

GUIDED CAPSTONE

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Springboard Data Science Track

May 1st, 2023

PROBLEM STATEMENT

How can Big Mountain Resort select a better ticket price or cut costs to increase their revenue by \$1,540,000 for their additional chair lift cost this season?

1 Context

The Big Mountain Resort has recently installed an additional chair lift to help increase the distribution of visitors across the mountain. This additional chair increases their operating costs by \$1,540,000 this season. The business wants some guidance on how to select a better value for their ticket price. They are also considering several changes that they hope will either cut costs without undermining the ticket price or will support an even higher ticket price.

2 Criteria for success

Revenue increases by not less than \$1,540,00 this season through higher ticket price or cutting costs.

3 Scope of solution space

The resort's pricing strategy has been to charge a premium above the average price of resorts in its market segment. There are limitations to this approach. To compare the facilities and tickets prices with 330 ski resorts in the US to evaluate the operating costs and select the good price which can provide the business with a good sense of how important some facilities are compared to others.

4 Constraints within solution space

1. Gaining access to the proper data sources can be difficult.
2. There are too many influencing factors of the ticket price such as locations, the heights of resort base and summit mountain, kinds and number of lifts and trams, kinds, number, lengths and areas of runs and parks, open schedules for last season, number of years the resort has been opened, average annual snowfall, projected days, night skiing.

5 Stakeholders to provide key insight

Jimmy Blackburn – the Director of Operations

Alesha Eisen – the Database Manager

6 Key data sources

A csv file including 330 resorts in the us with the facilities information provided by the database manager.

RECOMMENDATIONS

The suggested ticket price for new season is

\$86.77

Suggestion:

- adding one run and increasing vertical drop by 150 feet with the additional chair lift.
- closing 5 of the least used runs.

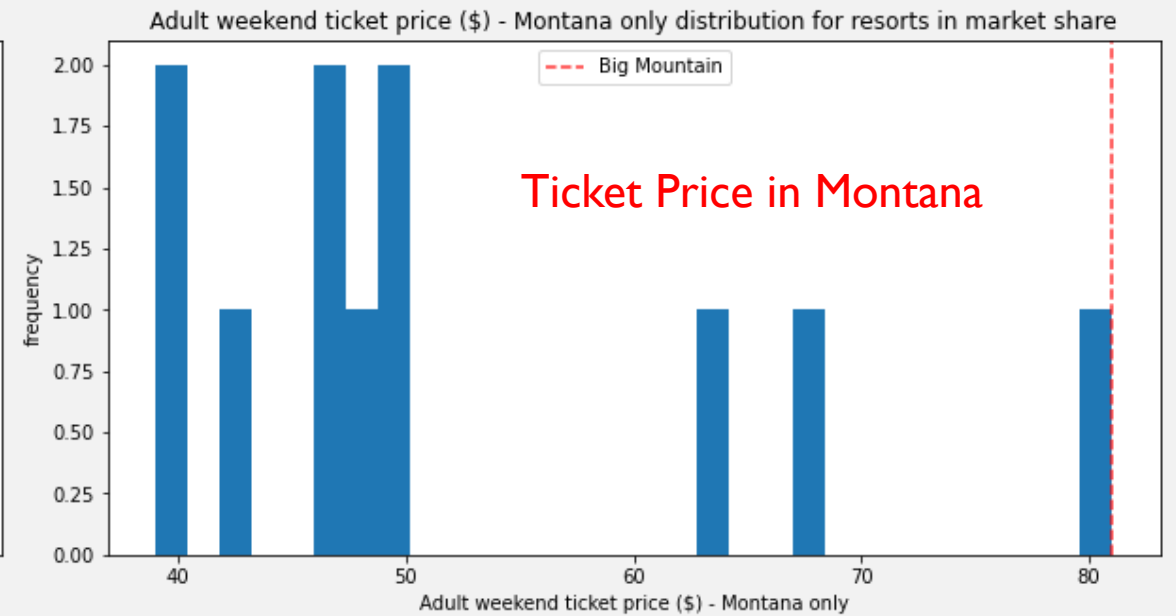
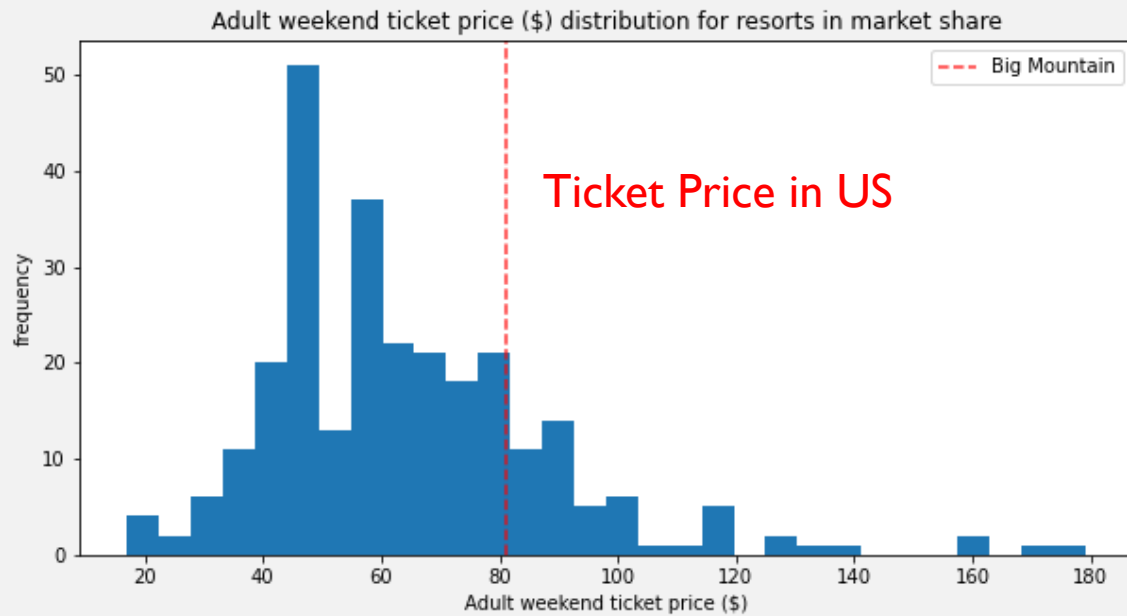
Surplus:

