

Pricing Model for Big Mountain Ski Resort



Problem Statement

- Big Mountain Resort pricing has been based primarily on charging a premium above the average price of resorts in its market segment. However, this strategy may have underestimated the value of some facilities compared to others. The company wants a data-driven strategy to select a better value for their ticket price by making changes that will either cut costs without undermining the ticket price or raise the ticket price.

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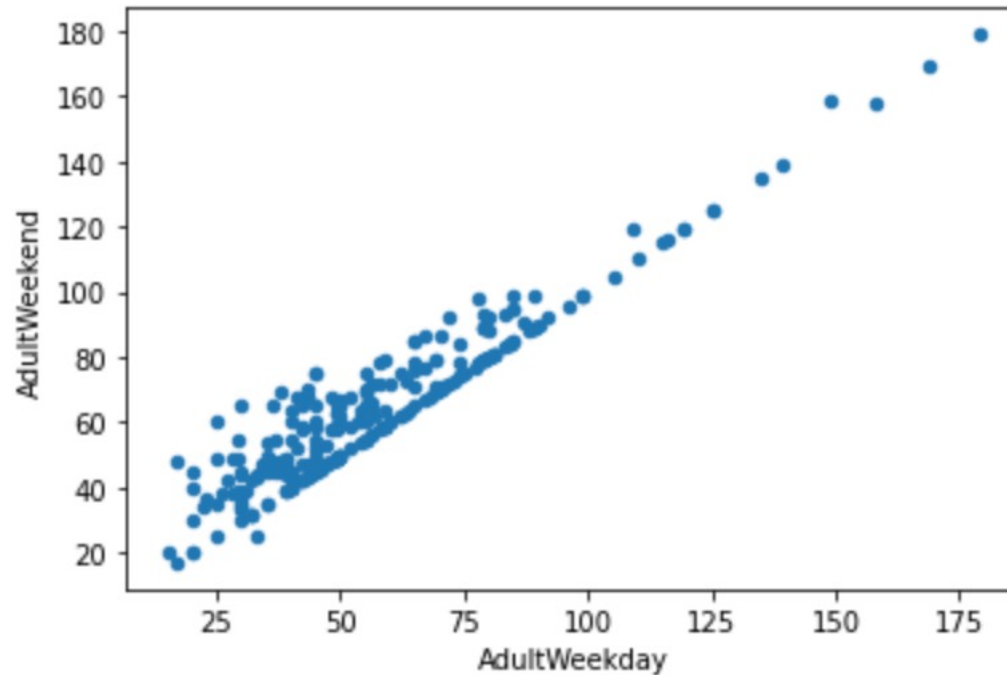
Stakeholders

