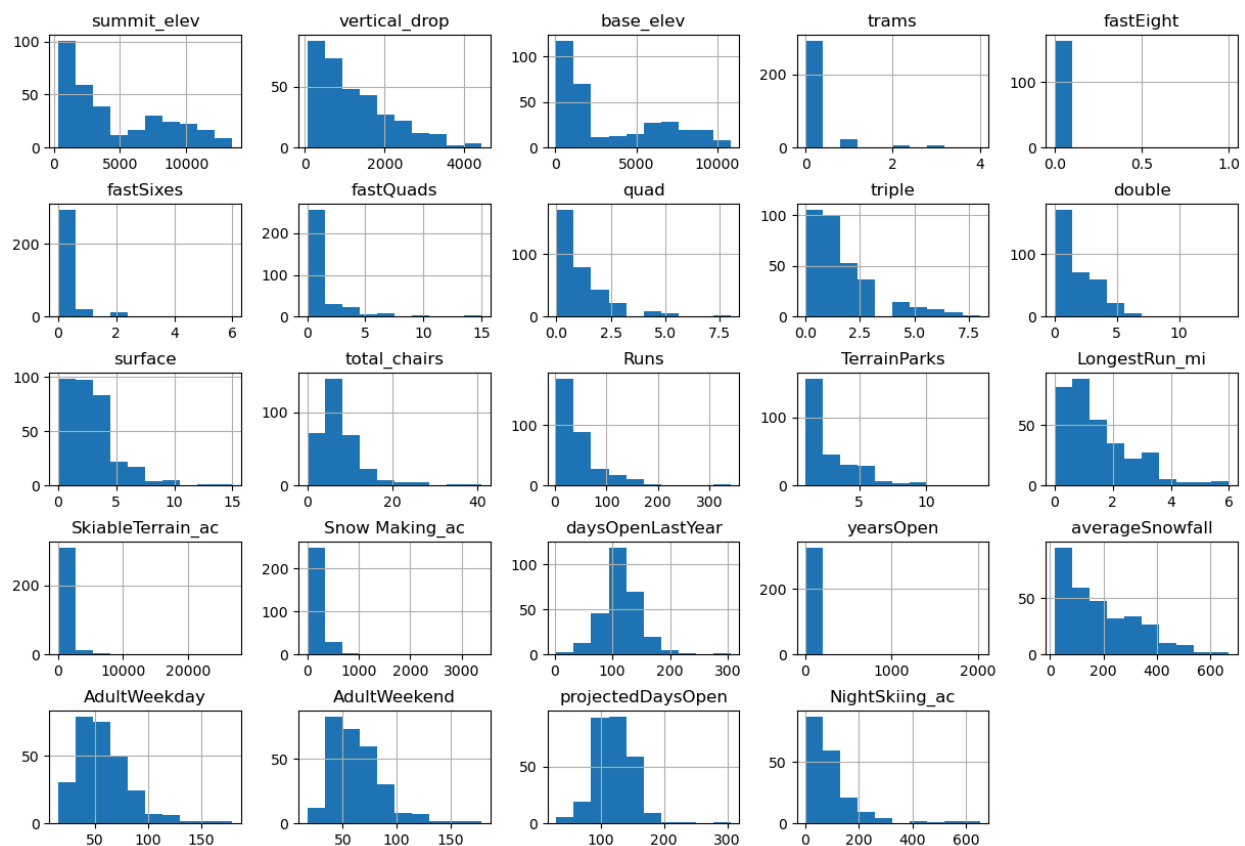
Problem Statement

How can Blue Mountain Resort increase revenue to cover the additional \$1.54B in operating costs this season?

