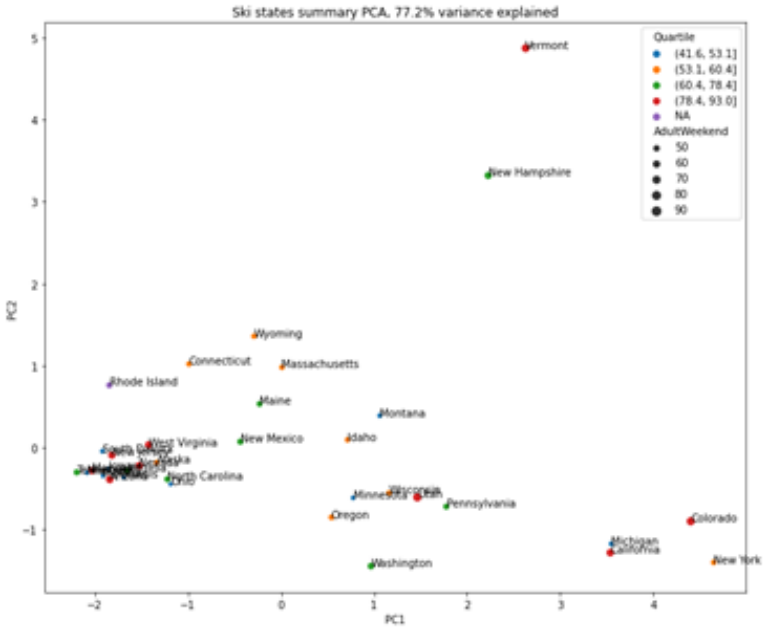
This analysis aims to understand how Big Mountain's ticket prices compare against those of market competitors and to what extent Big Mountain would need to raise ticket prices to offset the addition of a chair lift. We cleaned a dataset containing 330 ski resorts across 35 states, from which we identified an outcome variable: adult weekend ticket prices. Using this data, we performed some descriptive analysis to better understand the relationships between variables and built a predictive model to assess whether we can calculate a new proposed adult weekend ticket price.

The dataset was adjusted such that each row represented a resort, and each column represented a resort attribute. 11 columns are missing values for up to 17% of the resorts. Additionally, "NightSkiing_ac" is missing values for over 40% of the resorts, and "fastEight" (which we ultimately dropped) is missing values for over 50% of the resorts. We chose to remove rows for ski resorts missing both weekday and weekend prices. Lastly, we dropped a row (Pine Knob Ski Resort) that contained resort age information that was determined to be inaccurate after verifying with online sources.

Aside from a few outliers, most ticket prices generally range between 25 to over 100 dollars. We chose to focus on weekend ticket pricing as the rows containing weekend prices had fewer missing values overall. In doing so, we eliminated the weekday price column from our dataset and kept only the rows that had weekend prices. This yielded a "final" dataset with 277 resort rows and 25 attribute columns, with "AdultWeekend," or adult weekend ticket pricing, as the outcome variable.

In the descriptive analysis, we attempted to understand whether there was any correlation between a resort's state and ticket price. Ultimately the scatterplot we created shows that there is not a strong correlation between state and ticket price. As such, we have decided to treat all states equally in subsequent modeling.

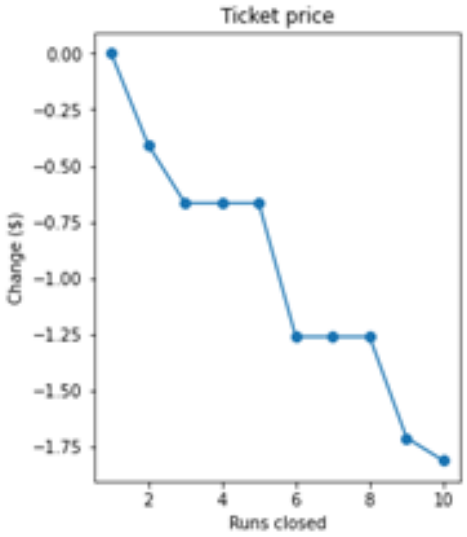


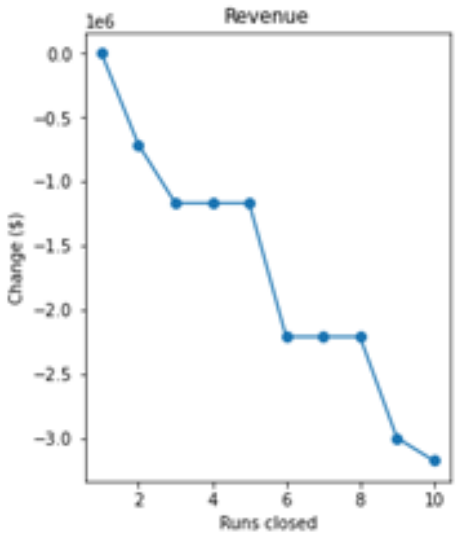
Before determining our modeling results, we assessed the performance of different modeling approaches: in particular, we compared using the mean, a linear regression model, and a random forest regressor model. When using the mean as the predictor, we estimate the discrepancy between our predictions and known data to be about $19 (if measured by mean absolute error). The linear regression model reduced this discrepancy by $10. The random forest regressor model reduced mean absolute error by $1 and exhibited less variability, so we used the random forest regressor model going forward.

Big Mountain currently charges 81/ticket. Our model suggests that based on the market data available to us, Big Mountain's facilities can support a ticket price of 95.87/ticket. Even with the expected mean absolute error of 10.39, this suggests there is room for an increase of 4.48/ticket. We would approach business leadership by identifying the key features that we identified throughout this analysis and emphasizing the observation that Big Mountain consistently outperformed many other resorts in our dataset in vertical drop, snow making area, total chairs, fast quads, total and long runs, and skiable terrain.

In the modeling exercise we analyzed the effect of installing an additional chair lift on Big Mountain's operating costs. The results indicate that when assuming each visitor on average buys 5 day tickets, Big Mountain can raise ticket prices by $1.99/ticket to offset increased operating expenses associated with the new lift.

Management requested that we analyze the impact of increasing snow making acreage on ticket price. While the scenario requested (increase of 2 acres) did not have a significant impact on ticket price, further study may explore what the minimum snow acreage increase is required to call for revenue support through ticket price increase. Similarly, further studies can explore the minimum amount by which Big Mountain can increase the distance of the longest run to require additional revenue support as well. Regarding closures, the model predicts business would need to close at least 2 runs to see an impact on ticket price. Closing 3-5 runs has the same impact on ticket price, as does closing 6-8 runs.





Beyond the information provided, it would be advantageous to understand the labor costs that factor into Big Mountain's annual operating expenses. It would also be good to understand the seasonality of Big Mountain's operating costs; if the resort has a longer "peak season" than other facilities, there may be grounds for increasing ticket pricing further. Finally, Big Mountain may benefit from assessing similar costs for children’s tickets as well.