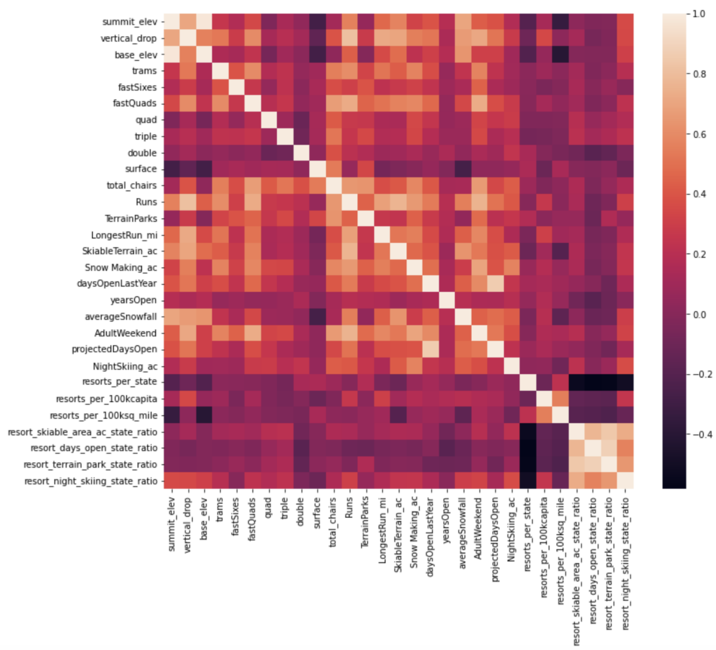
A CSV file named '../raw_data/ski_resort_data.csv' was received and imported for auditing. In this file, there are 330 rows and 27 columns, consisting of the ski resorts across the United States. The rows are each ski resort name and the columns are features of the ski resorts such as state, amount of runs, chairs, and ticket price.

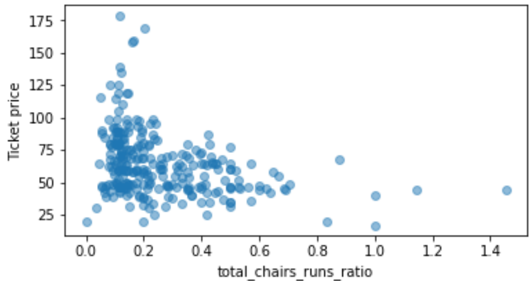
In this assessment, our main goal was to see if we can take advantage of available opportunities at Big Mountain Resort in Montana to develop and implement a new ticket pricing strategy to fully capitalize on their investments. The addition of the new chair lift increased operating costs by $1.5M, so we wanted to see if there was room for ticket price increase to then offset the new chair lift costs.

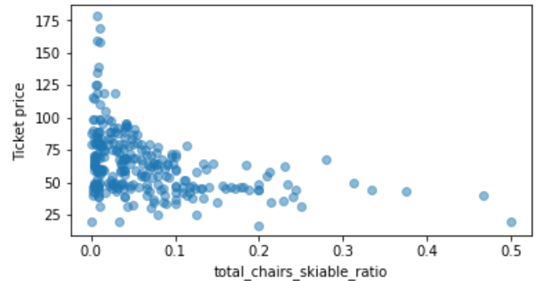
As mentioned earlier, there are 27 features that are taken into consideration when looking at each ski resort. A Feature Correlation Heatmap was used to determine which features of each ski resort mattered most and the patterns between them when thinking about ticket pricing.

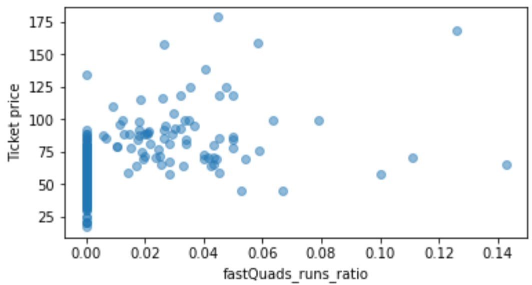


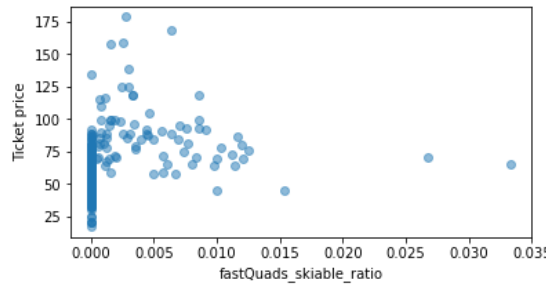
This was especially helpful as this was used to focus on the ones that were the most relevant to our modeling process: number of runs, the longest run (mi), number of chairs, number of trams, number of fast Quads, skiable terrain (acres), and amount of snow making (acres). Along with Runs, the total number of charis is quite well correlated with ticket price. This makes sense as the more runs a resort has, the more visitors they get and the more chairs you need to ferry the visitors to the top. This is interesting too, as the total chairs feature may be more looked at than the total skiable terrain area. It also makes sense that the total skiable terrain area is not as useful as the area with snow making capabilities. It seems that visitors value the guaranteed snow on a run rather than the variable terrain area. To finish it off, of course it seems that vertical drops are important to selling tickets and the pricing of these tickets.

