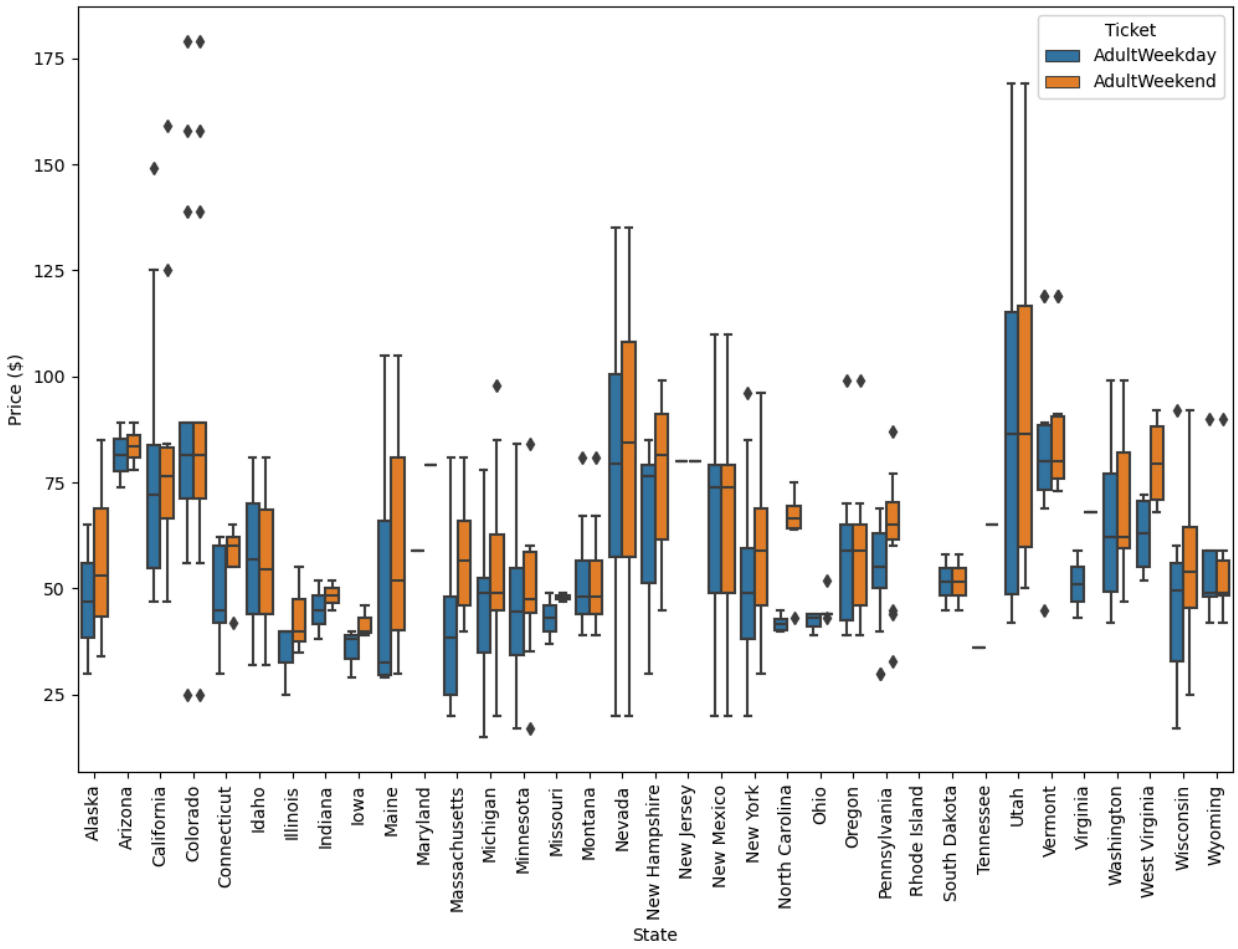
Big Mountain Resort is a ski resort located in Montana. Boasting access to 105 trails, Big Mountain Resort attracts skiers of all skill levels, bringing in ~350,000 people every year to ski/snowboard at the resort. Big Mountain's pricing strategy has been to charge a premium above the average price of resorts in its market segment. There are flaws to this idea, as Big Mountain does not capitalize on what is has to offer, which begs the question, how can Big Mountain Resort optimize financial performance and ticket price/strategies within the next 6 months through data-driven analysis of the resort's facilities rather than comparing to the average price in its market segment?

