Big Mountain Resort Analysis

Poojitha Bhat

Big Mountain Resort

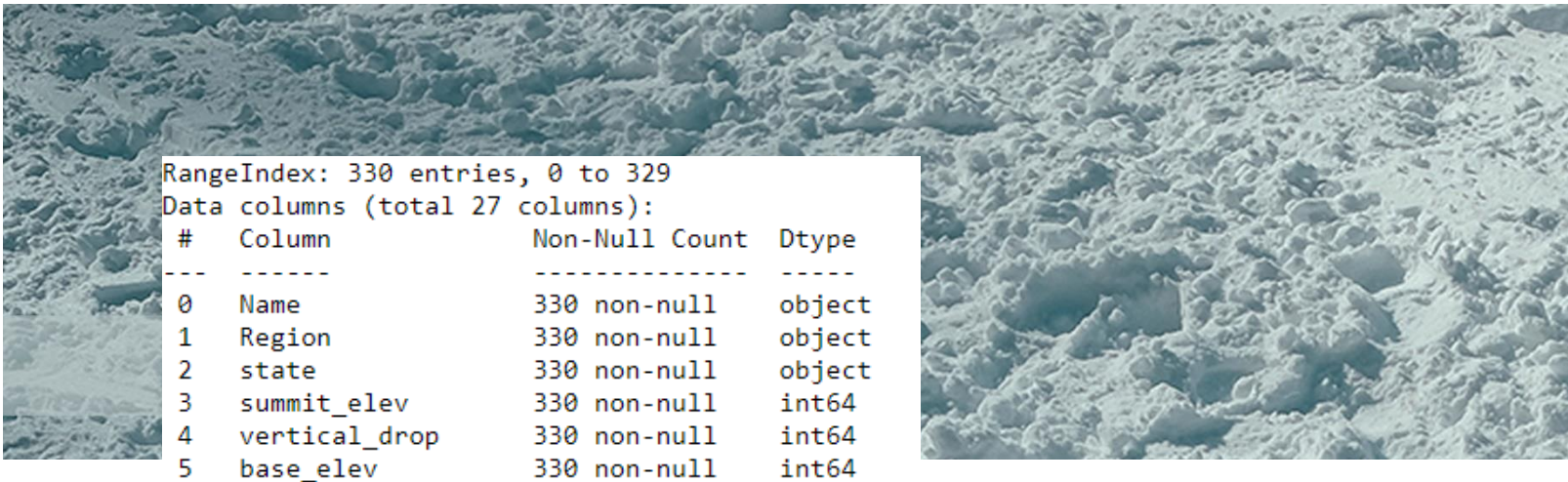
Big Mountain Resort, a ski resort is located in Montana. It offers spectacular views of Glacier National Park and Flathead National Forest, with access to 105 trails. Every year about 350,000 people ski or snowboard at Big Mountain.
This mountain can accommodate skiers and riders of all levels and abilities.
These are serviced by 11 lifts, 2 T-bars, and 1 magic carpet for novice skiers. The longest run is named Hellfire and is 3.3 miles in length. The base elevation is 4,464 ft, the summit is 6,817 ft with a vertical drop of 2,353 ft.

Problem Statement:
To evaluate the pricing strategy of the resort using a data driven approach. The resort has so far been employing a strategy of above the average pricing.
We will be collecting the data pertaining to the facilities offered by different resorts of the region and model on optimizing the pricing.

Steps involved:

1. Data collection
2. Data Wrangling
3. Exploratory Data Analysis
4. Pre processing the data
5. Modeling

On overall data analysis we found that there were details of 330 resorts with 27 parameters. Below is a detailed analysis of the datatypes for each of the fields.