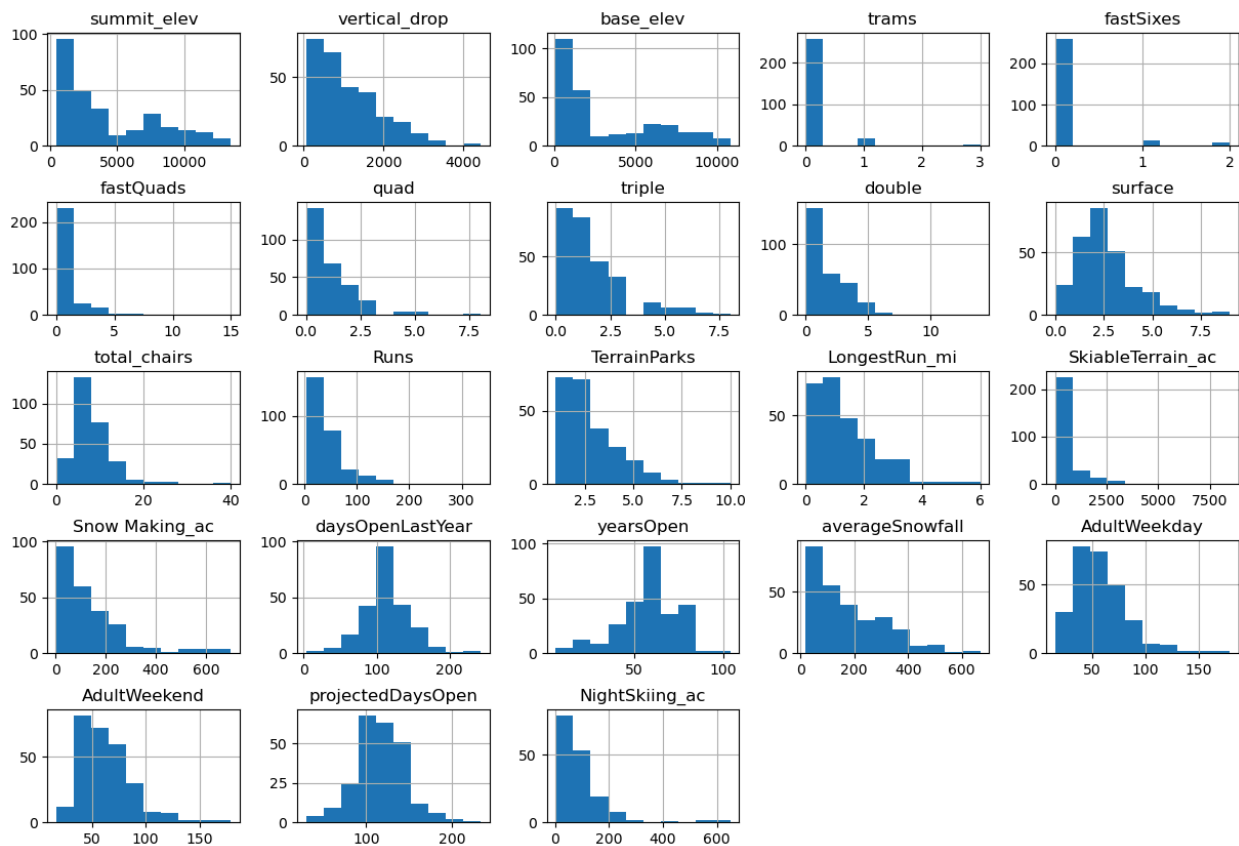
Exploratory Data Analysis



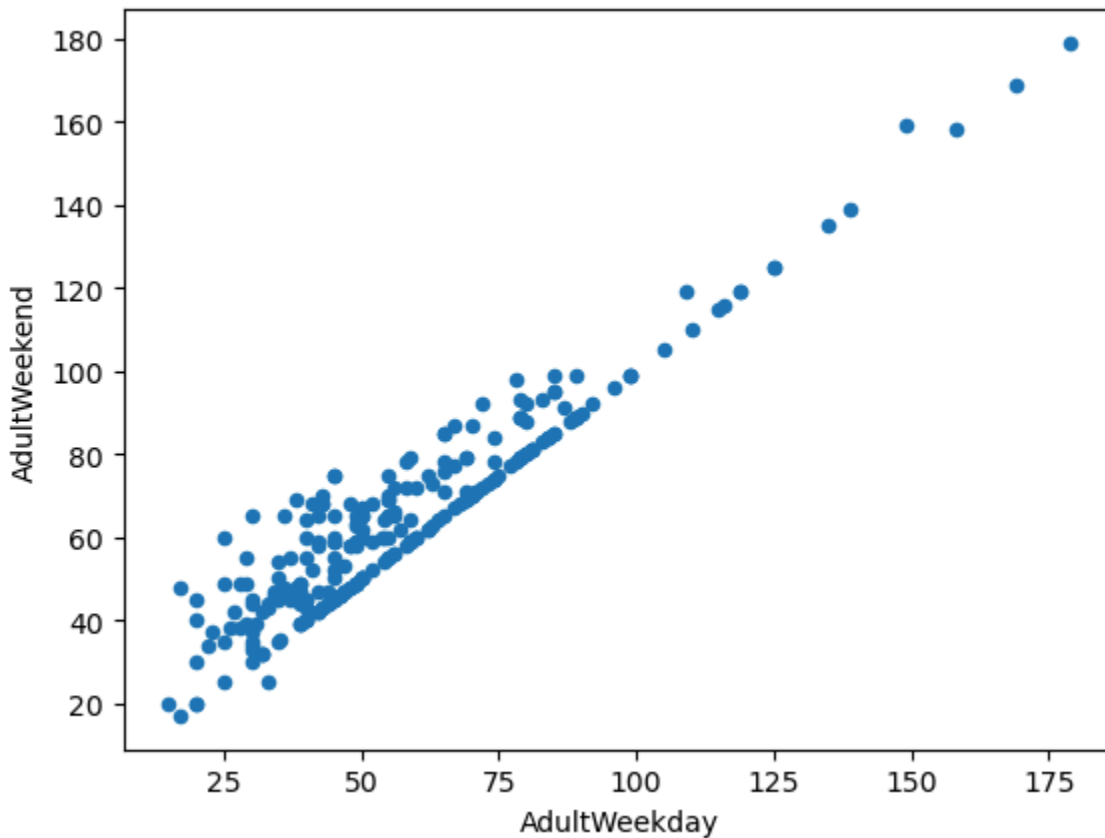
Ticket price was plotted to compare a rough estimate in ranges across states



