From the data provided, we have been able to find multiple features of the resort that would most impact ticket price predominately ‘fast quads’, ‘runs’, ‘snow making accuracy’, ‘total chairs’. Scatter plots are showcase below.

Chart, scatter chart

Description automatically generated

Features that came up as important in the modeling (not just our final, random forest model) included:

Chart, histogram

Description automatically generated

When comparing Big Mountain Resort to others in specific features, the following can be concluded:

1. Big Mountain is doing well for vertical drop, but there are still quite a few resorts with a greater drop.
2. Big Mountain is very high up the league table of snow making area.
3. Big Mountain has amongst the highest number of total chairs, resorts with more appear to be outliers.
4. Most resorts have no fast quads. Big Mountain has 3, which puts it high up that league table. There are some values much higher, but they are rare.
5. Big Mountain compares well for the number of runs. There are some resorts with more, but not many.
6. Big Mountain has one of the longest runs. Although it is just over half the length of the longest, the longer ones are rare.
7. The vast majority of resorts, such as Big Mountain, have no trams.
8. Big Mountain is amongst the resorts with the largest amount of skiable terrain.

From the information obtained through the notebooks, there is definitely room in justification for an increase in ticket price or operational change to reduce costs.

An adult ticket is currently $81 If the average visitor purchases 5-day tickets with 350,000 visitors, the model predicts a 3 million increase in revenue if the ticket price is increased by $8.61 if a 150 ft run, and a chair lift are added.

Based on our model, we were able to input the suggested facility changes to obtain an estimate on the potential outcome.

1. Closing 10 of the least used runs. The model says closing one run makes no difference. Closing 2 and 3 successively reduces support for ticket price and so revenue. If Big Mountain closes 3 runs, it seems they may as well close 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.
2. 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 $8.61. Over the season, this could be expected to amount to $15065471.
3. Repeat the previous scenario but adding 2 acres of snow making. This increases support for ticket price by $9.90; over the season, this could be expected to amount to $17322717. Such a small increase in the snow making area makes no difference!
4. Increasing the longest run by .2 miles and guaranteeing its snow coverage by adding 4 acres of snow making capability. No difference whatsoever. Although the longest run feature was used in the linear model, the random forest model (the one we chose because of its better performance) only has longest runway down in the feature importance list.