Big Mountain Price Analysis

Guided Capstone: Executive Slides

Problem identification

- Is Big Mountain maximizing its returns?
- What facilities are most important to customers?
- The lift ticket price is currently $81. How does this compare to other resorts in the market?

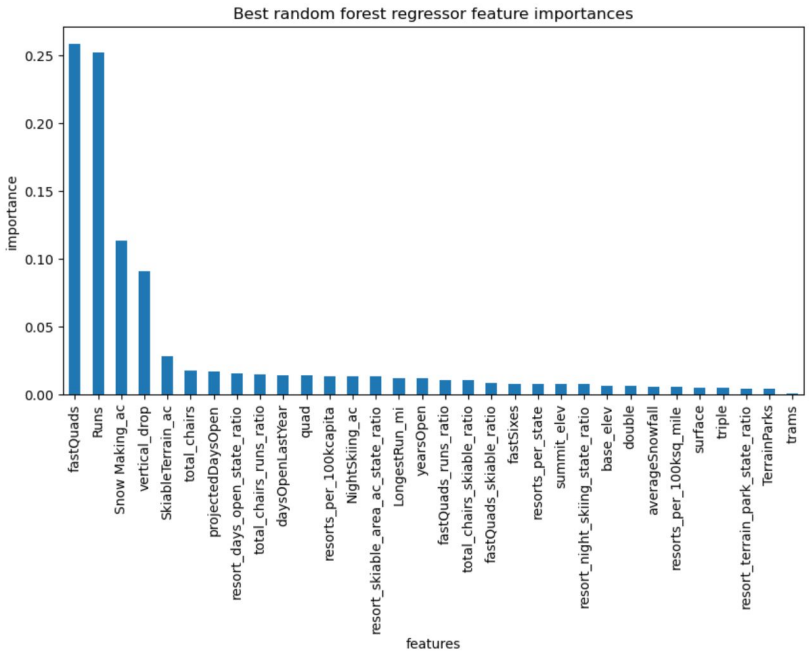
In this work, we aim to build a predictive model for ticket price based on facilities, state data, and feature engineered variables to provide guidance for Big Mountain’s pricing and future facility investment plans

Recommendation and key findings

- The features most correlated with ticket prices are number of fast quads, total number of runs, acres of snow making, and vertical drop

- Big Mountain national rankings:
  - Fast quads: 93rd percentile
  - Runs: 93rd percentile
  - Snow making acres: 97th percentile
  - Vertical drop: 89th percentile

  - Lift ticket price: 81st percentile



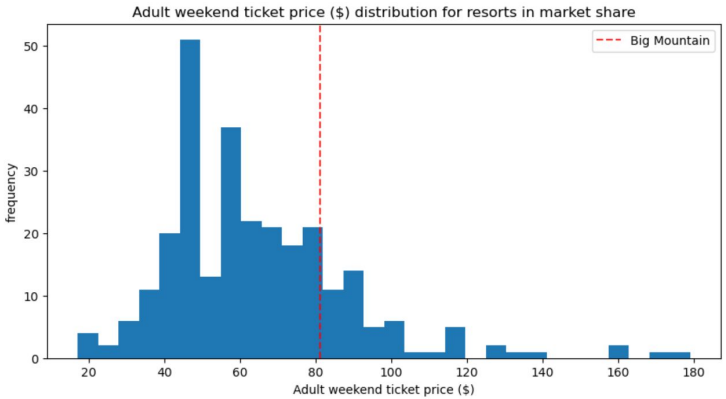
Recommendation and key findings

- Our predictive model suggests that Big Mountain could charge $95.87 per guest based on its facilities
- This prediction carries an expected mean absolute error of $10.39, meaning that at the minimum, ticket prices could be increased to $85.48
    - This minimum increase in price would account for an additional $7840000 in revenue (assuming 350000 guests that all ski 5 days)
- We ran different scenarios that could also increase revenue. The best scenario we modeled would be to increase vertical drop by 150ft by adding an additional run and lift that lowers the base elevation
    - This scenario would allow lift ticket prices to increase by $1.99 or by 3474638 annually

Modeling results and analysis

- The data used contains 330 resorts in 35 different states, 277 different resorts after removing null values

- We added the state populations and area in sq. miles to the data to perform additional analysis
  - Montana is ranked 12th in most ski resorts
  - Montana is the 13th cheapest state to ski in on average
  - Per capita, Montana is ranked 4th in most ski resorts



Modeling results and analysis

- The best model we found uses a random forest regressor
- Using all valid resorts in the U.S. to train model, we can predict the ticket price at Big Mountain
  - The model predicted the lift ticket price as $95.87 per day per guest with an expected mean absolute error of $10.39
  - We feel confident with this prediction and expected error to state that the ticket prices can be increased
- Based on the additional costs of the new chair lift ($1540000 annually), the ticket price would only need increased by $0.88 to offset this

Modeling results and analysis

- We modeled different scenarios that may also be helpful to increasing revenue
  - Scenario 1 - close 10 of the least used runs
    - increasing more than 6 runs leads to a large drop in revenue
  - Scenario 2 - increase vertical drop by 150ft by adding an additional run and lift
    - increases lift ticket price by $1.99
  - Scenario 3 - same as scenario 2 but add 2 acres of snow making cover
    - increase lift ticket price by $1.99
  - Scenario 4 - increase the longest run by 0.2 miles to be 3.5 miles total but requires 4 acres of snowmaking
    - makes no change to lift ticket price

we can recommend

Summary and conclusion

- These results need to be viewed with an optimistic but doubtful eye
- Additional features may need to be included for a more thorough analysis
    - Examples of additional data: real estate statistics, number of lodges, population of mountain village, number of fine dining restaurants, distance from large metro areas
- Instead of building model on all resorts in the U.S. it may be realistic to look only at other resorts in Big Mountain's market
- Nonetheless, our analysis provides a solid baseline for where Big Mountain is now in terms of ticket sales and what mountain features are important to customers