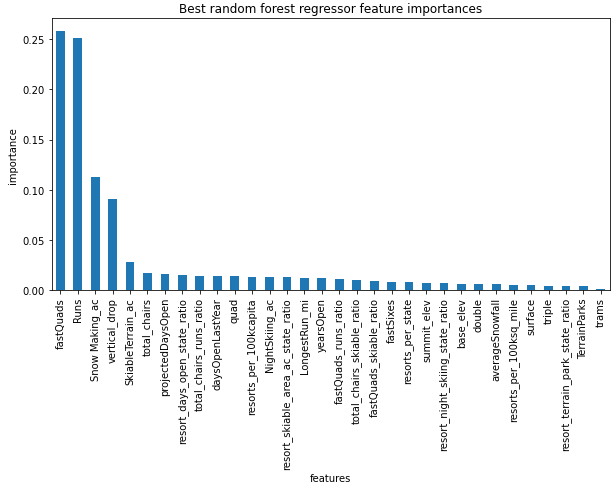
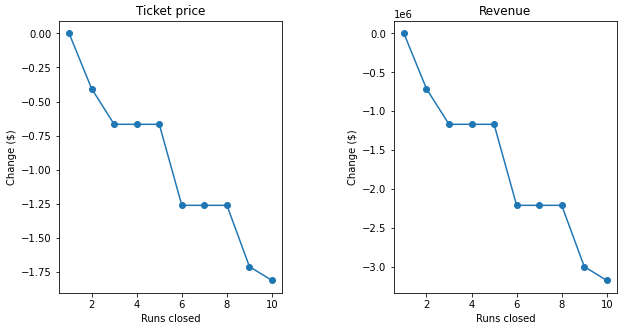
After reviewing the data of other resorts in the country, a model was created using the Random Forest Regressor to predict what the ticket prices of Big Mountain Resort should be. After cleaning up the data given to us, removing some of the features with tons of missing data and filling in others, this model gave us a ticket price of $95.87. This model looks at all the features and the ticket prices of all other resorts in the US and finds connections between the features and how they affect the ticket price.



As seen in the graph above, we can see the importance of each feature in relation to the ticket price of the resort. The number of Fast Quads and Runs being the most important. This tells us that people place higher values on these features and providing more of these will help increase the ticket price. Although focusing on what Big Mountain currently has, the model gave a ticket price of $95.87. This is an increase of $14.87 on top of the original price of $81. Using the expected number of visitors, 350,000, and the average length of stay per visitor, 5, we see that this increase in price will give us an additional $26,022,500 in revenue for the resort to use as they will. The original problem that caused this was building a new chair that increased operating costs by $1,540,000. With this increase in revenue, it will be able to cover the increase in operating costs and provide an extra $24,482,500 in revenue on top of what the resort was making previously. The resort also prompted us with four scenarios to evaluate and see what might be best to implement.

Scenario 1 was to close down the 10 least popular runs at the resort. This scenario may be a good idea but there is not enough information to make an informed decision whether to implement this or not. The number of runs were the second most important feature our model found, closing runs will have a negative impact on the ticket price.



As shown above, we can see the change in ticket price for however many runs may be closed. Additionally with the runs closure, other features may be affected as well, such as skiable terrain and snow making terrain. Skiable terrain was our fifth most important feature so this may contribute to a small drop in price as well. The reason why there is not enough information is that it entirely depends on the operating costs of each run. If the revenue loss is less than the operating costs of the run, then it may be worth it to close that run.

Scenario 2 and 3 are very similar so these will be paired together. Scenario 2 adds a new run that increases the vertical drop and a new chair. Scenario 3 is the same as scenario 2 but it increases the amount of snow covered terrain. These scenarios will increase the ticket price by $8.61 and $9.90 respectively. One cost we do know associated with this change is the operating cost of a new chair, which is $1,540,000. Using the same expected number of visitors and length of stay above, it tells us that the ticket price needs to be increased by $0.88 to break even on the increase in operating costs. With the ticket increase of $8.61, this is almost 10 times the amount to break even on the chairs operating costs. These two scenarios should be implemented since they have a large increase on ticket price and will bring in tons of revenue, on top of the revenue brought in from the adjusted ticket price mentioned before.

Scenario 4 was to increase the longest run and increase the amount of area that produces snow. This change prompted no increase in our ticket price so this scenario should not be implemented. Since it will cost money to implement this but it will not help bring back much in return.