Scatterplots were also built to analyze how ticket price varies with other numeric features.









These were the most important features to look at and through the model, we calculated and graphed the ratio of ticket price to each feature. At first these relationships are quite counterintuitive. 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. What we may be seeing here is an exclusive vs. mass market resort effect; if you don't have so many chairs, you can charge more for your tickets, although with fewer chairs you're inevitably going to be able to serve fewer visitors. Your price per visitor is high but your number of visitors may be low. This data is encapsulating the entire nation, so to hone in on Big Mountain Resort, we would want to incorporate the number of visitors per year, which these data models are missing. It also appears that having no fast quads may limit the ticket price, but if your resort covers a wide area then getting a small number of fast quads may be beneficial to ticket price.

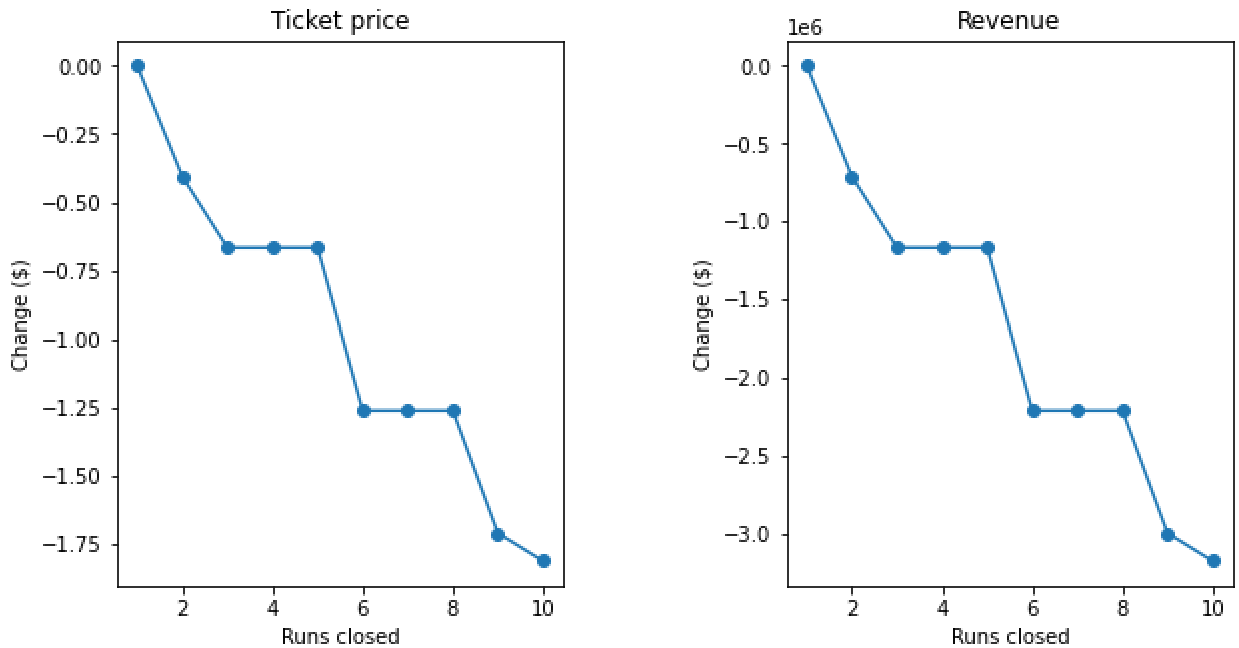
Recommendations:

Our model suggests that the Big Mountain Resort's ticket price is lower than the predicted model by 16.31%. The resort has a few scenarios where cutting costs by closing runs or increasing ticket price by increasing the vertical drop, adding acres for snow making, or increasing the longest run may be plausible.

Increasing the vertical drop by a mere 150 feet can increase the price from $81 to $82.99, resulting in an annual revenue increase by $3,474,638.

Additionally, adding 2 acres of snow is such a small addition that there is no increase in revenue or benefits in ticket price.

After running calculations on the results of closing down runs, a few things came up. 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 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.



Conclusion:

After the entire model was trained and executed for Big Mountain Resort's potential as a ski resort in America, we can conclude a few things. The best scenario that we saw could be plausible is increasing the vertical drop by 150 ft. This slight $1.99 price increase, $81 to $83.99, would allow Big Mountain to offset the price of the new chair lift and still increase revenue by $1.93 million annually.

It is not suggested to close down runs, as Big Mountain would need to close down many in order to see a difference, or add more acres of snow, since there was virtually no effect of pricing if that were to be done. It also does not support dynamic ticket pricing due to the lack of weekday ticket pricing.