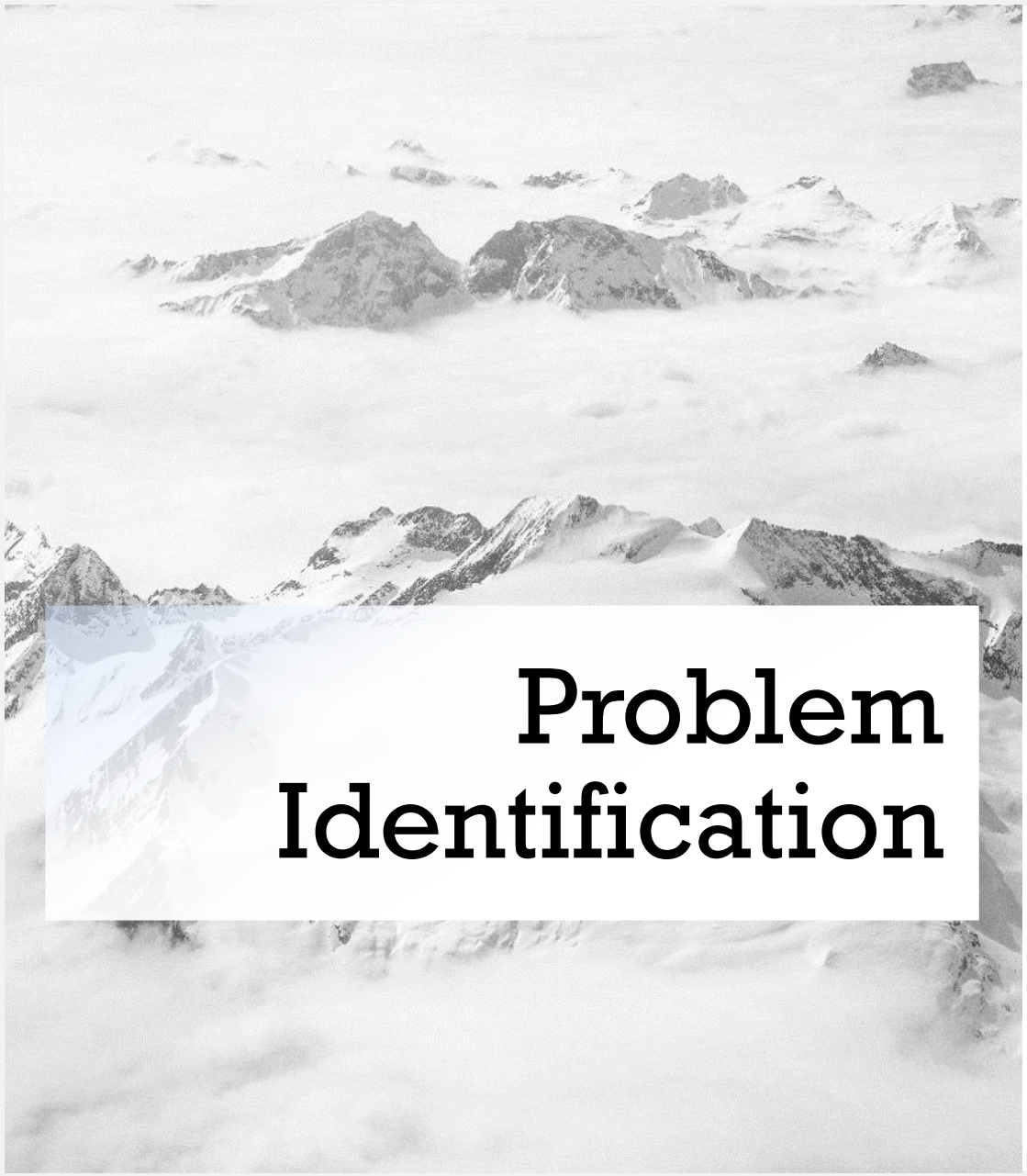
Ticket Price Strategies for Big Mountain Resort