- CEO
- CFO
- SVP
- Facility engineers
- Maintenance managers

Data Sources

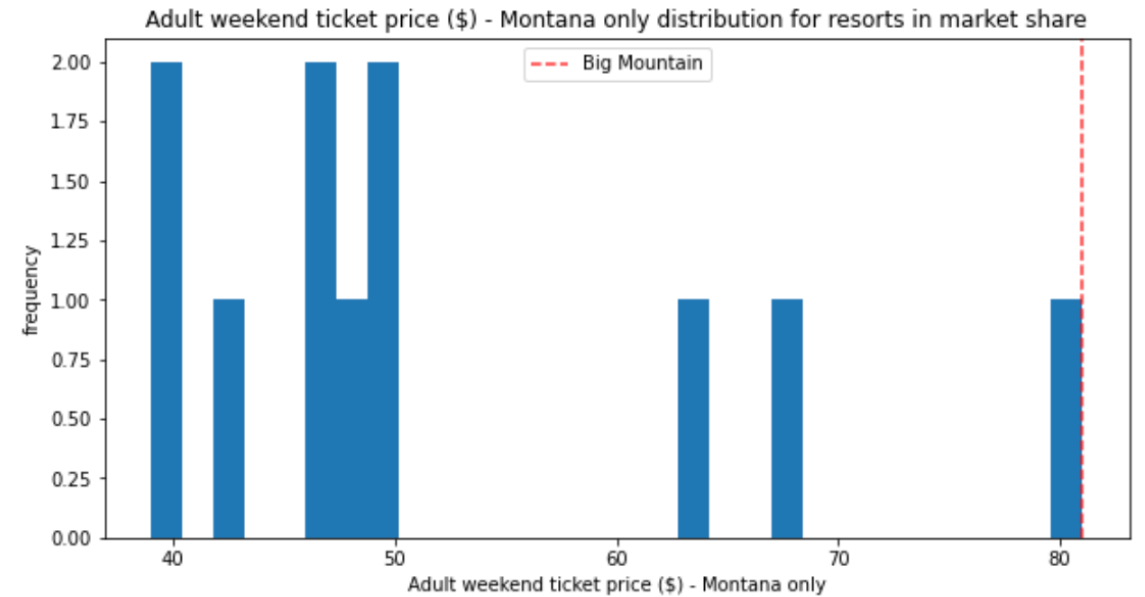
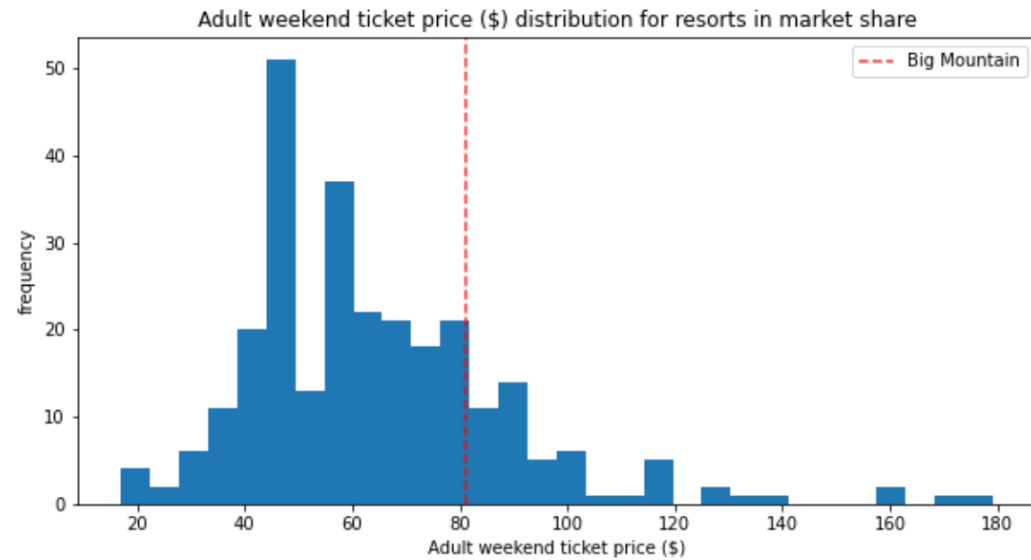
- CSV file that contains information from 330 resorts in the US that can be considered part of the same market share

