

Big Mountain Price Ticket Optimization Guided Capstone—Slide Deck for the Executive Team

Sahar Hihath

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Big Mountain Resort, Montana Parameters

- Current price of Adult Weekend Daily Ticket: \$81
- Vertical Drop: 2353 Feet
- 14 Chairs
- 105 Runs
- Skiable Terrain: 3000 acres
- Snow Making: 600 acres
- Average Snow Fall: 333 inches

Big Mountain Resort Ticket Price Optimization

- Average Ticket Price for U.S. resorts: \$64
- Number of Resorts in Montana: 12
- Average Ticket Price of Montana Resorts: \$52

Recommendation and Key Findings

Scenario:

- Add 1 run
- Increase vertical drop by 150 feet
- Add 1 chair lift
- Increase snow making
- Increase ticket price by \$9.90 to \$90.90 for adult weekend daily ticket

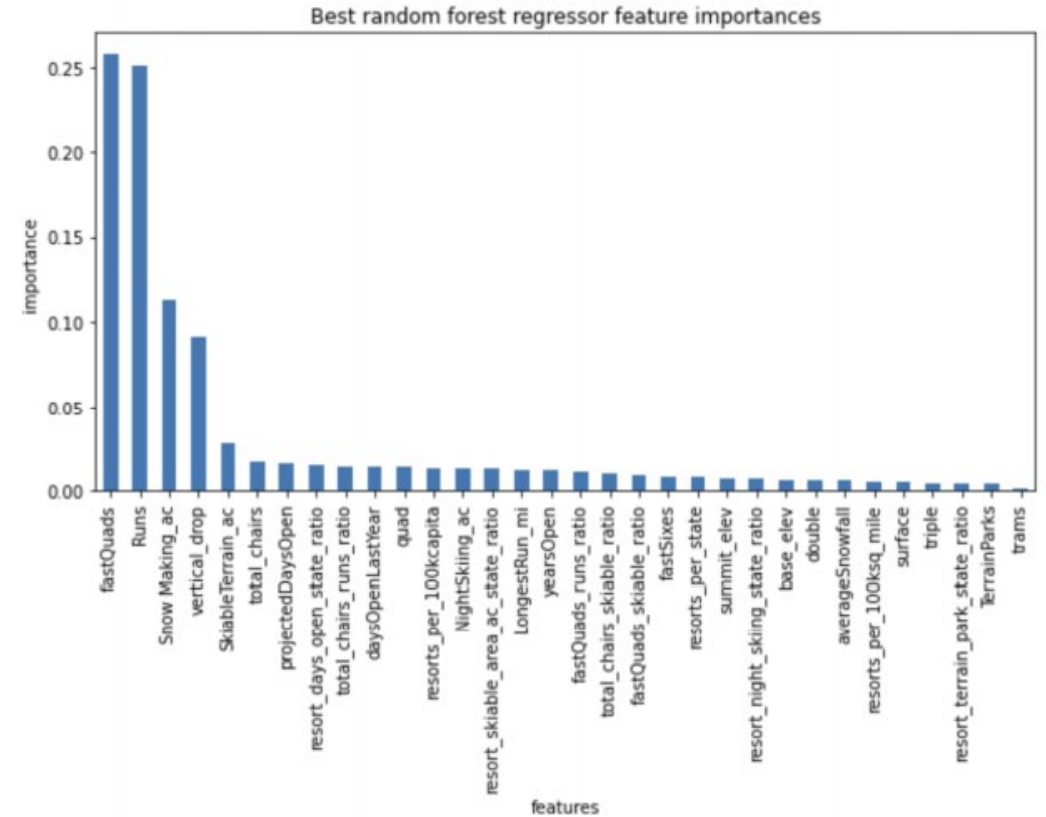
Recommended Big Mountain Resort Ticket Price: \$95.87

Modeling Results and Analysis

Random Forest (RF) Regressor

Eight best features for RF model:

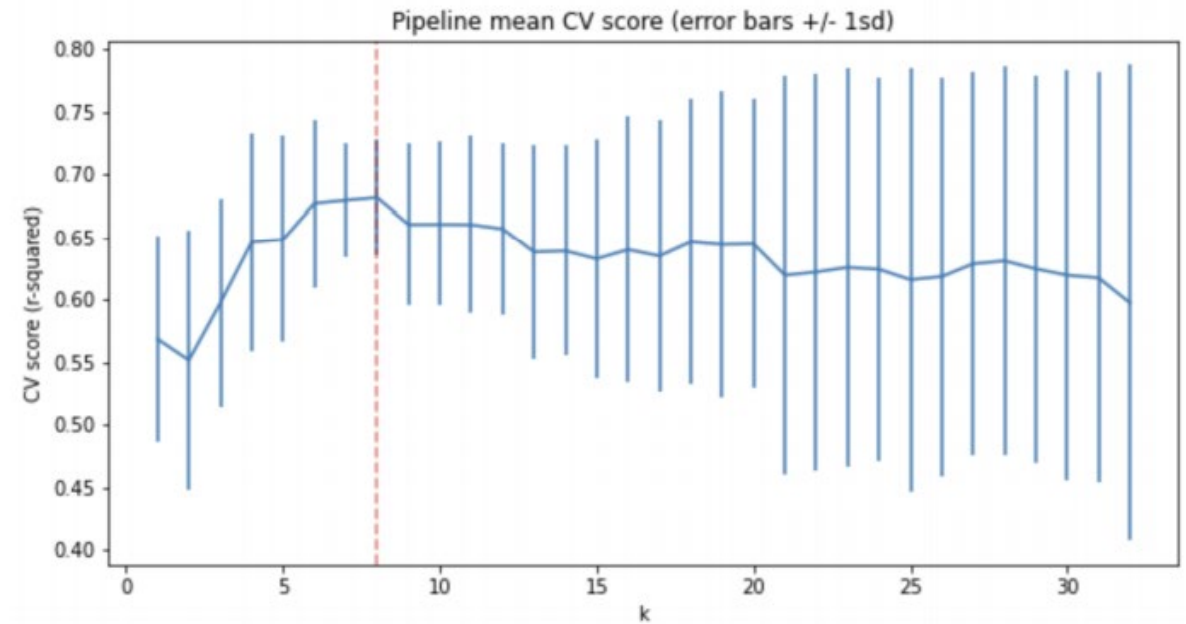
- Simplest model: The mean, \$64.00
- Error of the mean model: \$19.00
- Random Forest regression: \$95.87
- R2 error of RF regression test data: 0.70
- R2 error of the mean test data: -0.003
- Recall R2 optimized error = [0,1]