Mendy Hsu

Data Science Career Track, Springboard



Problem Identification

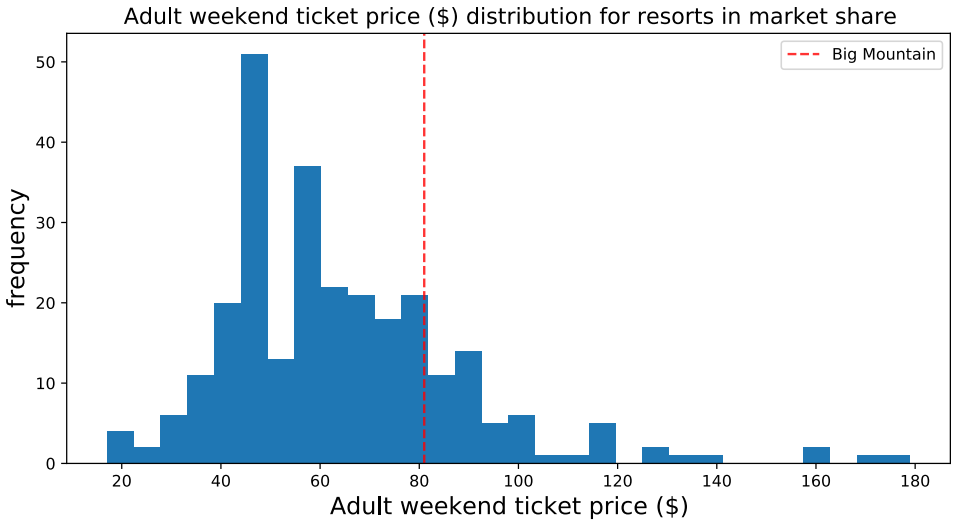
Provide the guidance for Big Mountain to select a ticket price and investment plans for increasing the revenue.

- Big Mountain Ski Resort's new chair lift increases the operating costs by **$1.54 million this season**.
- To predict Big Mountain's ticket price based on **the facilities offered** and **the associated ticket prices** from the **other (276) ski resorts in the U.S.**
- To predict how price should change under various scenarios, such as new investments or reducing a few facilities' services.

Recommendation & Key Findings

Ticket Price

- The currently price is **$81** (Adult Weekend).
- Its modeled one is **$94.22**, with the expected mean absolute error of $10.39. There is room for an increase.



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Scenarios and the predicted outcomes

1	Closing one run makes no difference in the ticket price but helps to reduce the operating costs.
2	Adding a run for increasing the vertical drop by 150 feet and installing an additional chair lift. It increases the ticket price by $1.99. Expect to $3.47 million increase over the season, which could cover the cost of running the new chair lift ($1.54 million).
3	Repeat the 2nd case but adding 2 acres of snow making cover. This makes **no difference in ticket price compared to 2nd one.**
4	Increasing the longest run by 0.2 miles (to boast 3.5 miles length) and guaranteeing its snow coverage by adding 4 acres of snow making capability. It makes **no change** in the ticket price.

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4	Increasing the longest run by 0.2 miles (to boast 3.5 miles length) and guaranteeing its snow coverage by adding 4 acres of snow making capability. It makes **no change** in the ticket price.
5	Combining scenarios #1 and #2 supports for ticket price by $1.99 and reduces the operating costs.
6	Decrease snow making area down up to 35 acres makes **no change** in the ticket price but helps to reduce the operating costs.

Modeling Results & Analysis

Dataset

- The model mainly considers the facilities offered (32 features) and the associated ticket prices of the 276 ski resorts in the U.S.
- Other factors, e.g., the number of visits, business operating costs, etc., are not available and and not involved for prediction.

EAD - Feature correlations (top 10)

