Big Mountain Resort Price Analysis

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Problem identification

▶ Objective: Develop a data-driven pricing model that accurately reflects the significance of Big Mountain Resort's facilities while remaining competitive in the market.

▶ Challenge: Determine a price that is both competitive for customers and accurately reflects the value provided by the resort.

▶ Recent cost increase: Installation of a new chair lift has raised operating costs by $1.54 million for the season.

Recommendation and Key Findings

▶ Increase ticket price by at least $16.96 to better reflect the exceptional facilities and offerings of Big Mountain Resort.

▶ Optimize costs by selectively closing some runs based on demand without significantly impacting revenue.

Modeling Results and Analysis– Exploratory Data Analysis

- Patterns and insights from exploring the data:

  - Principal Component Analysis (PCA) identifies key components influencing ticket prices.

  - Features like fastQuads, runs, snowmaking coverage, and resort night skiing show a strong positive correlation with ticket prices.

- Heatmap visualization confirms the relationships between features and ticket prices.
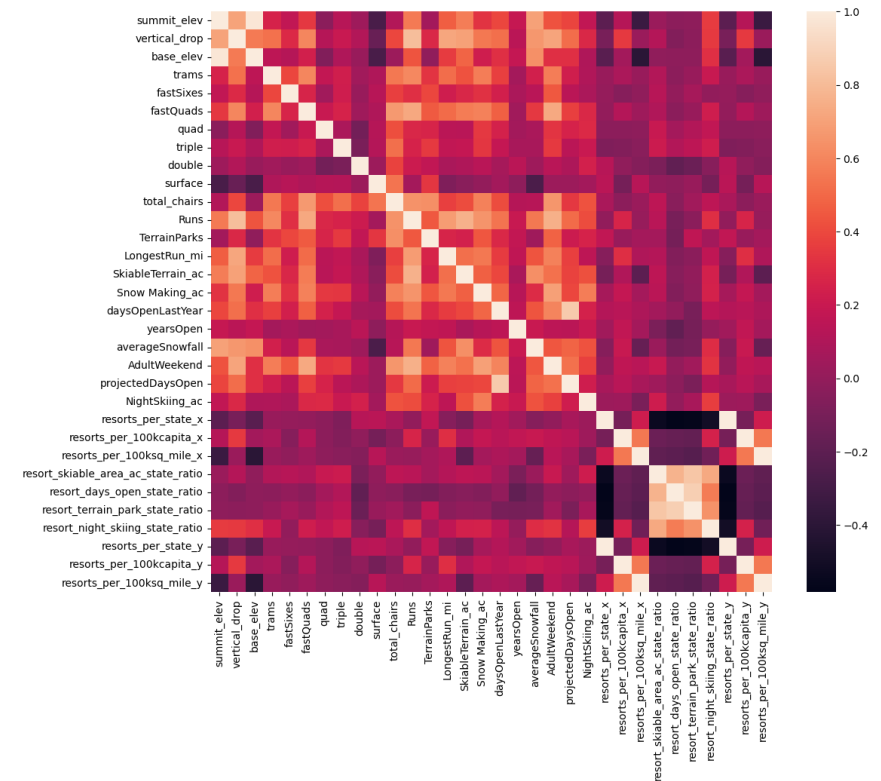
Modeling Results and Analysis – Pre-Processing and Training Data

Best random forest regressor feature importances
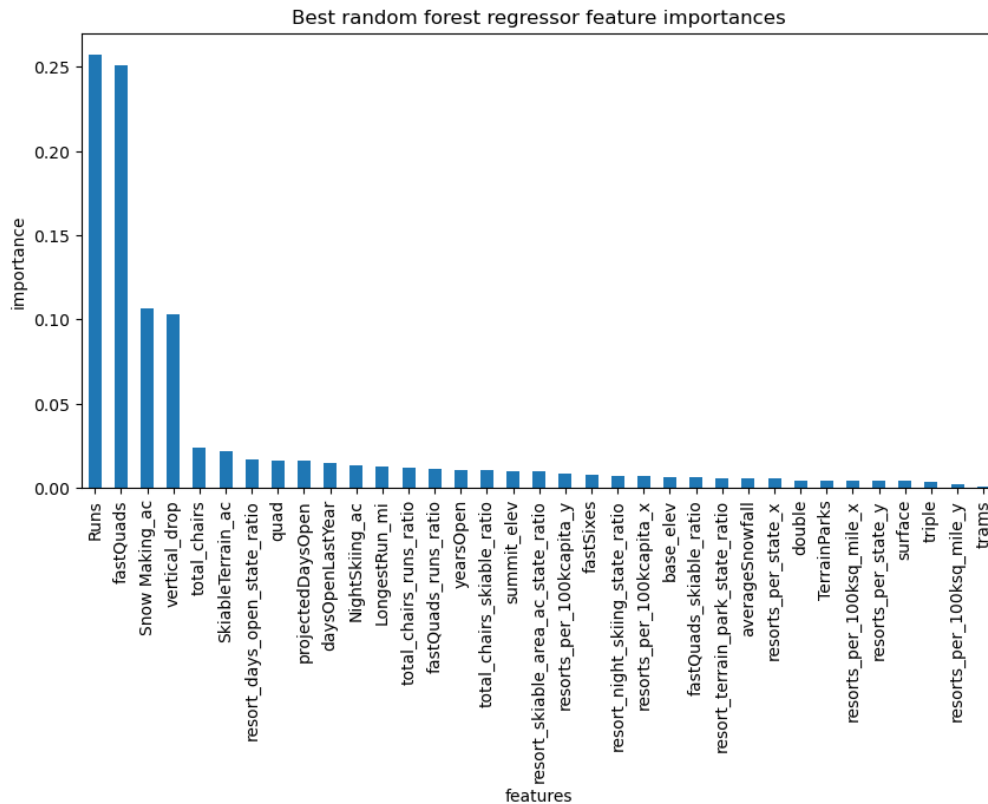
- Regression models employed for determining a new pricing strategy: Baseline pricing derived using the mean.

- Median used to reduce mean absolute error (MAE).

- Random Forest Model incorporated with vertical drop as an additional component, resulting in improved accuracy and reduced MAE.

Modeling Results and Analysis – Final Model

- Eight key components considered in the final model:

    - Vertical drop, total chairs, fast quads, longest run, number of trams, number of runs, area covered by snowmakers, and skiable area.

- Comparison of Big Mountain Resort's performance in these categories to other resorts indicates excellence in most areas, warranting a higher price.

- Model predicts a price of $97.96, significantly higher than the current price of $81.00.

Summary and Conclusion

- Analysis highlights:

  - Big Mountain Resort consistently outperforms or surpasses the average in each category, demonstrating its exceptional status among resorts.

  - Pricing strategy recommendation: Increase ticket price by at least $16.96 to better reflect exceptional facilities and offerings.

- Additional recommendation: Optimize costs by selectively closing some runs based on demand without significant revenue impact.

- Model's usefulness: Valuable tool for informed pricing decisions, with potential for further improvement by incorporating additional data.

- Continuous monitoring and refinement of the model essential for long-term success.