- \$1,934,638 avenue.

MODEL COMPARING

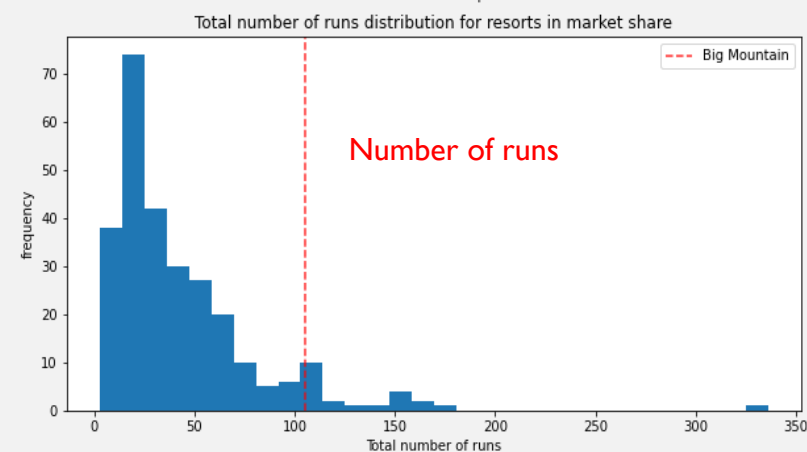
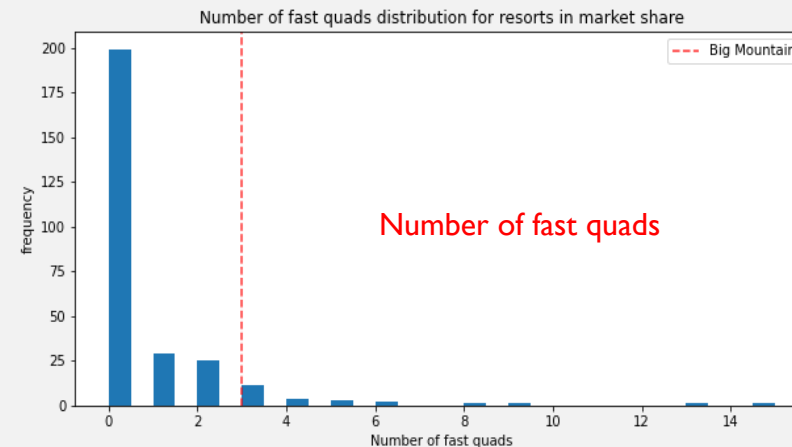
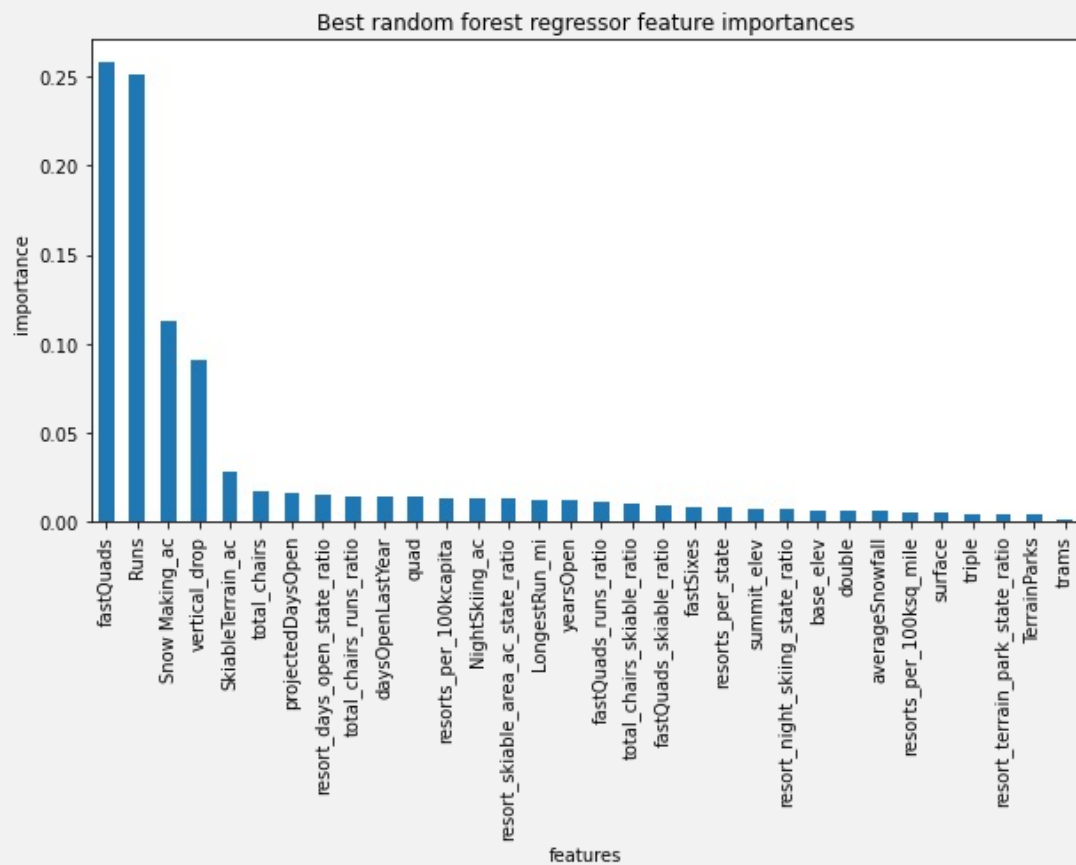
- Linear regression model
 - a linear approach for modelling the relationship between a dependent variable response and one or more independent variables.
 - Performance: mean absolute error is 11.79
- Random Forest regression model
 - a supervised learning algorithm that uses ensemble learning method for regression.
 - Performance: mean absolute error is 9.54
- We use Random Forest regression model for our case.
 - Ticket price from model: \$95.87 +/- \$10.39 VS. Current ticket price: \$81.00

