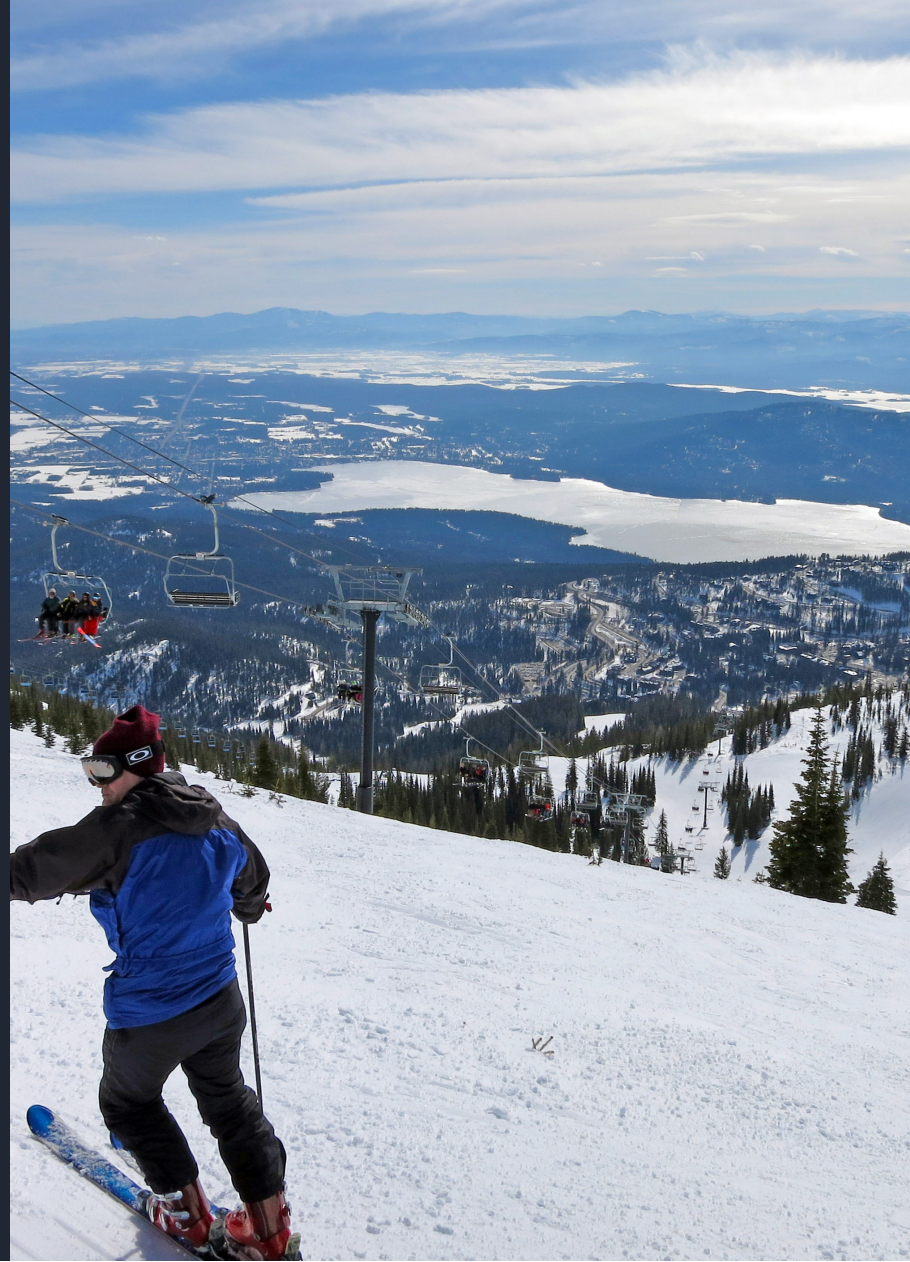
Predicting Ticket Prices for Big Mountain Resort

Welcome and thank you for joining us today. In this presentation, we will be sharing the findings from our machine learning model that predicts ticket prices for Big Mountain Resort. Strap on your skis and let's hit the slopes!

by Kyle Rodriguez



Problem Identification

Issue

Big Mountain Resort execs have been suspecting that that they are not capitalizing on its already existing facilities to emphasize value in their ticket pricing.

Challenge

To recoup the increased operational cost of 1.54MM, from installing a new chair lift, over the next year by maximizing existing value-added facilities as a part of the resort's pricing strategy, without undermining the current ticket price.

Objective

To create a ML model to predict the ideal price that the resort should be charging based on its current facilities, and to extract insights from the data on which facilities might be considered valuable in the eyes of the consumers.

Recommendation and Key Findings

Target Price

Based on the model's predictions, the optimal ticket price to maximize the value of the current facilities should be $95.87 for the *Adult Weekend ticket,* up from $81.00.

Value-Added Facilities

The model identified the resort's most valuable facilities as being Fast Quads, Runs, Snow Making Acreage and vertical drop.

Best Scenario

Of the proposed scenarios, the one with potential for the greatest return would be increasing the vertical drop by adding a run to a point 150 feet lower down with the installation of an additional chair lift to bring skiers back up, and without additional snow making coverage.

Modeling Results and Analysis

1

Data Collection & Preprocessing

Data from the ski resorts and state summary datasets were used to train the machine learning model. The data was preprocessed to handle missing values and outliers.

2

Model Selection & Training

A baseline model generated from predicting ticket prices based on the average was used to measure performance on a linear model and a random forest model

3

Model Evaluation

The model was evaluated using metrics such as R-squared values and mean squared errors. And cross-validation was employed to avoid overfitting of data.

4

Price Recommendations

Of the two models, the random forest model had a lower cross-validation mean absolute error, as well as exhibited less variability. This model's recommended price was chosen as a result.

Summary and Conclusion

1 Results

As shown by the model, the executives were right in their suspicions that their Adult Weekend ticket prices were being undercharged. The model suggests increasing the price by $14.87. With an average of ~350,000 visitors a year, this can mean additional returns of ~$5.2MM/yr from Adult Weekend prices ***alone***.

2 Recommendations

Besides the optimal price, the model recommended that features such as Vertical drop, Runs, Snow Making Acreage and Fast Quads be focused on more as value-added facilities customers are willing to pay more for.

3 Future Work

With additional data such as operating cost and number of annual visitors, the model can be refined to potentially improve our predictions and keep Big Mountain Resort ahead of the competition.