For this project, we were attempting to create a pricing model for ski resort tickets in the United States, and use this model to determine a more optimum ticket price for Big Mountain Resort. Prior to undertaking the creation of this model, we suspected that Big Mountain Resort was one of the highest quality resorts in the country. However, they were only charging slightly above the market average for a weekend ticket. Our mission was to prove to stakeholders that there exists tangible proof, as evidenced by the features of Big Mountain Resort in comparison to the features of other U.S ski resorts, that Big Mountain can charge near top of the market prices for a ticket. Additionally, we sought to provide further suggestions as to how Big Mountain could implement new cost effective features to increase revenues further.

After cleaning our data and conducting exploratory data analysis, we set out to build our model. We settled on a random forest model that imputes the median for missing values, doesn't scale our features and is cross validated to score regression via mean absolute error. Once we refit our model, we were able to determine that our expected weekend ticket price for Big Mountain was $95.87, which was substantially different from their previous price of $81.00. The calculated mean squared error was $10.39. Therefore, the model has led us to recommend that in its current form, Big Mountain should charge somewhere between $85.48 and $106.26 for a weekend ticket.

The initial inputs we entered into our model helped us calculate the expected value for a weekend ticket to Big Mountain for last season. Our next, more pressing task was to calculate what Big Mountain should charge moving forward. Big Mountain recently added a new chair lift that will increase seasonal operating costs by $1,540,000. Given that 350,000 visitors are expected this season, and that the average visitor is expected to stay for 5 days, an 88 cent raise in ticket prices would offset this cost. However, we believe that Big Mountain should make further additions. We were presented with 4 cost cutting/revenue raising options that Big Mountain are willing to consider moving forward. We believe that Option 2, which is to increase the vertical drop by adding a run to a point 150 feet lower down and install an additional chair lift to bring skiers back up,

without additional snow making coverage, is their best option. We've determined that it will increase support for ticket price by $1.99.

In summation, we recommend that Big Mountain Resort should increase the price of a weekend ticket by between $4.48 and $25.26. Then they should raise revenues further by increasing vertical drop, installing a new chair lift, and adding a new run. We determined that Big Mountain is a high value ticket because it has a large snow making area, a high number of chair lifts, a high amount of skiiable terrain and one of the longest runs out of any resort. Big Mountain ranks near the top 10 for all of these important metrics; one would surmise that this could justify Big Mountain charging one of the 10 highest ticket prices. Currently, it is not doing that. Business executives may be surprised by this because Big Mountain already charges the highest ski resort ticket prices in the state of Montana. But we believe that our modeling data should persuade them to raise prices regardless of this.