Proposal for Big Mountain Resort

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Overview

The aim of this project is to find out the optimal solution to recoup the increase of operating costs from the new chair that Big Mountain installed this season, and keep the profit margin at ~ 9.2% . After analyzing the dataset containing information from 330 resorts in the US, that can be considered part of the same market, we built models to predict the optimal ticket price and days to open for this season based on the data. And our conclusion is we can increase the revenue by 6% through increasing the ticket price and extending our open days, in order to keep the profit margin around 9.2%.

Problem Identification: How can Big Mountain Resort increase revenue to recoup the increase of operating cost so the profit margin will stay ~9.2% by the end of this season.

1 Criteria for success

Revenue increased and margin stayed ~9.2% by the end of this season.

2 Scope of solution space

>Analysing revenue and cost data from last year to calculate the necessary incremental revenue for this season.
> Analysing data of 330 ski resort, identify the best way to increase revenue (for instance: by raising the ticket price or extending the open days)

3 Constraints within solution space

Other competitors start better sales campaign and attract our visitors which may cause a decrease in our revenue.

4 Key data sources

>Revenue and cost data from last year

>Updated_ski_data.csv (dataset contains information of 330 ski resorts across US).

Recommendation and Key Findings

Key findings:

1. Our weekend ticket price is lower than most of our competitors which has similar features as we have. (Number of runs, skiable area, etc.)
2. Our open days is shorter than some of the competitors which has less average snowfall than we have.

Recommendation:

1. Increase our ticket price from $81 to $89 ($ 89 is the optimal price predicted by the model).
2. Extend our open days to 130 days in this season (130 days is the optimal open days predicted by the model).

Modeling and Analysis

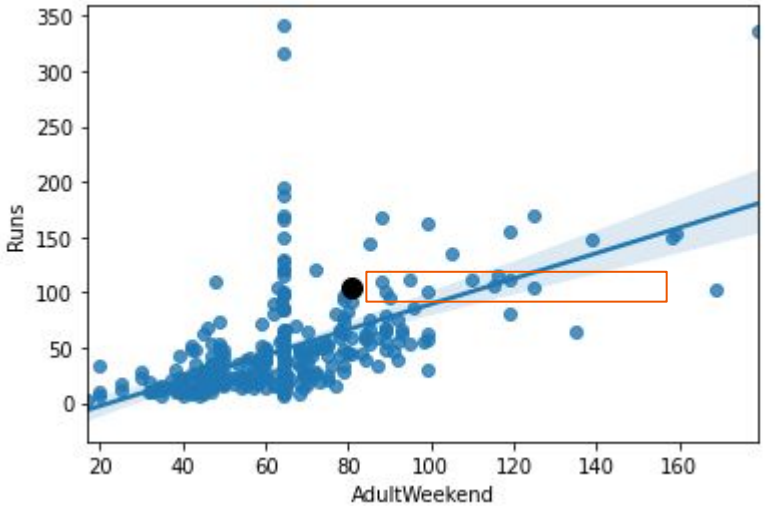
Modeling results

After cleaning and preprocessing the original dataset, we built 3 different prediction models (model 1 ~ model 3), to predict the optimal weekend ticket price and optimal open days for Big Mountain by using the feature data of every ski resort as predictors. In the end we chose model 3, as it has good performance and contains the least unactionable features among three models. Features used to build model 3 are, for instance: ticket price for weekday, average snowfall in the resort, number of runs, skiable area, and number of regular speed chairlifts for 1 person, 3 person and 4 person, etc.

Model	Explained Variance	Mean Absolute Error	Features dropped from the original dataset
Model 1.	0.928	5.22	None (Used all the features)
Model 2.	0.922	5.54	State
Model 3.	0.924	5.53	State, summit_elev, base_elev

Analysis

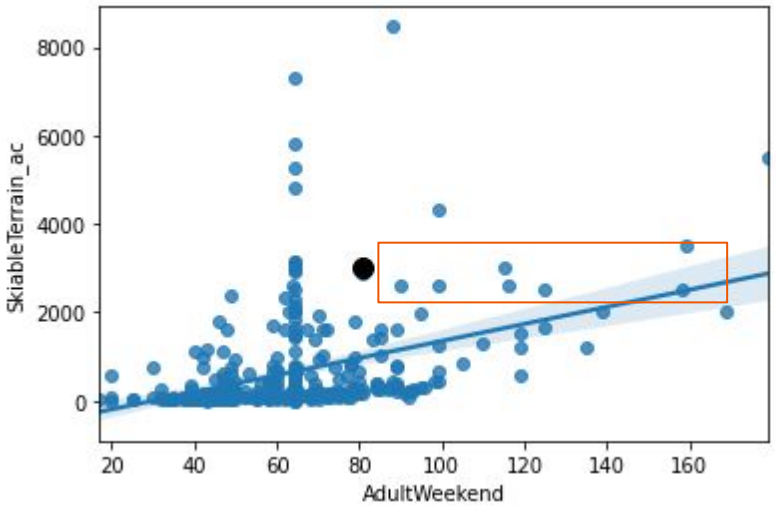
Graph 1



As you can see in graph1, it shows the relation between weekend price and number of runs in the 330 ski resorts in our dataset. You can see in the red circled area, most of the resorts that have about the same number of runs as Big Mountain has, normally price their weekend ticket higher than $81, which means we still have some room to raise our ticket price without losing customers to our competitors.

Analysis

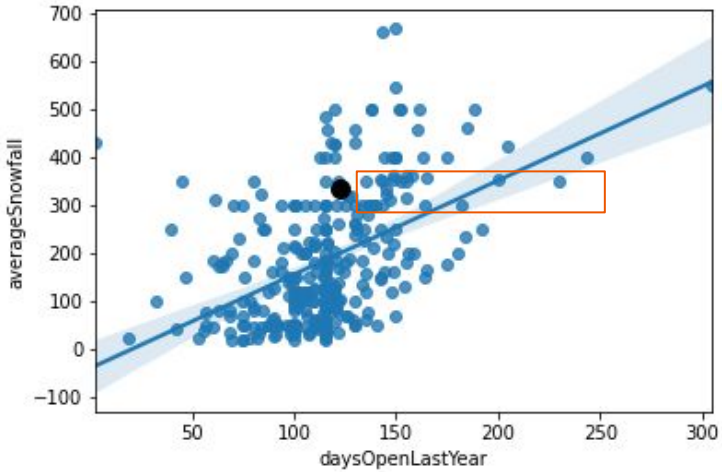
Graph 2



As you can see in grap2, it shows the relation between weekend price and skiable areas in the 330 ski resorts in our dataset. You can in the red circled area, see some of the resorts that have about the same skiable area as Big Mountain has (or even slightly less than Big Mountain) price their weekend ticket price higher than $81. This also suggests there's still room for us to raise our weekend ticket price without losing customers to our competitors.

Analysis

Graph 3



As you can see in grap3, it shows the relation between total open days in last year and average snowfall in the 330 ski resorts in our dataset. You can see in the red circled area, some of the resorts that have about the same average snowfall as Big Mountain has (or even slightly less than Big Mountain) have longer open days than Big Mountain. This suggests we can extend our open days from 123 days to 130 days as the model recommended.

Summary and conclusion

Based on the prediction results of model 3, and after comparing some of the features of Big Mountain Resort with other resorts that have similar features (similar numbers of run, similar skiable areas, similar average snowfall) we would like to recommend the management team to increase the weekend ticket price to $89 and extend the open days to 130 days for this season. This will help us recoup the increase of the operating cost caused by the installing the new chairlift and we will still stay competitive from other competitor ski resorts.

Thank you