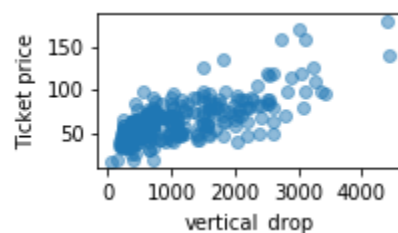
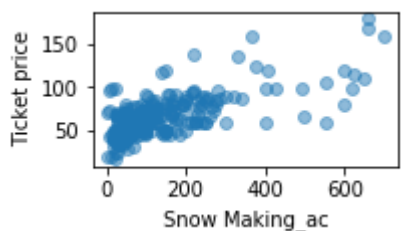


## Sara M – Guided Capstone – Big Mountain Resort

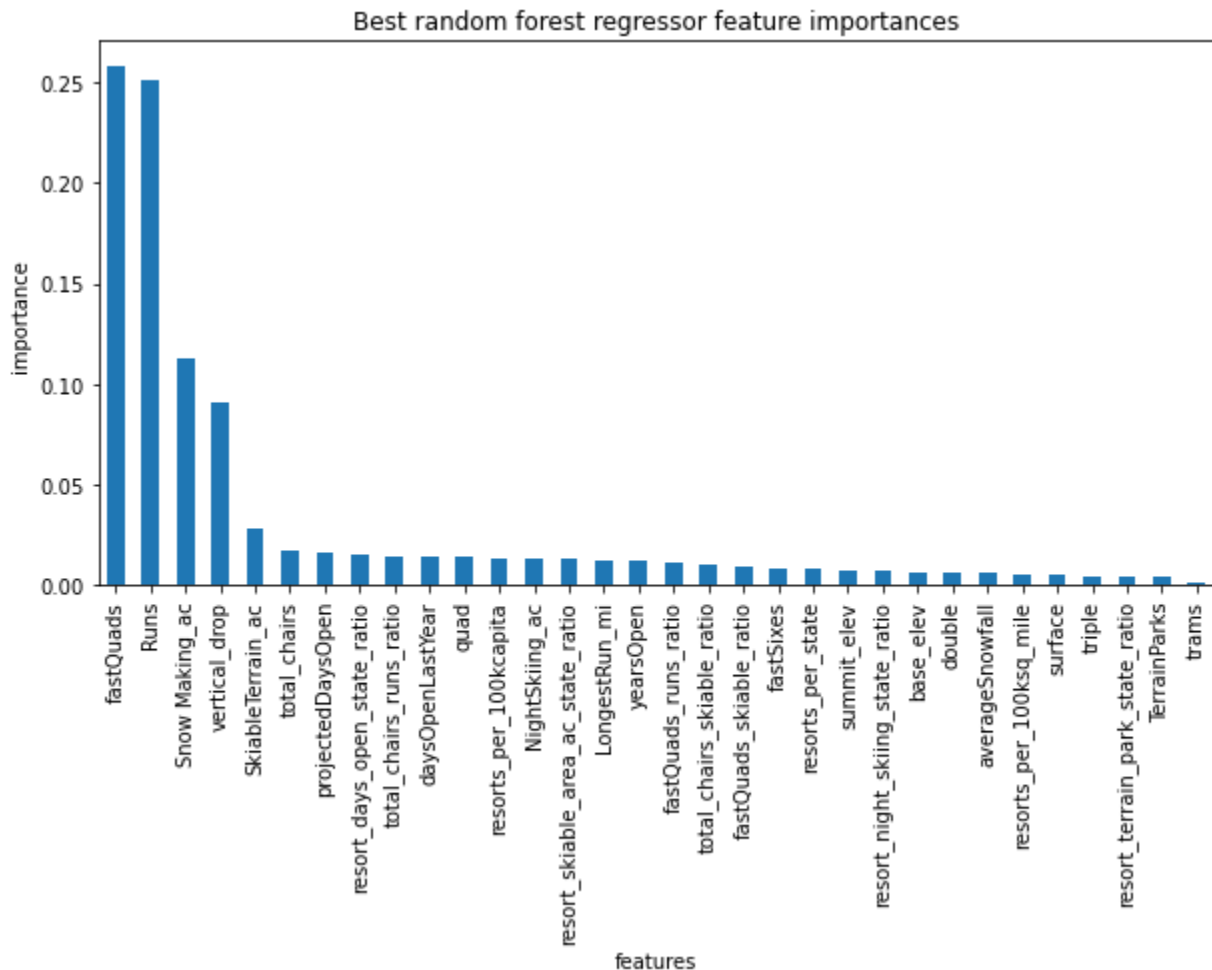
Big Mountain Resort is a ski resort in Montana that offers views of Glacier National Park and Flathead National Forest. An additional chair lift was installed and increased operating costs by \$1.54 million. The resort's strategy has been to charge a premium above the average price of similar resorts. They are also looking at other ways to offset the increase by cutting costs or raising ticket prices further. Their goal is to find a way to maximize revenue above the \$1.54 million in increased operating costs from the new chair lift while maintaining quality services in the resort. The focus on identifying ways to maximize revenue will be applied to the facilities in the resort that are more valuable.

The dataset is a CSV from Database Manager Eisen that includes names and information about the 330 resorts in the same market share as Big Mountain such as the highest point, skiable terrain, and days open in the previous year. When cleaning the data, I found several problems. The values for skiable terrain and snow making were clustered at the low end. Half of the fastEight values were missing and all but one value shown is 0. Fast sixes and trams had zeroes for most of their values, though they had better variance than fastEight. One of the values of Years Open is 2019. One resort had a rather unusually large amount of acreage. A few rows had to be deleted, such as Heavenly Mountain because of the lack of ticket information, FastEight because half its values were missing and all but one of the remaining values are 0, and Years Open because where the data were gathered and the length of time that the resort with the value "2019" has been open are not known.

When doing exploratory data analysis, the heat map analysis showed a high correlation between summit and base elevation, a positive correlation between the ratio of night skiing area with the number of resorts per capita, a positive correlation between total chairs and ticket price. The scatterplot shows a strong positive correlation of ticket prices with the vertical drop and with snowmaking.



Applying the Random Forest Model showed fast quads, runs, snow making, and vertical drop as the features in common with the linear model. Random Forest was found to be the best model for this dataset because it has a lower cross-validation mean absolute error and less variability.



Modeling the data showed that Big Mountain is actually underpriced, though it isn't known how the current ticket price of \$81 was decided on. The suggested ticket price is almost \$15 higher, at \$95.87, though even increasing the price by half that amount results in more than enough revenue to cover the extra \$1.54 million in operating costs for the new chair lift. The resort can be sold as having more amenities to offer with few other competing resorts.