Big Mountain Resort Report

Guided Capstone Project

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1. Problem Identification

Big Mountain Resort recently installed an additional chair lift which increases the operating cost by $1,540,000.

How can Big Mountain offset that increase of operating cost and capitalize better on its facilities?

It is assumed that the current ticket prices are not capitalizing as much as the market would allow.

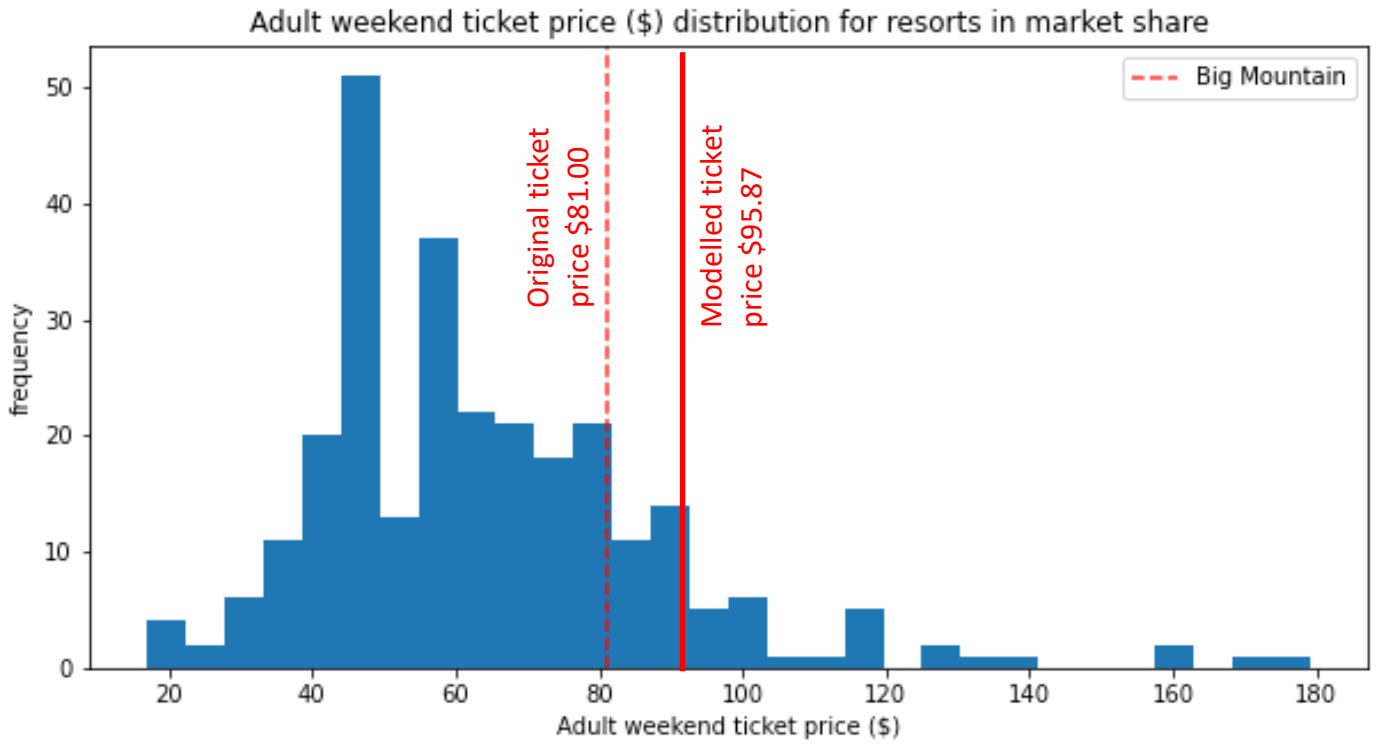
2. Objectives

- Use the data from 330 resorts to create a model that predicts the ticket price with assumption that nearly 350,000 people visit yearly and buy 5-day tickets.
- What are the most important facilities Big Mountain is providing?
- What options exist to reduce costs?
- How much could Big Mountain charge based on the competitors' prices?

