Guided Capstone Project Report

Problem Statement :
Big Mountain Resort (BMR) recently acquired a new chair that amounts to a ~$1.5M increase in operational costs.

Context:
Big Mountain Resort, is a ski company.that has recently invested in an additional chair lift installation to help increase the distribution of visitors across the mountain. This additional chair increased their operating costs by $1,540,000 this season. The business wants some guidance on what should be the ticket price for this chair lift to increase revenue.

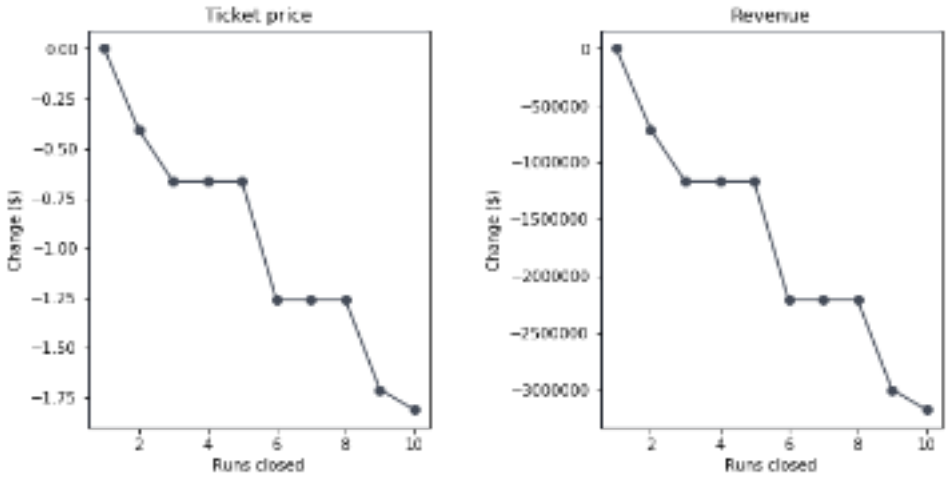
Scope of Solution :

- Analyse the ski Resorts data and calculate whats the avg number of lifts required with similar base elevation, summit and vertical drop.
- how many lifts other companies have installed and what's percent change in ticket price with increase in elevation and vertical drop. (finding correlation between price and elevation/ vertical drop / summit)
- Then set the ticket price of new lift and change the price of preinstalled ones.

We standardized our dataset to allow for any machine learning modeling to make predictions, by handling categorical values, in this case the state feature, missing value analysis and data exploration. We then standardized the numeric column values in the dataset and then created a training and testing dataset. our calculations predicted revenue for each scenarios given by the business

The business has shortlisted some options to resolve the issue::

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



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.

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**

This scenario tends to increase the ticket price by $1.99 generating an annual revenue of $3474638 for Big mountain resort. Therefore runs, vertical_drop,total_chair, Snow Making_ac are the facilities that plays most important part in ticket price.

3) **Same as number 2, but adding 2 acres of snow making cover**

such a small increase in the snow making area made no difference to revenue calculation.

4) **Increase the longest run by 0.2 mile to boast 3.5 miles length, requiring an additional snow making coverage of 4 acres.**

- This scenario calls for increasing the longest run by .2 miles and guaranteeing its snow coverage by adding 4 acres of snow making capability. No difference in revenue. Although the longest run feature was used in the linear model, it only made its way down in the feature importance list not making much difference to revenue.