BIG MOUNTAIN RESORT IN MARKET CONTEXT

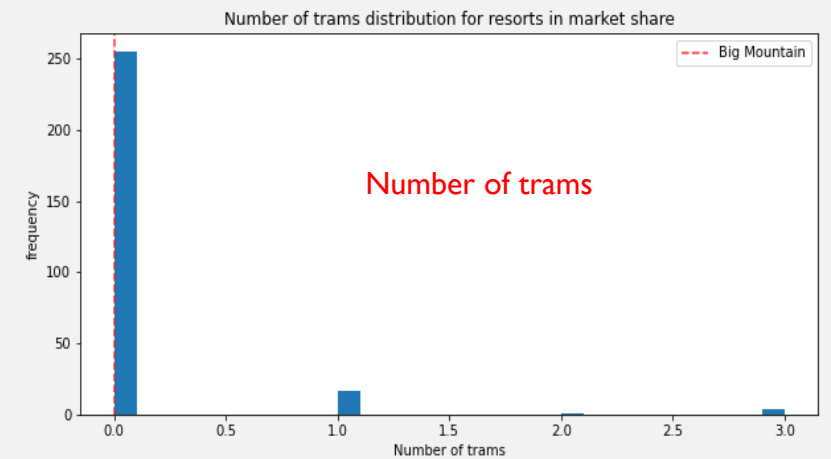
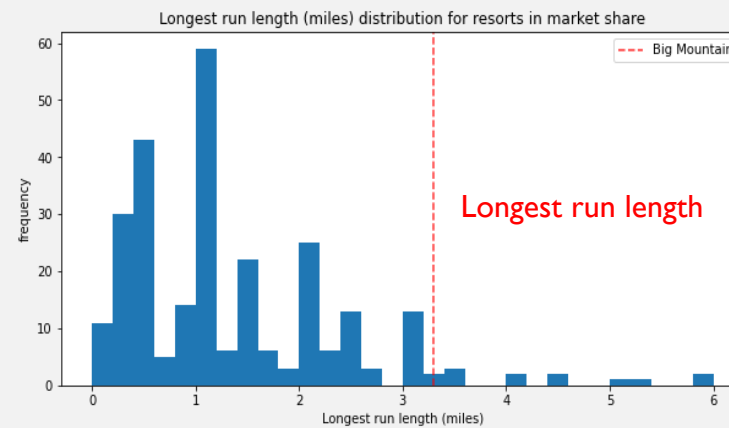
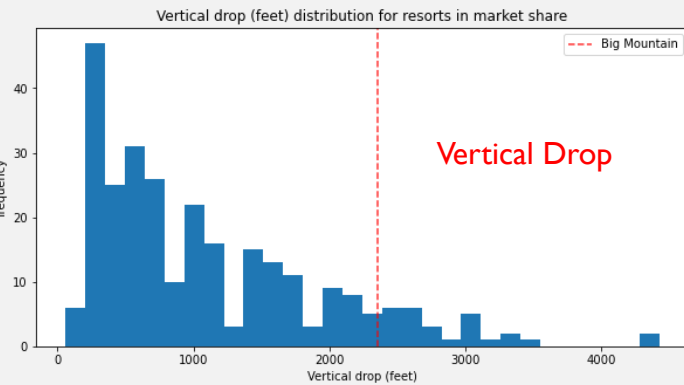
