Based on the data available, it is recommended that Big Mountain Resort increase their ticket prices and consider further facility development. Our model predicts that facilities currently offered by Big Mountain Resort could support an increased ticket price. Several target features set Big Mountain Resort apart from competing resorts, such as the vertical drop. An investment in further improving features like the vertical drop could increase revenue for the resort.

Big Mountain Resort is a large ski resort located in Montana. With 350,000 visitors annually, Big Mountain boasts a variety of features that make it a desirable skiing and snowboarding destination. Currently, Big Mountain sets prices at a premium above average prices for similar resorts. However, the current pricing does not reflect the unique facilities that Big Mountain offers.

The initial data source—“ski\_data”— provided information on 330 resorts in the United States that are part of the same market share as Big Mountain Resort. The initial dataframe included details of specific features at competing resorts—vertical drop, number of chairs, and number of runs, for example. Importantly, this dataframe also listed adult weekday and weekend ticket price. Examination at this stage revealed that Big Mountain resort is charging $81.00 for both weekday and weekend tickets. Prices for the other resorts listed in ski\_data varied from much lower to much higher.

To supplement the information provided in the initial data source, state-specific information such as population data was pulled from Wikipedia. This information paired with further state summary statistics allowed for a deep dive into the features available in each state and each resort. While the initial proposition from our team was to focus on a regional submarket of the available data, reevaluation of the data at this step encouraged us to alter our approach. Rather than narrow our data to a specific region or location, it would be more useful to focus on competing resorts that shared similar features regardless of their location.

The first step in developing a model was to examine performance by using the mean of prices. This generated a good baseline to consider, though more detailed models provided more insightful results. A linear model targeted eight features as drivers of price value: vertical\_drop, Snow Making\_ac, total\_chairs, fastQuads, Runs, LongestRun\_mi, trams, and SkiableTerrain\_ac.

A random forest regressor model highlighted four of the same target features: fastQuads, Runs, Snow Making\_ac, and vertical\_drop. Due to more consistent cross-validation results and a lower mean absolute error, the random forest model was selected for use.

Our model predicted that Big Mountain Resort prices should be set to $95.87. A number of facilities currently maintained by Big Mountain could support an increased ticket price, though additional improvements could also bolster profits. Specifically, Big Mountain could choose to increase the vertical drop by 150 ft. While this would require adding an additional chair lift at an estimated $1.5 million expense for the season, increasing the vertical drop would enable ticket prices to be increased by $8.61. If ticket prices were raised to $89.61 and each visitor purchased five day tickets, the expected amount received would be $15,065,471. Cost-cutting measures such as closing the ten least used runs were considered during this process. Ultimately, this scenario was not recommended without first gathering additional information. Closing more than one run reduces the support for ticket price and revenue. Unless closing these runs results in an increase in sufficient savings to offset this loss, closing runs is not suggested.