Big Mountain Resort Revenue Increase Recommendation

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Problem Statement

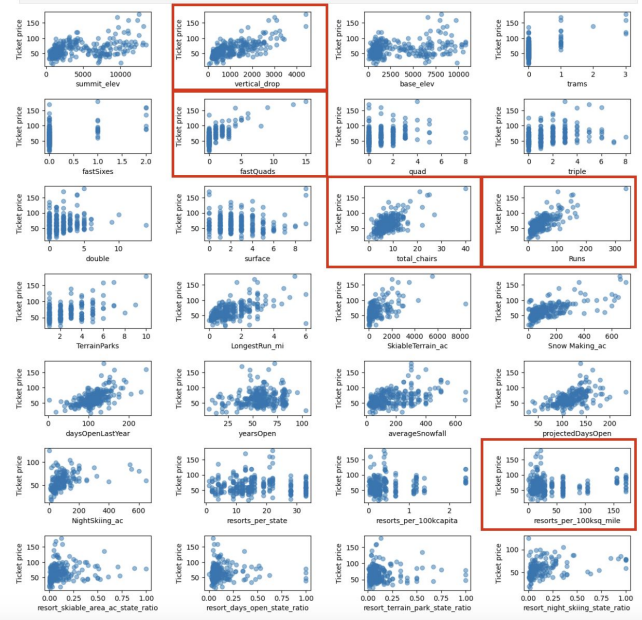
- The Big Mountain Ski Resort in Montana hosts 350,000 visitors annually with 11 lifts, 2 T-bars, and 1 magic carpet.
- A new chair lift has been added, increasing operational costs by $1,540,000.
- **Current pricing strategy:** Above market value, unsustainable long-term.
- **Objective:** Increase revenue by at least 10% without cutting costs or reducing current ticket prices.

Recommendation and Key Findings

- **Recommendation:**
  - Increase ticket prices leveraging the resort's unique features.
  - Implement a pilot closure of up to 4 lesser-used runs.
- **Key Findings:**
  - New Random Forest model suggests optimal ticket price: $95.87 (current price: $81.00).
  - Features influencing ticket price: fast Quads, Runs, Snow Making capabilities, vertical drop.
  - **Market positioning:** Highlight resort's competitive advantages.

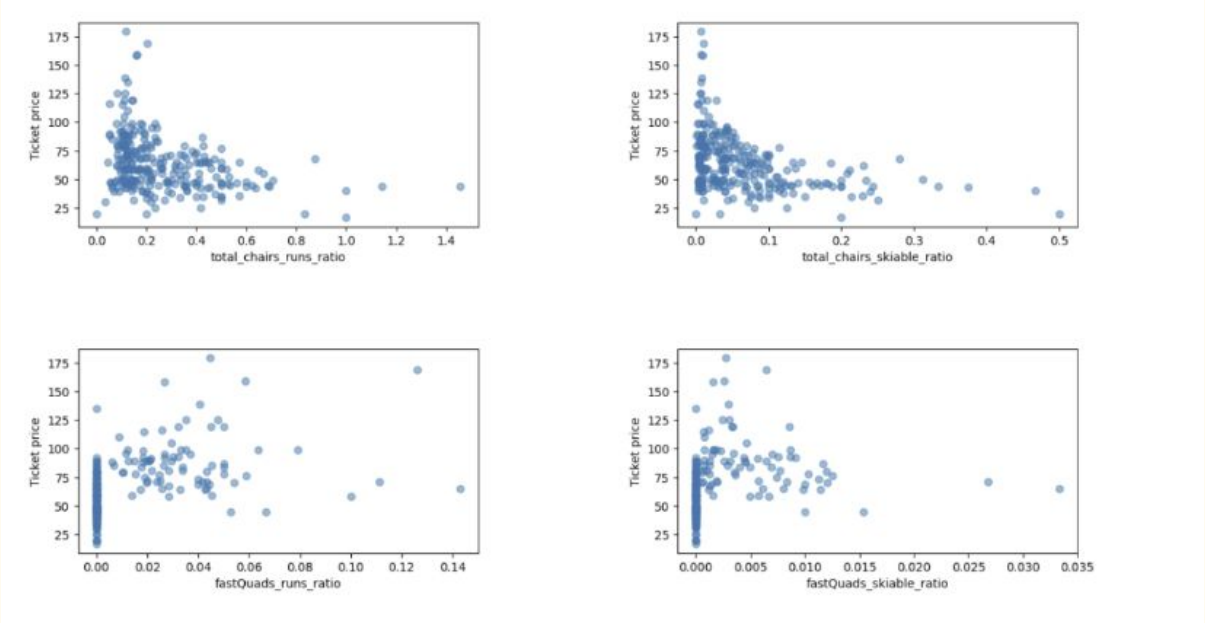
Data Analysis Insights

- Correlation analysis shows vertical_drop, Runs, fast Quads, total_chairs highly influence ticket prices.