Initial data distribution was reviewed for possible areas of concern. Columns with skewed data like trams, fastEight, SkiableTerrain_ac, Snow Making_ac, and yearsOpen.

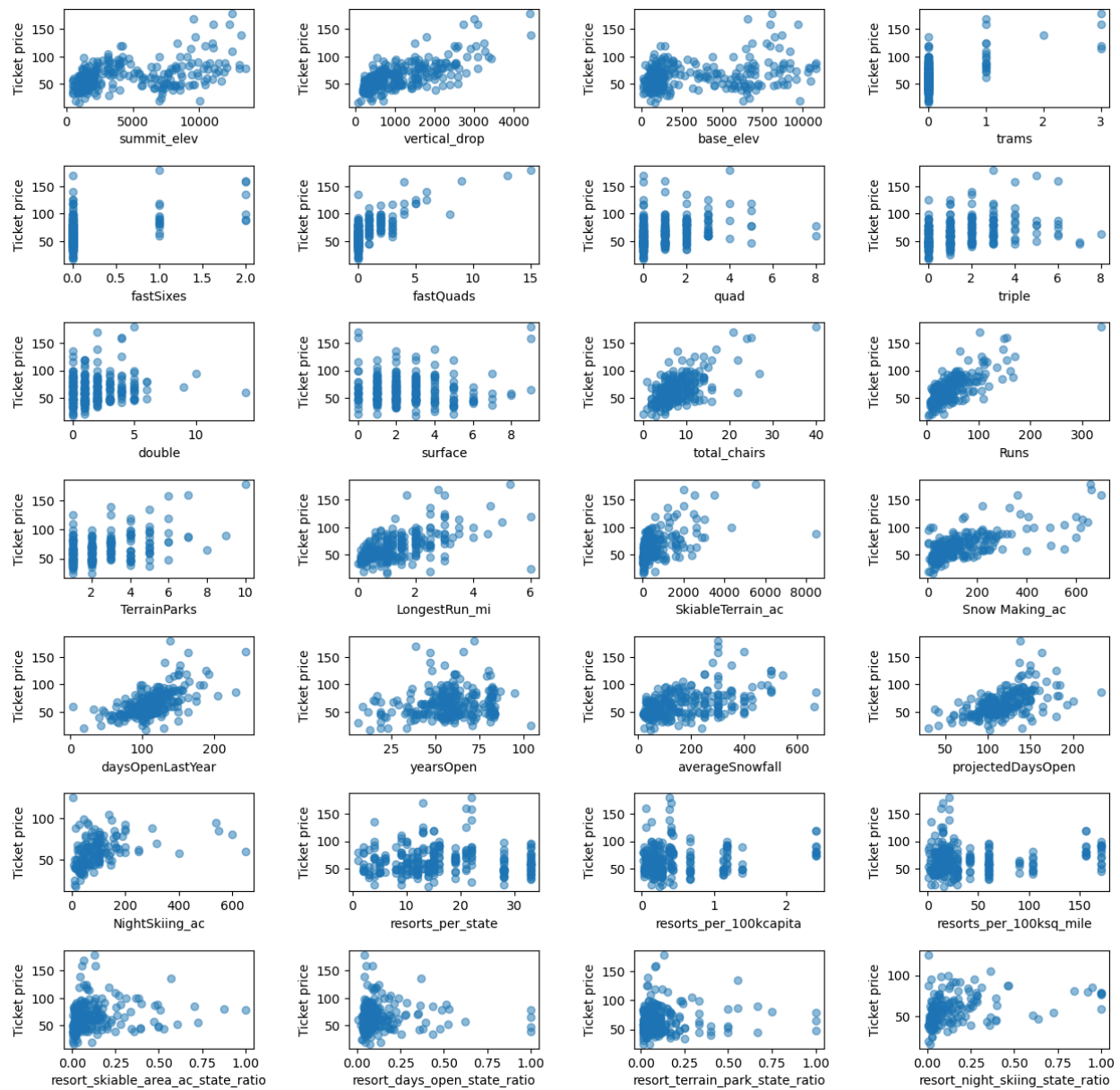


The fastEights column was dropped, and the SkiableTerrain, Snow Making, and yearsOpen columns had unreasonable extremes removed.



Next, AdultWeekend and AdultWeekday ticket prices were compared and revealed a clear equality between the two with Weekend prices tending to be higher for ticket prices below \$100.

When deciding between the two, AdultWeekend was missing 4 values while AdultWeekday was missing 7. For this reason, AdultWeekend ticket price was chosen as the target value.



Scatterplots showed a high complexity in the relationship between individual features and ticket price, with vertical_drop, fastQuads, Runs, and total_chairs appearing to have the strongest positive correlation.

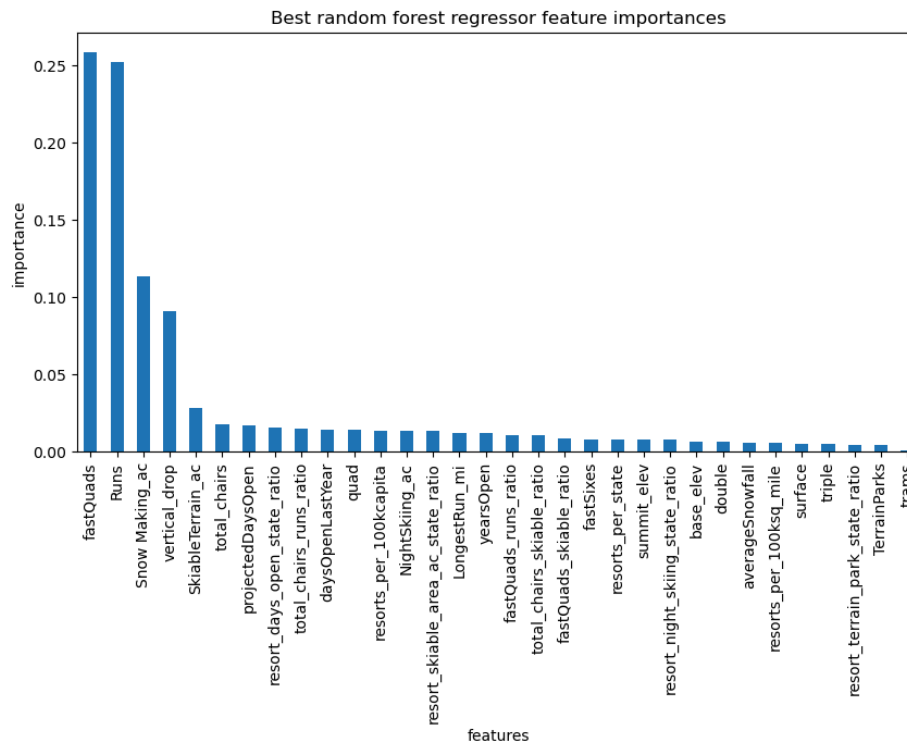
Model Training

Two models were built for price prediction utilizing GridSearchCV:

- Linear Regression model
 - Resulted in a Mean Absolute Error of ~\$10.50
- Random Forest Regression model
 - Resulted in a Mean Absolute Error of ~\$9.60



Since the cross-validation score begins to level off at a sample size between 40-60, it seems there is sufficient data available for the models to train on. Random Forest had a lower MAE, it was selected as the final model.



Conclusion

Recommended price is \$95. Even with the MAE for the random forest model at ~\$9.50, this suggests room for ticket price increase.

Important features to determine resort value appear to be

- fastQuads
- Runs
- Snow Making
- Vertical Drop

Additional data to consider for model improvement could include

- Amount of sales of 1, 3, and 5 day tickets
- Number of chalets per resort
- Additional lift options like rope-tows and magic carpets
- Ticket sales per year.