**Guided Capstone Project – Big Mountain Resort Report**

**Introduction and Background**

Big Mountain Resort is a resort located in Montana with access to 105 trails. Every year, about 350,000 people ski or snowboard at Big Mountain. They are one of the most reliable resort in the sense that they can accommodate skiers and riders of all levels and abilities.

They recently installed an additional chair lift to help increase the distribution of visitors across the mountain and that in turn increased their operating cost by $1,540,000. Big Mountain suspects it may not be maximizing its returns, relative to its position in the market. It also does not have a strong sense of what facilities matter most to visitors, particularly which ones they're most likely to pay more for. The data science team were tasked to build a predictive model for a ticket price based on a number of facilities, or properties, boasted by resorts (*at the resorts).* This model will be used to provide guidance for Big Mountain's pricing and future facility investment plans.

**Model Analysis**

Big Mountain Resort modelled price was $94.22, a difference of $13.22 from the actual price. Meaning the resort is undercharging base on the current facilities. Assuming Big Mountain sells 350,000 tickets per year, this would amount to a revenue of $33 million as opposed to $28 million revenue based on the current ticket price. We see a revenue increase of about $5 million. Which should be able to cover the operating cost leaving a profit of about $3.5 million if all things being equal.

Among the features that came up as important in determing the modelled price are the vertical drop, snow making area, total chairs, fastquads, longest run, trams and skiable terrain area.

Below shows the different facilities where Big Mountain Resorts compares to the other resorts. We can see from the below plots that Big Mountain indeed provides good services in terms facilities to skiers and should be charging more than what they are currently charging. Big Mountain is doing well for vertical drop, but there are still quite a few resorts with a greater drop. Big Mountain is very high up the league table of snow making area. Big Mountain has amongst the highest number of total chairs, resorts with more appear to be outliers. Most resorts have no fast quads and Big Mountain can boast of 3, which puts it high up that league table. There are some values much higher, but they are rare.

Big Mountain compares well for the number of runs. There are some resorts with more, but not many. Big Mountain has one of the longest runs. Although it is just over half the length of the longest, the longer ones are rare. Big Mountain is amongst the resorts with the largest amount of skiable terrain.

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**Other Scenarios**

Among other things that were tested are as follows;

1. Big Mountain adding a run, increasing the vertical drop by 150 feet, and installing an additional chair lift: This scenario increases support for ticket price by $1.99 and over the season, this could be expected to amount to $3,474,638.
2. Close up to 10 of the least used runs. The number of runs is the only parameter varying.

The model says closing one run makes no difference. Closing 2 and 3 successively reduces support for ticket price and so revenue. If Big Mountain closes down 3 runs, it seems they may as well close down 4 or 5 as there's no further loss in ticket price. Increasing the closures down to 6 or more leads to a large drop.

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