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New Ticket Price Estimation:

Using Data Science Methods for Big Mountain Ski Resort

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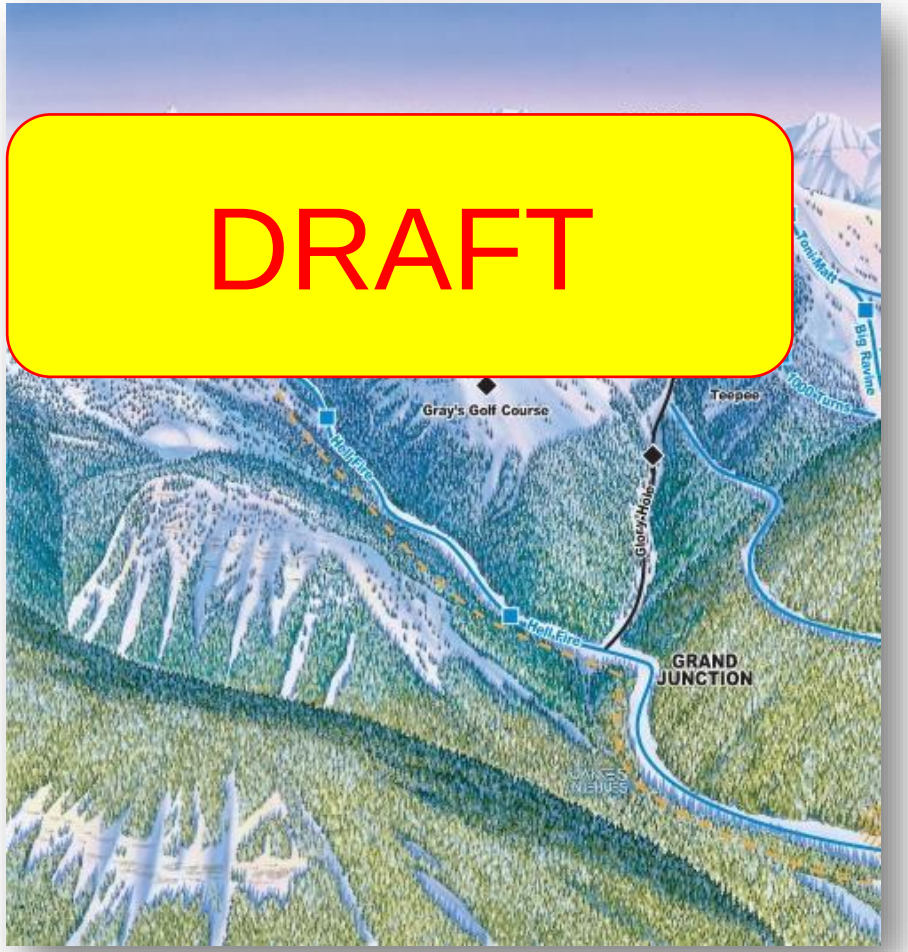
Problem identification

Context

- Big Mountain Resort is a ski resort in Montana.
- It serves nearly 350,000 skiers every year.
- Recently, the resort has recently installed an additional chair lift
  - The project operating costs of $1.540M this season.
- The resort needs to adjust its finances to accommodate the cost
  - By increasing the ticket price
  - By cutting other costs of facility



Problem identification

Criteria for success

- Setting pricing to cover the new $1.540M cost
- Identifying the areas to cut the cost

Solution space

- Competitive analysis with 300 ski resorts in the country
- Use direct competition to set price.
- Consider cutting other operational costs

Solution Constraints

- New ticket price sh… co… the…
- The business should be ensured.