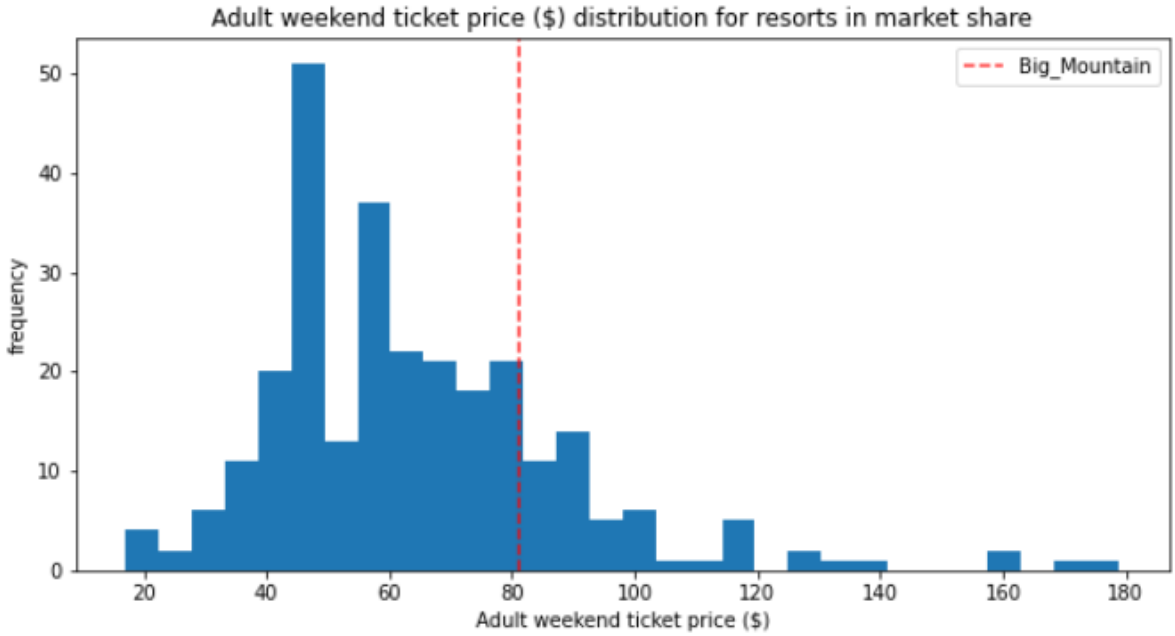


```
RangeIndex: 330 entries, 0 to 329
Data columns (total 27 columns):
 #   Column             Non-Null Count  Dtype
---  ------             --------------  -----
 0   Name               330 non-null    object
 1   Region             330 non-null    object
 2   state              330 non-null    object
 3   summit_elev        330 non-null    int64
 4   vertical_drop      330 non-null    int64
 5   base_elev          330 non-null    int64
 6   trams              330 non-null    int64
 7   fastEight          164 non-null    float64
 8   fastSixes          330 non-null    int64
 9   fastQuads          330 non-null    int64
 10  quad               330 non-null    int64
 11  triple             330 non-null    int64
 12  double             330 non-null    int64
 13  surface            330 non-null    int64
 14  total_chairs       330 non-null    int64
 15  Runs               326 non-null    float64
 16  TerrainParks       279 non-null    float64
 17  LongestRun_mi      325 non-null    float64
 18  SkiableTerrain_ac  327 non-null    float64
 19  Snow Making_ac     284 non-null    float64
 20  daysOpenLastYear   279 non-null    float64
 21  yearsOpen          329 non-null    float64
 22  averageSnowfall    316 non-null    float64
 23  AdultWeekday       276 non-null    float64
 24  AdultWeekend       279 non-null    float64
 25  projectedDaysOpen  283 non-null    float64
 26  NightSkiing_ac     187 non-null    float64
```

