**Guided Capstone Project Report**

Big Mountain Resort is located in Montana and serves around 350,000 visitors annually. ​The resort has 105 trails and 11 lifts, with a new lift increasing operating costs by $1,540,000. The pricing strategy is premium, but there are concerns about not maximizing facility usage. ​

The goal is to implement a data-driven strategy to improve ticket pricing and cost management.

Originally there were 330 rows in original data file'ski\_resort\_data.csv'. Analyzed and total 277 rows are left in cleaned data file'ski\_data\_cleaned.csv', removed 2 rows as well from the original data file.

As part of exploratory data analysis worked on following:

* 1. Analyzed variables and relationships between variables using summary statistics and data visualization using different types of plots.
  2. Cleaned and transformed data file to use further in the latest file’data/ski\_data\_cleaned.csv’.

As part of “04\_preprocessing\_and\_training.ipynb”, worked on cleaned and processed data, explored different ways to compare model performances and mean values. Finally, picked model”Random Forest Model, GridSearchCV” that worked best given the current problem.

Big Mountain currently charge $81.00 for ticket.

The random forest model has a lower cross-validation mean absolute error by

almost $1. It also exhibits less variability. Verifying performance on the test set

produces performance consistent with the cross-validation results.

Big Mountain Resort modelled price is $90.50.

Updated ticket price to $90.50 is proposed based on other resort features and ticket price variation.

Here is valuable business intelligence of our model:

1. Permanently closing down up to 10 of the least used runs. This doesn't impact any other resort statistics.
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

By providing demo to business executives and then getting their views can tell, what opinion Big Mountain business executives have about this proposal of ticket price increase.

Business analysts will be provided with the detail of this model/Python code detail and can experiment themselves for newer future uses.

A graph of a price

AI-generated content may be incorrect.