Modeling Results and Analysis

Random Forest Regressor:

- Cross Validation revealed $k=8$ for best features for RF regression model
- Missing values were swapped with median of each feature

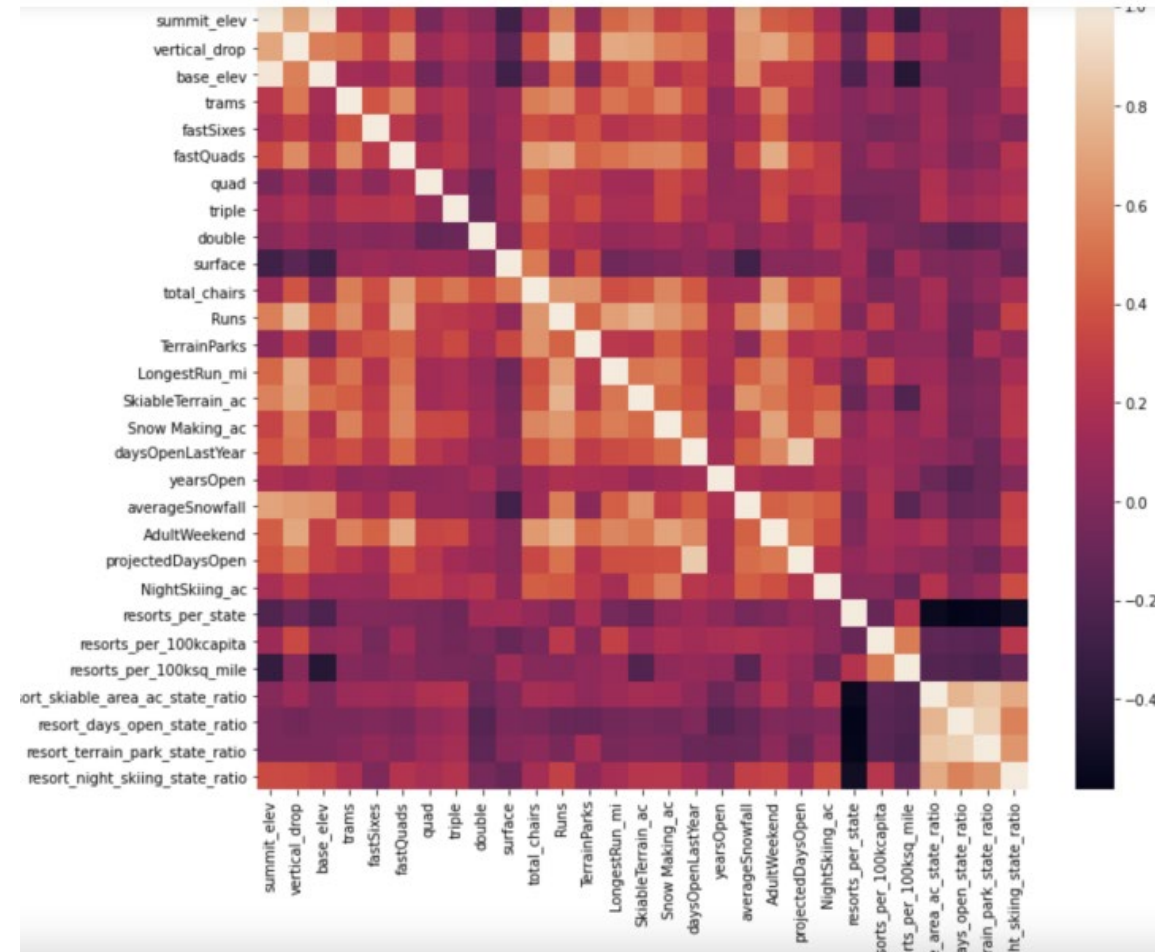


Modeling Results and Analysis

Random Forest Regressor

Eight best features for RF Regression model:

- Fast Quads
- Runs
- Vertical Drop
- Snow Making
- Total Chairs
- Projected Days Open
- Resort Days Open Per State (Ratio)
- Skiable Terrain



Modeling Results and Analysis

Random Forest Regressor Pipeline:

- Error of the mean model (mean absolute error): \$19.00
- Error of the RF model (mean absolute error): \$9.54
- Pipeline to train the data: 70 (train)/30 (test):
 - 1) Simple Imputer (substitute missing values as median)
 - 2) Standard Scaler (normalize data (mean = 0, std = 1)) was not used in RF model
 - 3) Random Forest Regression
 - 4) GridSearchCV (Use 5 fold cross-validation and grid to find k=8 best features)

Summary and Conclusion

- The current price for Big Mountain is \$81.00 for Adult
- The recommended price for Big Mountain is \$95.87

The top four features:

- Fast Quads
- Runs
- Snow Making
- Vertical Drop

