

# Big Mountain Resort ticket pricing business strategy: a data-driven analytical model

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# Problem identification

- Big Mountain Resort (BMR) recently installed an additional facility which increased operating costs by \$1.54M.
- BMR desires to:
  - implement a data-driven business strategy to select a better value for their ticket price based on the facilities they provide
  - consider potential changes to their facilities to either cut costs or support higher ticket prices

# Scope

- Derive a data-driven analytical model to predict the ticket price that best fits BMR value by investigating 330 resorts in the same market share
- Evaluate the effect that potential changes to BMR facilities have on ticket price by analyzing four different scenarios:
  1. Permanently closing down up to 10 of the least used runs
  2. Increase the vertical drop by adding a run to a point 150 feet lower down but requiring the installation of an additional chair lift to bring skiers back up, without additional snow making coverage
  3. Same as number 2, but adding 2 acres of snow making cover
  4. Increase the longest run by 0.2 mile to boast 3.5 miles length, requiring an additional snow making coverage of 4 acres

# Recommendation and key findings

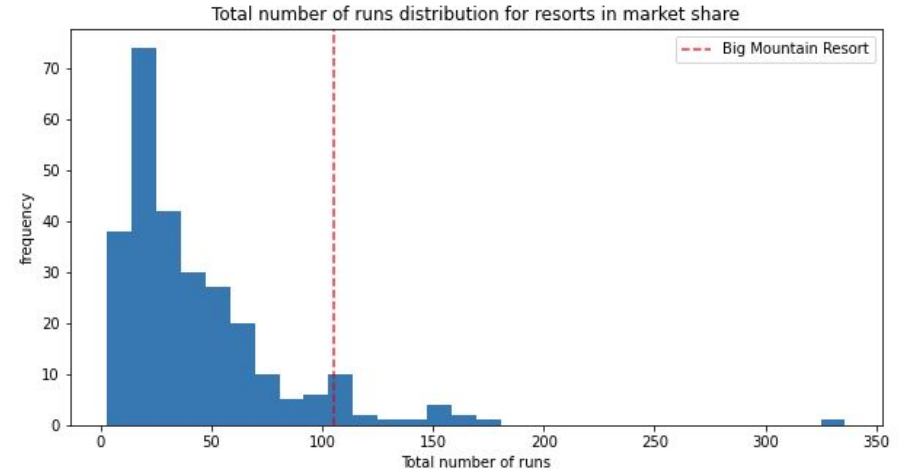
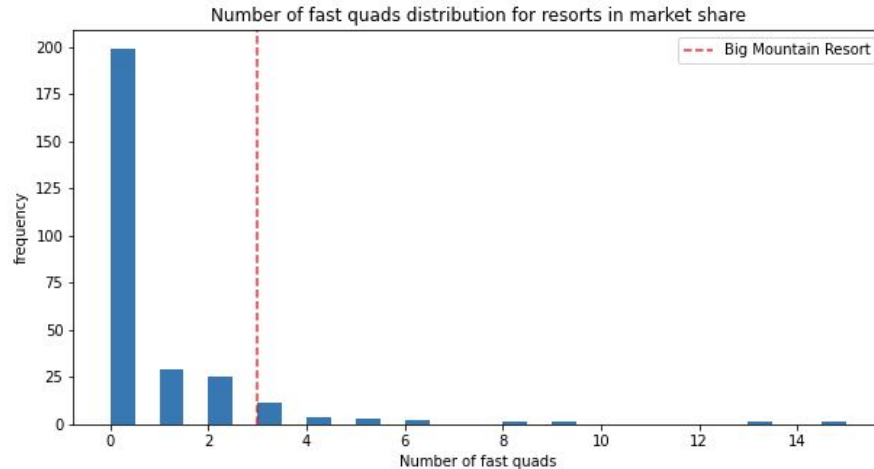
- The recommended ticket price for BMR is \$95.87 ( $\pm$  \$10.39)
  - With 350,000 visitors over the season skiing for five days on average, the revenue is increased by approximately \$26M
- The number of fast quads, runs, snow making acres, and vertical drop are the four most important features affecting the ticket price
- Among the four scenarios evaluated, Scenarios 2, consisting in adding 150 feet of vertical drop by the installation of on run with chair lift, further increases the new revenue by \$17M

