

1. Project Summary Big Mountain Resort currently charges \$78 for an adult weekend ticket. After building a predictive model using a random forest regressor and training it on features from other ski resorts, I found that Big Mountain's current pricing is consistent with what the market supports for its existing features.

2. Scenario Testing & Results To explore potential improvements, I tested multiple upgrade scenarios:

- **Scenario 2 (Recommended):** I modeled a scenario where Big Mountain adds one run, increases the vertical drop by 150 feet, and installs one additional chair lift. This increased the model's predicted price by approximately \$2.00 per ticket. With the expected number of visitors and assuming each person buys five tickets, this scenario could generate around **\$3.47 million** in additional seasonal revenue.
- **Snowmaking Upgrades:** I tested adding 2 to 4 acres of snowmaking (SkiableTerrain_ac). This change showed little to no effect on predicted ticket price, which suggests customers may not value minor snowmaking improvements as much.
- **Longest Run Extension:** Increasing the longest run by 0.2 miles also didn't move the needle in terms of price. It appears that this feature has low importance in the model's pricing decisions.

These results show that not all improvements contribute equally to pricing power. While some upgrades may have visual or experiential value, they may not influence how much customers are willing to pay.

3. My Recommendation I recommend that Big Mountain consider implementing the upgrades outlined in Scenario 2. This path is clearly supported by the model and could justify a \$2 increase in the ticket price. However, it's important to understand the actual cost of operating a new chair lift. If the added revenue outweighs this cost, then it would likely be a worthwhile investment.

I would also caution against run closures. The model clearly shows that reducing the number of available runs can lead to lower supported ticket prices. Maintaining or slightly expanding terrain could protect or boost the resort's perceived value.

4. Limitations & Data Gaps One limitation I faced was the lack of cost data. While I had pricing and facility features, I didn't have access to:

- Operational cost breakdowns (e.g., lift maintenance, snowmaking, staffing)
- Visitor satisfaction metrics or customer preferences
- Branding or location-based effects on pricing

Also, while the model predicts what the market might support, it doesn't directly reflect real-world demand or willingness to pay. That would require additional customer and competitor analysis.

5. Final Summary In this project, I used a data-driven approach to understand how feature changes could affect ticket pricing at Big Mountain Resort. The results showed that the resort's current price is in line with expectations, but targeted improvements (like in Scenario 2) could support a modest but meaningful price increase.

The findings also highlight that not all upgrades have equal value in the eyes of customers. I suggest focusing on the changes that provide the most pricing power while being mindful of operational costs. Going forward, collecting more detailed cost data and customer feedback will help improve model accuracy and support more confident business decisions.

Overall, this analysis provides a solid foundation for making strategic improvements that are both customer-aligned and financially beneficial.