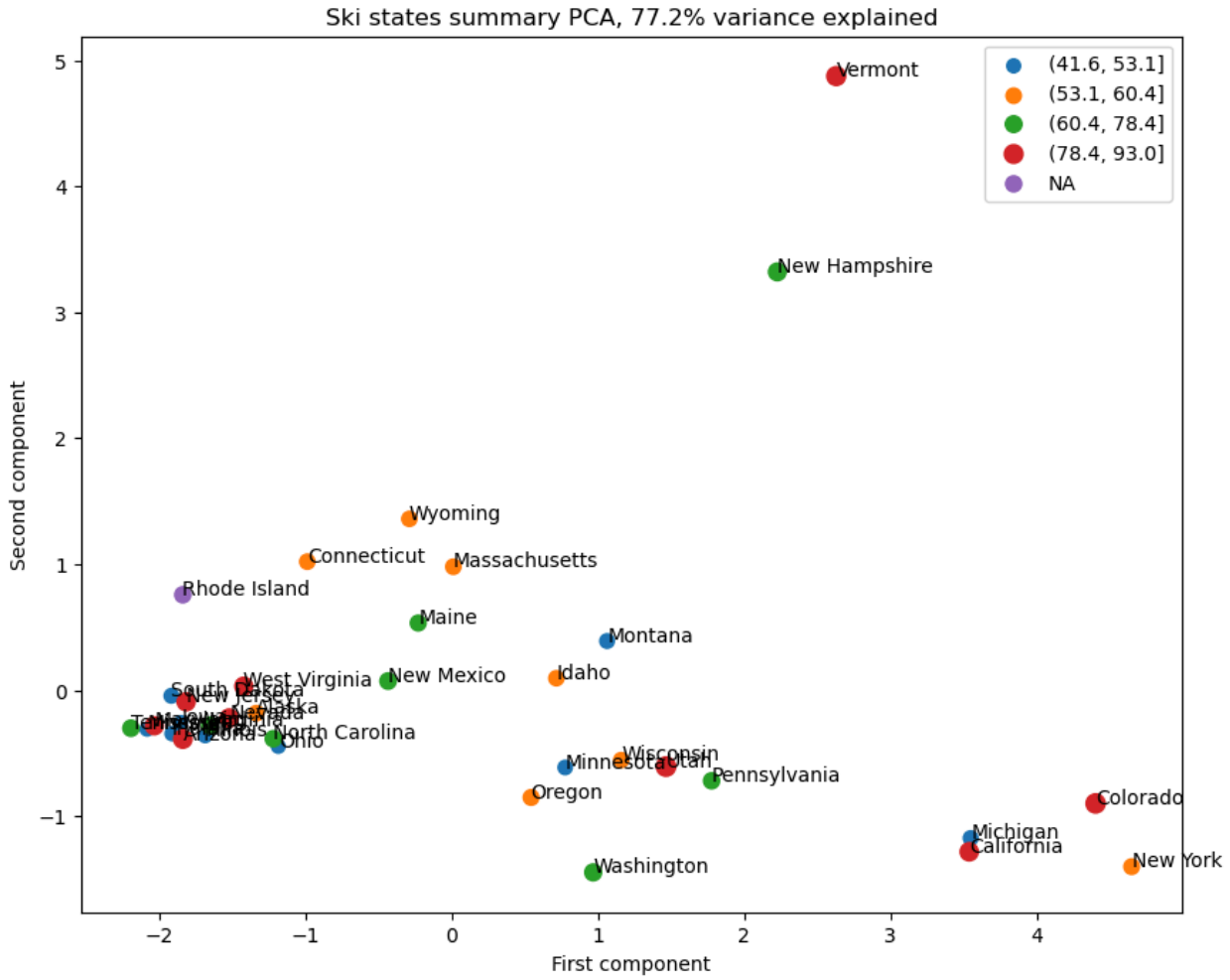
After creating a relevant problem statement, data wrangling comes forth. Through data wrangling, I found there were two types of ticket prices. Adult weekday tickets and adult weekend tickets. The data must be clearly defined before finding the target feature. This was done through comparing the prices of the two ticket types between states. The following figure compares ticket price distribution between states.



We can conclude that most prices are in the range of $25-$100, with some outliers.