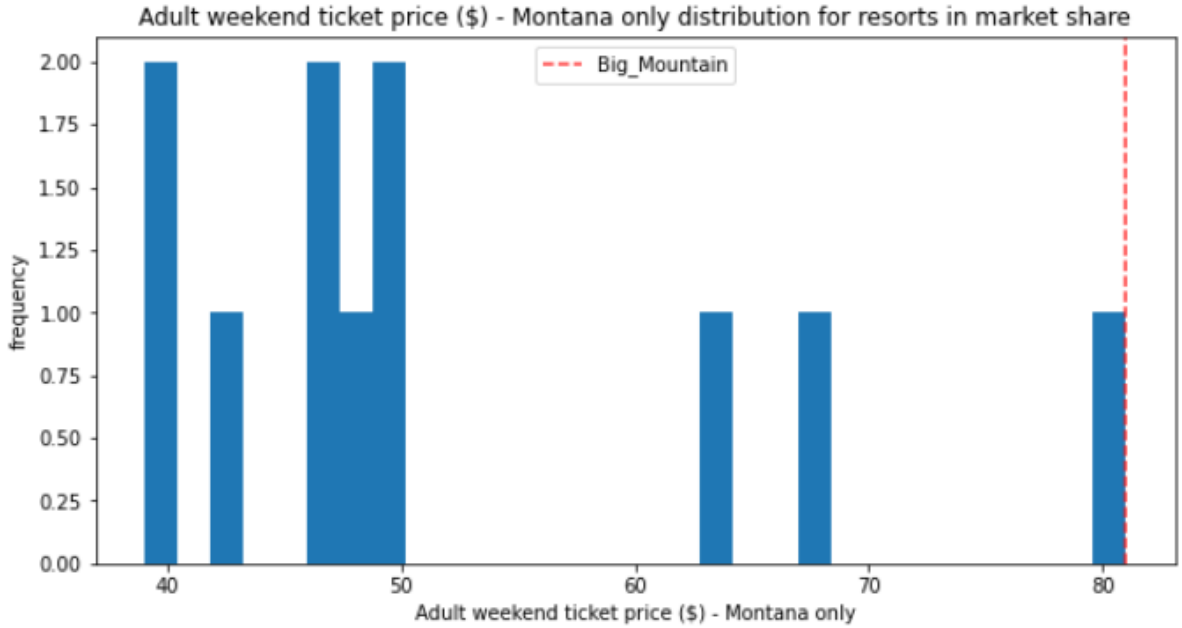
This data was seen pertaining to numerous resorts across USA. It was cleansed and then modeling was done using random forest regression. The best parameters were then narrowed down upon.

Results:

- Upon cleansing, transformation and analysis, it was found that the big mountain resort was at par with the other competitors in the market in terms of pricing.



- However considering the resorts in Montana only, The Big Mountain resort was charging the highest among all resorts in state.