Comparison of Weekday and Weekend Prices

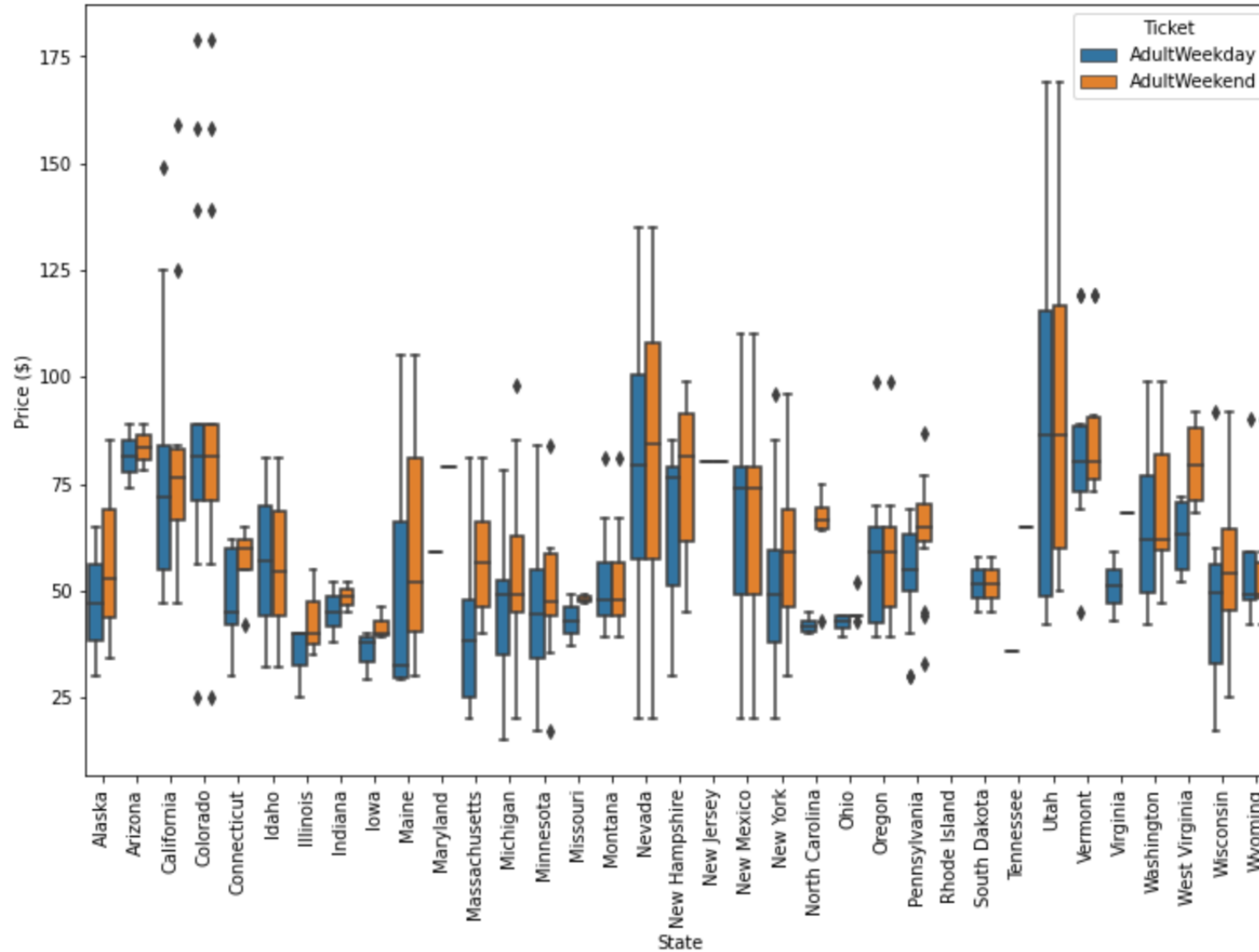


- Weekend prices are equal or higher than weekday prices
- Less missing values for Adult weekend prices
- Adult weekend prices is the target variable

