Big Mountain Resort

What is the proper ticket price at the resort?

Overview

Big Mountain Resort, a ski resort located in Montana. BMR 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. BMR has recently installed an additional chair lift to help distribution of visitors across the mountain. This additional chair increases their operating costs by $1,540K this season. How should BMR compensate for this cost increase as well as exploring opportunities to increase the revenue?

Problems to solve

1. Identify the best business strategy comprising increase in ticket price and/or cost reduction to compensate the additional operating cost due to the new chair lift and to increase revenue in general.

2. Build a model that predicts ticket prices at ski resorts in market share based on numeric variables describing the capacity of resorts and their proportion relative to the total capacity of states to which they belong.

3. Evaluate the model and identify how the model can be improved for a better prediction and business use.

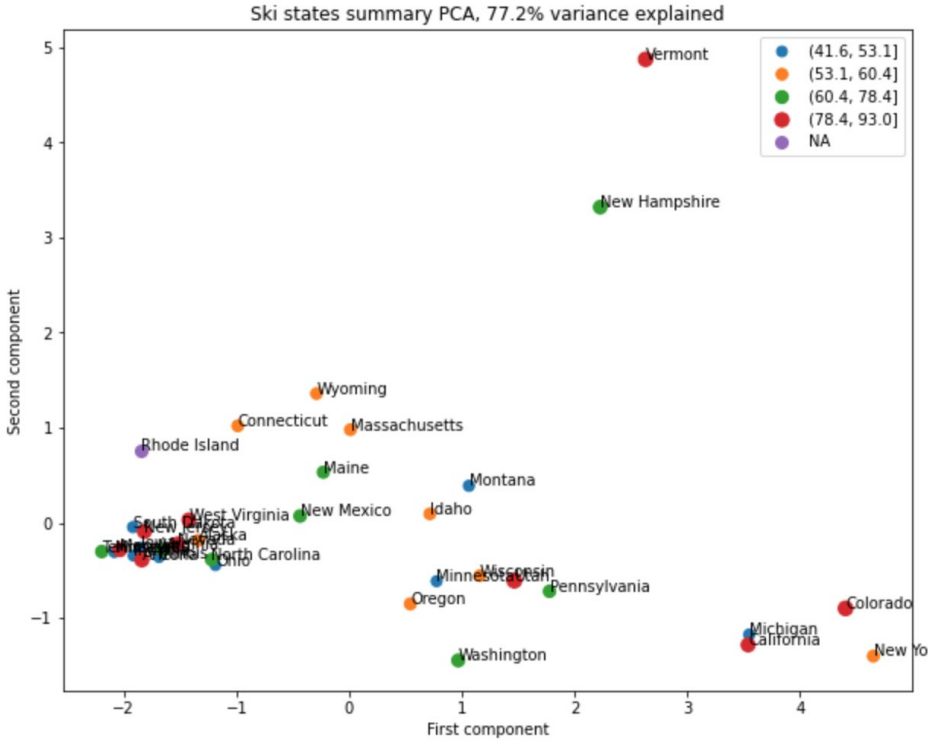
Recommendations and key findings

1. According to our model, the predicted ticket price for Big Mountain Resort is $95.87, and the current price is $81.00. Even with the expected mean absolute error of $10.39, this suggests there is room for an increase.
2. Closures of the least used runs will lead to an unknown amount of cost reduction, but it will also create pressure to lower the ticket price and in turn the revenue.
3. The option of adding a run to increase the vertical drop would require installation of an additional chair, however, it is still favored by the model that supports almost $2 increase in ticket price which corresponds to $3,474,638 increase in revenue over a season.
4. Increasing the longest run by 0.2 miles to boast 3.5 miles in length would have a negligible impact on the ticket price.

Modeling Results

01

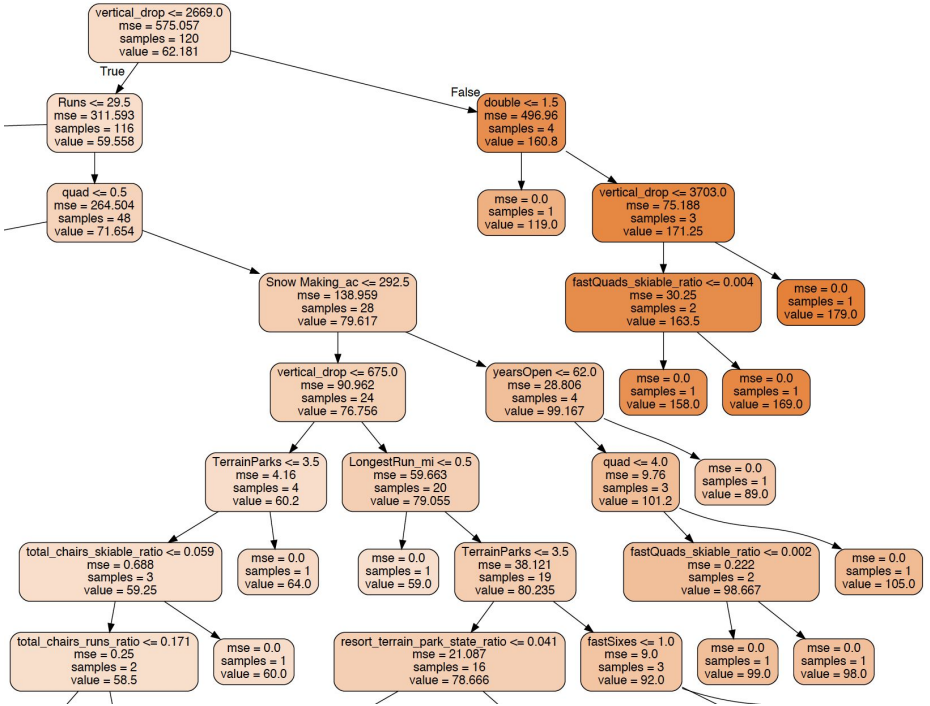
- Principal component analysis (PCA) revealed that no obvious clustering of states in terms of their resources for skiers/riders.
- This suggested that resorts in different states can be treated equally within a unified model without further clustering.



