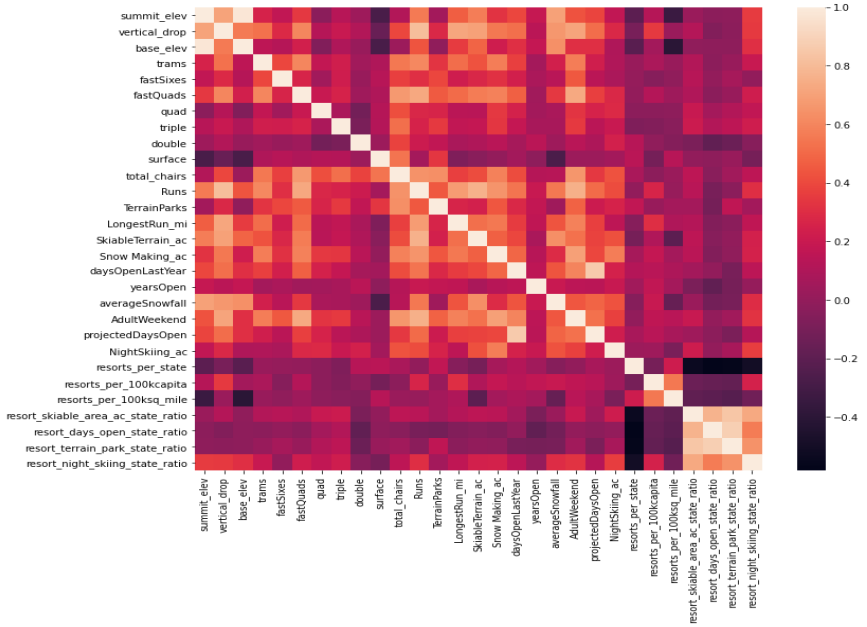
Guided Capstone Project Report

To whom it may concern,

Big Mountain Resort has been serving the people of Montana state and its visitors since 1947. Since then, the resort has gained notoriety and value in its name and is, or should I say, has been ready to throw its hat into the ring and compete with the biggest resorts in the nation. Averaging 350k visitors annually calls for a well thought and intelligent pricing structure that will maximize profit and preserve the resort's value and image to the public.

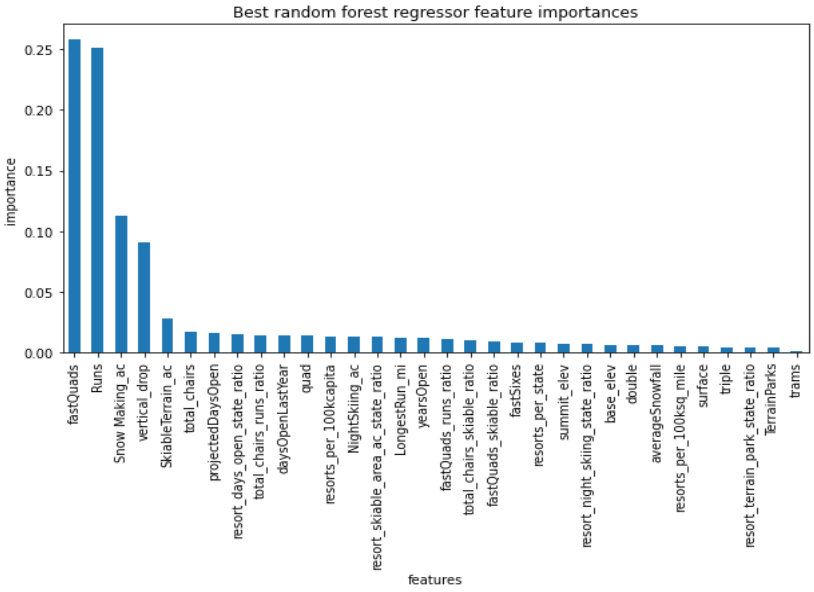
After analyzing the data provided and receiving some insights from the stakeholders in your company, I was able to build an algorithmic model to predict what the ticket price should indeed be. The modeled price for Big Mountain is $95.87, which is $14 dollars over the current price of only $81. Even with an expected mean error of $10.39, this model still encourages an increase in the price. These numbers were generated after a really tidy and careful analysis of all the features available in our data set, which later on were filtered to only the critical ones that are affecting the price. I was able to add more features, mostly density features, to our data so we could have a better idea of how they are affecting the ski resort market in regard to the ticket pricing strategies.