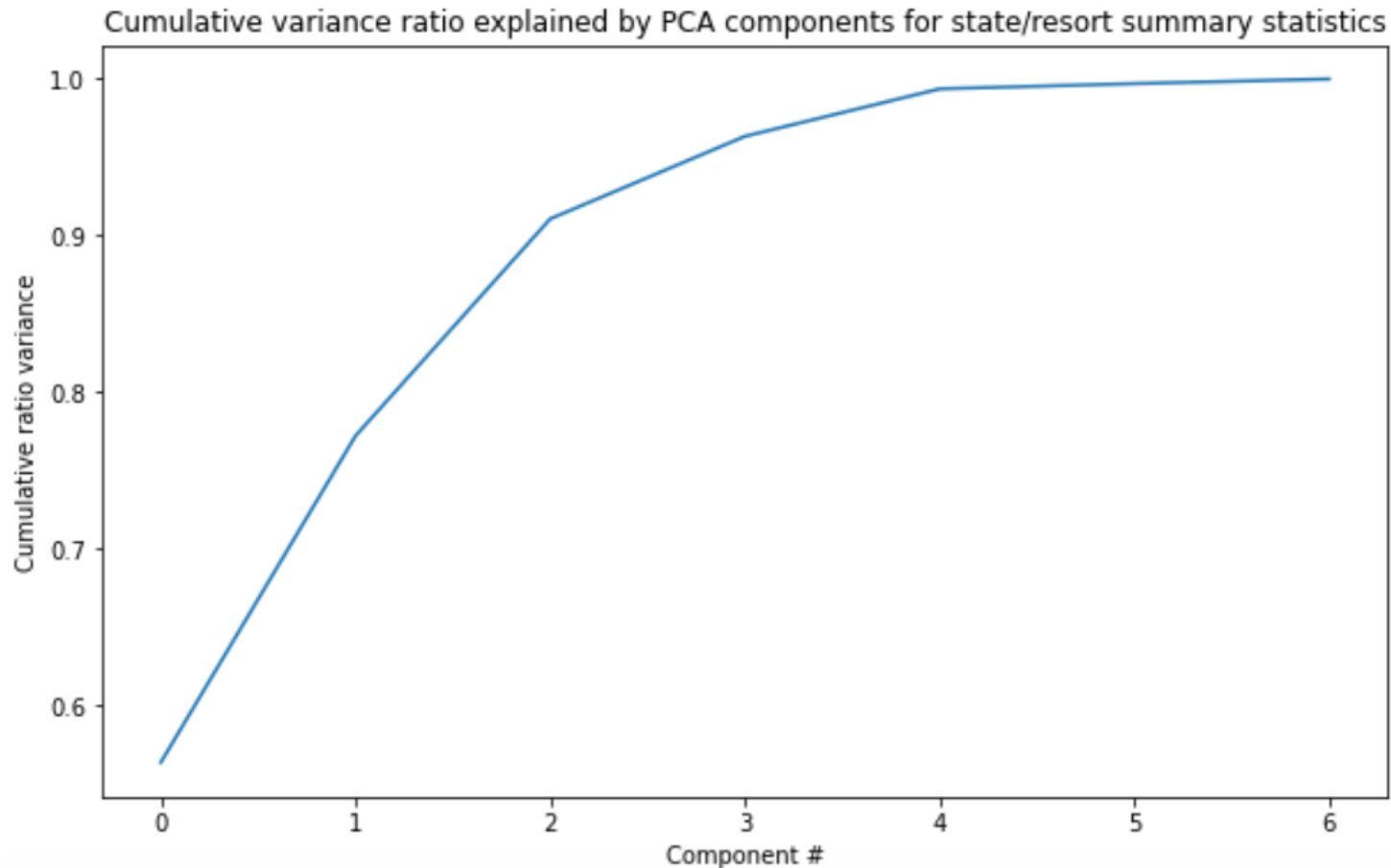
Distribution of ticket Prices



Ticket Prices by state

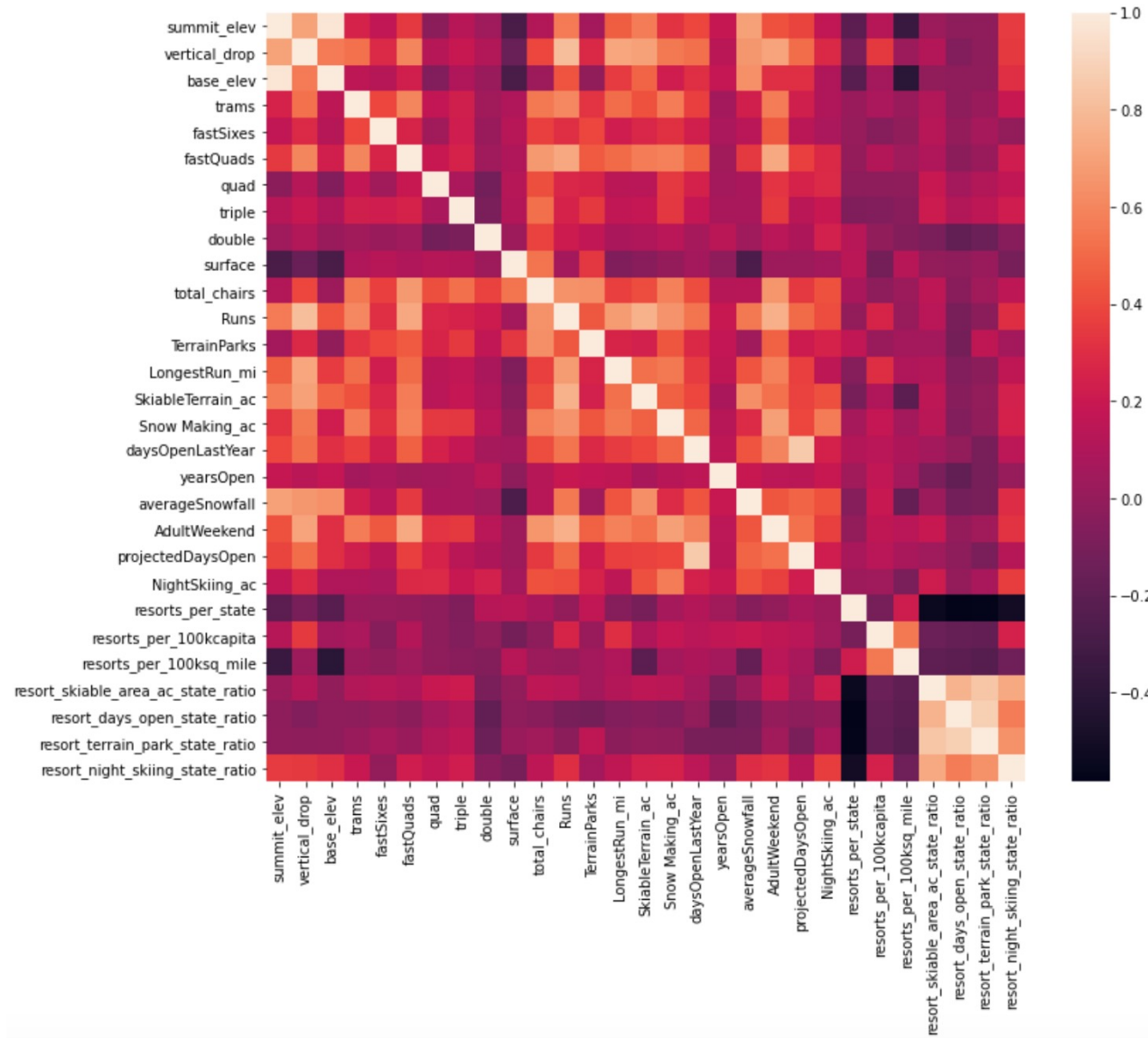


