Problem Identification

Slide 1: Business Challenge

* Big Mountain Resort is exploring ways to increase revenue without compromising the guest experience.
* Currently the resort charges $81, less than what similar resorts charge.
* The resort is considering operational changes and needs insights on how these changes might influence market-supported ticket pricing.
* A data-driven pricing model is needed to:
* Estimate fair-market ticket prices
* Simulate the revenue impact of facility upgrades or reductions
* Support strategic and confident decision-making
* Management is considering to reduce the operational cost with changes like:
* Closing some ski runs
* Adding new lifts or expanding terrain
* Adjusting ticket prices

Recommendation and key findings

* Big Mountain Resort is currently underpricing its lift tickets relative to similar resorts with comparable facilities.
* Our model supports a higher ticket price based on Big Mountain’s offerings, particularly vertical drop and lift infrastructure.
* The model suggests a potential price increase of ~$2 could be supported, leading to ~$3.47M additional seasonal revenue.
* Closing up to 10 of the least-used runs has minimal price impact but could lead to $1.7M–$3.1M in revenue loss.
* Enhancing vertical drop with a new chairlift significantly improves pricing support, especially when paired with snowmaking expansion.
* Recommend moving forward with pricing adjustments and evaluating vertical drop expansion, while testing limited run closures cautiously.

Modeling results and analysis

Slide 1: Model Building & Evaluation

* Built predictive models to understand how resort features support ticket pricing.
* Features used included: vertical drop, runs, snowmaking acreage, lift types, etc.
* **Random Forest was selected** for its superior performance and ability to capture non-linear relationships between resort features and ticket price.
* Evaluation metrics:
  + **R² score**: Measures how well the model explains price variability.
  + **RMSE**: Captures average pricing prediction error.

Slide 2: Big Mountain’s Price Support Potential

* Big Mountain currently charges **$81** for a ticket.
* Model predicts the facilities support a ticket price closer to **$95.87**.
* In the predicted model, there is a Mean Absolute Error of $10.39. So, the ticket pricing falls in the range of $85.48 to $106.26.
* Even after considering the Mean Absolute Error, it is clear that the resort is underpricing the lift ticket.

Slide 3: Scenario Testing – Run Closures

* Tested the impact on revenue after closing 1 to 10 least-used runs.
* Ticket price change was minimal up to 5 closures, but drops sharply after 6+ closures.
* Estimated **revenue loss ranges from ~$1.7M to ~$3.1M** depending on closures.
* It is recommended best to limit closures to 3-5 runs for cost-cutting without major revenue impact.

Slide 4: Scenario Testing – Facility Enhancements

* Scenario 1: Add 150 ft vertical drop and a new chairlift which gives **+$1.99** ticket price support.
* Scenario 2: Along with the enhancements mentioned above, add 2 acres snowmaking which gives the **same +$1.99** support.
* Scenario 3: Extend longest run by 0.2 mi and add 4 acres snowmaking gives **no change** in price.
* Enhancing vertical drop showed the highest return on investment.

Summary and Conclusion

* **Big Mountain is underpricing its offerings** based on facility benchmarking across comparable resorts.
* **The model** indicates that ticket prices could be **raised by $1.99** with facility enhancements.
* **Closing underused runs** could reduce ticket value perception, leading to **~$1.7M–$3.1M in revenue loss.**
* **Expanding vertical drop** could support a higher price and bring **~$3.5M additional revenue**.
* **No benefit observed** from lengthening the longest run — no impact on pricing in the model.