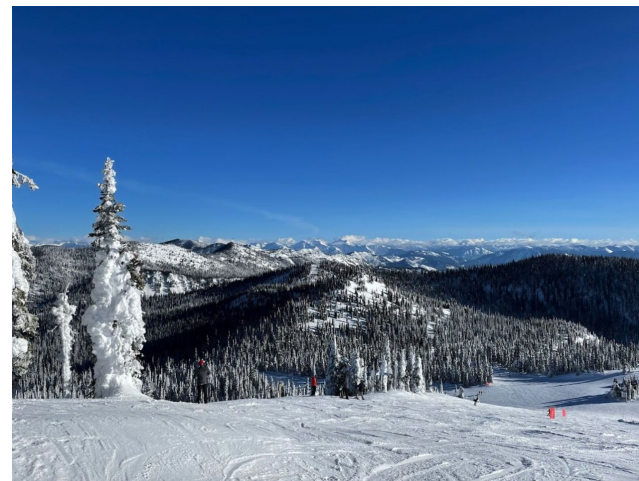


Springboard–DSC
Guided Capstone Project: Big Mountain Ski Resort

Final Report by Zohreh Asaee
March, 2022

Problem Identification

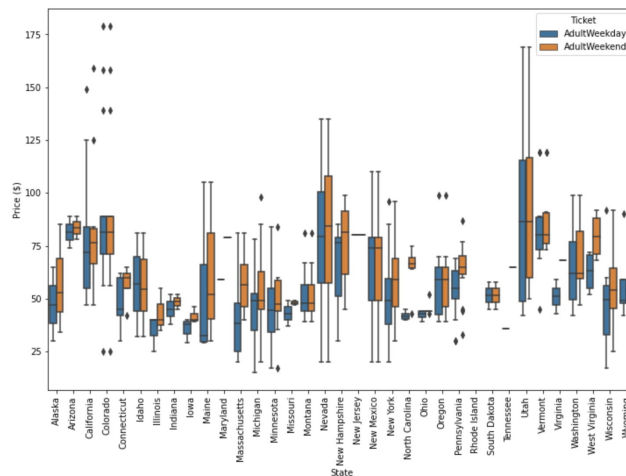
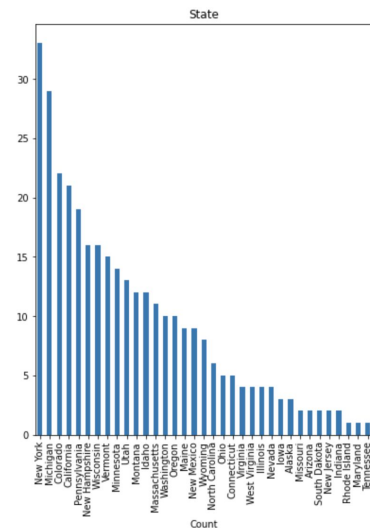
- Big Mountain Ski Resort, located in Monata within Glacier National Park and Flathead National Forest, is serviced by 11 lifts, 2 T-bars and 1 magic carpet.
- Recently, an additional chair lift is installed to facilitate the commute of visitors across the mountain which increased the operating cost by \$1,540,000 this season.
- The management of Big Mountain resort is willing to cover this operating cost by an increase in the ticket price with respect to the market segment and provided facility.
- The main goal of this project is to estimate the ticket price compared to the market segment and other competitors.



Key Findings

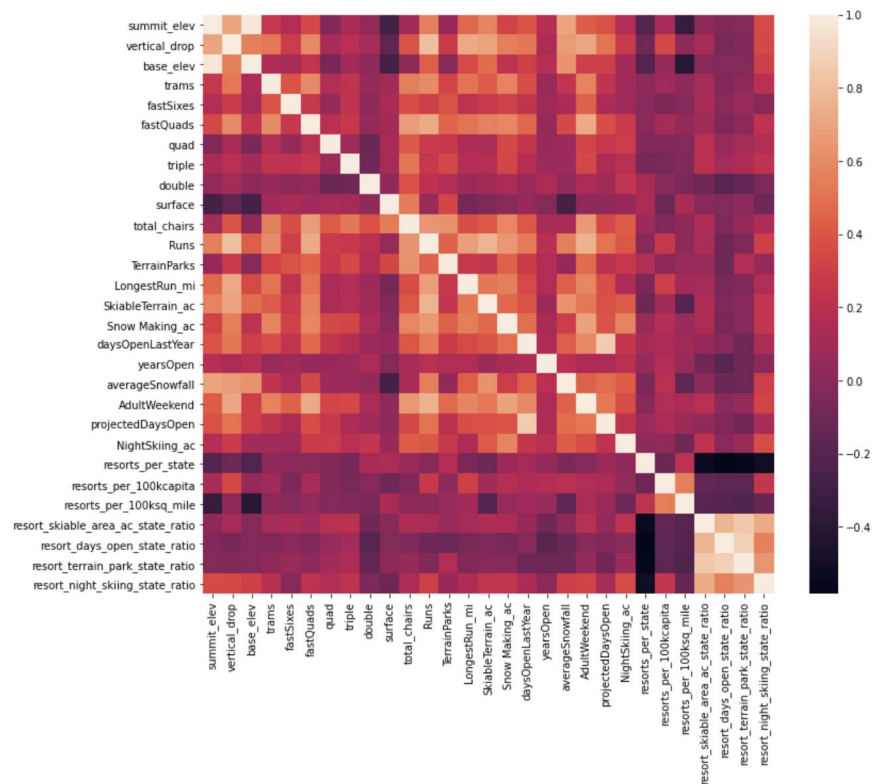
Data of 330 resorts across 35 states with the features including the name, region, state, geographical features of resorts, the facility types and their numbers, ticket price for weekdays and weekends, number of days open, and night skiing availability.

