The Big Mountain Resort

Ticket Pricing Predictive Model

July 19th, 2021

Problem Identification

- Big Mountain resort bases its ticket pricing on the average price in its market segment

- This pricing scheme has two main draw backs

    1. It does not capitalize on the facilities the resort owns

    2. It does not provide an insight on which facilities are important compared to the others which in turn hampers investment strategy

Big Mountain Resort (aka Whitefish Mountain Resort)

Objectives

- The main objectives of this project are:

1. Build and train a model to predict ticket prices

2. Use the model to identify features (facilities) that have bigger impact on pricing and those that have minimum impact

Recommendation and key findings

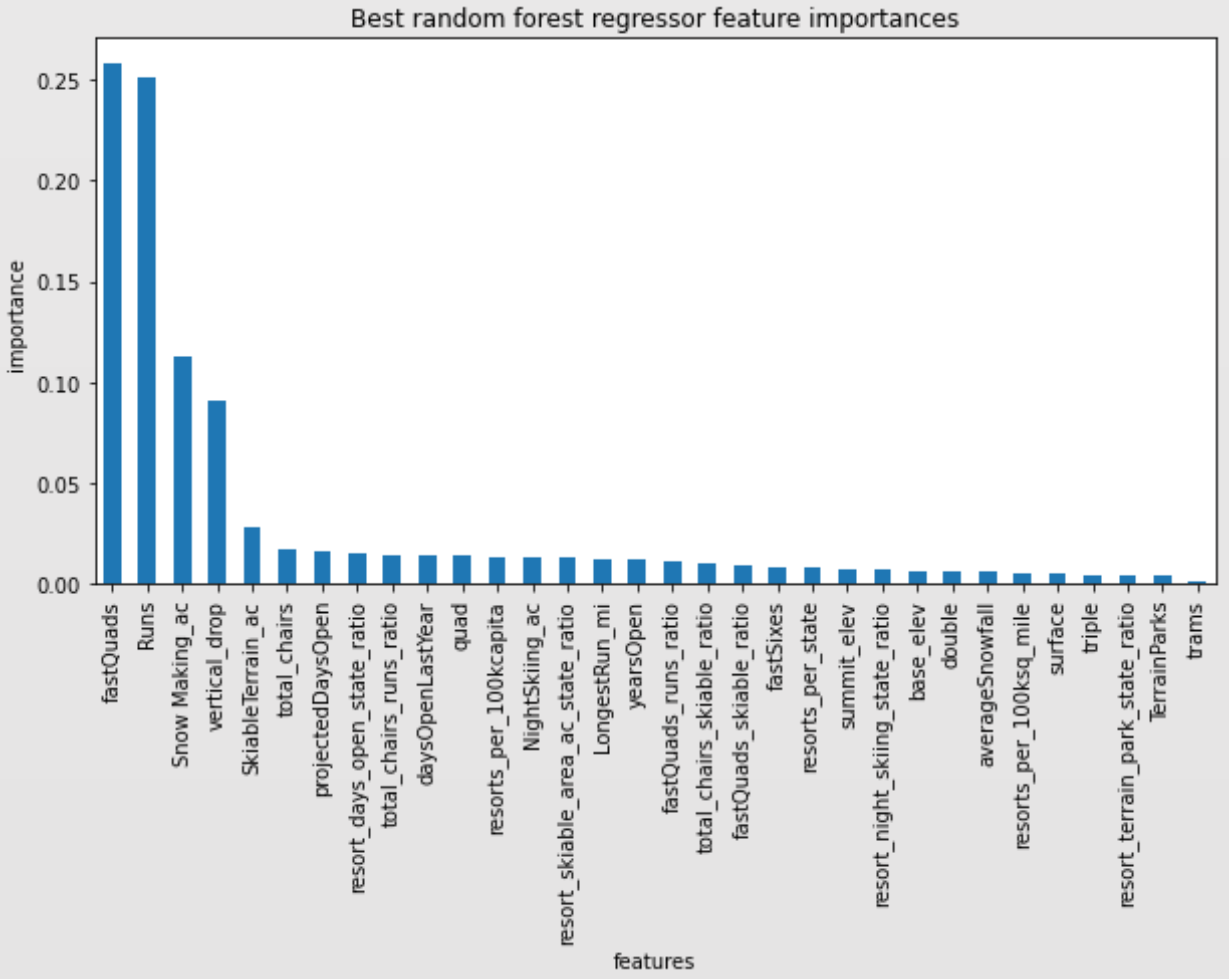
- Based on our model, we recommend the following for management to consider:
  1. Increase the ticket prices
     - The current average ticket pricing scheme is too low. Big Mountain resort possesses facilities that are highly valued by consumers and should take advantage of that
  2. Invest on increasing the vertical drop
     - This has the highest potential to support higher ticket prices
  3. Close at least one least used run, it has zero impact on ticket pricing
     - this will save the resort the operational cost for that particular run
  4. There is a potential to close up to 5 runs
     - This will depend on the operation cost of each run (the information we don't have currently). If the total operational cost of these 5 runs is greater than the reduction of revenue caused by their closure, then there is a room to increase profit by closing these facilities

