**Big Mountain Resort Recommendation Summary**

Using the random forest regression model to predict price based on the facilities data available (total chairs, runs, etc) on competing resorts, it predicted that Big Mountain Resort’s current ticket price should be at $96 (with a mean absolute error of $10). The features that had the highest correlation to ticket price were vertical drop, snow making acres, total chairs, fastQuads, Runs, longest run miles, trams, and skiable terrain acres.

After running the model with the changes proposed on the shortlisted options, the model predicted the following for each:

1. **Closing up to 10 runs** – Results showed that closing 3-5 would minimally impact ticket price by **-**$0.51. Closing any more than 5 doubles the expected impact on price.
2. **Increase by 1 run, increase vertical drop by 150 feet, and add 1 additional lift** – Results in an increased price of $1.51 (on top of the predicted price of $96).
3. **Same scenario as 2 with the addition of increasing Snow Making by 2 acres** - Results did not yield a higher predicted price increase than in #2.
4. **Increase the longest run by 0.2 mile, additional snow making coverage of 4 acres** – Results showed no impact on price.

While this model proved to be quite effective at predicting price based on the data sets available, it is worth mentioning that there may be other data points that could further enhance this model’s accuracy in prediction prices. Also, as this model is strictly based on the data included within it, it assumes that competitor prices are priced based strictly on facility stats, however in reality there are subjective factors/decisions that also may determine ticket price. For example, a resort may decide to charge a higher price strictly based on lack of local competition and therefore facility features may not have as much consideration. However as is, this model nearly halved the deviation in predicted price and actual price from simply using the mean/median of the sample group to predict price.

**Recommendation:**

It is our recommendation that Big Mountain Resort consider implementing the suggested changes of adding 1 run, increasing the vertical drop by 150, and adding 1 additional lift. Doing so the resort can then justify a price increase from $81 to between $87-$107. The price increase would bring Big Mountain Resort between $10.5 - $45.5 M in additional revenue (assuming customer volume maintains and skis for 5 days).

Below are key figures used in the analysis for reference:

***Figure 1 – Box Plot of AdultWeekday and Weekend Prices by State***

**Chart, bar chart

Description automatically generated**

**Chart, bar chart

Description automatically generated*Figure 2 Figure 3***

**Chart, histogram

Description automatically generated**

Figure 1 and Figure 2 show that Big Mountain Resort currently is priced high in the local market, however when comparing prices on the national level the prices show to be at a slight premium (figure 3).

***Figure 4 – Facility features most important to price - ordered from most to least***

**Chart, histogram

Description automatically generated**

**Chart, histogram

Description automatically generated**

**Chart, histogram

Description automatically generatedChart

Description automatically generated with medium confidence**

**Chart, histogram

Description automatically generated**

**Chart, histogram

Description automatically generated**

Figure 4 shows the features in descending order from left to right on the impact on ticket price based on the random forest regressor model, along with the national distribution for the top 4 features.