Assignment: Summarize your recommendations for Big Mountain Resort

The purpose of this data science project is to come up with a pricing model for ski resort tickets in our market segment. Big Mountain suspects it may not be maximizing its returns, relative to its position in the market. It also does not have a strong sense of what facilities matter most to visitors, particularly which ones they're most likely to pay more for. This project aims to build a predictive model for ticket price based on a number of facilities, or properties, boasted by resorts (*at the resorts).* This model will be used to provide guidance for Big Mountain's pricing and future facility investment plans.

Key Recommendations:

1**.Investigate SkiableTerrain_ac outliers.** The modeled prices would vary significantly without these outliers, strengthening this model's value if proven accurate.

2. Consider immediately raising the price by 13.3% to the model's suggested value, $91.78.

3. Consider trading a few slow chairs for a fast four-person chair (fastQaud) . The model predicts a marginal price lift of $23 .

4. Consider extending vertical drop by 369 feet . The model predicts marginal price lift of $6.9 .

5. Consider decreasing skiable terrain, snow machine coverage, and night skiing area to save costs. The model predicts almost no change for a 25%+ decrease in these metrics.

6. Consider advertising Big Mountain Resort's leading metrics compared to nearby competitors e.g. skiable terrain area, night skiing area, longest run, total runs, terrain parks. BMR already has the highest price in Montana. Highlighting these metrics will help justify its local price leadership.

7. Consider building a demand curve . It might be dangerous to assume that any price shift scenario would have no effect on annual ticket purchase volume. A demand curve lets analyst's factor in estimated shifts in demand for any given price shift. Split testing price variations is a good way to start.

8. Consider iterating toward a profit model. Adding data about transactions, feature-level use volumes, daily metrics, weather, and sentiment analysis from reviews & social media could greatly increase the model's ability to predict prices for maximum profits, not just norms.

9. Consider modeling weekday prices separately. As fewer weekday prices were available, all weekday pricing data was dropped before training this model. I can imagine some good reasons one might want to set weekday prices differently than weekend prices. And if the models' predictions differ in any significant ways, this could yield valuable insights.

This analysis is based on the ski data provided and the assigned random forest model.

It seems the model has used the very high correlation in the first deciles of skiable terrain area to support a price floor near $90. This could make sense. However, some suspicious patterns are visible. This model suggests that Big Mountain Resort could reduce its skiable terrain by 80% and still raise its price. A possibility is that only some resorts offer cross-country skiing. This could dramatically increase the skiable terrain area. Also, resorts in Montana and adjacent states are all showing significantly higher values in this metric than average, at somewhat low cost. This could be a local norm or a sign that data could have been recorded differently in different locations. For these reasons, auditing more of this feature's outliers before leaning on this model too heavily may be wise. I would look for ways to verify and segment the skiable terrain area, then retrain the model if possible.

The biggest opportunity suggested by these model plots is to add a fast quad chair. This would justify a price of $114, a marginal price increase of $22. No other feature adjustments are predicted by the model to increase ticket value above $110. Not even by matching the highest competitor value in any other feature could we surpass the model's predicted lift from a single additional fast quad chair. Assuming: no change in demand & annual cost of $1.54 million for an additional chair, the model predicts increased gross revenue of $8.3 million per year for this change. This could be compared to estimates for installation and financing to project return on investment for the new lift. It is also worth considering that less than 10 total resorts have 4 or more fast quads. As such, it would be worth looking at each of those 10 individually, and verifying if there may be some other correlating factors between leading to a high ticket price.