Modeling results and analysis

- Random forest regression was used to build and train the model
- Of the data provided, only 84% was used to build and train the model, the remaining 16% was discarded, as it has missing information
- In order to avoid biasing the model by the current pricing scheme, the Big Mountain resort's information was not included in training the model
- the predicted model was validated using different metrics. the final model achieved a mean absolute error of $9.65 and a standard deviation of $1.5

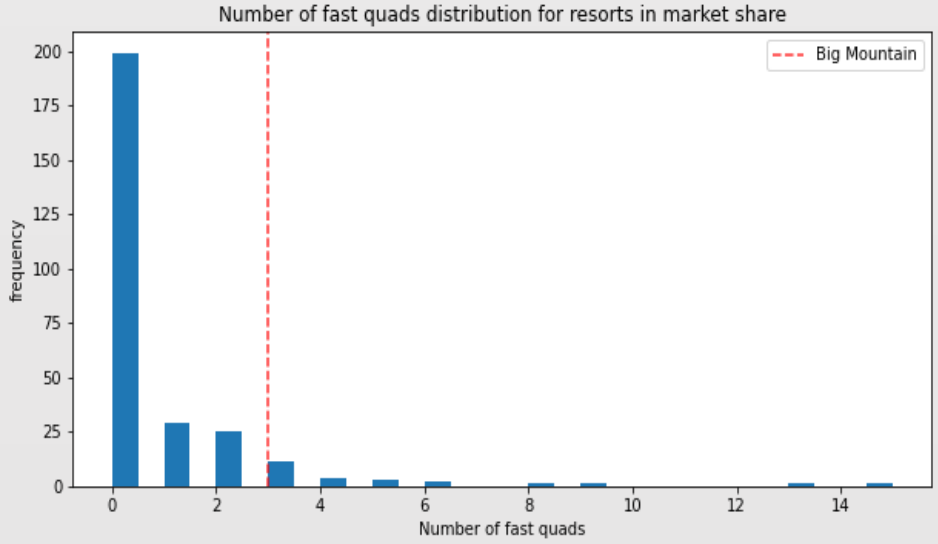
Prediction and scenario testing

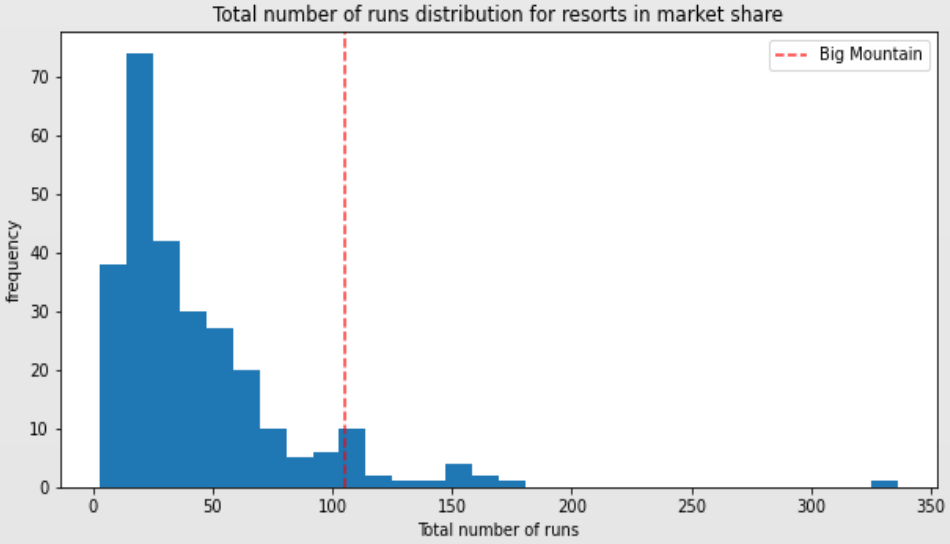
- Our model predicted a ticket price of $95.87 with an error of +/- $10.39
- The predicted price is relatively higher than the current price of $81.
- The predicted model also ranked the facilities according to their impact on pricing.

