Big Mountain Resort, a ski resort located in Montana. Big Mountain Resort offers spectacular views of Glacier National Park and Flathead National Forest, with access to 105 trails. These are serviced by 11 lifts, 2 T-bars, and 1 magic carpet for novice skiers. The longest run is named Hellfire and is 3.3 miles in length. Big Mountain Resort has recently installed an additional chair lift to help increase the distribution of visitors across the mountain. This additional chair increases their operating costs by $1,540,000 this season. The resort's pricing strategy has been to charge a premium above the average price of resorts in its market segment. There's a suspicion that Big Mountain is not capitalizing on its facilities as much as it could. The business wants some guidance on how to select a better value for their ticket price. They are also considering several changes that they hope will either cut costs without undermining the ticket price or will support an even higher ticket price.

We have created a heatmap and scattered plot for the numerical features vertical\_drop, Snow Making\_ac, total\_chairs, fastQuads etc to see the correlation between the features.

Chart, treemap chart

Description automatically generated

Diagram

Description automatically generated

Based on the plots we can see there is a positive correlation between ticket price with vertical\_drop,total\_chairs, Runs and fastQuads.

In this notebook we have a comprehensive data modelling approaches on our clean, pre-processed, and trained ski\_data dataset. We have build different models and checked which one fit our model best. The random forest model was the best fit and we saw that out top 4 estimators were fastQuads,Runs,Snow Making\_ac and vertical\_drop.

For our modeling we have created 4 different cost increasing scenarios. Based on our model closing one run makes no difference. Closing 2 and 3 successively reduces support for ticket price and so revenue. If Big Mountain closes down 3 runs, it seems they may as well close down 4 or 5 as there's no further loss in ticket price. Increasing the closures down to 6 or more leads to a large drop.

Chart, line chart

Description automatically generated

In scenario two, Big Mountain is adding a run, increasing the vertical drop by 150 feet, and installing an additional chair lift. This scenario increases support for ticket price by $0.84. Over the season, this could be expected to amount to $1468750. Adding two more acres in the snow making area also increased the revenue to amount to

$1468750.

In our next scenario we have increased our longest run by .2 miles which made no difference in our revenue.