Data Analysis Insights

- Engineered features indicate ticket prices drop with more chairs per run.

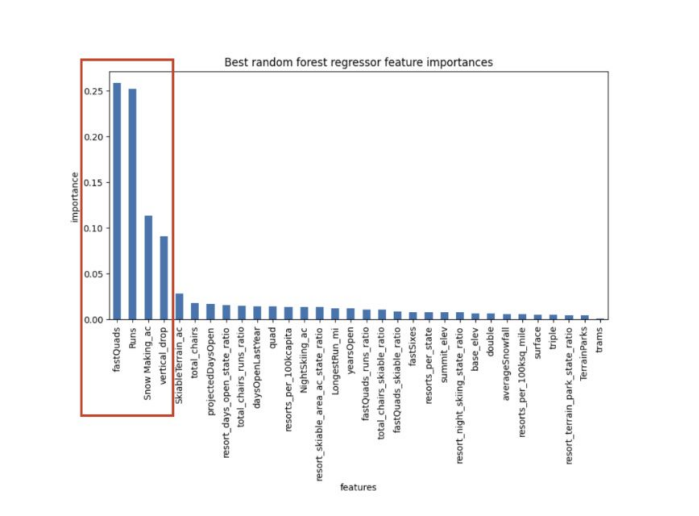


Model Development

- Baseline model using mean prediction: MAE of 19.14.
- Linear regression model: MAE of 10.5.
- Random Forest model: MAE of 9.5 (selected model).

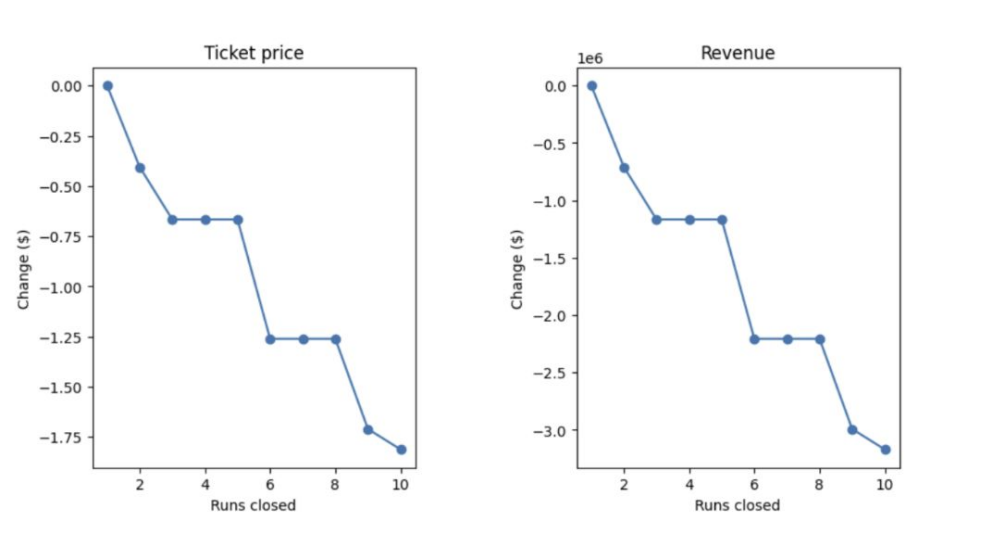
Important features utilized by Random Forest Model

- The Random forest model that we chose gave us predictions mostly based on fast Quads, Runs, Snow Making capabilities and Vertical Drops



Pricing Scenarios Analysis

- Closing up to 4-5 runs: Minimal impact on ticket price.
- Increasing vertical drop by adding a run: Price increase of $1.99.
- Increasing longest run: No change in ticket price.



Random Forest Model Results

- Modeled optimal ticket price: $95.87.
- Comparison to actual price: Significant room for price increase.
- Mean absolute error: $10.39 indicates accuracy of model predictions.

Summary and Conclusion

- Summary
  - Increase ticket prices based on resort's unique features.
  - Implement a pilot closure of lesser-used runs.
  - Focus on marketing the resort's advantages to justify higher prices.
- Conclusion
  - Modeled price provides a target for revenue enhancement.
  - Future work: Refine model with additional features (employee salaries, food/beverage costs, seasonal variations).
  - Monitor visitor response to price changes bi-annually/yearly.