Modeling Results

02

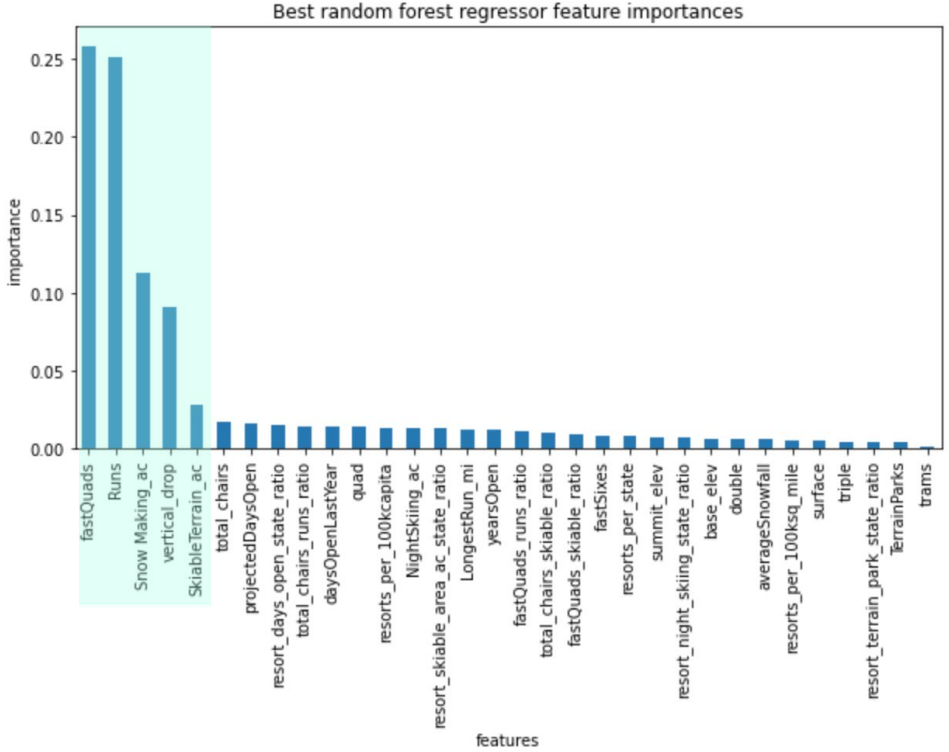
- Random forest (RF) model displayed smaller bias and variance compared to the linear regression in predicting the ticket prices. The accuracy of the model was measured using the mean absolute error metric, which was about $10.
- Grid searching has found that random forest with 69 trees showed best performance.
- What are some of the important features in the model?



Modeling Results

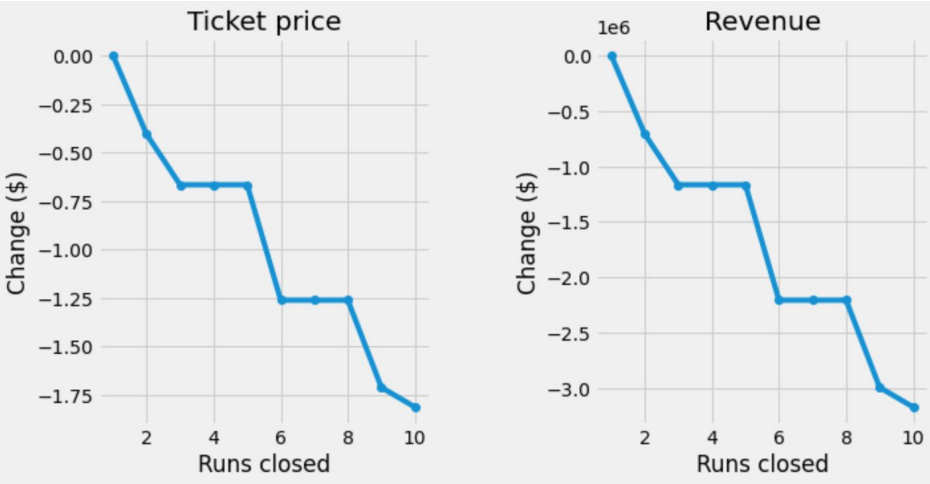
03

- The RF model has identified ‘fastQuads’, ‘Runs’, ‘Snow Making_ac’, and ‘vertical_drop’ as four critical features that had greater influence on the ticket price.
- The linear regression also found that the same variables positively support the ticket price.
- Thus, business strategies should harness the importance of those four variables in the business decision making.



Modeling Results

04



- Closures of least used runs are expected to create pressure to lower the ticket price and revenue.
- Amongst potential options, our model favors addition of a new run that increases the vertical drop by 150 feet, as this will support increases in ticket price by $2 in revenue by $3,475K, respectively.

Conclusion

- Harnessing the dataset with useful numeric variables describing resources of resorts in the same market share, we could build a model that predicts the ticket price with a high accuracy.
- This model identified four features that positively influenced the ticket price, thus, business decisions should consider these four variables of importance.
- The model favored business scenario #2, while rejecting other options.
- Further information with respect to costs for operations and labors is expected to improve the accuracy of the model.

Thank you.