Determining Ticket Price for Big Mountain Resort

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Problem Statement

- Current adult ticket price during weekend at Big Mountain Resort: $81.00
- A new added chair lift increase operation cost to $1,540,000.00
- How ticket price should change and are there other suggestions of change in operation?

Is There a Better Pricing Strategy?

New pricing strategy must:

- Offset the additional operating cost
- Competitive within the market segment

Suggestion

- Increase ticket price for adult to $95.87
- Closing one least used run
- Data size should be limit to 40 to 50 data points

Cross-validation score as training set size increases

Suggestion

Features that have the greatest effect to pricing

- The number of fast quads
- The number of runs
- The cover capacity of snow making machine
- The height of vertical drop

Data Sources

Data of ski resorts within the United States

Geography and Population data of states

Modeling - EDA

Scatter plot of the average ticket price in each state with respect to the two components of PCA transformation indicate that the state labels should be disregard in building prediction model

Ski states summary PCA, 68.5% variance explained
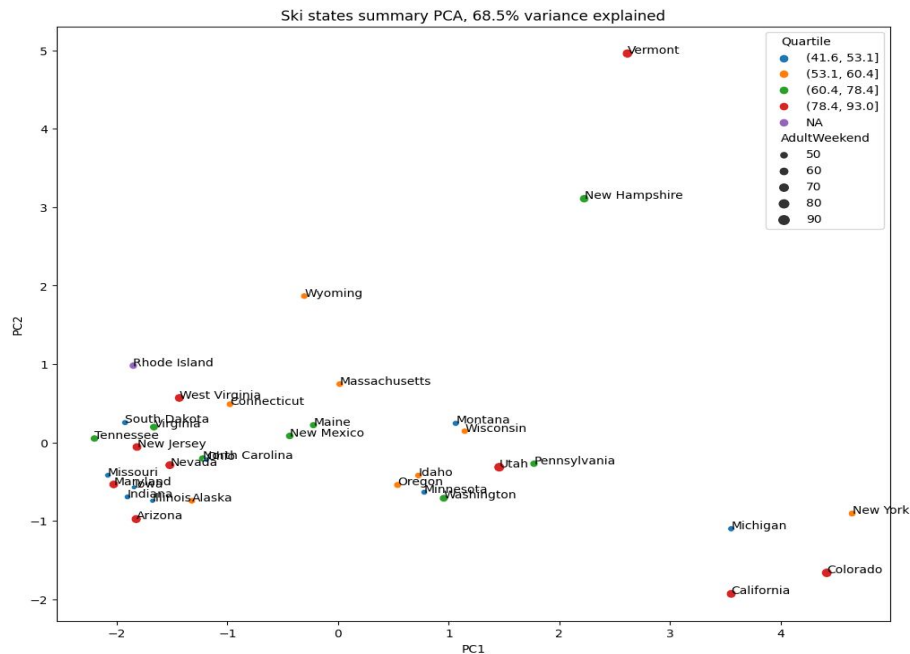
Modeling

- Trained/Test Set Split: 70/30
- Base Model: Mean Value
- Linear Regression with Cross-Validation
- Random Forest Regression with Cross-Validation
- Model Assessment
  - R-square
  - Mean Absolute Error
  - Mean Square Error

Modeling - Model Assessment

	Trained Set			Test Set		
	R-sq	MAE	MSE	R-sq	MAE	MSE
Base Model	0	17.92	614.13	-0.0031	19.13	581.44
Linear Reg.	0.63	10.50	N/a	0.67	11.79	N/a
Random Forest	0.70	9.64	N/a	0.70	9.53	N/a

Summary

- Random Forest Regression provides the best model
- Comparing Big Mountain Resort with the market context

Adult weekend ticket price ($) - Montana only distribution for resorts in market share