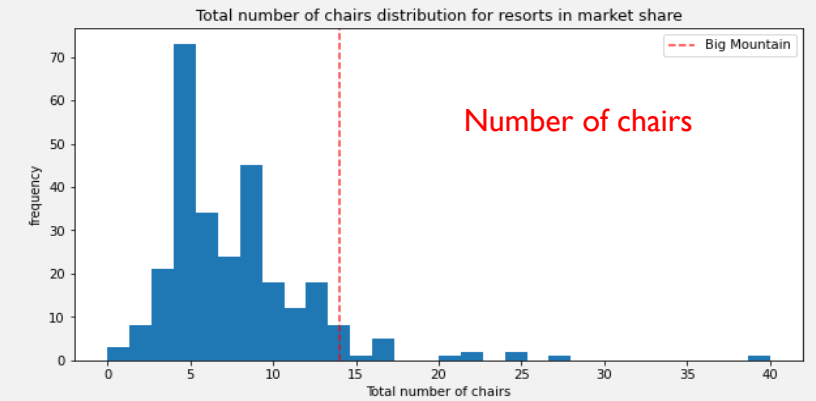
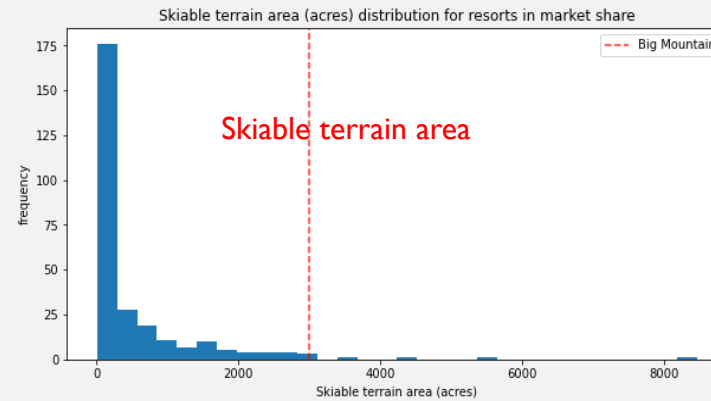
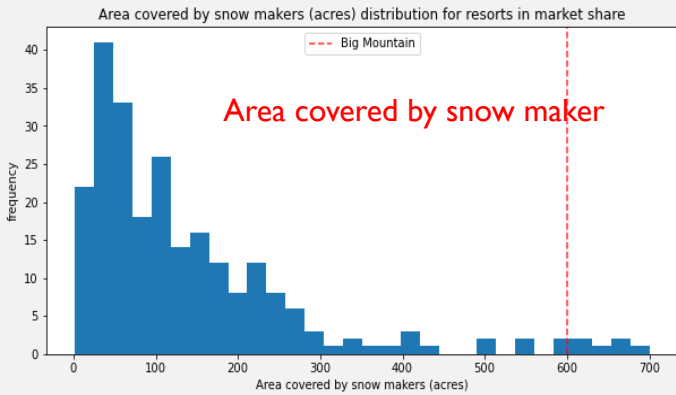


