

Big Mountain Resort

Ticket Price Optimization – for the Executive Team

Wei Dong

12/7/20

Big Mountain Ticket Price Optimization

Big Mountain Resort, Montana

Current price of Adult Weekend Daily Ticket: \$81

Vertical Drop: 2353 ft

14 chairs

105 trails

Skiable Terrain: 3000 acres

Snow Making: 600 acres

Average Snow Fall: 333 inches

Limitation of the pricing strategy

- Profits NOT maximized
- Important facilities are NOT capitalized

Can we adjust the ticket price for a better value?

1. Maximize the usage of useful facilities or install new facility to increase the ticket price
2. Cut down the facilities while maintaining the ticket price and revenue

The potential strategy

Recommended Big Mountain Resort Ticket Price: \$ 95.87

- adding 1 run,
- increasing vertical drop by 150 feet
- installing 1 chair lift.

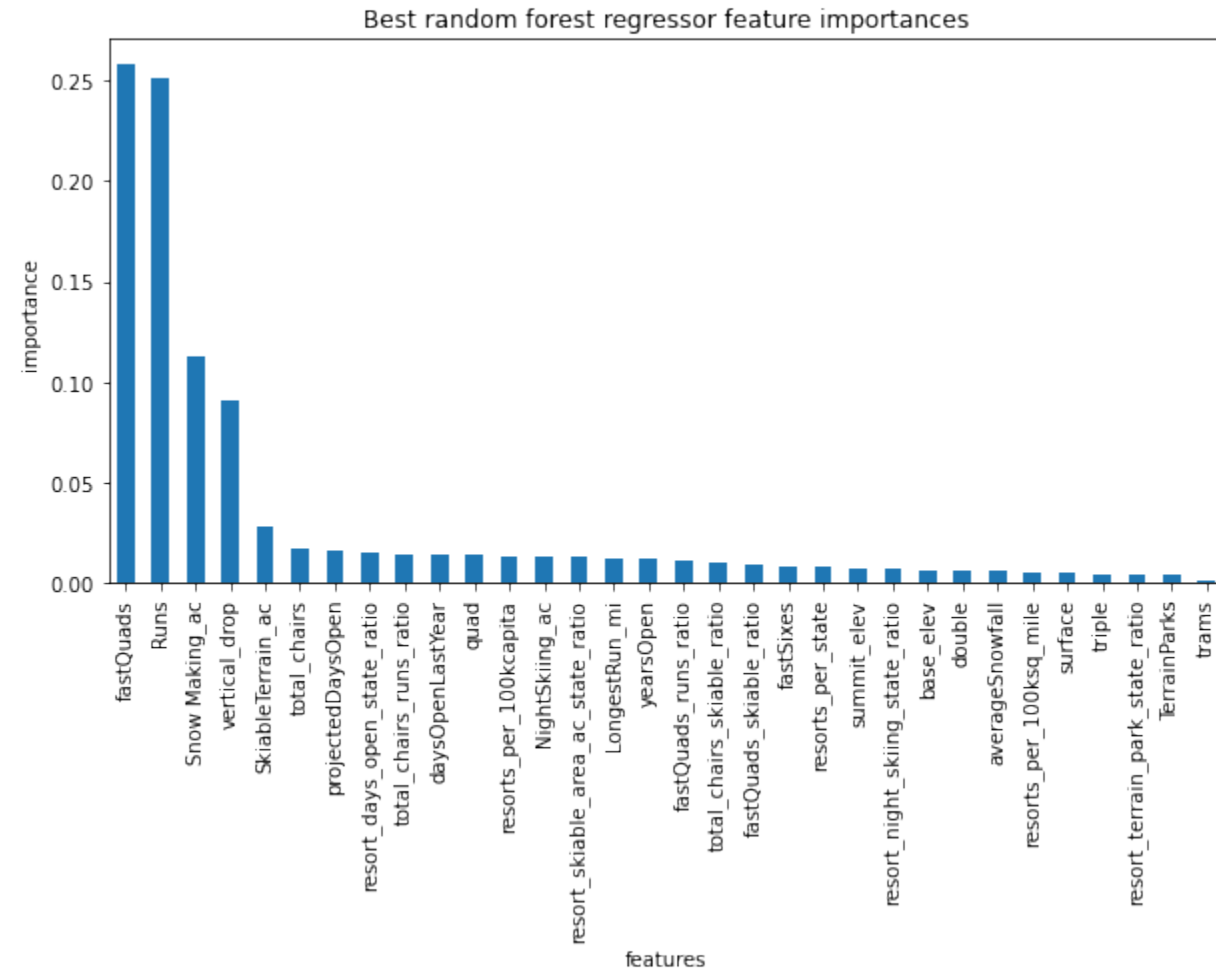
 Increase by \$ 1.99

Adjusted price: \$82.99 for adult weekend daily ticket
Potential to increase

Modeling results and analysis – Random Forest Regression

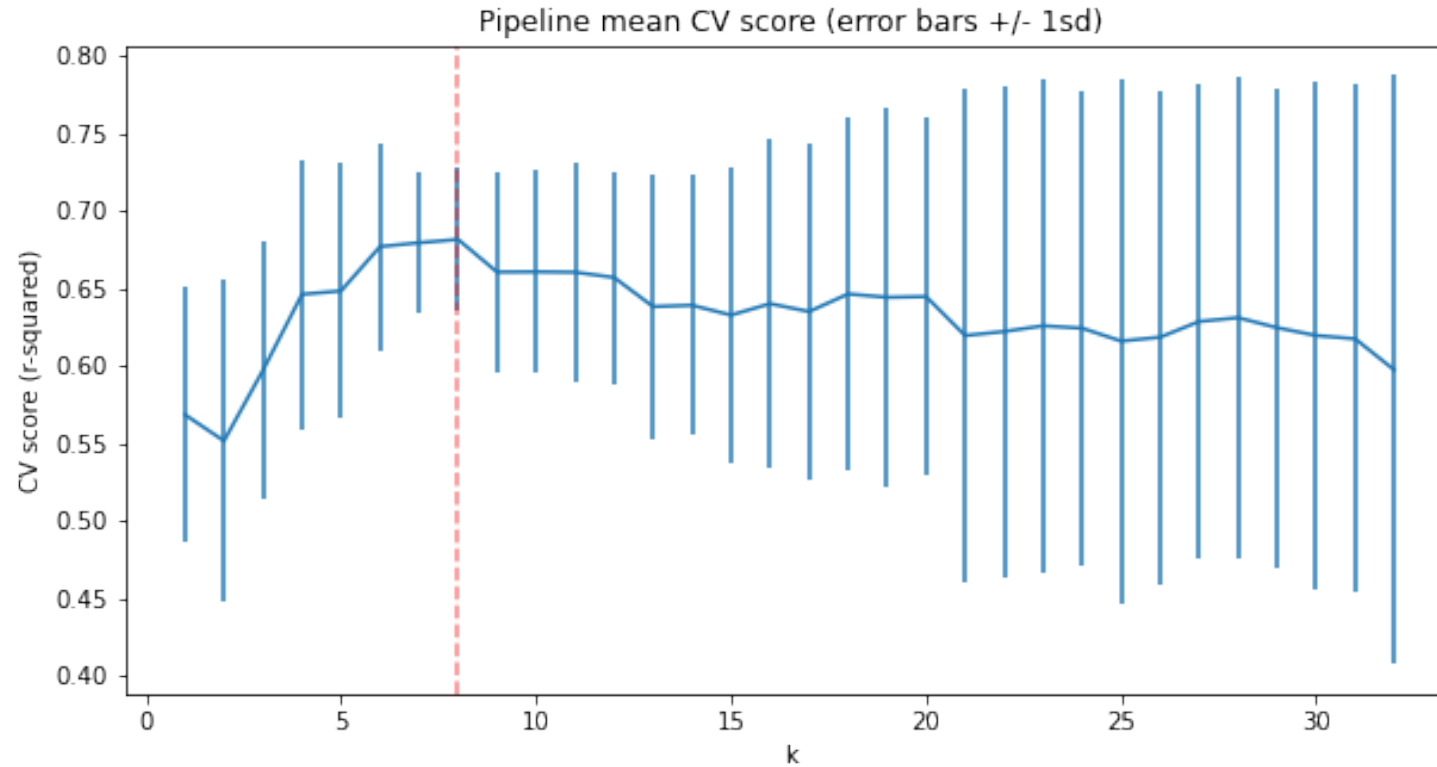
Eight important features in the modeling:

- **‘Baseline model’**: mean value, \$64
- Error of the ‘baseline model’ (Mean Absolute Error) off \$19
- **Linear Regression**: imputing mean or median values
- Error of the LR (mae): \$ 11.79
- R^2 : 0.63
- **Random Forest Regression**
- Error of the RF (mae): \$ 9.54
- Modelled ticket price: \$95.87
- $R^2 = 0.7$



