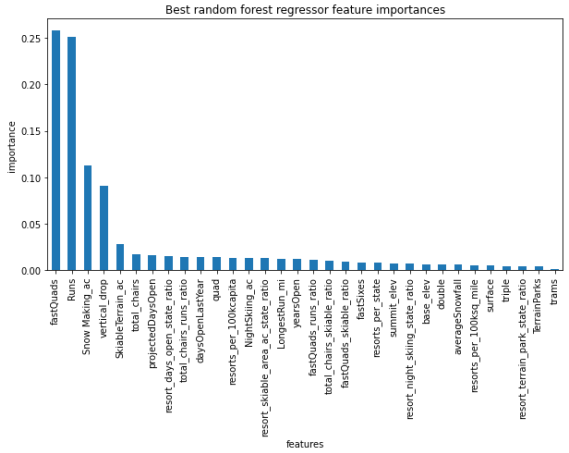
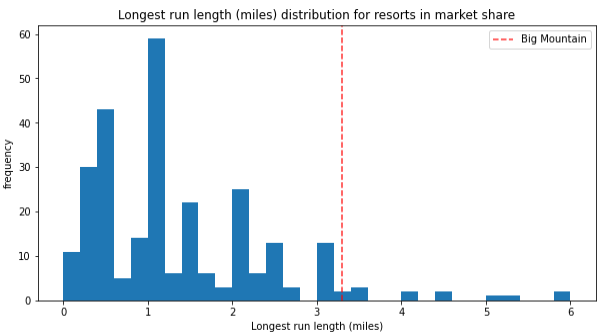
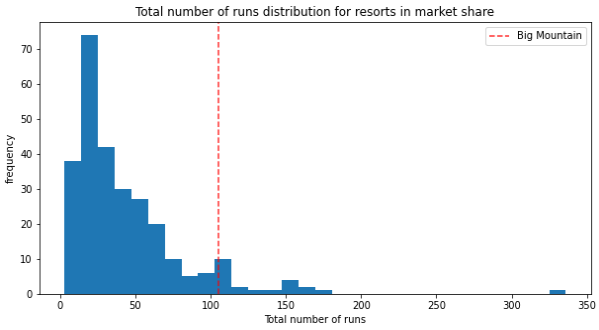
Nathan Cantwel
3/21/22

Through exploratory data analysis variance in adult weekend ticket price was seen to vary primarily through four factors: vertical drop, snow making acreage, number of runs, and number of Quads.

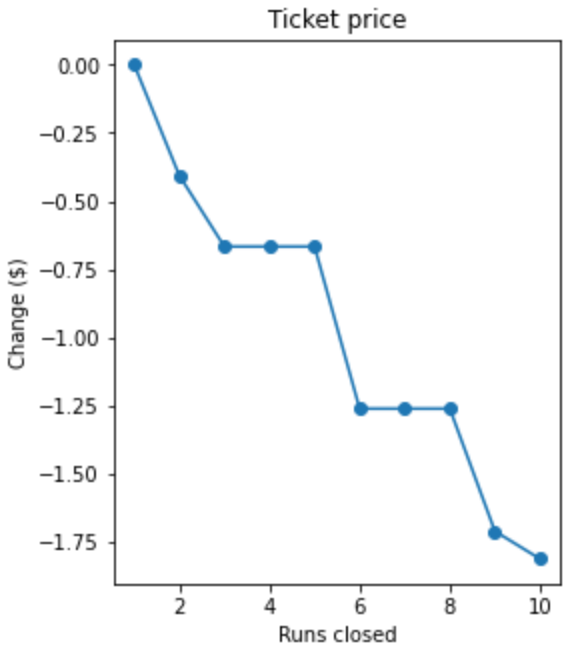


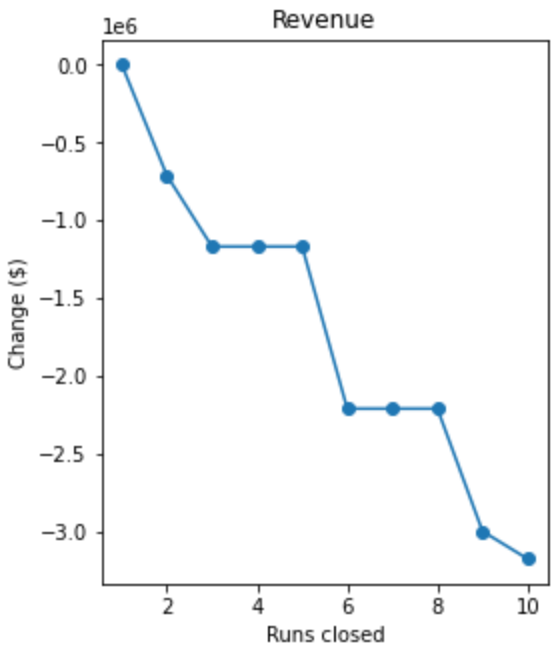
A random forest model with sixty-nine trees, median simple input of missing values, and without scaling was found to best fit the dataset. With the model trained and finalized Big Mountain resort was evaluated according to the dataset and model.





Big Mountain Resort aligns high on the distribution for all major factors. The model found an appropriate adult weekend ticket price of $95.87 with a mean absolute error of $10.39. With current price of $81, a modest price increase of $4 still falls below the lowest possible price reported by the model. The new lift costs $1.5M in operation annually, with 350,000 expected visitors a $4.40 price increase is required to offset operating the new lift.





The proposed scenario one shows a total price decrease of $1.75 if 10 runs are closed, however a partial decrease of 8 runs will entail a price decrease of $1.25. Scenario two, an additional 1, increasing 150ft drop, and 1 lift, would support a $1.99 increase in ticket prices. Scenario 3, adding 2 acres of snow making area would not affect ticket price. Scenario four, four acres of snow making area and 0.2 miles added to the longest run, would also not affect ticket price.