Big Mountain Resort

Pricing Model

Problem Identification

- GOAL - Increase revenue by $1,540,000 within the season to pay for new chairlift that was installed
- Current strategy - Charge higher prices than competitors
  - How do you justify the new prices?
  - Potential for missed opportunity
- New Strategy – Build predictive model for ticket price based on resort facilities
  - Use data on US resorts to identify features that would support higher ticket prices
  - Predict prices based on free market valuation of those facilities

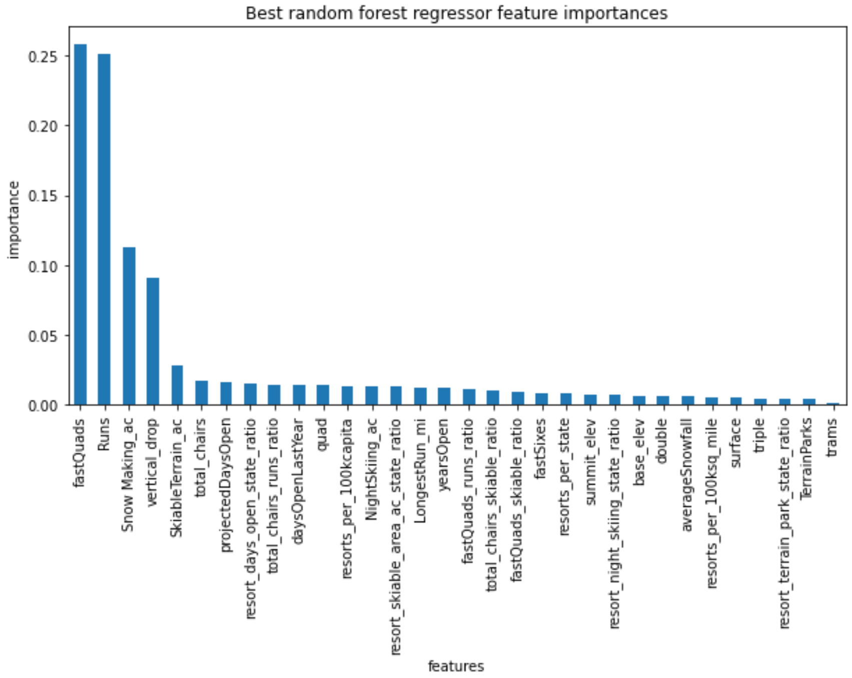
Recommendations and Key Findings

Recommendation: Increase vertical drop, add a run and a chairlift:

- Increase per ticket - $1.99
- Revenue increases (one season) - $3,474,638

- Big Mountain ranks high among many features high in importance in our model:
    - Snow making area (3rd in our model)
    - Fast quads (1)
    - Runs (2)
    - Longest run
    - Skiable terrain area (5)

- Vertical Drop (4th in our model) is relatively high for Big Mountain resort but not among the highest