3.Recommendation

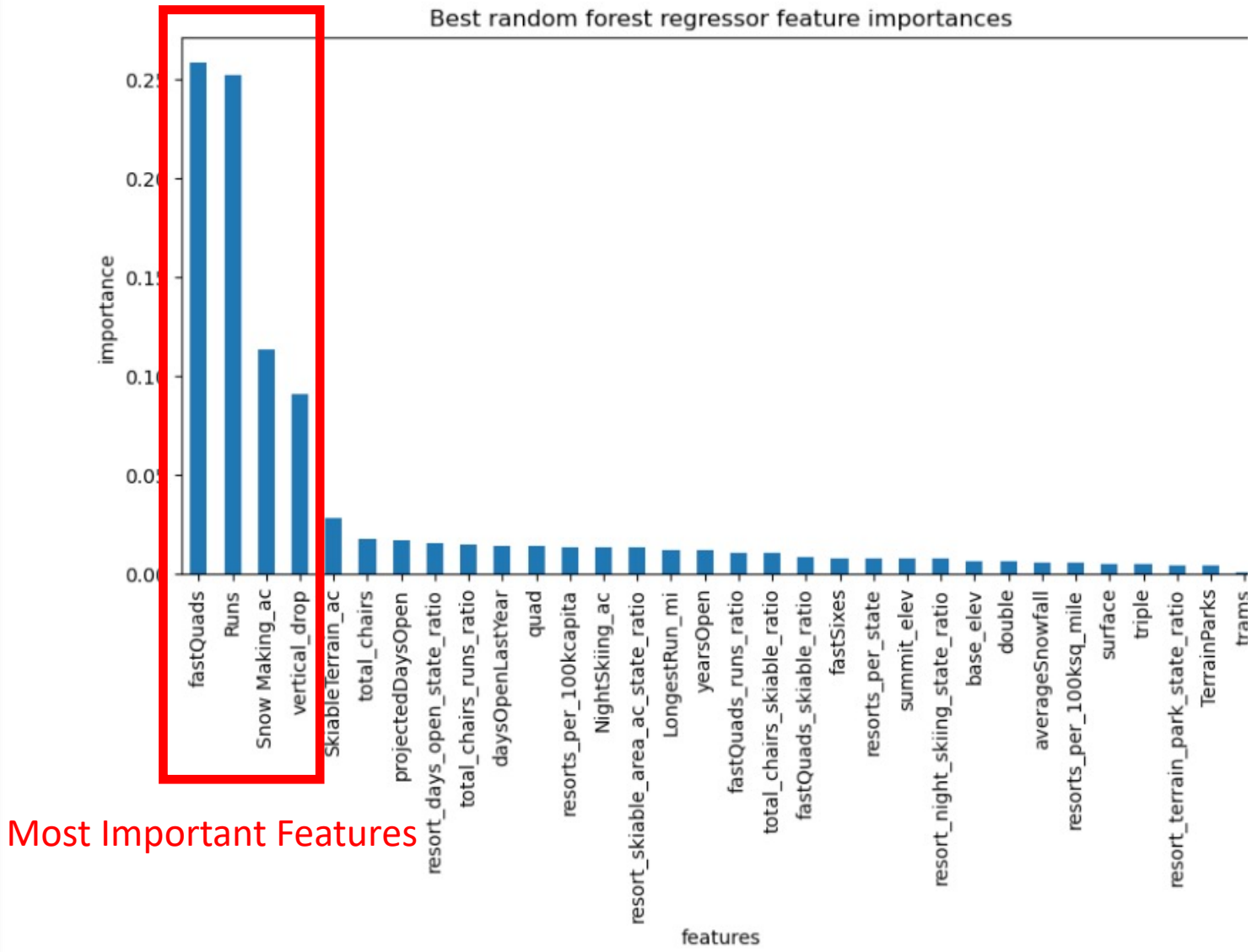
- The model suggests $95.87 for the ticket prices which is $14.87 increase from the original price of $81.00.

- This would increase the revenue to $26,022,500.