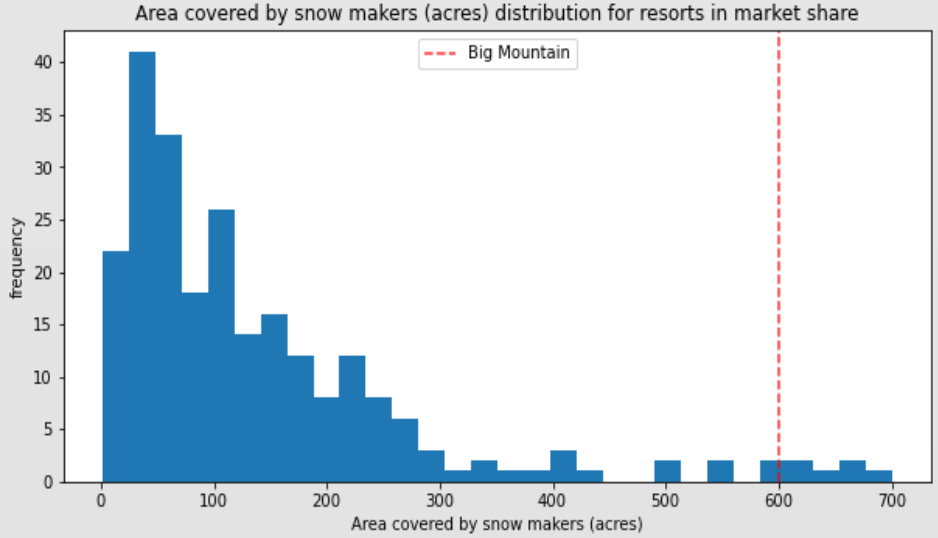


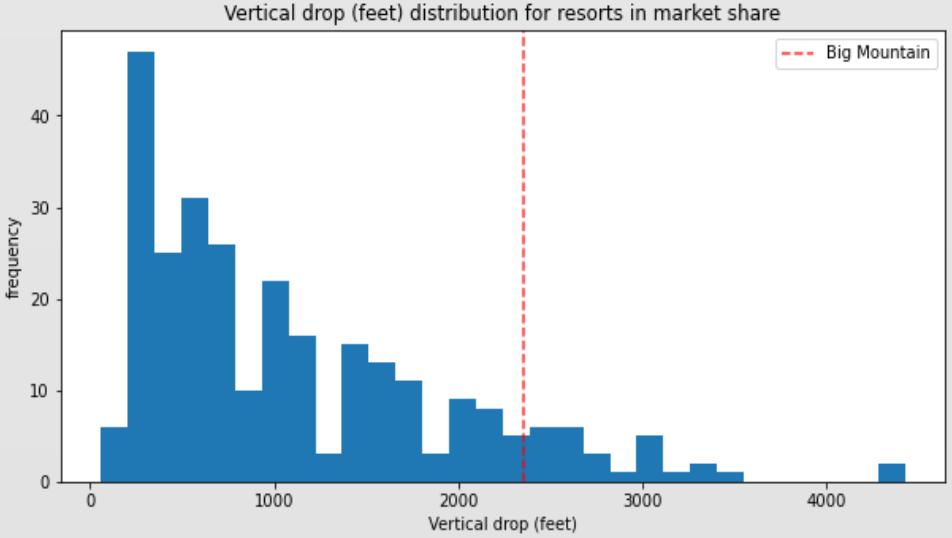
Big Mountain Resort Facilities vs The Competition

Big Mountain's values for these top features sits at the top of the competition. Hence increasing the ticket price could be justified.