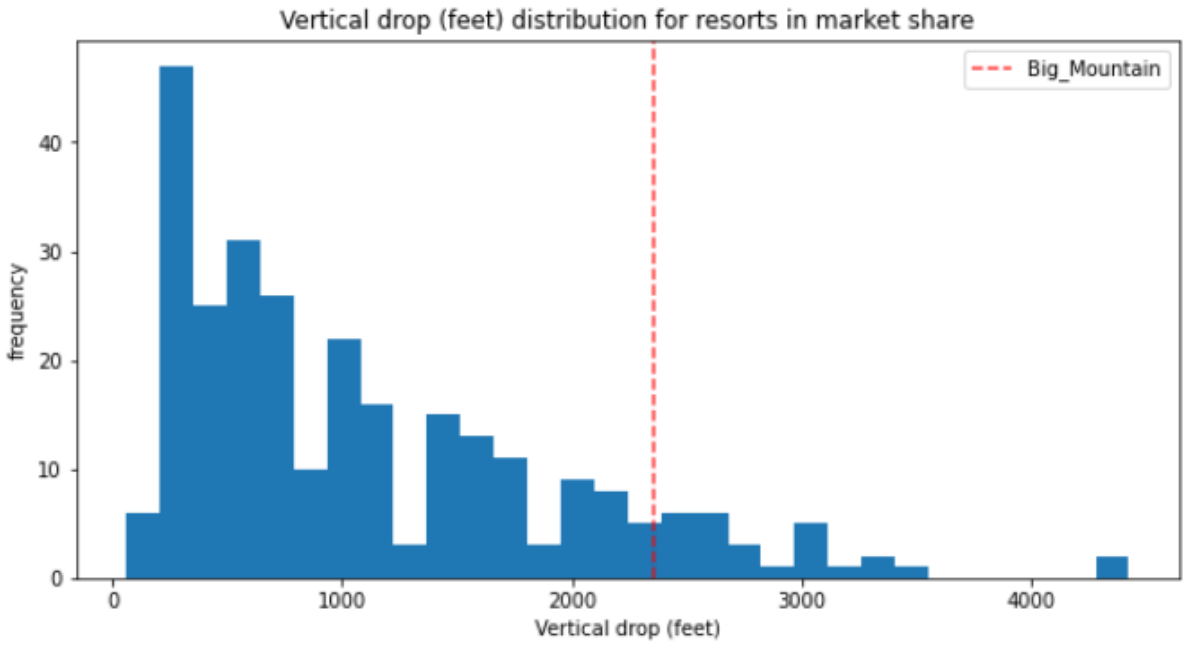


- It was fond that the below 8 facilities ranged the highest in their impact on the ticket prices:

```
vertical_drop        10.767857
trams                -4.142024
total_chairs          5.794156
fastQuads             5.745626
Snow Making_ac        6.290074
SkiableTerrain_ac    -5.249780
Runs                  5.370555
LongestRun_mi         0.181814
dtype: float64
```

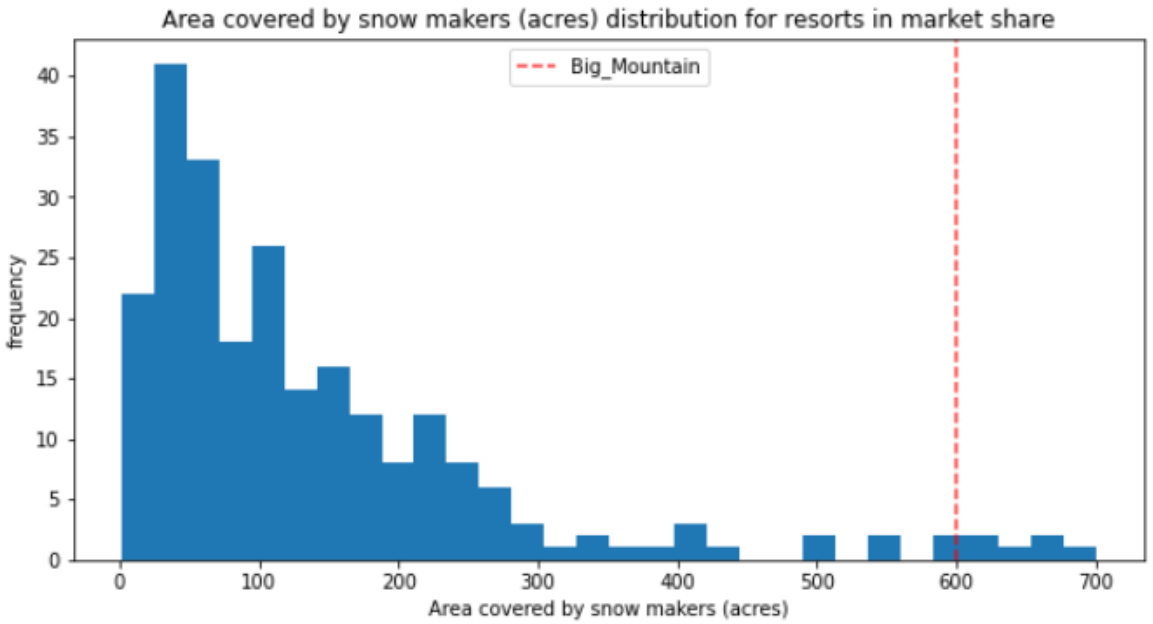
Vertical drop:

It was seen that the ticket prices increased proportionately with the vertical drop. There were many resorts seen with a higher vertical drop than Big Mountain. Hence the resort may consider increasing the drop.