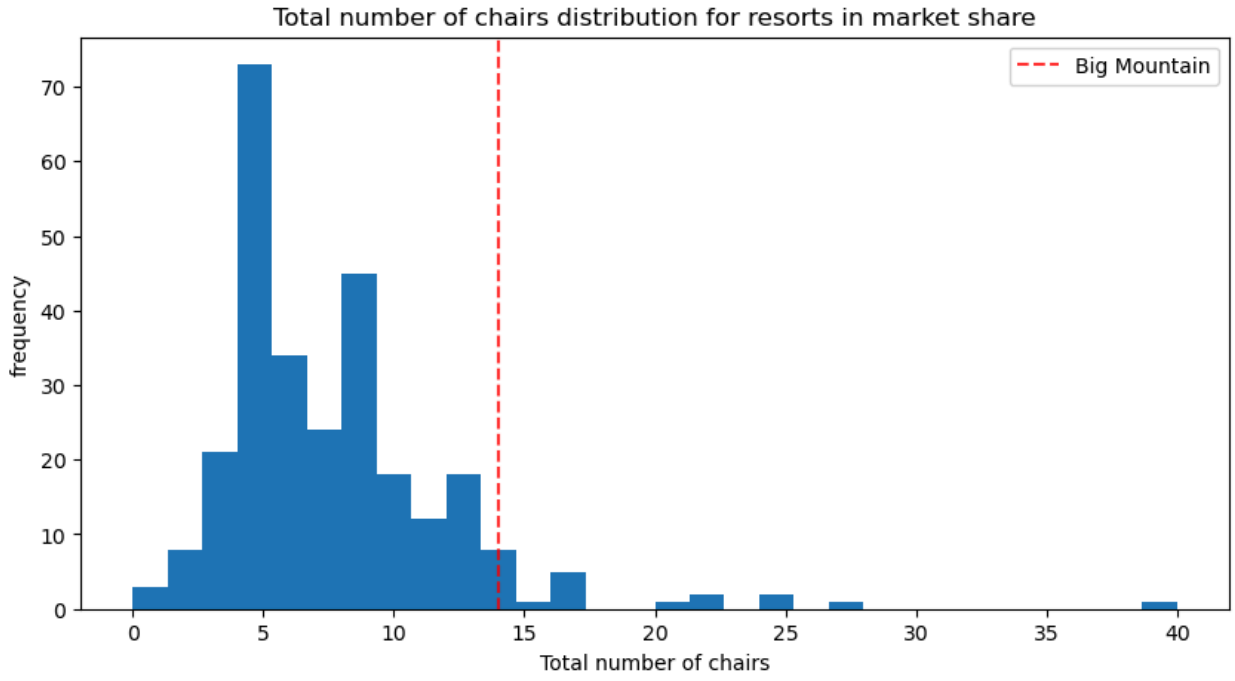
Following data wrangling is exploratory data analysis. Through EDA, I came to the conclusion that there is no pattern between state and ticket price. The following model shows that there is

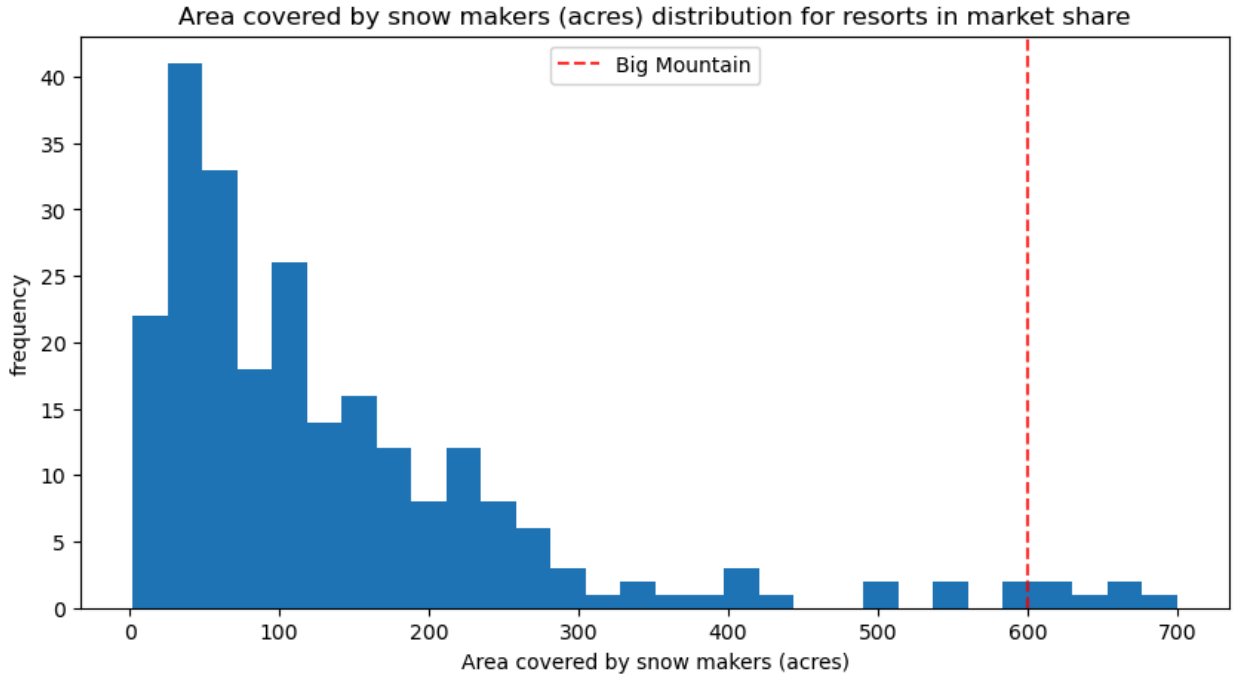
no obvious pattern through the use of PCA.

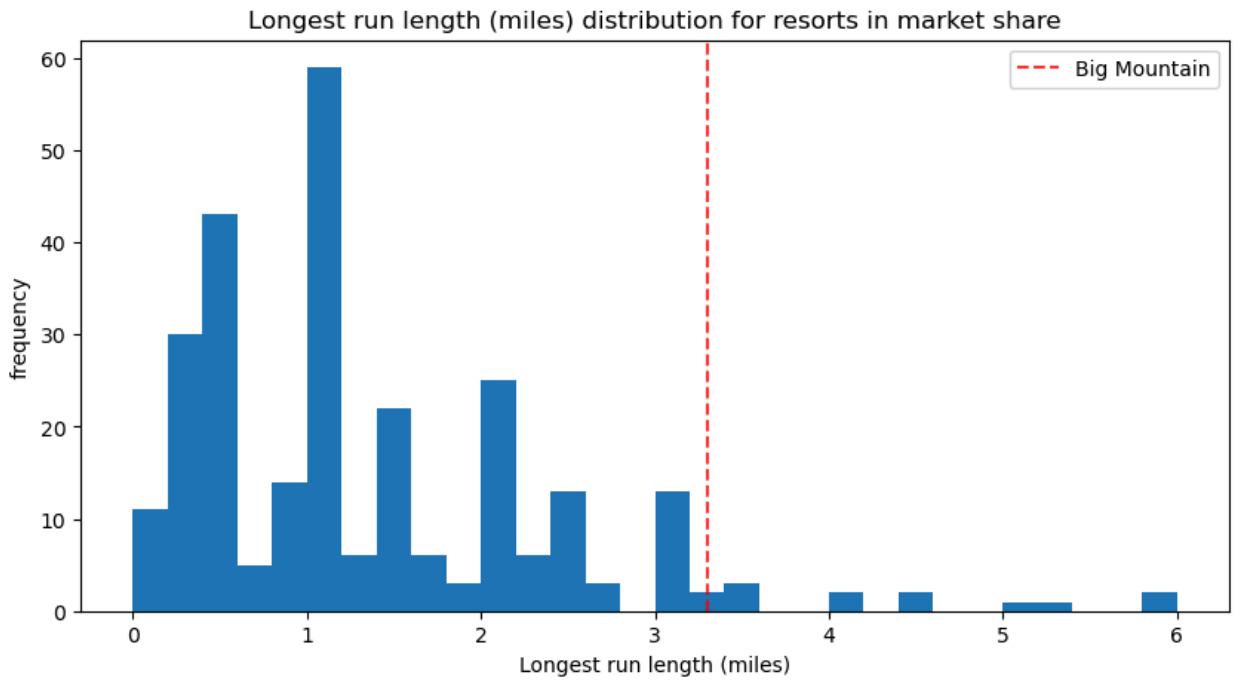


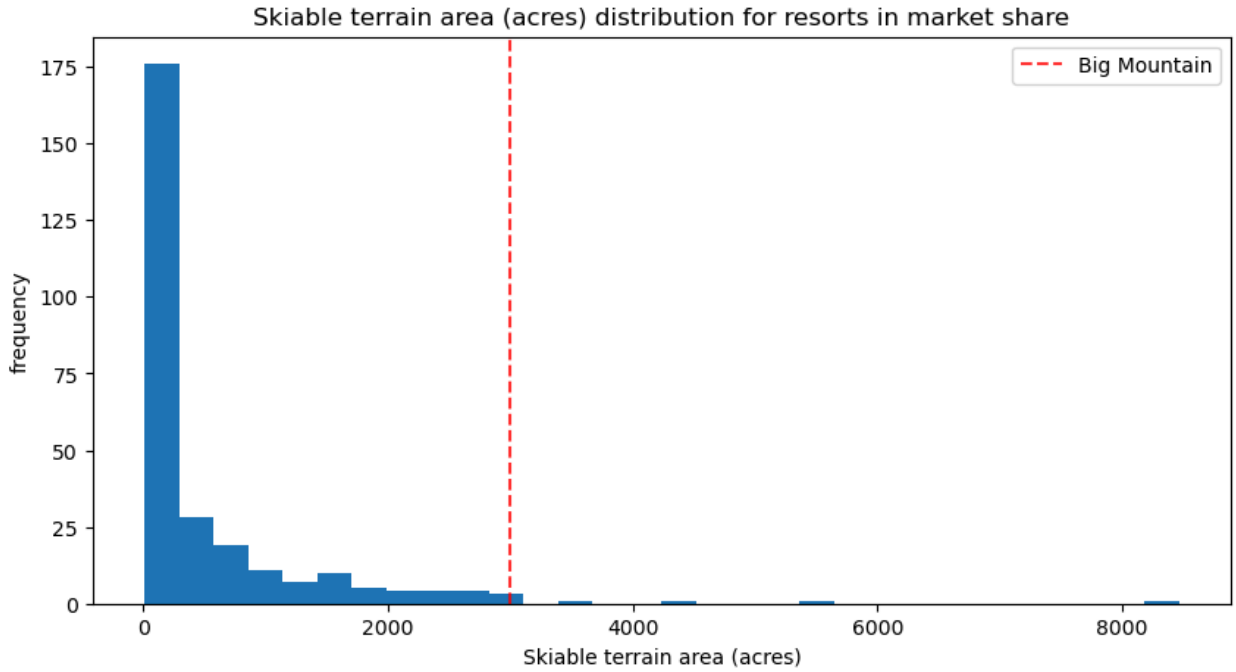
Preprocessing and training was done after EDA. A train/test split was performed, and the mean was not found to be a good predictor, as the mean absolute error came in at 19. Through further testing, by use of the 'best_params_' attribute on the random forest pipeline,, the median was found to be a good predictor, as the ticket price would be within $9 of the real price, rather than the $19 using the average. The winning model with the least room for error was found to be the random forest pipeline. Big Mountain currently charges $81 for