Finding the Best Price for Big Mountain Resort Tickets

Problem Identification

What is the business problem?

-Finding the ideal price for Big Mountain Resort tickets (adult weekend tickets).

Context

-Big Mountain is a ski resort in Montana currently charging $81 for a ticket.

Criteria for success:

-If a model can convincingly show that a higher ticket price is supported (and hint to why) then the executives of Big Mountain can increase the price and increase profitability.

Problem Identification (2)

Constraints

-Any model will be based on limited data, and analysis will be conducted over a short timeframe

Stakeholders-Big Mountain executives

Data Sources-the dataset of ski resorts in America.

Recommendation and Key Findings

The random forest regression model was found to be more accurate than the linear regression model

This model recommended a ticket price of $95.87

This suggests that the current ticket price of $81 can be dramatically increased

The dataset was determined to be of sufficient size to make this recommendation

Modeling Results and Analysis (1)

-Often, a good heuristic is get baseline prediction by taking mean of relevant data

-Then compare subsequent predictions' performance against this baseline

-Mean of the training set's relevant resort price column (excluding the price of Big Mountain) was ~63.8.

Modeling Results and Analysis (2)

-Linear regression-average mean absolute error across 5-fold cross validation on training data-~10.50, s.t.d. ~1.62

-Random forest regression-average mean absolute error across 5-fold cross validation on training data-~9.64, s.t.d. ~1.35

Modeling Results and Analysis (3)

-Random forest regression model mean absolute error on **testing** data ~9.54

-Linear regression model mean absolute error on **testing** data ~11.79

-Learning curve function found cross validation scores leveled off at sample size 40-50

Summary and Conclusion

-Big Mountain currently charges $81
-The modeling suggests a price of $95.87 can be supported
-Data was deficient in that it did not include operating costs
-The model could be expanded into an online (or offline) app that could be used to test impact of additions or subtractions to resort facilities on predicted ticket price