4. Key Findings

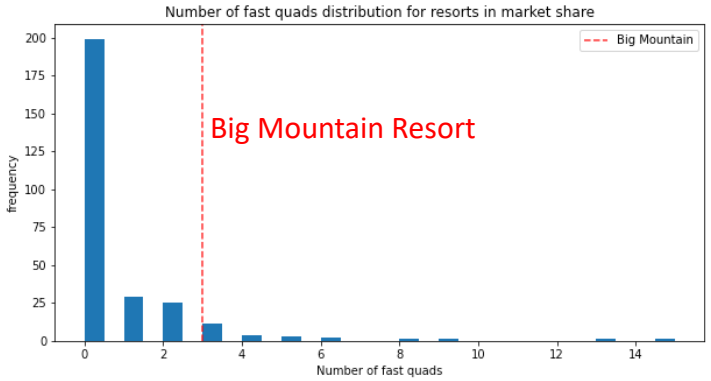
- The 4 most important features that affect the ticket price the most were found to be:
  - Fast Quads
  - Runs
  - Snow Making area
  - Vertical drop

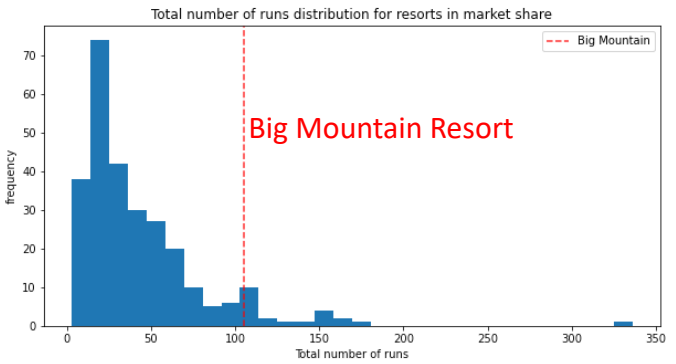


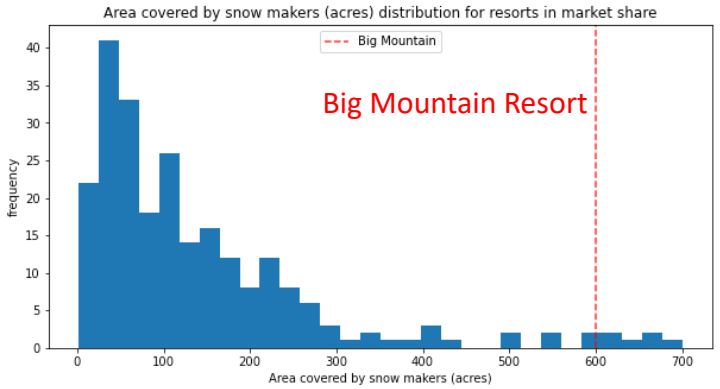
Most Important Features

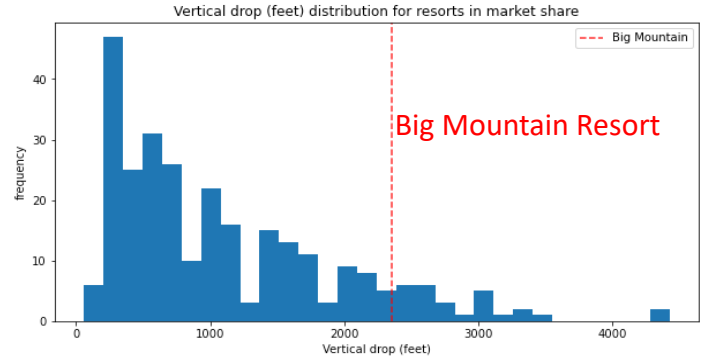
4. Modeling Results : Features

- Big Mountain has 3 fast quads.
- It has more than 100 runs.
- High up in the league table of snow making area.
- Not in top but has more that 2000 ft high vertical drop.