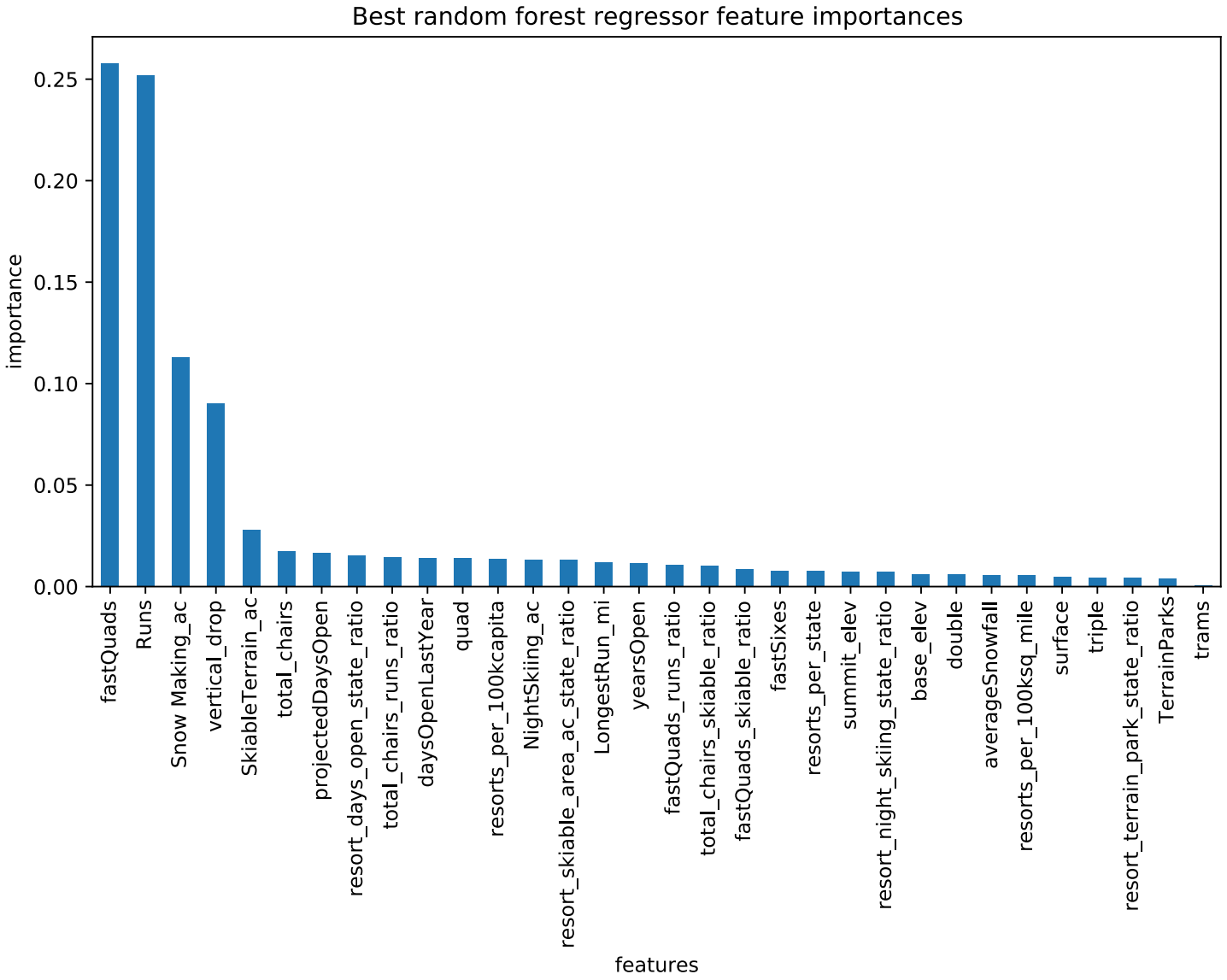
	AdultWeekend
AdultWeekend	1.000000
Runs	0.756926
fastQuads	0.731445
vertical_drop	0.713287
Snow Making_ac	0.695764
total_chairs	0.654397
daysOpenLastYear	0.596674
LongestRun_mi	0.579602
trams	0.569015
projectedDaysOpen	0.529650
SkiableTerrain_ac	0.527750

Modeling Results & Analysis

Model - Random forest regressor

- **Top four** dominated features associated with ticket price:
  - the number of fast-quads
  - runs
  - snow-making acres cover
  - vertical drop

They are also the top four features correlated with AdultWeekend (EDA results).



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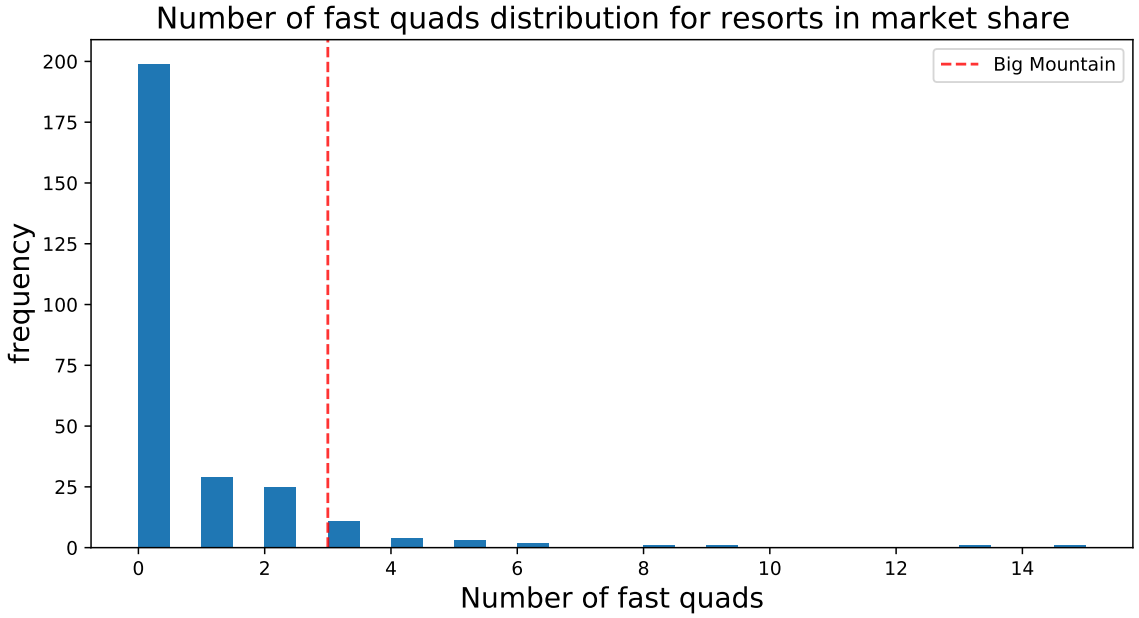