During our data cleaning and preparation phases, we were unable to find any trends or correlations in regards to the state and the ticket price. This suggested that the location could be disregarded and still won't affect our calculations. The graph below is a heat map of the correlation of all features with each other. The darker the color is the less influence the features have on each other.

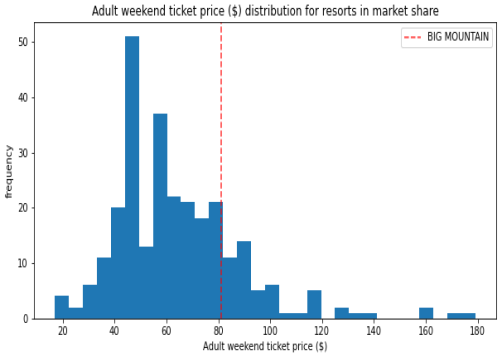


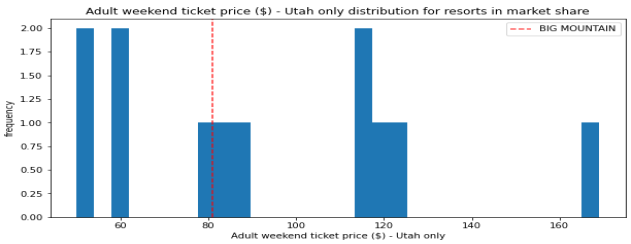
This graph provided a general and broad idea of what features we should focus on in building our model. After trying both a linear and a random forest model on our data, we were able to not only pick the more efficient one but also have a more precise idea of what features are the most important in our study.

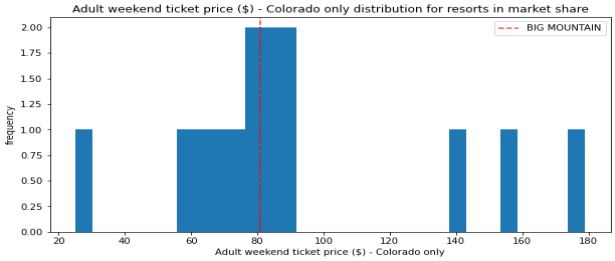
For our model, we chose the Random Forest model. It provided more accurate and precise calculations for our set of data. It also helped us rank the features and their importance. As a result, we concluded that the main features for this study would be: Vertical drop, Runs, Snow Making, FastQuads, Skiebale Terrain, Total chairs, and Longest run.



Finally, if we compare Big Mountain's ticket price to the rest of the resorts in Montana, we can clearly see it already at the top. It also is on the expensive end of all the resorts in the nation, however, its price is average compared to the big resorts in the main skiing states such as Colorado and Utah. The following graphs show this clearly.







This maybe suggests that the resorts charging for more most likely surpass Big Mountain in all those important features. However, BM figures at the top of all these features, which indicates that it clearly needs to increase its pricing.

After looking at your suggested scenarios, I believe that expanding the longest run and installing a new chair could be really beneficial for the resort. Our model suggests a price increase of $1.99 in case, which translates to 3.4M every year. Adding 2 acres of

snow-making would not affect the price, but it could definitely make the customers happier!

In conclusion, I believe a price increase for Big Mountain should not be considered an option, but a necessity for a resort with such resources and facilities. This increase is justified and deserved for the resort considering the other resorts in the nation. Of course, other factors play a role in the pricing strategy, however, the data we have strongly pushed towards an increase.

Sincerely,
Yassine Raouz