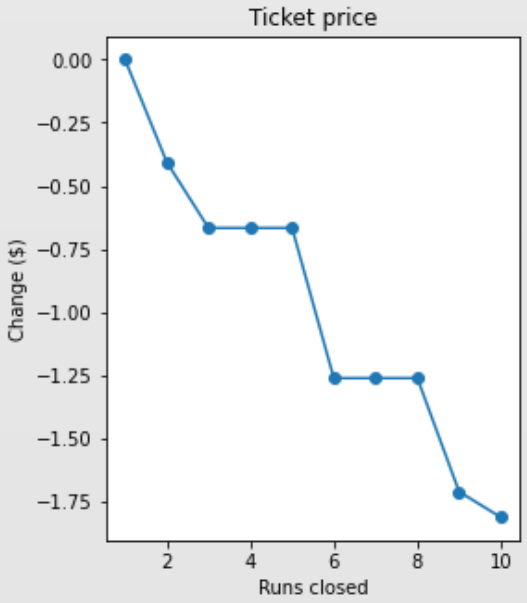


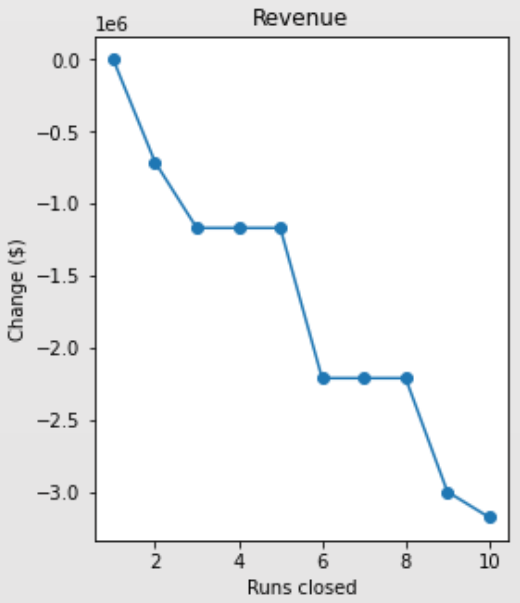


Scenario Testing

- Several scenario tests were conducted using the predicted model. the following key assumptions were used to calculate the revenue
  - 350000 visitors per season
  - On average 5 days of skiing per visitor

- Scenario 1 --- Closing up to 10 least used runs
  - Closing one run does not have any impact on ticket price.
  - Closing up to 3 runs would reduce the price by ~ $0.7 and the revenue by ~ $1.2M
  - However closing 3 runs and closing 5 runs have the same impact of pricing and hence Big Mountain may as well close 5 runs instead of 3
  - Closing 6 or more successively will reduce the ticket price and revenue





Scenario Testing cont.

- Scenario 2 --- Increase the vertical drop by 150 feet by adding a run, and installing an additional chair lift
  - This scenario has a potential to increase the ticket price by $1.99 which resulted on increase in total revenue by $3.5M and adjusted revenue of $1.96M (subtracting the operational cost of the new added chair lift)

- Scenario 3 --- The same as scenario 2 but with addition of 2 acres of snow making cover
  - No impact on ticket pricing

- Scenario 4 --- Increase longest run by 0.2 miles and snow making cover by 4 acres
  - No impact on ticket pricing

Summary and conclusion

- Increase the ticket prices. The current average ticket pricing scheme is too low. Big Mountain resort possesses facilities that are highly valued by consumers and should take advantage of that.
- Invest on increasing the vertical drop. This has the highest potential to support higher ticket prices.
- Close at least one least used run, it has zero impact on ticket pricing and thus will save the resort the operational cost for that particular run.
- There is a potential to close up to 5 runs. This will depend on the operation cost of each run (the information we don’t have currently).

Further Work

- With all the information at hand (such as operational cost of each facility), Big Mountain management can utilize the model to conducted different combination of scenarios to see their effect on pricing and revenue
- This will help the management :
  - to make strategic decisions to invest on facilities that have positive impact on price
  - to identify and close certain facilities that have minimum impact on pricing but with high operational cost.