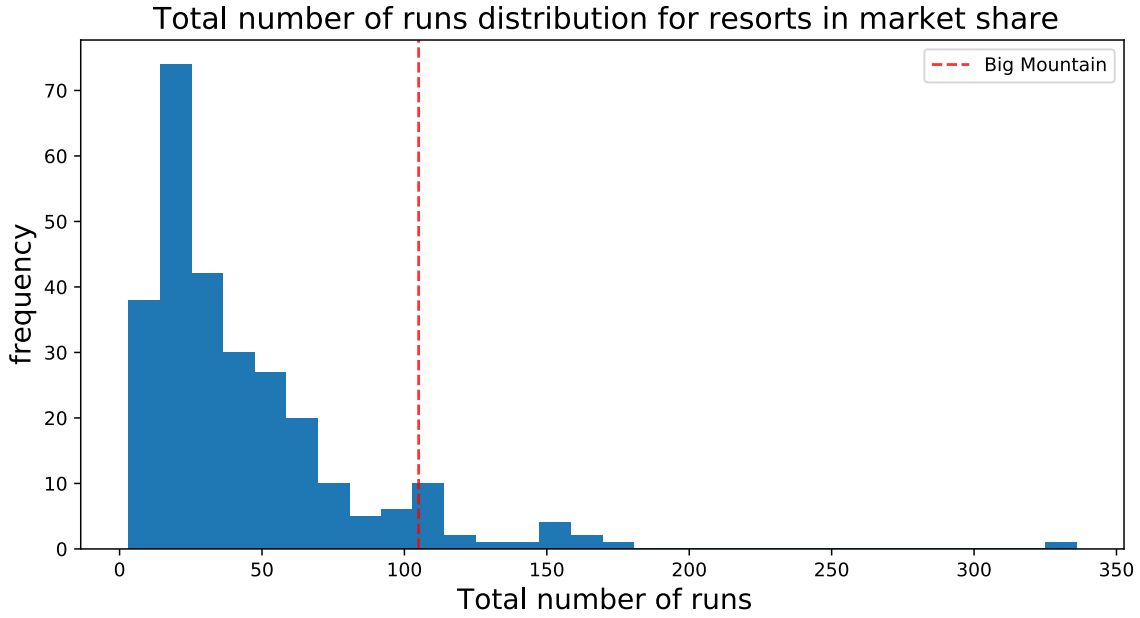

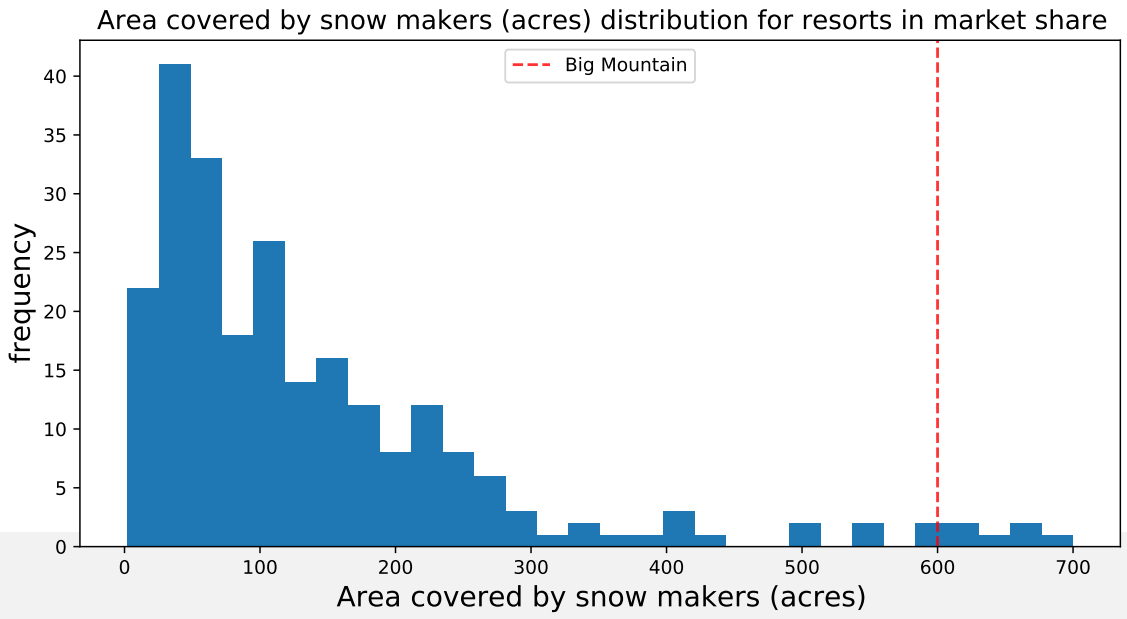

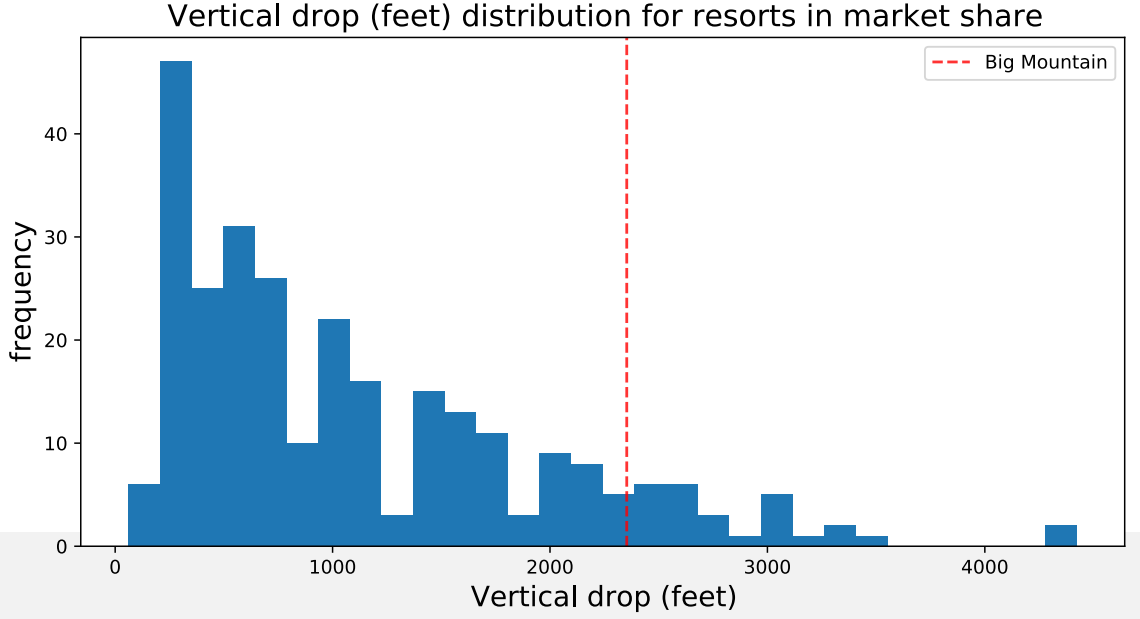

Summary and conclusion

- Big Mountain sits higher up in the league tables across the **top four predictive features** (facilities) related to the adult (weekend) ticket price.
- The suggested price is **$94.22** with expected mean absolute error $10.39. Comparing to the **currently charge $81**, we recommend Big Mountain to increase their ticket price.
- Recommend scenarios:
  - #1 Closing one run helps to reduce the operating costs.
  - #2 Adding a run to increase the vertical drop by 150 feet and installing an additional chair lift. It increases the ticket price by $1.99. Expect $3.47 million increase over the season.
  - Combining scenarios #1 and #2
  - Decrease snow making area down up to 35 acres makes **no change** in the ticket price but helps to reduce the operating costs.