Springboard–DSC
Guided Capstone Project: Big Mountain Ski Resort
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Guided Capstone Report

Big Mountain Ski Resort, located in Monata within Glacier National Park and Flathead National Forest, is serviced by 11 lifts, 2 T-bars and 1 magic carpet. Recently, an additional chair lift has been installed to facilitate the commute of visitors across the mountain. This new facility increased the operating cost by $1,540,000 this season. The management of Big Mountain resort is willing to cover this operating cost by an increase in the ticket price. However, they are concerned about the quality of the provided facility and the ticket price compared to the market. The main goal of this project is to estimate the ticket price compared to the market segment and other competitors.

The provided dataset comprises information from 330 resorts in 35 states. The features include the name, region, state, geographical features of resorts, the facility types and their numbers, ticket price for weekdays and weekends, number of days open, and night skiing availability. The initial analysis revealed the following points:

- In terms of the number of resorts in the state, Montana's rank is 13 among 35 states.
- The difference between weekdays and weekend ticket price varies from state to state. In Montana, there is no difference between weekdays and weekend fees. Also, except for a small number of states, the ticket price in all states lies within a boundary of $25 to $100.
- One of the main factors affecting the pricing strategy is the state-wide supply and demand. Therefore, the information on population and states' areas was added to the dataset.
- The data analysis revealed that big states are not necessarily the most populous. Also, some states host many resorts but other states have a larger total skiing

area. This data exploration consists of some other observations, too. All in all, there are various trends and correlations observed and it's challenging to relate those all. To address this challenge, the PCA technique is employed to find linear combinations of the features that are uncorrelated with one another and sort those by the amount of variance.

- The seaborn heatmap of correlation revealed that the most correlated features to the ticket price include the **fastQuads, Runs, Snow_Making_ac, total_chairs, vertical_drop and resort_night_skiing_state_ratio**.

In conclusion, four scenarios based on the model are shortlisted below:

Scenario #1: Big Mountain Resort can close one run without changing the ticket price. However, closing more than one run reduces support for the ticket price and so revenue.

Scenario #2: Big Mountain Resort is adding a run, increasing the vertical drop by 150 feet and installing an additional chair lift. This scenario supports a $1.99 increase in the ticket price. In total, a $3,474,638 revenue increase can be expected over the season.

Scenario #3: It is similar to the second scenario plus adding 2 acres of snow-making. This scenario supports a $1.99 increase in the ticket price. In total, a $3,474,638 revenue increase can be expected over the season. It shows that increase in the snow-making area makes no difference.

Scenario #4: Big Mountain Resort increases the longest run by 0.2 miles and guarantees its snow coverage by adding 4 acres of snow-making capability. This scenario does not support any change in the ticket price.

As a result, this study supports a $1.99 increase in the ticket price by adding a run, increasing the vertical drop by 150 feet and installing an additional chair lift.