Ski States Summary PCA



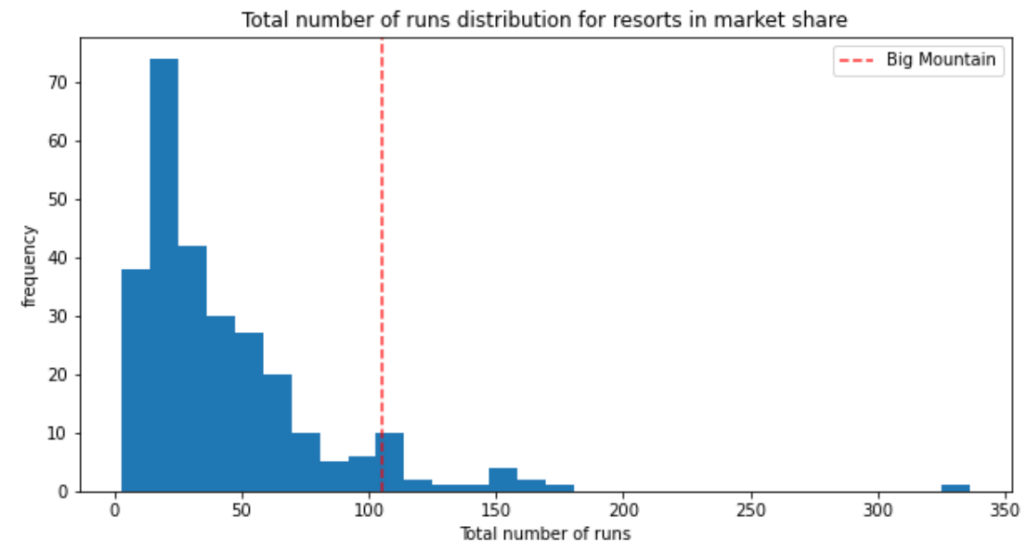
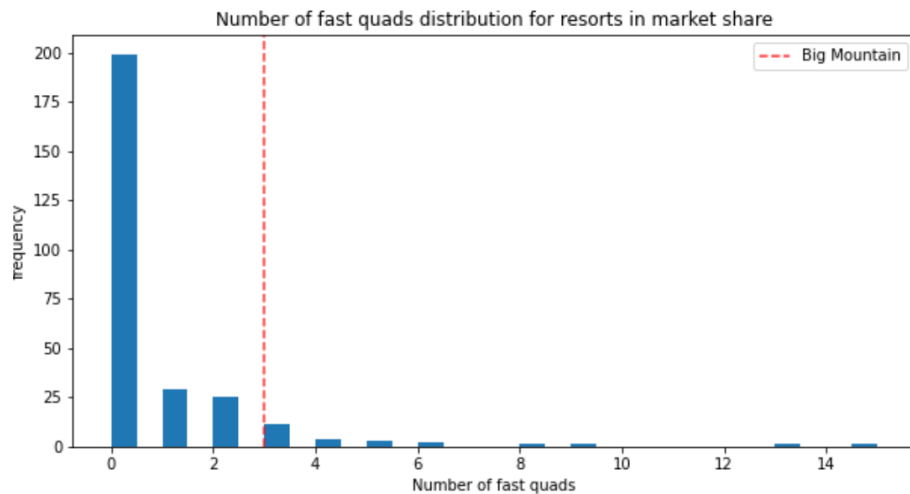
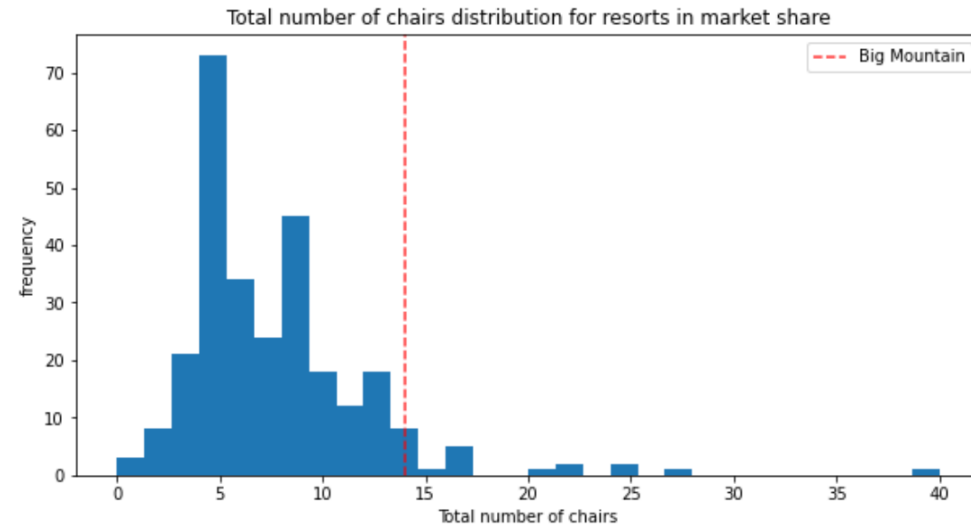