Model suggested price \$95.87 +/- \$10.39

BIG MOUNTAIN RESORT IN MARKET CONTEXT

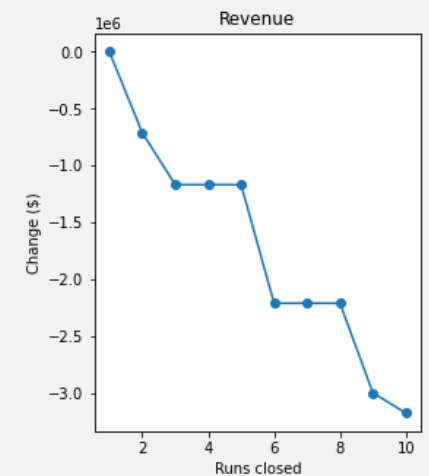
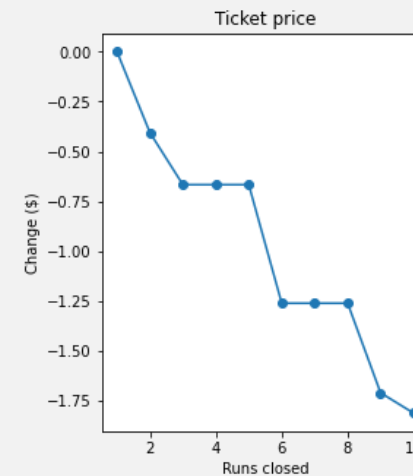


BIG MOUNTAIN RESORT IN MARKET CONTEXT



MODELING ANALYSIS

- **Scenario 1:**
 - Close up to 10 of the least used runs.
 - From the results, close one run will not effect, close 3 – 5 will get the same results, close more than 5 will not be considered.
- **Scenario 2:**
 - Add one run, increase the vertical drop by 150 feet, and install an additional chair lift
 - Support ticket price increasing by \$1.99 which is \$3,474,638 avenue
- **Scenario 3:**
 - scenario 2 + add 2 acres of snow making
 - No difference from scenario 2
- **Scenario 4:**
 - increase the longest run by 0.2 miles and add 4 acres snow maker area
 - No difference



CONCLUSION

- The ticket price from model is \$95.87 +/- \$10.39. Since the current ticket price on Montana is the highest, we suggest to pick the lower band price \$85.48
- Close 5 of the least used runs, the ticket price can be reduced by about \$0.7
- Add one run, increase the vertical drop by 150 feet, and install one chair lift: will support to increase ticket price by \$1.99 and will increase revenue \$3,474,638
- The additional operating cost of adding one chair lift is \$1,540,000
- The final suggested price is \$86.77
- The current price strategy has been to charge a premium above the average price of resorts in its market segment, but the most features of the resort are much better than the average level in its market. Considering it's the highest ticket price in Montana market, the higher ticket price may not be accepted by the local market. So we may pay more attention to consider how to reduce cost in the further work.
- Big Mountain can be built to the top resort in the Market, provide the best services and experience. In this way, we suggest the business to consider how the change of the number of fast quads, skiable terrain area to see how effect the price, then to decide if add the fast quads and skiable terrain area.