Guided Capstone: Big Mountain Resort

Problem Statement

- Big Mountain Resort is a ski resort facing difficulties in its investment and pricing strategy.
- The management team hopes to develop data-driven pricing strategy and investment options

Recommendation and Finding

- Based on our data, the current ticket price for Big Mountain is underpriced and can be raised from $81 to $94.22
- Our analysis of the features within the resort shows that investing in the number of runs, height of its vertical drop, and the surface area of its snow could potentially be profitable for the company.

Modeling

- Linear Regression
  - Obtained a mean absolute error of 10.5 in the training data and 11.79 in the test set
  - Contains k=8 predictors, chosen by 5-fold cross-validation
- Random Forest
  - Obtained a mean absolute error of 9.66 in the training data and 9.5 in the test set
  - Contains n=69 decision trees, chosen by 5-fold cross-validation
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| Models	Train mean MAE	Train Sd	Test MAE
Linear Regression (k=8)	10.50	1.62	11.79
Random Forest (n=69)	9.66	1.35	9.50

Analysis

- Using our best model Random Forest, we are able to extract the relative importance of the features in the the resort.
- As shown by the graph, features like "runs", "vertical_drop", "snow_making" are more important in predicting the ticket price

Best random forest regressor feature importances
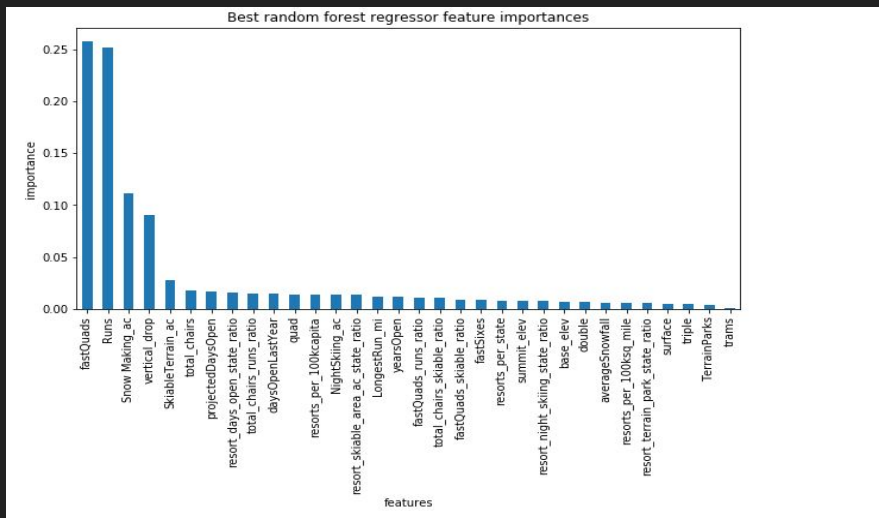
Analysis

- Potential Investment Strategies
  - Reduce the number of runs to save operating cost
  - Add 1 run, raise the vertical drop by 150 ft, adding 1 more chair lift
  - Add 2 acres of snow on top of the previous scenario
  - Increase the longest run by 0.2 mile and adding 4 acres of snow
- The impact of each investment scenarios is shown below
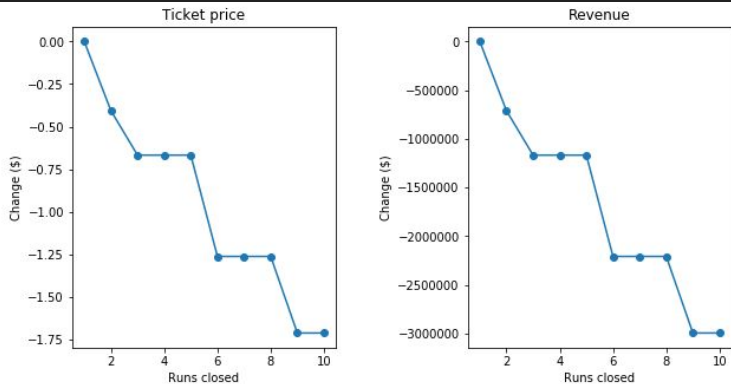
Scenarios	Increase in ticket price	Increase in Revenue
2	8.46	14,811,594
3	9.75	17,068,841
4	0	0

Conclusion

- Based on the current features of the resort, our best performing model suggests that there should be a increase in ticket price to $94.22
- Our model also suggested some potential investment opportunities for the company to further raise their ticket price.
- More data on the operating costs is needed in order to improve and finalize its investment strategy.