Big Mountain is a ski resort in Montana that offers spectacular views of Glacier National Park and Flathead National Forest serving about 350,000 skiers and snowboarders annually. We were tasked with finding an optimized pricing strategy to capitalize on its current facilities and direct future investments to maximize revenue.

Big Mountain’s current price for an adult weekend lift ticket is currently $81 which was arrived at by charging a premium above the average price of resorts in its market segment. Using data on all the resorts in Big Mountain’s market segment provided by Alesha we attempted to come up with a pricing model for ski resort tickets. It was decided to focus on modelling the adult weekend price as that data was the most complete in the file provided.

After several model tests we decided that the best was a random forest model, it had the lowest mean absolute error of all the models tested and exhibited the least variability. The most impactful features to the modelled price were vertical drop, Snow Making, fast Quads and number of runs.

The model suggests that big mountain could increase its weekend ticket price to $95.87, however there is a mean absolute error of $10.39 or 18% average error. Due to this high possible error, we would recommend increasing price by a smaller amount than the full $15 the model suggests. This approach was far better that using just the mean to estimate ticket price, when this was tested, we could expect our estimate of ticket price to be off by about $19.

We were also provided with a list of some options for cutting costs or increasing revenue, these are listed below with the modelled results.

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

Running this scenario through the model showed that closing more that one run would have a negative impact on modeled ticket price. 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. We would recommend closing runs with caution as a cost cutting measure.

1. 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

The model suggests this scenario supports an increase in ticket price of $1.99, assuming 350,000 visitors buying 5 days of tickets this could amount to $3,474,638

1. 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, adding 2 acres of snow making coverage.

The addition of 2 acres of snow making had no incremental impact compared to scenario 2.

1. 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 showed no positive impact to ticket price.