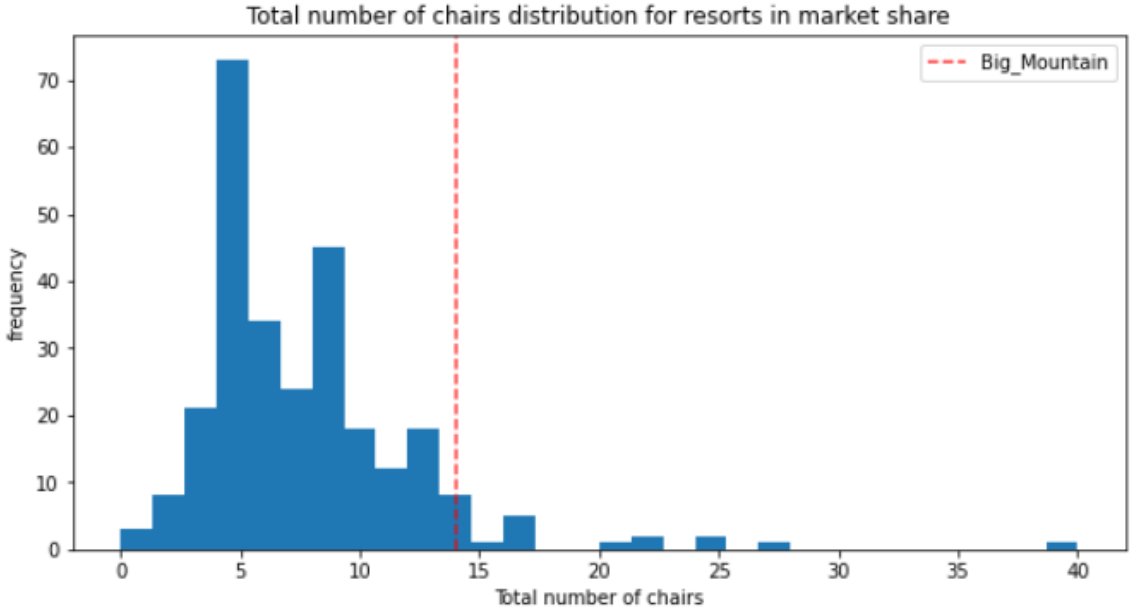
Snow making area in acres:

Big mountain resort is high up in the league of the snow making area.



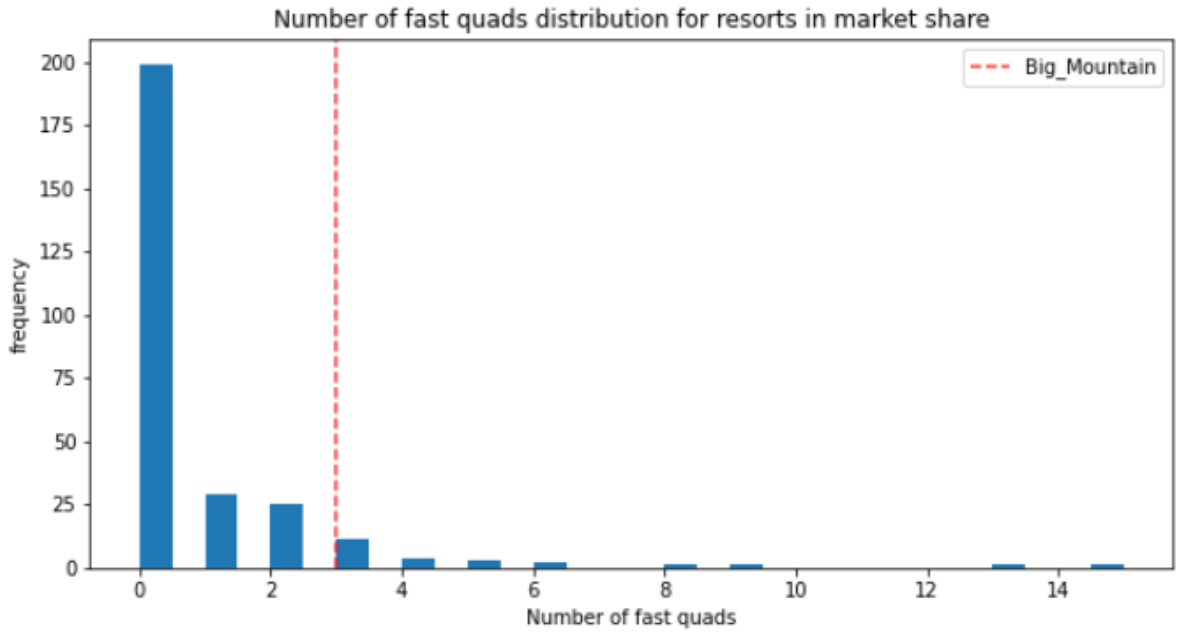
Total number of chairs:

Big Mountain has amongst the highest number of total chairs, the remaining seem to be outliers.



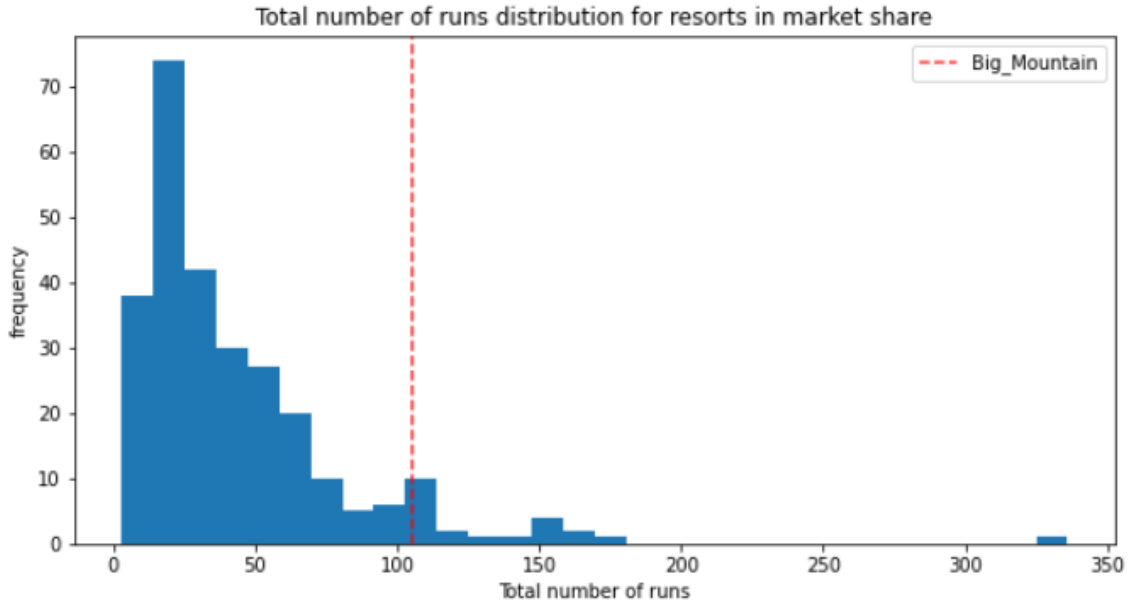
Number of fast quads:

The number of fastquads was seen to be the better than a majority of the resorts who have no fastquads at all. This puts Big mountain resort on the higher end of the league.



Total number of runs:

The number of runs is also seen to be higher than the majority of the resorts who have between 0 and 50 runs. There are a few resorts with higher than Big Mountain resort's number of runs but they are too few.