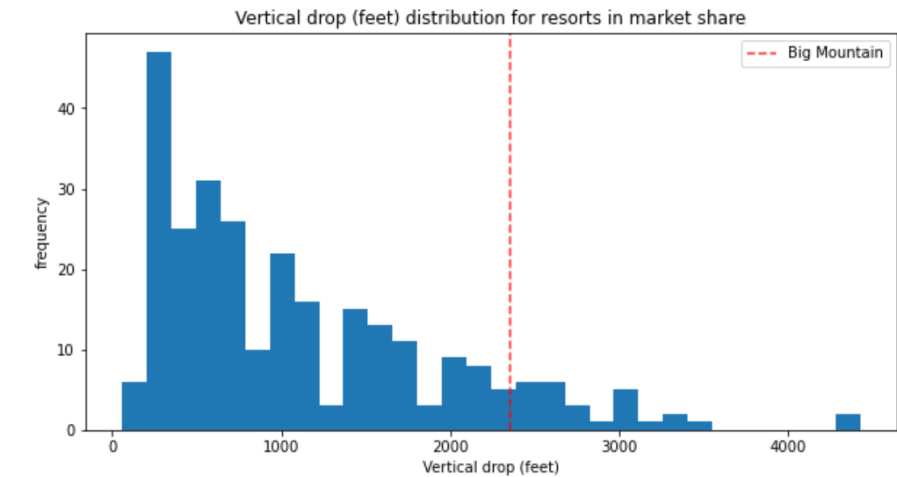
- The first 4 PCA components account for 94% variance
- The first 2 PCA components account for 77% variance

