We have taken on the task of optimizing ticket pricing and investment strategy to increase revenue by utilizing a more data-driven approach to inform business decisions. There was also the cost of the new chair lift addition to consider in our analysis which has increased operating expenses by $1,540,000 this season. Further, we wanted to use our analysis to inform a more efficient capitalization strategy for Big Mountain Resort's existing facilities.

Modeling & Analysis

The data that was analyzed for our purposes consisted of information on 330 resorts in the same market segment as Big Mountain Resort. For determining a ticket price that the market would support, the target feature we selected for our analysis was 'AdultWeekend' which represents the prices for adult ticket purchased on weekends. When performing feature selection for modeling, we found that the following features were the most strongly correlated with ticket price: fastQuads, Runs, Snow Making_ac, resort_night_skiing_state_ratio, & total_chairs. Our analysis did not yield an obvious pattern suggestive of a relationship between the state in which the resort is located and the ticket price and thus we opted to treat all states equally.

Before selecting a model for our data, a baseline idea of performance was made by taking the mean of the ticket prices of every resort in the dataset. The average price was approximately $63.81 per ticket. After testing several models with the data, the random forest regressor displayed some marginal improvements over linear regression models with a lower cross-validation mean absolute error and less variability. Thus the random forest regressor was selected after this testing.

Results & Conclusions

Currently, Big Mountain charges $81 for adult weekend tickets. Our modeling suggests a price of $95.87 could be supported in the marketplace. Assuming that other resorts are accurately setting their prices according to what the market supports, Big Mountain Resort is currently undercharging for tickets even considering the expected mean absolute error of $10.39.

Modeling the potential scenarios for cutting costs or increasing revenues has found that an increase in ticket price of $1.99 is supported by the addition of a new chair lift, the addition of a run, increasing the vertical drop by 150 feet and adding 2 acres of snow making. On the basis of a visitor on average buying 5 day tickets, this could amount to $3,474,638 over the season.

Regarding the consideration of run closures, the closure of a single run should make no difference in the support for ticket price. Closing 2 and 3 successively reduces support for ticket price and revenue with no further loss in ticket price with the closure of 3 - 5 runs. However, increasing the closures down to 6 or more leads to a more significant drop.

There are some limitations to our analysis based on the available data that we determined during the course of this process. As we were missing some weekday ticket price data, we opted to base our modeling on weekend ticket prices. If we had a fuller dataset at our disposal, we would be better able to mitigate the issues that come with incomplete data which may be limiting our ability to accurately assess the market and thus form an efficient pricing strategy that could maximize revenues.

We are also working under the assumption that the other resorts are accurately setting their prices according to what the market supports. However, as our ticket prices were found to be below what we determined the market would support based on our analysis of the available data, it may be reasonable to expect that other resorts are over or undercharging and thus our data may not be an accurate reflection of the actual price that the market could optimally support. With further information such as seasonal revenue data and number of visitors per season as well as operating expenses, we might be able to determine a more concise view of the market and be able to more accurately form a pricing strategy.