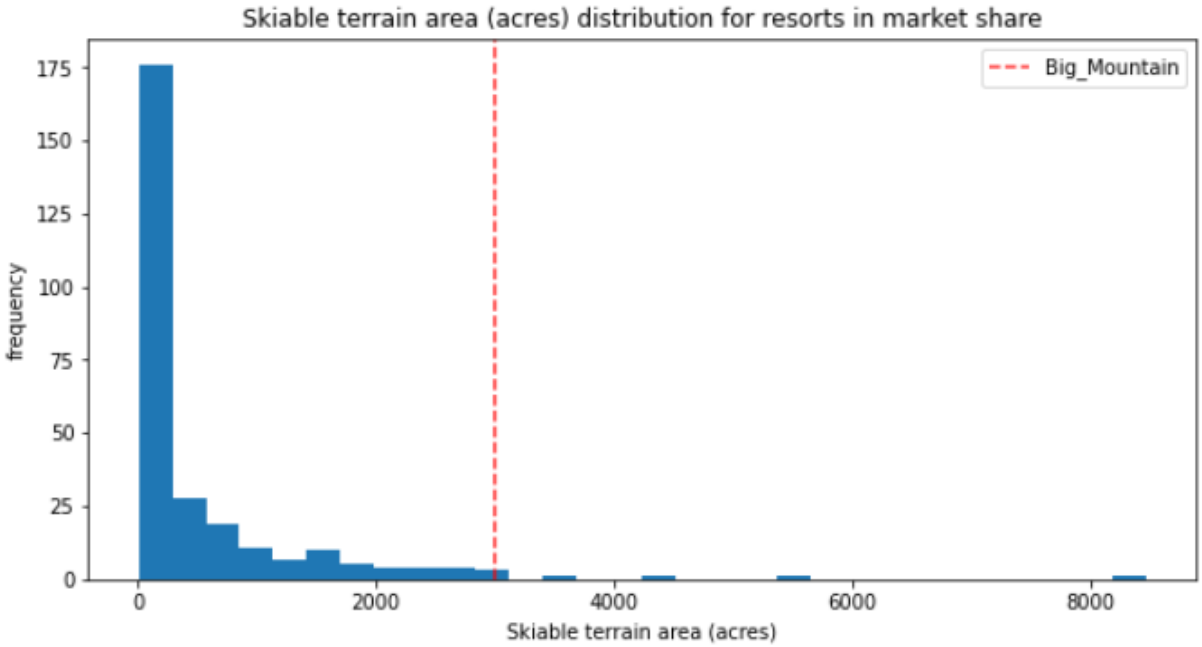


Total number of trams:

Big mountain resort was seen to be among the majority of resorts with no trams at all.

Skiable terrain area in acres:

The skiable area was seen to be among the highest in the competitors. A large number of resorts have smaller skiable areas and very few have a higher area in comparison to the Big mountain resort.

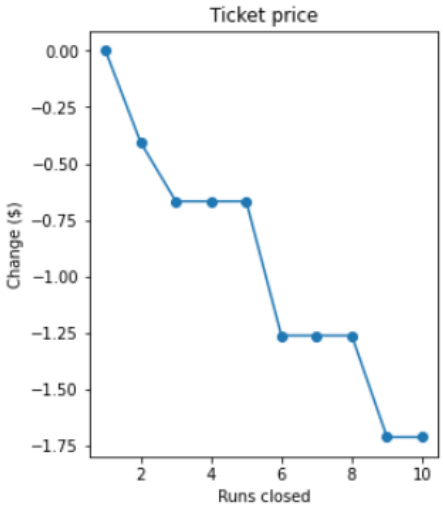


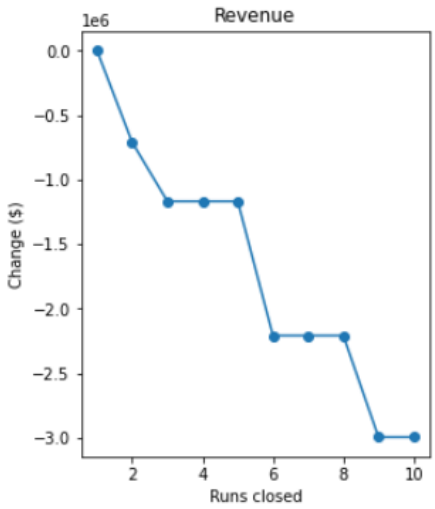
Assessing the viable options:

The options shortlisted by the business were assessed for their feasibility and their impact on the ticket prices. The results were assessed assuming a footfall of 350,000 customers and the resort kept open for 5 days

Results were as follows:

Scenario 1:
Permanently closing down up to 10 of the least used runs. This doesn't impact any other resort statistics.
This was assessed by reducing the number of runs from 1 to 10. The impact on the ticket prices and revenue was seen as below:





The ticket prices were seen to drop by upto **$0.75** until 3 runs were closed. The revenue was also seen to drop by **$1.25** until 3 runs. There was no change in the prices and revenue until closure of 5 runs and a drop was seen for closure of 6 runs. It was seen that with a closure of 10 runs, there was a drop in ticket prices by **$1.75** and a drop in revenue by **$3**.

Scenario 2:

Increase the vertical drop by adding a run to a point 150 feet lower down with an additional chair lift to bring skiers back up, without additional snow making coverage
With these changes it was seen that the ticket price increased by **$8.46** which would mean an increase in the revenue by **$14,811,594** over the season.

Scenario 3:

Increase the vertical drop by adding a run to a point 150 feet lower down but requiring the installation of an additional chair lift to bring skiers back up, adding 2 acres of snow making cover

This scenario increases support for ticket price by **$9.75.**
Over the season, this could be expected to amount to **$17,068,841**.

Scenario 4:

Increase the longest run by 0.2 mile to boast 3.5 miles length, requiring an additional snow making coverage of 4 acres.
With these changes it was seen that there will be **no changes** in the ticket price and no addition to the revenue over the season.

Summary and conclusion:

The objective of the modeling was to optimize the parameters that had an impact on the ticket prices in Big Mountain Resort. On comparison with the remaining resorts in the USA it was found that the customers were paying a higher ticket prices at resorts with certain facilities. There were 8 features that were found to have a major impact on the ticket price i.e. vertical drop, snow making area, the total number of chairs ,number of runs, longest run, skiable terrain area, fast quads and the number of trams. In terms of snow making area, the total number of chairs, number of runs, longest run, skiable terrain area and fast quads, the resort was found to be among the best in the region. In terms of the number of vertical drop there were a considerable number of resorts seen with a higher drop available. Considering the fact that the vertical drop impacts the ticket prices considerably, the resort might want to consider a strategy of increasing the vertical drop to increase the ticket pricing.

While testing four of the scenarios the resort wanted to consider, we assessed the impact as per the model built.

- One of the strategies was to close upto 10 least used runs. According to the model, the customers will be willing to pay lesser price with closure of these runs resulting in an expectation to drop the ticket prices hence leading to a drop of revenue.
- The second strategy of increasing the vertical drop seems to increase the revenue as per the model and fits well with the recommendations from the model.
- The third strategy was to have additional snow making area along with strategy two. This would also result in an increase in the revenue for the resort as per the model. As the snow making area is also seen to positively impact the ticket prices, this strategy fits well with the predictions of the model.
- The fourth strategy was to increase the longest run which would also result in a requirement to increase the snow making area. This strategy does not seem to work as it results in no additional revenue for the resort.

The findings of the model suggest that the resort employs either the second or the third strategy for an increase in the revenue. If cost cutting is required, it may consider the first strategy of closing down the least used runs.

These suggestions were made based on the available parameters in the data of the resorts in USA. There may be additional metrics impacting the ticket prices and the revenue. The resort's management may want to consider the operational and maintenance costs incurred with each of these facilities and take the final decision.