Correlation of data variables

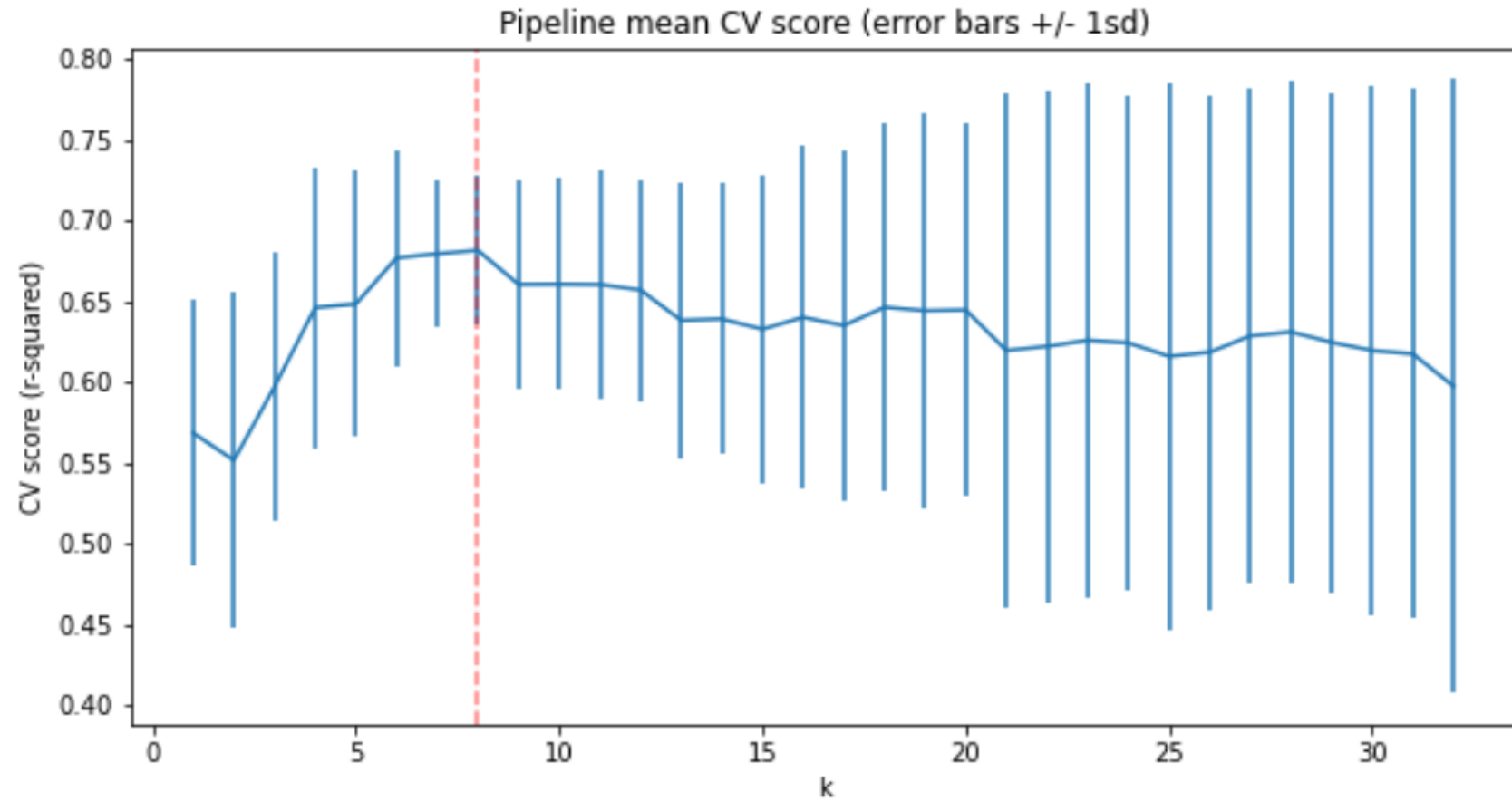


- fastQuads, runs, snow_making and total chairs are correlated with price

Distribution of the correlated features



Linear Regression Model: Gridsearch for best K



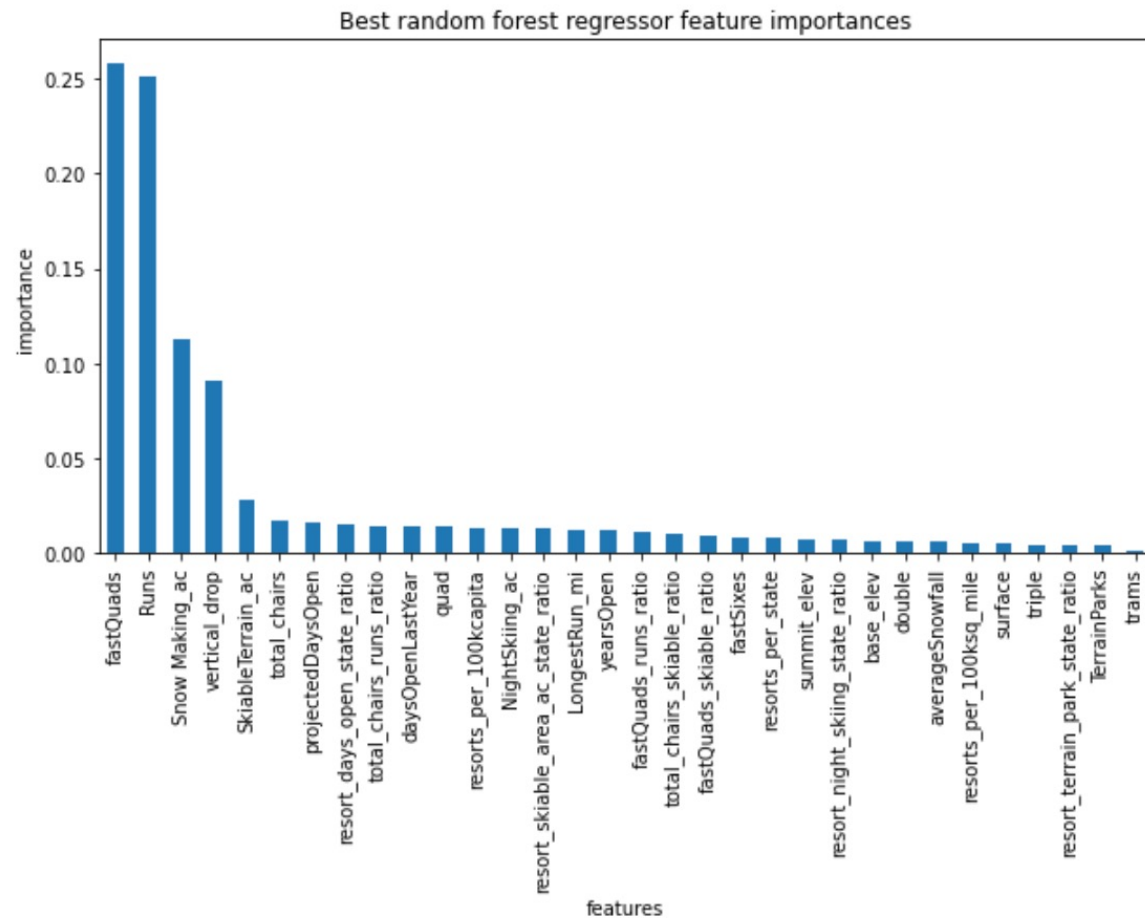
- Best k is 8

Model Performance Metrics

	Linear Regression	Random Forest
R²	0.63	0.70
MAE train	10.50	9.64
MAE test	11.49	9.53

- Random forest regression model gave the lower MAE.

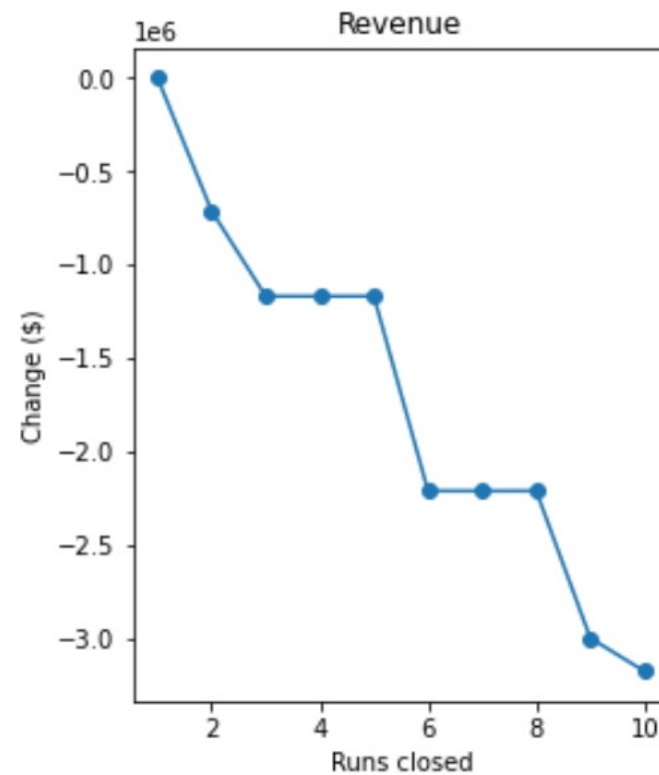