a ticket. The modeled price is $95.87, suggesting that Big Mountain is undercharging and there is room for increase. Big Mountain can definitely charge the modeled price, as they have more vertical drop than the average resort, they're very high up in snow making area, and they have among the highest number of chairs. Most resorts have no fast quads, while Big Mountain has 3. They have a high number of runs and one of the largest amounts of skiable terrain. I'd suggest continuing to let a Data Scientist on the leadership side of the business team, as the results found could bring in more revenue to Big Mountain. Installing an additional chair lift would increase operating costs, but it would also expect to bring in $3,474,638 in revenue while only increasing the ticket price by $1.99. For future improvements, I'd recommend adding 2 acres of snow making, as this would also increase revenue. I wouldn't recommend any run closures, as adding runs and chairs would greatly increase revenue for Big Mountain. The following graphs showcase Big

Mountain's facilities compared to other ski resorts, and give them more reason to raise their ticket price, as competitors with less to show for themselves charge a higher ticket price.









In conclusion, Big Mountain is definitely undercharging their ticket price, and can raise ticket price justifiably without adding any new runs, lifts, or ski making area, even though doing so would increase revenue. The models ran should continued to be used by Big Mountain's finance team, as I feel they weren't correctly analyzing their own facilities, rather they were basing off the market average. Future data that would provide insight is the operating costs of all facilities Big Mountain has to offer, and to do further testing on whether or not adding more facilities in worth it. Big Mountain has room to increase their ticket price.