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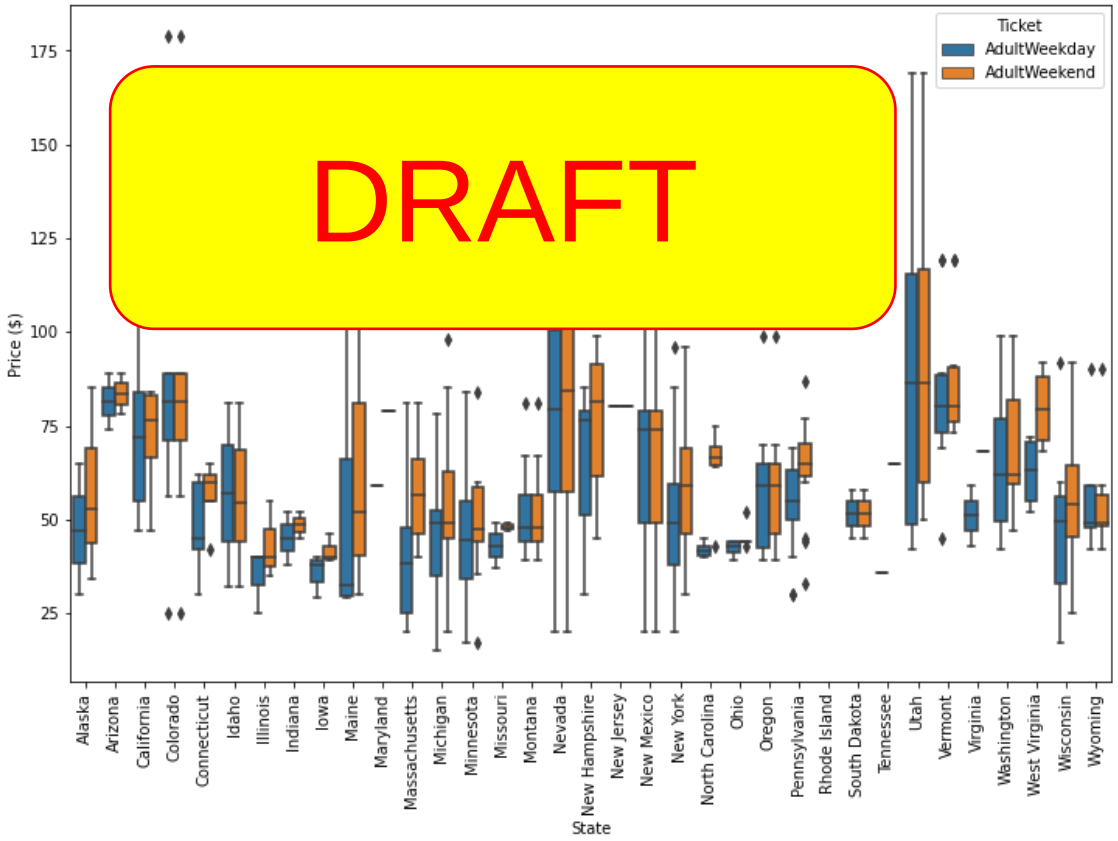
Key data sources

- Data for 300 … resorts … ntry
  - … ice
  - Number of chair lifts
  - Number of terrain parks
  - Length of the longest run
  - Base elevation
  - Summit elevation
  - Vertical drop
  - etc.

Recommendation & key findings

- Important operational and business-related information for 330 ski resorts was collected.
- 277 resorts that included all features of interest was used for further analysis.
- The ticket price for the resorts ranged from $25 – over $100.
- We combined the resort specific data with state features.
- A total of 32 numerical features was be used to model the ticket prices.



Modeling results & analysis

Model

- Deployed models:
  - Linear regression
  - Random forest regression
- Dependent & Intendent Features
  - Dependent feature (to predict): Ticket price
  - Independent features (use to predict): Other features
- Train-test sets
  - 70-30 train and test sets split

Choosing a Model

- Determined in an au… pipeline of
  - Cross-validation
  - Hype-parametriz… techniques
- Best Performance Model
  - Random forest model performance for
    - Train MAE = 9.65±1.47
    - Test MAE = 9.43.