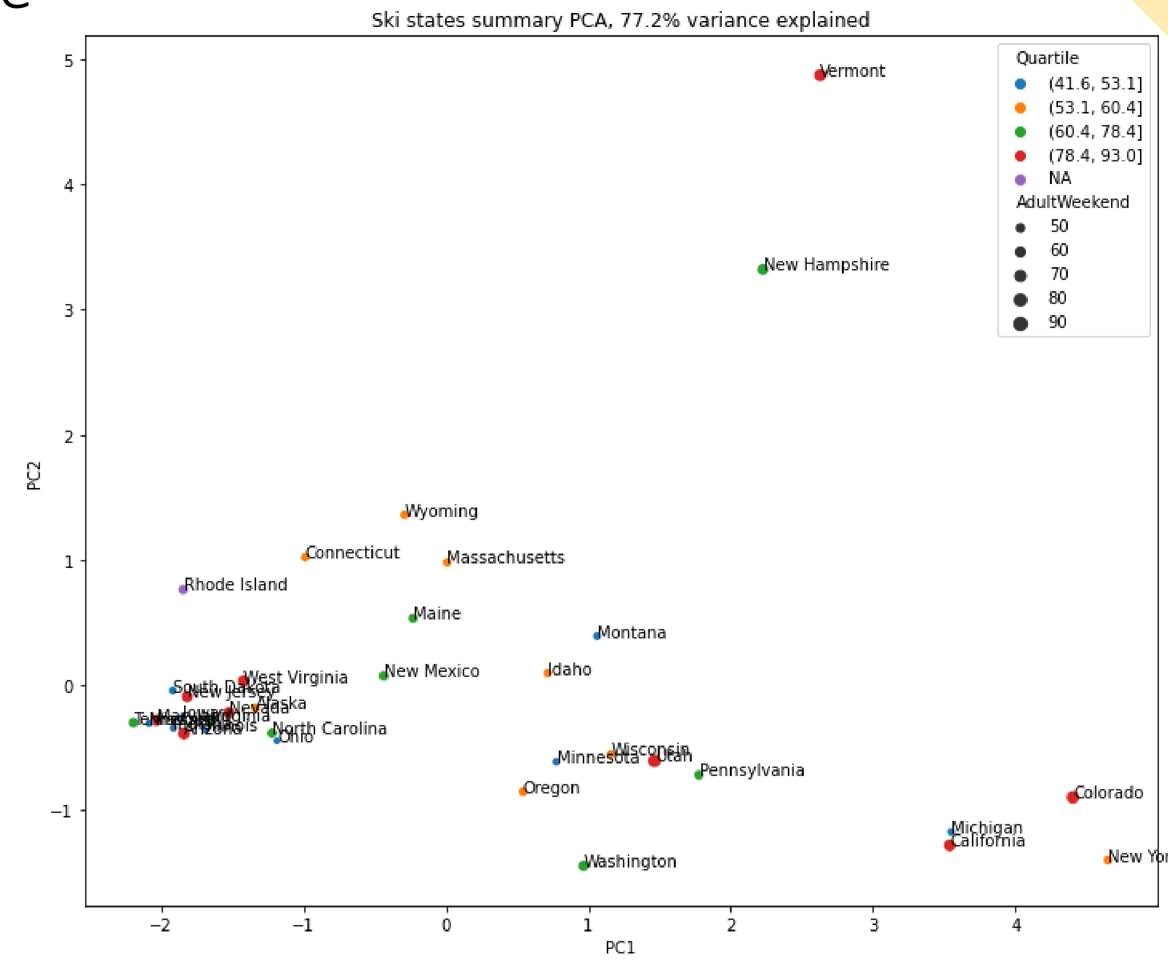


Target Value and State Labels

Target value: Adult weekend price

Treat states equally:

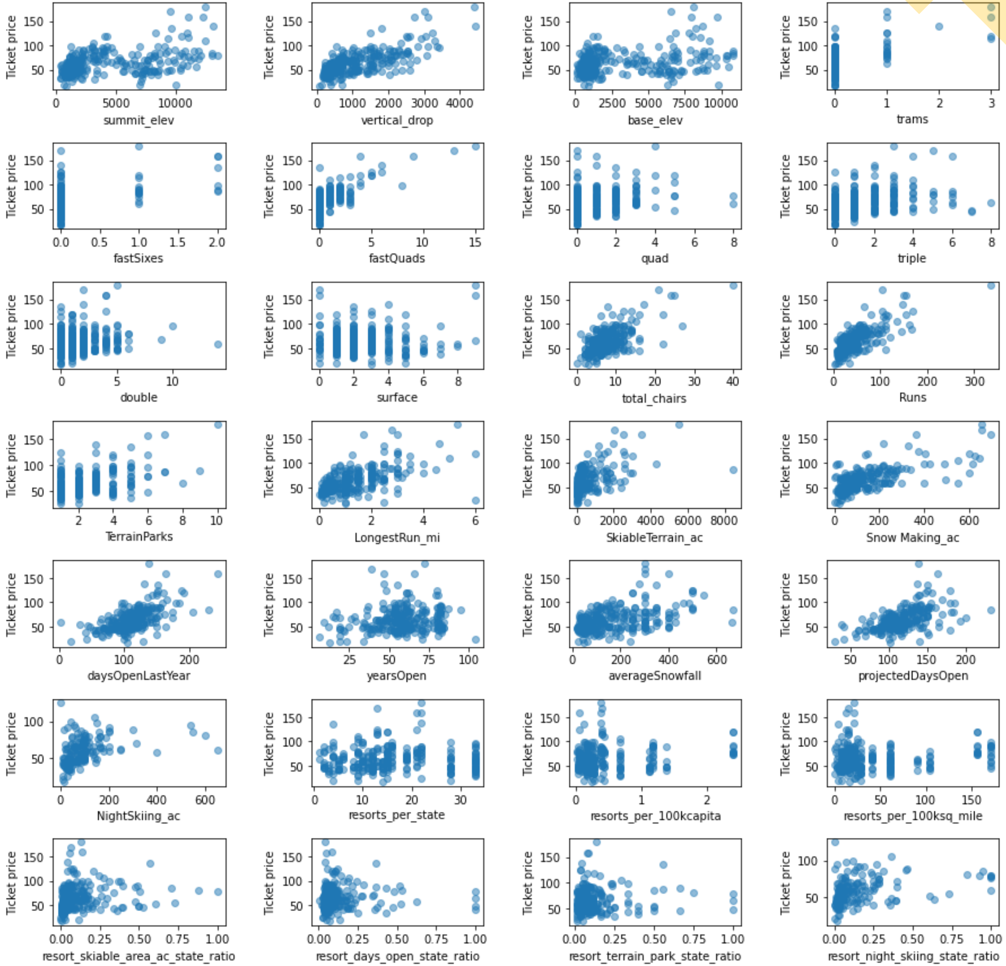
- Big spread of states across 1st component
- Vermont/New Hampshire are outlines of 2nd components: high resort density
- Big spread of average price and quartiles



EDA - Feature Correlation

Features highly correlated with ticket price:

- Vertical drop
- Fast quads
- Number of runs
- Snow making acers



Building Model

- Baseline Model
  - Use mean to predict the value
  - Error - $19

- Linear regression model:
  - Impute missing features with the median
  - Explains 80% of train set's variance and 70% on the test set – Overfitting?
  - Estimates the price to within $9

- Random forest model (chosen model):
  - Lower cross-validation mean absolute error by almost $1 with less variability

Modeling Scenarios

- Scenario 1 - Close up to 10 of the least used runs: This model results in a price drop or no change in price at all
- Scenario 2 and 3 - Add a run, increase the vertical drop by 150 feet, and install an additional chair lift (with or without adding 2 acres of snow making): Supports an increase in ticket price by $1.99 and a revenue increase of $3,474,638
- Scenario 4 - Increase the longest run by 0.2 miles and add 4 acres of snow making capability: No difference in ticket price

Conclusion and Summary

- Modelled price (using all features) - $95.87 (MAE of $10.39) vs. current price - $81
- Big Mountain is doing well for vertical drop (4th important in model), but there are still quite a few resorts with a greater drop
- Big mountain resort already ranks very high for the top 3 features of importance, fast quads, runs and snow making area
- The scenario with a 150 feet vertical drop increase (and adding a run and a chairlift) resulted in an extra revenue of $3,474,638 while only increasing ticket price by $1.99