# Modeling results and analysis

- No obvious pattern was discovered by examining the relationship between states and ticket prices, hence all states were treated equally
- A random forest regressor was selected to predict the ticket price as it offered the best performances (lowest error in price prediction) among various candidate models
  - The recommended ticket price for BMR is \$95.87 ( $\pm$  \$10.39)
  - The most important features affecting the price prediction are:
    - Number of fast quads
    - Number of runs
    - Acres of snow making area
    - Vertical drop

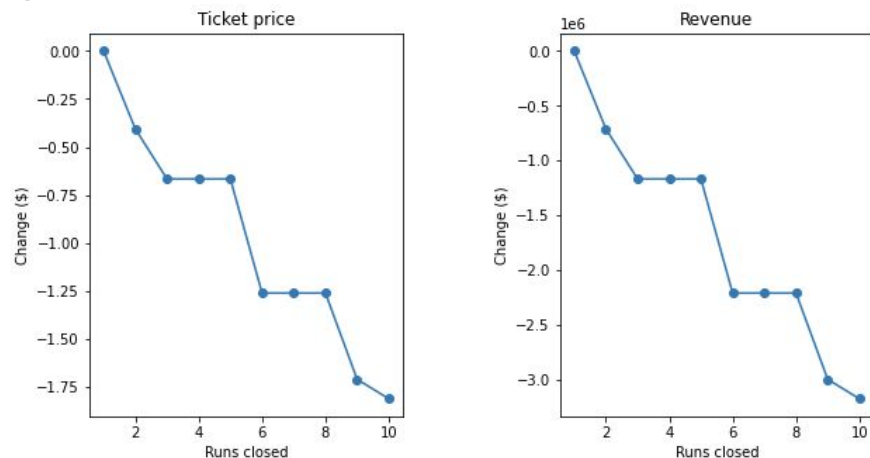
# Modeling results and analysis (cont'd)

- The current BMR ticket price of \$81.00 is the highest among the resorts located in Montana and in the 81st percentile among all resorts
- However, the current ticket price appears not to be in line with the value of the facilities offered by BMR:
  - BMR excels in number of fast quads, runs, area covered by snow makers and vertical drop



# Modeling results and analysis - Scenarios

1. Permanently closing down up to 10 of the least used runs
  - Closing one run makes no difference
  - Closing more than one run reduces ticket price revenue
  - There are no differences at closing down 3, 4 or 5 runs
  - Increasing the closures down to 6 or more leads to a large drop



## Modeling results and analysis - Scenarios (cont'd)

2. Increase the vertical drop by 150 feet adding a run and installing an additional chair without additional snow making coverage
  - Support for ticket price increased by \$8.61
  - Over the season, this could be expected to amount to \$15M
3. Same as number 2, but adding 2 acres of snow making cover
  - Support for ticket price increased by \$9.90.
  - Over the season, this could be expected to amount to \$17M
4. Increase the longest run by 0.2 mile to boast 3.5 miles length, requiring an additional snow making coverage of 4 acres
  - No effect on revenue

Changes in ticket price and revenue are calculated as the difference between the scenario's prediction and the current prediction



# Summary and conclusion

- The number of fast quads, runs, area of snow makers, and vertical drop are the most predictive features of the ticket price
- We suggest the ticket price is increased from \$81 to \$96 immediately, without the need of implementing new facilities - increased revenue by \$26M
- Scenarios 2 and 3 increase the new revenue by an extra \$15M and \$17M, respectively
- Operating costs were not considered in this analysis as the data was not provided - future work should include this information
- Collecting data regarding the number of visitors per year could improve the model performance and should be included for future analysis