**Background**

**Big Mountain a Montana based ski resort has installed a new chair lift which hiked operating costs over $1.5 million to increase the distribution of clientele across the mountain. This new installment resulted in the resort increasing its ticket prices over market premium. Big Mountain is concerned they aren’t utilizing all their facilities to its maximum capabilities and requires additional assistance and to help determine a better value for their ticket price. They want to make changes to either cut costs without undermining ticket price or support an even higher ticket price. The resort currently has access to 105 trails, services 11 lifts, 2 T-bars, and 1 magic carpet. The longest run stands at 3.3 miles in length and the base elevation is 4,465 ft while the summit is 6,817 ft with a vertical drop of 2,353 ft. Big Mountain realizes that their competitors in the area may have lower prices and they must be able to justify the cost of the ticket increase. The task for the data scientist is to answer “How can Big Mountain set a ticket price that will increase their customer base by 20% and leverage/capitalize existing facility resources 15% by April 1, 2021?**

**Data Analysis**

**The analysis began by uploading the excel file with all the data points into Jupyter notebook to be reviewed for accuracy and see relationships through distributions. However,upon further review 16% of the data didn't have ticket info, of which 14% were missing both weekday and weekend data. Therefore, resorts missing both weekend and weekday data were dropped from the clean sheet resulting in only 277 rows. There were rows that were dropped due to inaccuracies in the data. 1 hotel reported being opened for 2019 years which is impossible and there was not sufficient information to say whether the resort will open in 2019 or if the resort is in it's first season. Next, the data was explored and the average ticket price was found for Big Mountain competitors and a target modelled ticket price was set. Features were also extrapolated to further analyze Big Mountains ticket price in more detail. Then the data went through processing and training by first creating pipelines through the linear model and through the random forest model then performing verification and validation of the model. Next, metrics were analyzed and various scenarios were modeled so that the client can pick the best scenario course of action for their hotel.**