

Guided Capstone Project Report-Big Mountain Resort

Big Mountain Resort, is a ski- resort with around 3,50,000 customers a year and management is committed to provide customers better experience. The company has recently added an additional chair lift to improve distribution of visitors which resulted in additional operating expenses of \$1,540,000 and management wants to recover the cost along with generating additional revenue to justify the investment strategy. The data science team is asked to provide guidance for realizing better ticket price and cost reduction avenues without adversely affecting ticket prices to generate additional revenue and maximize returns. After doing analysis, the major findings and recommendations are discussed below-

Key Insights & Recommendations

- Currently the Big Mountain Resort actual ticket price is USD 81 and without adding any additional capabilities the modeled price using random forest regressor is 95.87, actual price is USD 81.00 and with the expected mean absolute error of 10.39 the price can be increased without any major issues based on market place pricing.
- The total chairs is the 5th most important feature and contributes to less than 0.5 with respect to feature importance. The company is expected to incur USD 15,40,000 in operating costs due to addition of chair lifts. Interestingly, just by increasing the price from USD 81 to USD 95.87 as suggested by the model, the company can generate additional revenue of $350000 \times 14.87 = \text{USD } 52,04,500$ which gives additional profit of $52,04,500 - 15,40,000 = 36,64,500$. Just to recover the cost Big Mountain will need to increase the price by only $4.40 (15,40,000 / 3,50,000)$.
- Based on scenario analysis after fitting improvements in the models, it seems like adding 1 'Runs', 150 ft 'vertical_drop', and 1 'total_chairs', along with 2 acres of 'Snow Making_ac'] can result in additional revenue of USD 17,232,717. Conversely, Management can look at closing 5 of the least used runs as they do not impact the ticket price by more than USD 0.66 per ticket and it may save significant operating cost. However, as a cautionary note Big Mountain Resort ticket price is the highest in the Montana State and management has to carefully watch for the impact of price increase on customer traffic

Further Work

- The data does not indicate the number of customers visiting each resort, as it is an important metric to gauge the impact of ticket price on the number of customers. It is very possible that the resorts with higher prices do not have enough customers which may result in revenue loss. Collecting such data will help us in generating improved model.
- Also, no data is available for the costs associated with installation and operation of different features of resorts, and would be extremely helpful in generating better insights.

Appendix:

```
plot_compare('AdultWeekend', 'Adult weekend ticket price ($)')
```