- In terms of the number of resorts in the state, Montana's rank is 13 among 35 states.
- The difference between weekdays and weekend ticket price varies from state to state. In Montana, there is no difference between weekdays and weekend fees.



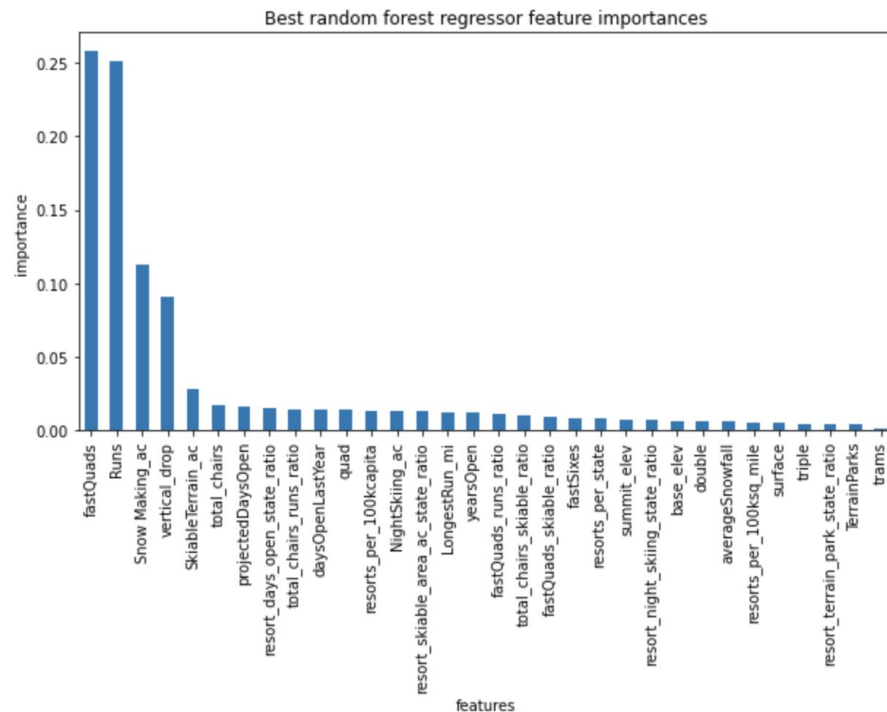
Key Findings

- The data analysis revealed that big states are not necessarily the most populous. Also, some states host many resorts but other states have a larger total skiing area. This data exploration consists of some other observations, too. All in all, there are various trends and correlations observed and it's challenging to relate those all.
- The seaborn heatmap of correlation revealed that the most correlated features to the ticket price are including **fastQuads**, **Runs**, **Snow_Making_ac**, **total_chairs**, **vertical_drop** and **resort_night_skiing_state_ratio**.



Modeling Results and Analysis

- Two models were considered in this study: Linear regression and Random forest regression model. The random forest model has a lower cross-validation mean absolute error by almost \$1. It also exhibits less variability. Verifying performance on the test set produces performance consistent with the cross-validation results. Therefore the final model is the Random forest regression model.



Summary and Conclusion

Id	Scenario	Increase in Ticket Price	Increase in Total Revenue
1	close one run without changing the price ticket	0	0
2	adding a run, increasing the vertical drop by 150 feet and installing an additional chair lift	\$1.99	\$3,474,638
3	adding a run, increasing the vertical drop by 150 feet and installing an additional chair lift plus adding 2 acres of snow-makin	\$1.99	\$3,474,638
4	increases the longest run by 0.2 miles and adding 4 acres of snow-making	0	0