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Modeling Scenarios

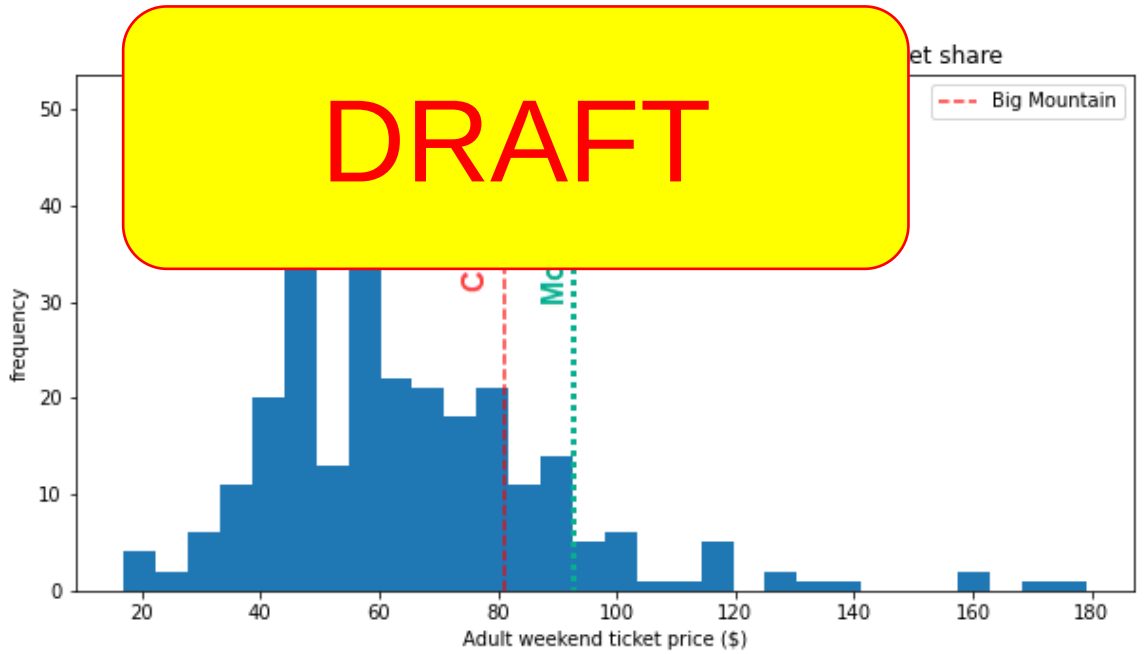
…el to …scenarios:

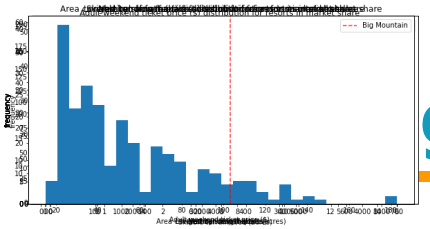
…used runs … increase the vertical drop by 150 ft, and installing a chair lift to support it

3. Add 2 acres of snow making to 2rd scenario
4. Increase the longest run by 0.2 miles and add 4 acers of snow making capacity.

Modeling results & analysis

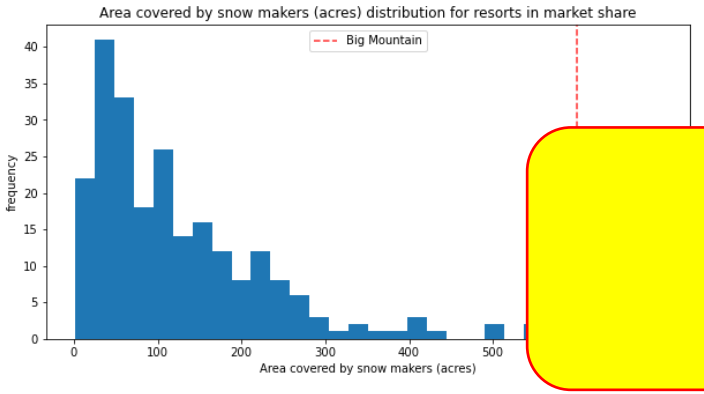
- Our modelled price suggests the new price of $94.26
  - Big Mountain resort currently charges $81 for adult ticket in the weekends.
- The modelled price is supported by the facilities that Big Mountain provides in the market place
- In national scale, Big Mountain is already one of the most expensive resorts; however, the $13 increase in ticket price will not dramatically change its position in the in the league