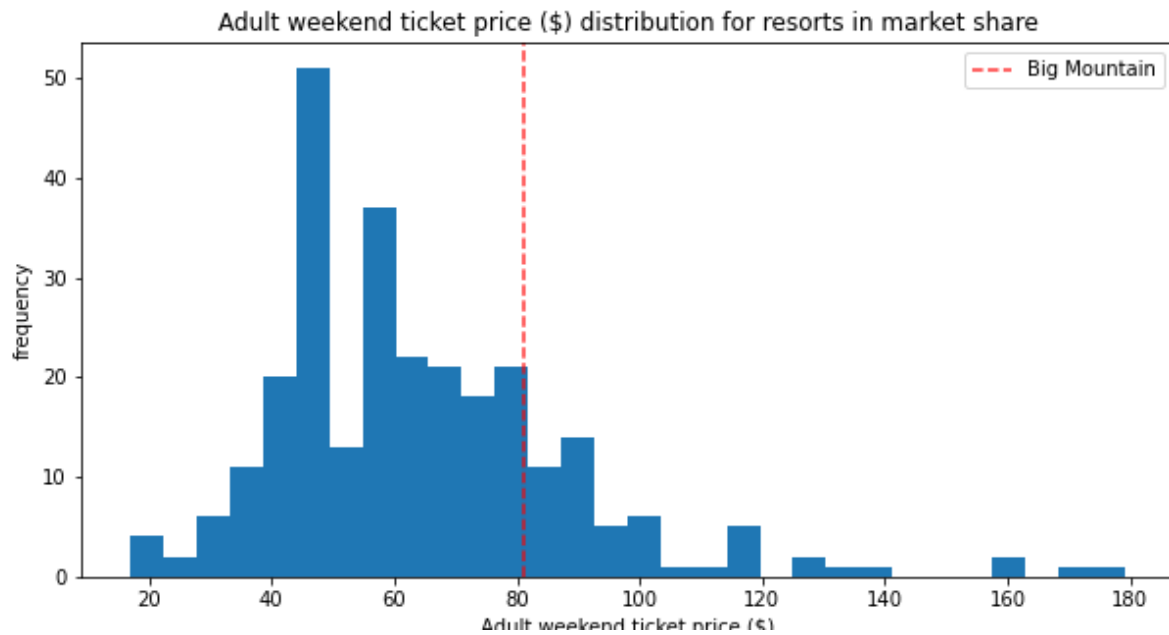


Fig.1



Fig2

```
plot_compare('vertical_drop', 'Vertical drop (feet)')
```

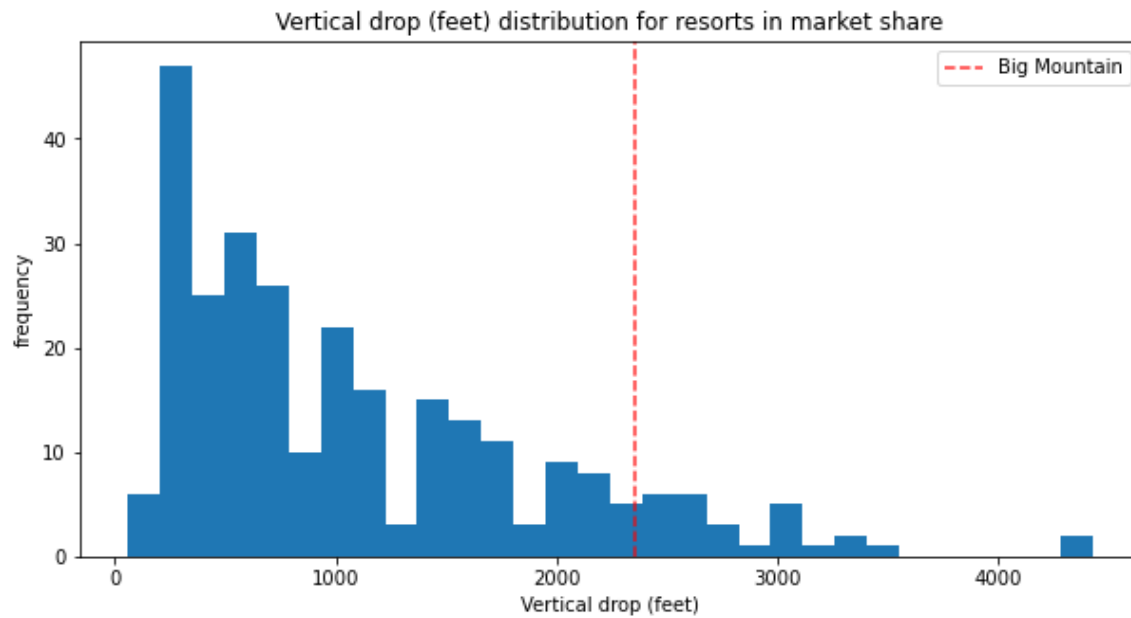


Fig.3

5.8.3 Snow making area

```
plot_compare('Snow Making_ac', 'Area covered by snow makers (acres)')
```

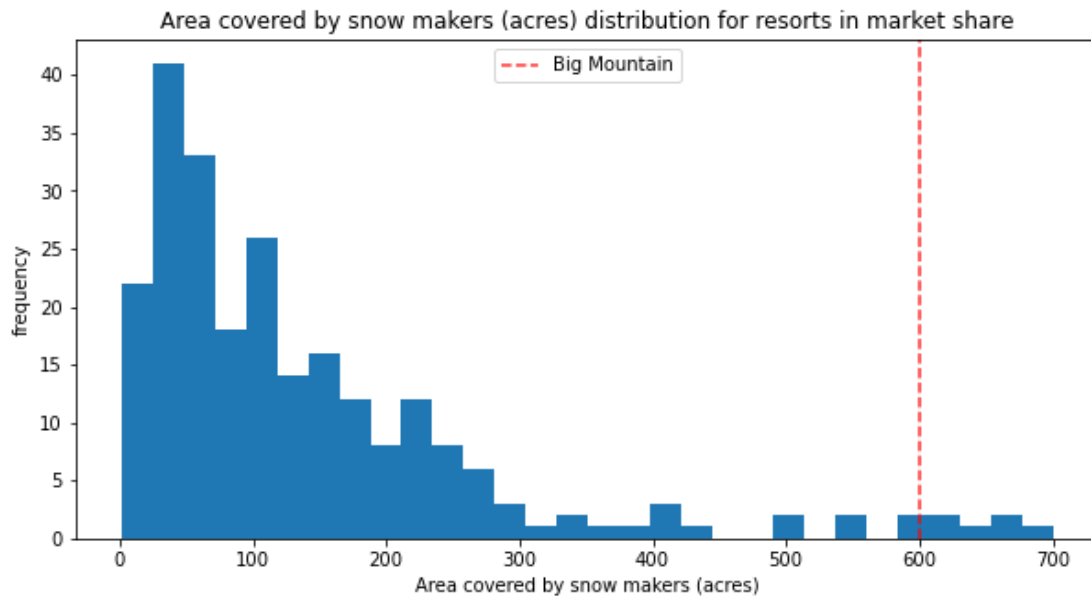


Fig.4