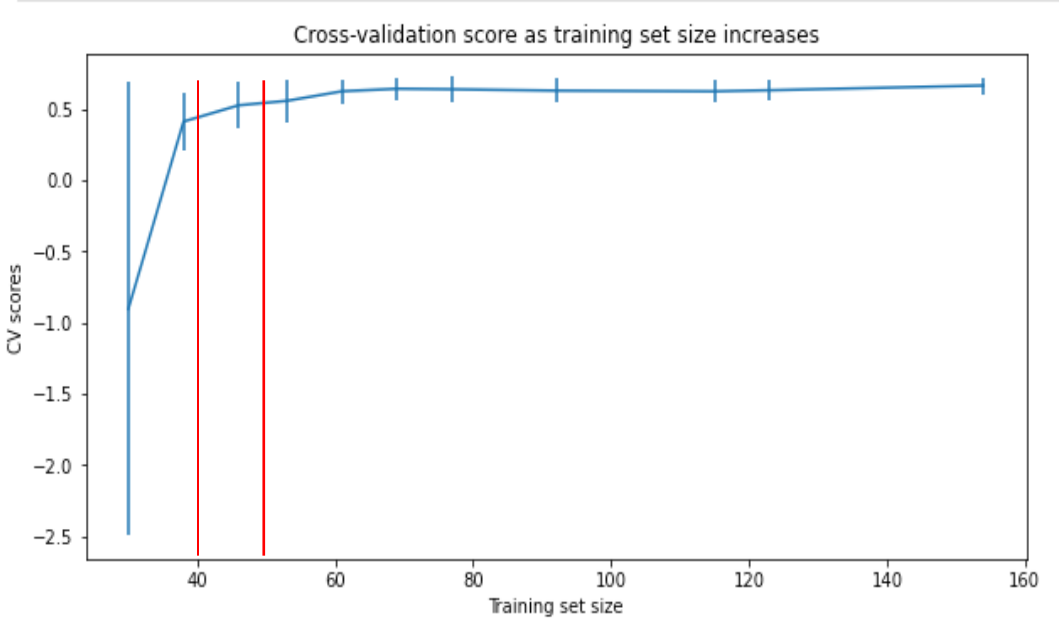






Random Forest Model

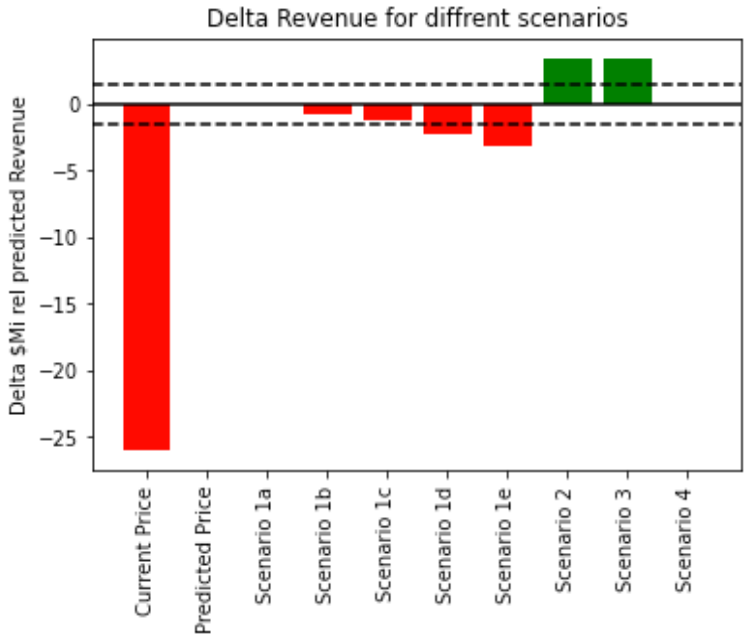
- Using the median value to impute missing values and not scaling the data yielded the best model.
- The mean absolute cross validation error (MAE) of the random forest regression model was $9.64 with a standard deviation of $1.35.
- The MAE for the model's prediction was $9.54.



