BMR Executive Presentation

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Big Mountain Resort Problem Statement

How to select a better value for Big Mountain Resort's ticket price to either cut costs without undermining the ticket price or support an even higher ticket price in order to increase revenue for the resort by 20% within the next financial year.

1 Context:

Big Mountain Resort is a ski resort located in Montana. Big Mountain Resort offers spectacular views of Glacier National Park and Flathead National Forest, with access to 105 trails. Every year about 350,000 people ski or snowboard at Big Mountain. This mountain can accommodate skiers and riders of all levels and abilities.These are serviced by 11 lifts, 2 T-bars, and 1 magic carpet for novice skiers. The longest run is named Hellfire and is 3.3 miles in length. The base elevation is 4,464 ft, and the summit is 6,817 ft with a vertical drop of 2,353 ft.

2 Criteria for Success:

The business wants some guidance on how to select a better value for their ticket price. They are also considering a number of changes that they hope will either (1) cut costs without undermining the ticket price or will (2) support an even higher ticket price. The goal of this is to develop a more data-driven strategy to ultimately increase revenue for the resort by 20% this financial year.

3 Scope of Solution Space:

Big Mountain Resort has recently installed an additional chair lift to help increase the distribution of visitors across the mountain. This additional chair increases their operating costs by $1,540,000 this season. The focus is on pricing strategy and capitalizing on facilities.

4 Constraints within Solution Space:

The resort's pricing strategy has been to charge a premium above the average price of resorts in its market segment. There's a suspicion that Big Mountain is not capitalizing on its facilities as much as it could. Basing their pricing on just the market average does not provide the business with a good sense of how important some facilities are compared to others. This hampers investment strategy.

5 Stakeholders to Provide Key Insight:

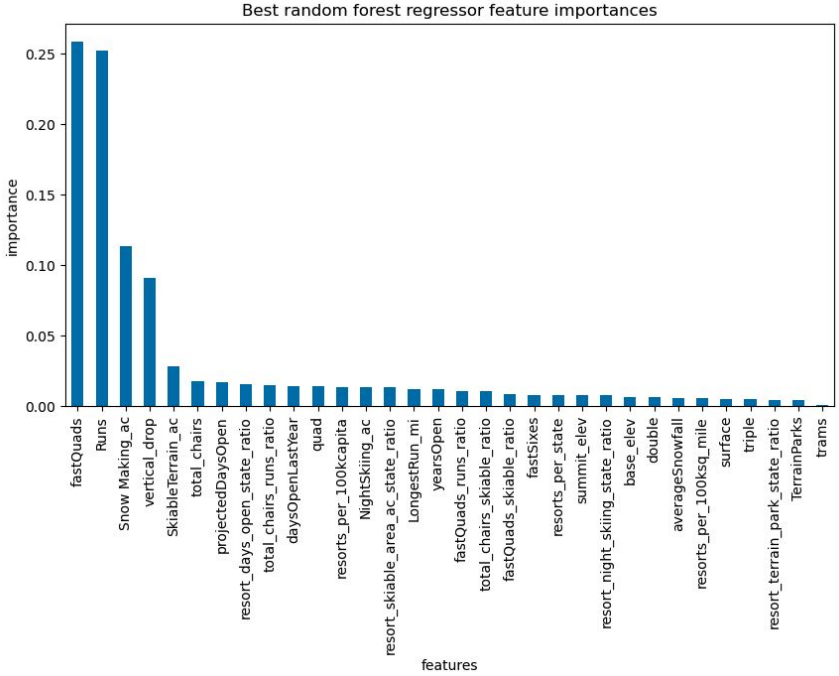
Jimmy Blackburn, Director of Operations,
Alesha Eisen, the Database Manager

6 Key Data Sources:

Single CSV file from the database manager.

Recommendation and Key Findings

- **Recommendation:** Big Mountain Resort currently charges $81.00; but the modelling suggests a ticket price of $95.87 could be supported in the marketplace. This would allow for Big Mountain Resort to increase their revenue.
- **Key Findings**:
  - There was a relationship between state and ticket price depending on each state's resort offerings.
  - States differ in their # of resorts, skiable area, and night skiing, as well as resorts per population and resorts per area. Each of these is related to ticket price.
  - The features with the strongest correlation to ticket price were Snow Making_ac, Runs, FastQuads, Total Chairs, and Vertical Drop.
  - We introduced multicollinearity with the new ratio features: resorts_per_100k_capita, resorts_per_100k_sq_mi, plus resort to state ratios for skiable area, days open, terrain park, and night skiing. They are negatively correlated with the number of resorts in each state.



Modeling Results and Analysis

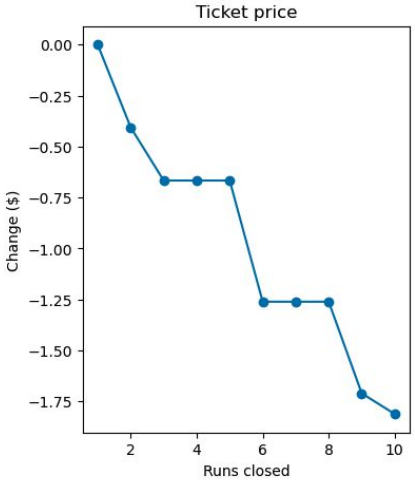
- Built both a Simple Linear Regression model and a Random Forest model.
  - Final Model Selected: Random Forest model b/c it has a lower cross-validation mean absolute error by almost $1. It also exhibits less variability.
- Chose Weekend Price over Weekday Price as Target Feature for Price Prediction because it has less missing values than Weekday Price. Dropped rows with Weekday Price as a result.

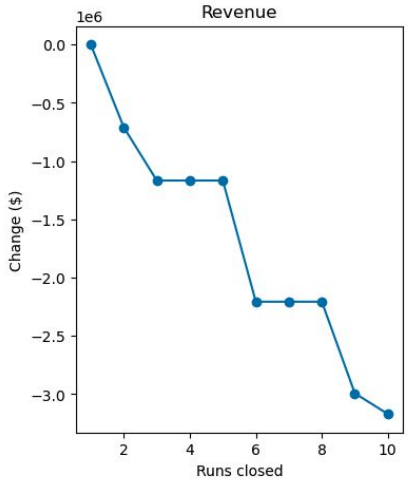
Modeling Results and Analysis

- Modelling suggests a ticket price of $95.87, well above the $81.00 currently charged. This could be supported in the marketplace.
    - Even with the expected mean absolute error of $10.39, this suggests there is room for an increase.
- The additional operating cost of a new chair lift per ticket (assuming each visitor on average buys 5 day tickets) is $1.99.

Modeling Results and Analysis

- For further improvements, consider closing at least one run. The model says closing one run makes no difference to the ticket price. Closing 2 and 3 successively reduces support for ticket price and so revenue. If Big Mountain closes down 3 runs, it seems they may as well close down 4 or 5 as there's no further loss in ticket price, but 6 or more closures leads to a large drop.
- If you were to test this, start with closing one run (knowing it won't have a negative impact), and then close a second one to see how quickly the revenue is affected. Wait until you have enough data before closing a third or more.





Summary and Conclusion

- The business could make use of the model by experimenting with different scenarios of feature tweaking, for example increasing or decreasing the number of closed runs, and/or the number of snow making coverage, and/or other feature tweaks to see what the predicted ticket price and thus revenue impact would be.
    - If you were to test this, start with closing one run (knowing it won't have a negative impact), and then close a second one to see how quickly the revenue is affected. Wait until you have enough data before closing a third or more.
- This would allow for data-driven insights before making significant business decisions.