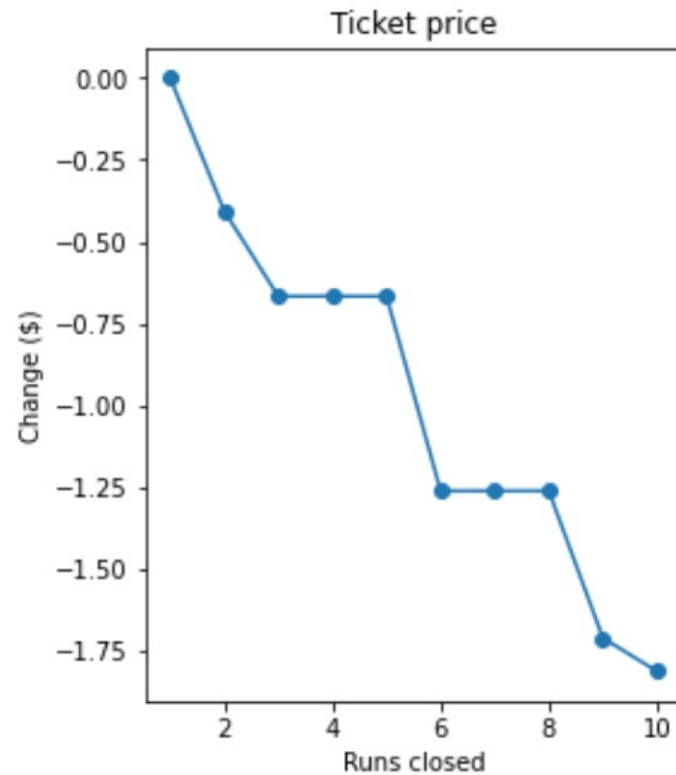
RF Feature Importance



Most Important features

- Average Deaths caused by cancer Per Year
- Population
- Cancer Incident rate

Change in ticket Price and revenue by number of runs closed



Conclusion

- The random forest was the best model for ticket prices
- FastQuads, runs, snow_making and vertical drop are the most important features
- The suggested adult weekend price for Big Mountain is \$95.87
- The ticket price could be increased by \$4.85 without negatively affecting