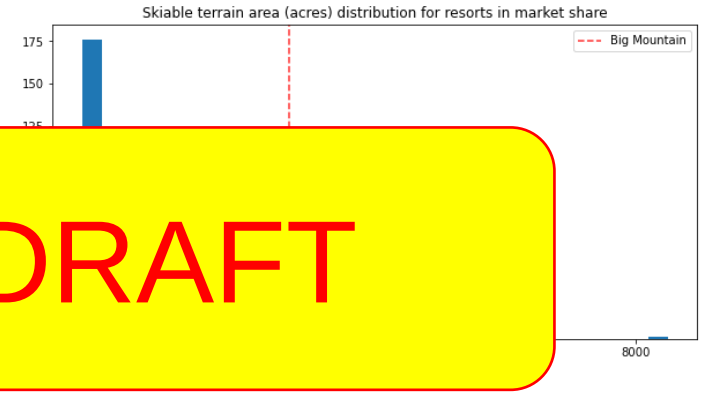




g results & analysis

Big Mountain is one of countries top resorts with large snow making area, skiable terrain, number of fast quads, longest runs, and vertical drop.





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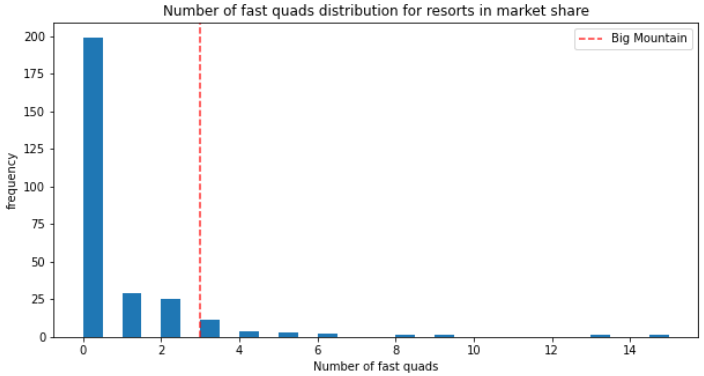

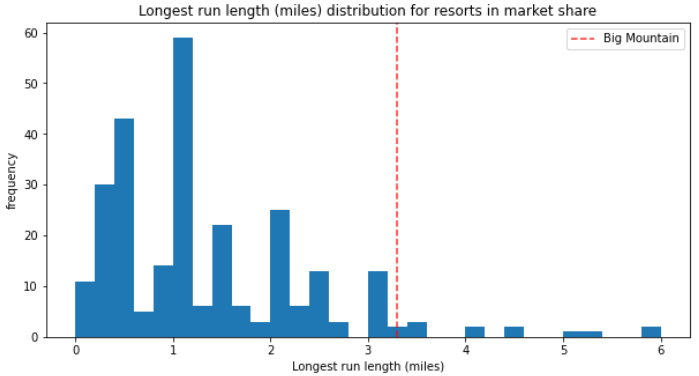

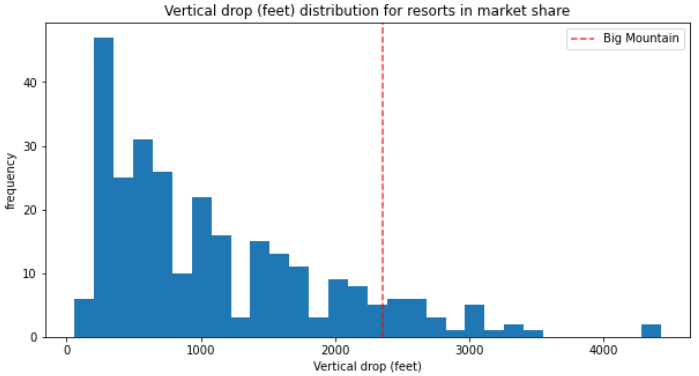

Summary and conclusion

- The operating cost of the new chair lift is **$1.540M** in the season.
  - Ticket price should to rise at least $4.4 to $85.4 to cover this operating cost.
- The modelled price suggests the new price of **$94.26**
  - It would be $13.26 more than the current price of
  - Which meets the required $4.4 increase
- The 2nd scenario found to have the best review supp
  - The scenario suggest to add 1 run, increase the vertical drop by 150 feet, and install an additional chair lift,
- Over the season, this could be expected to amount to **$2.967M**. The new revenue is larger than the new operational cost.
- It is also suggested to close 1 run
  - It doesn't impact the ticket price or revenue
  - It will help to reduce the maintenance costs.