Big Mountain Resort is a ski resort located in Montana offering views of Glacier National Park and Flathead National Forest, with access to 105 trails.  They have added an additional chair which increases their operating costs by $1,540,000 this season.  Blue Mountain needs to either cut costs or support a higher ticket price. What opportunities exist for Big Mountain Resort to recoup their increased operational cost of $1.54MM for installing new chair lift this season. This may involve the need to offset the increase of 1,540,000 by either cutting costs or increasing ticket price.

So the first step we need to identify how Blue Mountain can capitalize on its facilities. The current weekday and weekend prices for our resort, Big Mountain, were seen to be equal, at $81. This equality between weekend and weekday prices was seen for all resorts in Montana.  This ticket price is also already at the upper end of the ticket prices in Montana, and so it makes sense that we will treat weekend and weekday prices the same. Thus, as we had a few more weekend prices than weekday, we dropped the weekday prices and the target ticket price will be taken to be the weekend price.

Initially the data we found was how populous the state is, how many resorts in each state and popularity of the resorts in that state. Colorado seems to have a name for skiing; it's in the top five for resorts and in top place for total skiable area. The pattern of the relationship between state and ticket price is that the high price for some resorts when resorts are rare (relative to the population size) may indicate areas where a small number of resorts can benefit from a monopoly effect. The lower ticket price when fewer resorts serve a population may similarly be because it's a less popular state for skiing. Correlation between the ratio of night skiing area with the number of resorts per capital and As well as Runs, total\_chairs is quite well correlated with ticket price. It seems that the more chairs a resort has to move people around, relative to the number of runs, ticket price rapidly plummets and stays low. Although with fewer chairs you're inevitably going to be able to serve fewer visitors.

A picture containing text, screenshot, pattern, colorfulness

Description automatically generatedSo upon further review of the data we found a few reasonable correlations. fastQuads stands out, along with Runs and Snow Making\_ac. The last one is interesting. Visitors would seem to value more guaranteed snow, which would cost in terms of snow making equipment, which would drive prices and costs up. Of the new features, resort\_night\_skiing\_state\_ratio seems the most correlated with ticket price. Also the Runs, total\_chairs are quite well correlated with ticket price. last The vertical drop seems to be a selling point that raises ticket prices as well.

Then using the regression model

vertical\_drop 10.767857

Snow Making\_ac 6.290074

total\_chairs 5.794156

fastQuads 5.745626

Runs 5.370555

LongestRun\_mi 0.181814

trams -4.142024

SkiableTerrain\_ac -5.249780

dtype: float64

These results suggest that vertical drop is the biggest positive feature. Also, you see the area covered by snow making equipment is a strong positive as well. People like guaranteed skiing! From our analysisBig Mountain is doing well for vertical drop, but there are still quite a few resorts with a greater drop. Currently Big Mountain is very high up the league table of snow making area. In addition, Big Mountain has 3 fast quads, which puts it high up that league table.

According to the results, Big Mountain Resort modelled price is $95.87, actual price is $81.00. Even with the expected mean absolute error of $10.39, this suggests there is room for an increase.