Guided Capstone Project Report

Big Mountain Resort Pricing Strategy

1. Introduction

Big Mountain Resort, a ski resort located in Montana, wants to select a better value for their ticket price to increase revenue. The current price is based on the market average (plus a premium), but Big Mountain is not capitalizing on its facilities as much as it could to set the price.

This project is aiming to develop a pricing model for the ski resort ticket of the Big Mountain Resort. The predictive model is used to provide guidance for Big Mountain's pricing strategy and facility investment plans by exploring modeling scenarios. One of the scenarios is selected for pricing recommendation.

The implementation details can be found in the Notebooks in this GitHub repository (https://github.com/zxie9/DataScienceGuidedCapstone).

2. Approach

2.1 Data Acquisition and Wrangling

The raw data contains information from 330 resorts in the US that can be considered part of the same market share with Big Mountain. Data with many missing values and no price information were removed. Some outliers were deleted or replaced.

The adult weekend ticket price was selected as our target price because it is the same as Big Mountain's weekday price and it has fewer missing values.

2.2 Exploratory Data Analysis

Results of statistical analysis showed that there was not a clear pattern for the relationship between state and ticket price and the adult weekend ticket price was well correlated with several resort-level features, including vertical drop, number of fast quads, snow making area, and number of total chairs.

2.3 Baseline Modeling and Extended Modeling

The baseline model here was simply taking the average price. This model is a baseline performance comparison for any subsequent model.

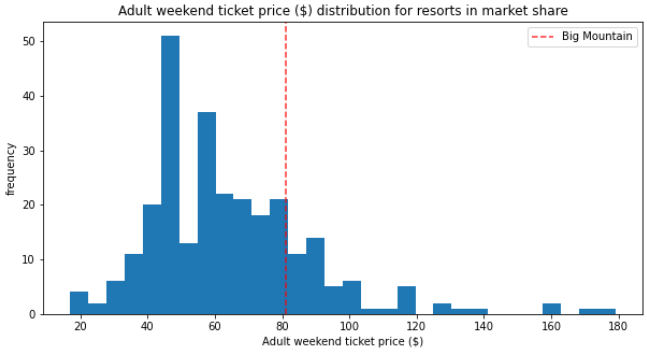
A linear regression model and a random forest model were trained to predict the ticket price. The prediction by random forest model had a lower cross-validation mean absolute error and exhibited less variability. Besides, the random forest model's performance on the test set was also slightly better than the linear regression model. Therefore, the best random forest model was selected for further business modeling.

3. Findings

3.1 Predicted Price

Big Mountain currently charges $81.00 for an adult weekend ticket. However, the model suggests a price of $95.87. This increase in ticket price is supported by the presence of specific features at the Big Mountain, including vertical drop, total snow making area, number of total chairs, number of fast quads, number of runs, length of longest run, and the amount of skiable

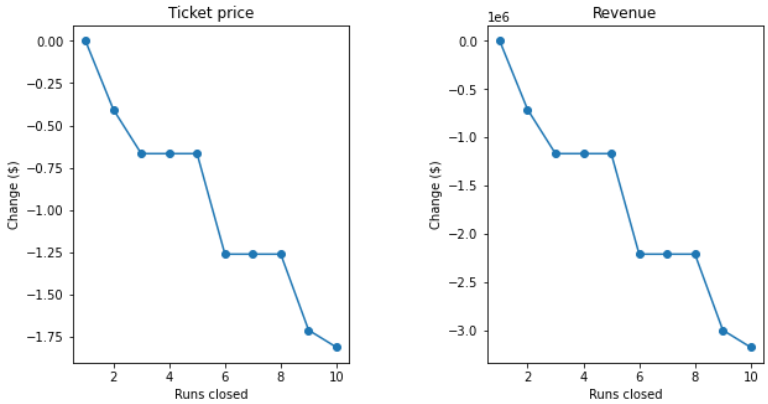
terrain. The following picture shows that the weekend ticket price for adults in Big Mountain Resort seems to be fair and with room for increase. Considering the prices of resorts located only in Montana, Big Mountain Resort should be aware that they charge one of the highest prices.



3.2 Scenarios

There are the 2 scenarios that the study identifies as the best possible options. To do a fair ticket price increase, the study considered 3 changes. These changes were to add one run, increase the vertical drop by 150 feet, and install an additional chair lift. These changes would support a $8.61 ticket price increase.

To increase the maintenance savings, the study considered closing some of the existing runs. By closing 2 to 3 runs, the ticket price would need to decrease drastically. However, by decreasing the amount of runs from 3 to 5 would keep the ticket price decrease at the same level as the picture shows.



4. Recommendation and Future Work

Since Big Mountain has already install an additional chair lift to increase the vertical drop, my extra suggestion is to close either one run or five runs. The business needs to know the operating cost per run. Closing one run will not lower the price, but its support for reducing costs is limited. Closing five runs will reduce the price by about $0.7. If cutting costs by closing five runs would more than make up for the price drop, I would recommend closing five runs.

Big Mountain sits high amongst all resorts for price and has the highest price in Montana. This suggests that most of the resorts may be "underpriced" in this marketplace. The business executives may be surprised by this mismatch since they set the price based on their experience and knowledge of the market, yet the modeled price is well above the market average. To find out the reason for the mismatch, we need to do more in-depth market research, such as Customer Satisfaction Survey on Ticket Prices.