Modeling results and analysis – Random Forest Regression

- Cross-validation from linear regression model give the best $K = 8$



Modeling results and analysis – Random Forest Regression

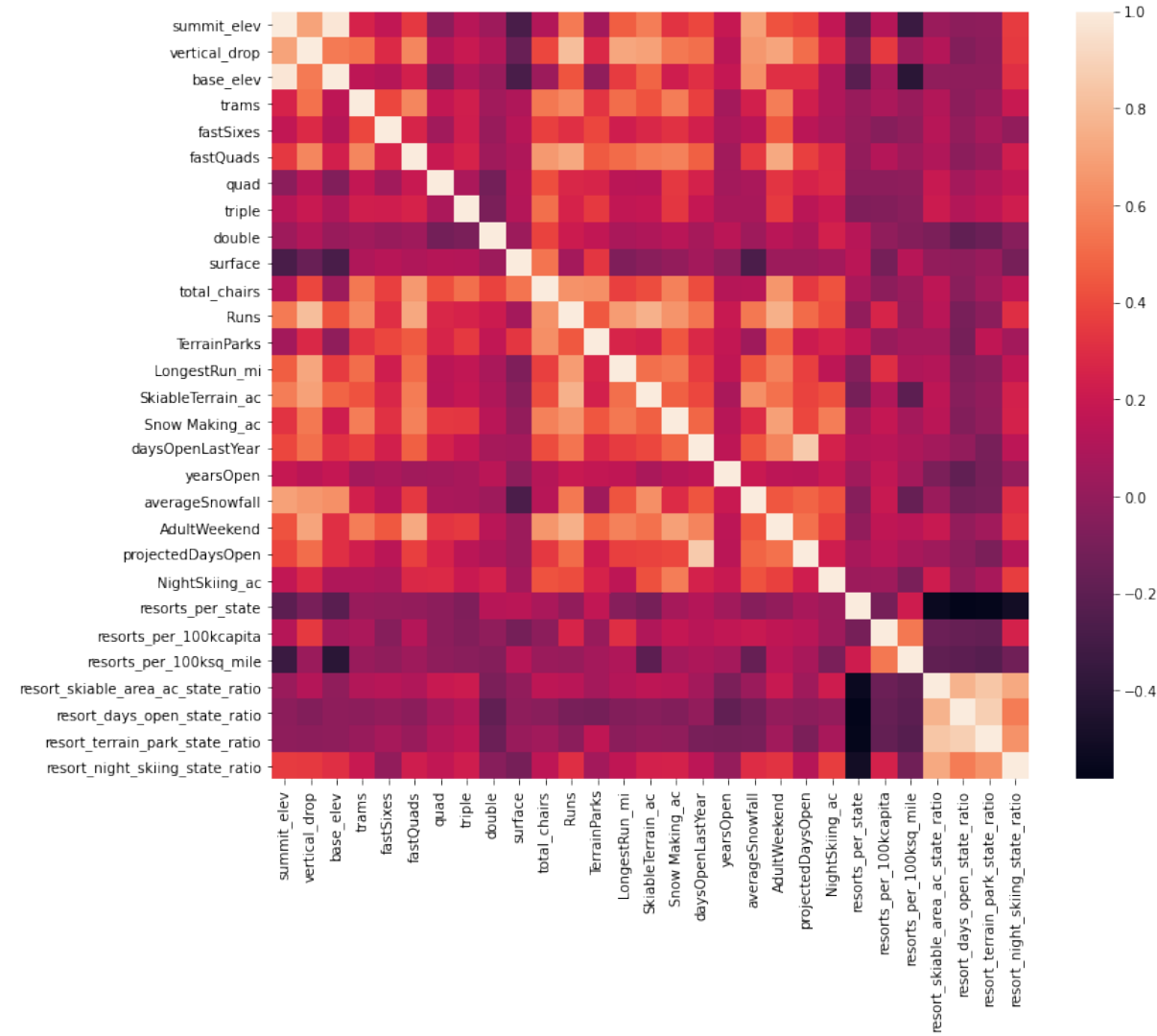
Pipeline: data 70/30 train/test split

- SimpleImputer(substitute miss values as median)
- StandardScaler(), None
- RandomForestRegressor(random_state=47)
- GridSearchCV (cv =5, k = 8)

Modeling results and analysis

Eight important features in the modeling vs correlation heatmap

- fastQuads
- Runs
- Snow Making_ac
- vertical_drop
- SkiableTerrain_ac
- total_chairs
- projectedDaysOpen
- resort_days_open_state_ratio



Summary and conclusion

- Current Weekend ticket price in the resort \$81.
- The recommended ticket price for Big Mountain is \$95.87.
- Proposed strategy may be tested.
- The top features from RF model:
 - fastQuads
 - Runs
 - Snow Making_ac
 - vertical_drop