Big Mountain Resort Price Adjustment

I. Introduction

Big Mountain Resort, which services 350,000 people each year, has recently installed an additional chair lift increasing their operating costs by $1,540,000 this season. The business wants to select a more accurate value for their ticket price. There is a suspicion that Big Mountain is not capitalizing on its facilities as much as it could. Increasing the price can be used to offset the cost of the chair lift.

Utilizing the data collected from 330 other resorts throughout the US, a model was developed to estimate the ticket price for the resort. The question is what factors best help determine the price for tickets? After analyzing 27 features in the data, 4 features dominate the estimate of the price within a Random Forest model. This model estimates the resort ticket price to be valued between $85.48 and $106.26. Due to competition between resorts within the state, a ticket price of $85 is recommended.

II. Data

An initial glance at the price as seen in Fig. 1 shows that there are resorts that have a higher price than the Big Mountain resort Weekend price of $81.

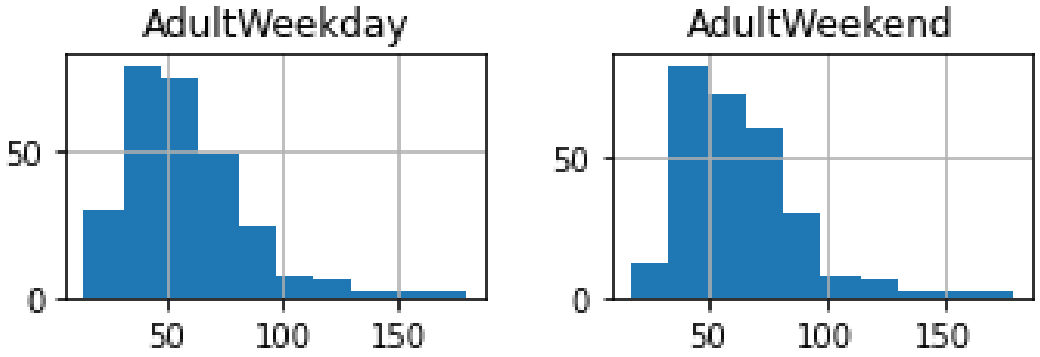

Figure 1: The distribution of AdultWeekday (*Left*) and AdultWeekend (*Right*) ticket prices for all 330 resorts.

Since the Big Mountain Resort uses the same price for the AdultWeekday and AdultWeekend tickets and since more AdultWeekday ticket prices are missing from the data, the AdultWeekend ticket price was used as a target feature. A Majority of the resorts use the same price for the tickets as can be seen in Fig. 2.

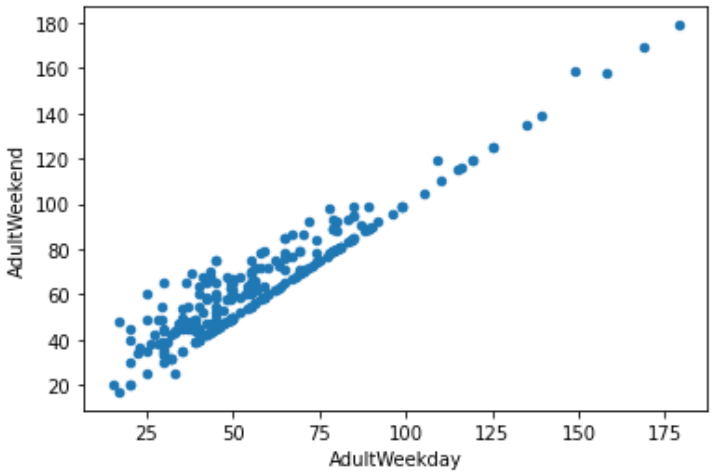

Figure 2: A scatter plot of AdultWeekday vs AdultWeekend ticket prices for resorts.

III. Methods, Analysis, and Results

A linear regression model, and a random forest model were both used and tested for accuracy. Since the random forest model gave the most accurate price estimates in the testing set, it was selected as the model to estimate the price for the Big Mountain Resort. This model had 4 features which dominated the price estimate (fastQuads, Runs, Snow Making_ac, and vertical_drop) as shown in fig. 3. This model resulted in a Mean Absolute Error of ~9.54. Using this model a price was projected for the Big Mountain Resort resulting in a price range of $85.48 and $106.26.

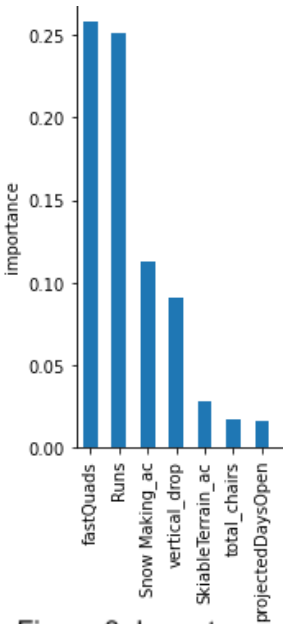

Figure 3: Importance of different features sorted by level of importance (Highest to the left). Features to the right of the vertical_drop feature play a miniscule role.

IV. Conclusion

The price for the Big Mountain resort is lower than the estimated price range based off of all of the 330 resorts. This suggests a price increase to at least $85.48, but because the Big Mountain resort is in Montana which has resorts with lower prices, it is recommended that the ticket price not exceed $85.00.

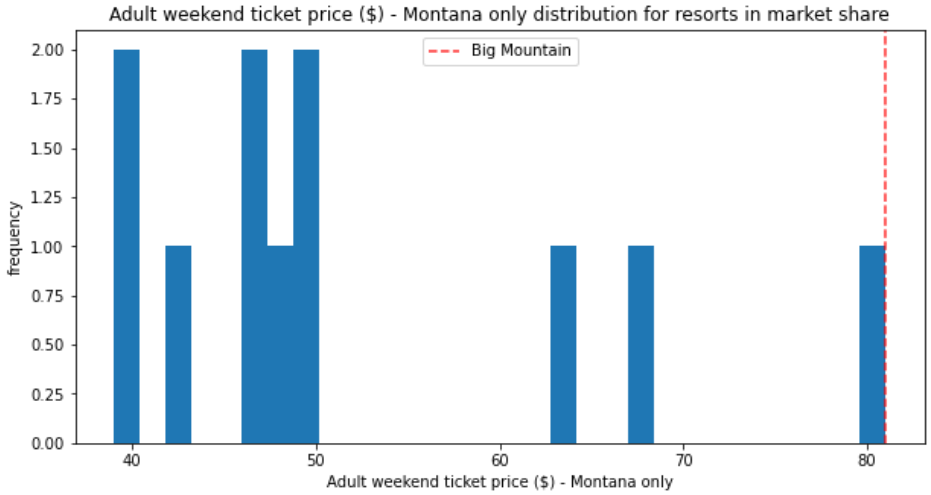

Figure 4: The distribution of ticket prices only in Montana with Big Mountain Resort price indicated with a red dashed line.