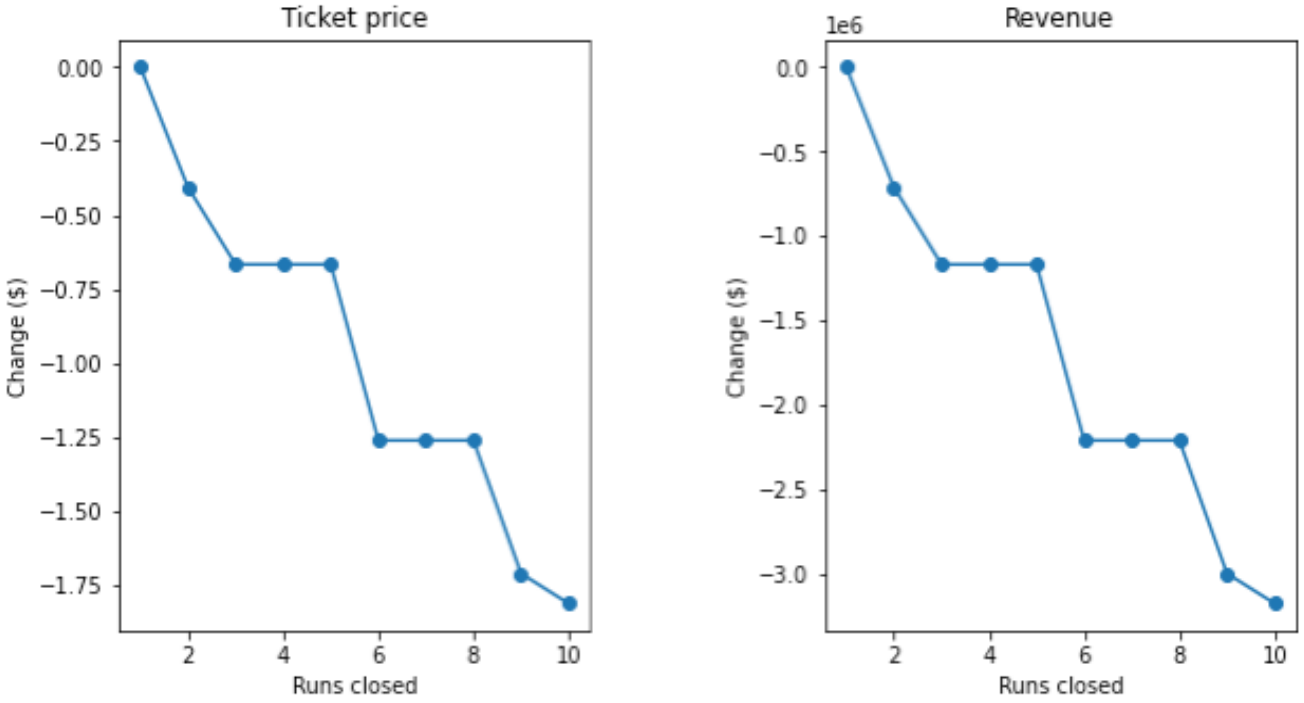
The plot above shows that there is initial rapid incline in model scores, and it levels off after approx. 50 sample size. Thus, the data available is more than enough to fully characterize the model.

4. Proposed Scenarios

	Scenarios	Description	Price	Difference with Predicted Price	Revenue ($Mi)	Revenue Diff from Modeled Price ($Mi)
0	Current Price	Current Price	81.00	-14.87	141.750	-26.02
1	Predicted Price	Predicted Price	95.87	0.00	167.772	0.00
2	Scenario 1a	Closing 1 run	95.87	0.00	167.772	0.00
3	Scenario 1b	Closing 2 run	95.46	-0.41	167.055	-0.72
4	Scenario 1c	Closing 3-5 runs	95.20	-0.67	166.600	-1.17
5	Scenario 1d	Closing 6-8 runs	94.61	-1.26	165.568	-2.20
6	Scenario 1e	Closing 10 runs	94.06	-1.81	164.605	-3.17
7	Scenario 2	adding 1 chair and 150ft vertical drop	97.85	1.99	171.238	3.48
8	Scenario 3	adding 2 acres of snow making	97.85	1.99	171.238	3.48
9	Scenario 4	extending longest run (0.2mi) & adding 4 acres...	95.87	0.00	167.772	0.00



5. Scenarios for Future Improvement



- The first scenario to consider in to add a run, increase the vertical drop by 150 ft, and adding an additional chair lift. This scenario supports a ticket price additional increase of the ticket price by $1.99 with a revenue increase of $3,474,638.

- Closing some of the least used runs can considered to cut the costs.
  - Closing 1 run suggests no change in ticket price.
  - Closing 2 runs decreases price by about $0.41.
  - Closing 3 runs would decrease the ticket price by about $0.75.
  - Closing 4 or 5 runs would not decrease the price any further.

Conclusion

- The model was based only on ticket prices and some of the features of the resorts. The price was checked against the cost of the new additional chair. There were no information on other additional costs of maintenance of other facilities. There was no information on other facilities that the resorts can provide e.g.: lodging, food, lockers, rentals etc.
- In general, the ticket price right now is very low given the facilities provided by Big Mountain Resort that was available to us in the data.
- Compared to the competitors, the model suggests that the price can be raised to $95.87.