***Big Mountain Resort, a ski resort located in Montana. Big Mountain Resort offers spectacular views of Glacier National Park and Flathead National Forest, with access to 105 trails. Every year about 350,000 people ski or snowboard at Big Mountain.It has 11 lifts, 2 T-bars, and 1 magic carpet for novice skiers.***

***Big Mountain recently installed an additional chair lift to help increase the distribution of visitors across the mountain ,with this the operating cost increased by 1.5million.***

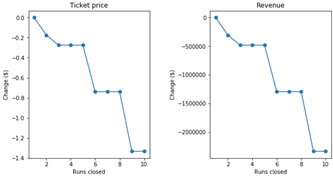
***In order to compensate for the increased cost of the chair lift ,Big Mountain resort decided to increase the average ticket price.So ,it has to determine by how much they would increase the ticket price or to decrease any features.***

***To evaluate and get the solution data was collected from 330 resorts in the US that can be considered part of the same market share and we have these same data columns for Big Mountain Resort as well. After cleaning and processing the data the business proposed 4 scenarios that they feel would validate the ticket price. The scenarios are***

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.***

***The business applied both Linear regression and Random forest regression models and chose Random forest regression.***

***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.***



***In the above figure the analysis shows that you can close up to 5 runs without significant change in ticket price with a relative drop of about $500,000 in revenue, any further drop of runs would result in much lower ticket prices and almost 3x loss of revenue.***

***The final model of increasing the longest run by 0.2 miles and guaranteeing snow coverage by the addition of 4 acres of snow making gave no difference for pricing tickets.Adding snow making to the increased vertical drop would increase the revenue by 3.5million dollars over the same option with no additional snow making.***

***Further ,Other information which would be useful is the weekday ticket prices - the models we were given only consisted of weekend ticket prices - in order to accurately analyze the effect of increasing the ticket prices, we need data regarding the prices during weekdays. Knowing the cost of adding additional snow-making capacity and the cost of extending trails would also be useful.***