Capstone Project Report: Big Mountain Resort

Introduction

Big Mountain Resort wants to adjust ticket prices to increase revenue while keeping guests happy. Current tickets are $81, below the market value. The goal was to find the key factors influencing price and recommend an updated ticket rate.

Problem Statement

Design a pricing strategy that reflects the resort's value, especially with upcoming upgrades like a new chair lift, aiming to maximize revenue without reducing demand.

Data Preparation

- Cleaned data: filled missing values, removed duplicates
- Standardized formats and combined resort features, pricing, and cost data
- Created a reliable dataset for analysis

Exploratory Analysis

- Tickets are undervalued at $81
- Key price drivers: vertical drop, number of runs, snowmaking
- Peak-season pricing could further boost revenue

Modeling

- Tested Linear Regression and Random Forest models
- Random Forest performed best, capturing complex relationships

Findings & Recommendations

- Optimal ticket price: **$94** without hurting demand
- New chair lift adds ~$2 per ticket, still profitable
- Planned upgrades support higher pricing
- **Recommendation:** Raise tickets from $81 → $94

Conclusion

Big Mountain Resort can increase prices safely, better reflecting its value and supporting future growth.

Next Steps

- Analyze costs for profitability
- Consider customer segmentation for dynamic pricing
- Build a dashboard for scenario testing
- Update models regularly to track market trends

FIGURES -

```
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 1   Region             277 non-null    object
 2   state              277 non-null    object
 3   summit_elev        277 non-null    int64
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 5   base_elev          277 non-null    int64
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 10  triple             277 non-null    int64
 11  double             277 non-null    int64
 12  surface            277 non-null    int64
 13  total_chairs       277 non-null    int64
 14  Runs               274 non-null    float64
 15  TerrainParks       233 non-null    float64
 16  LongestRun_mi      272 non-null    float64
 17  SkiableTerrain_ac  275 non-null    float64
 18  Snow Making_ac     240 non-null    float64
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 22  AdultWeekend       277 non-null    float64
 23  projectedDaysOpen  236 non-null    float64
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Fig1 - Data Cleaning Overview

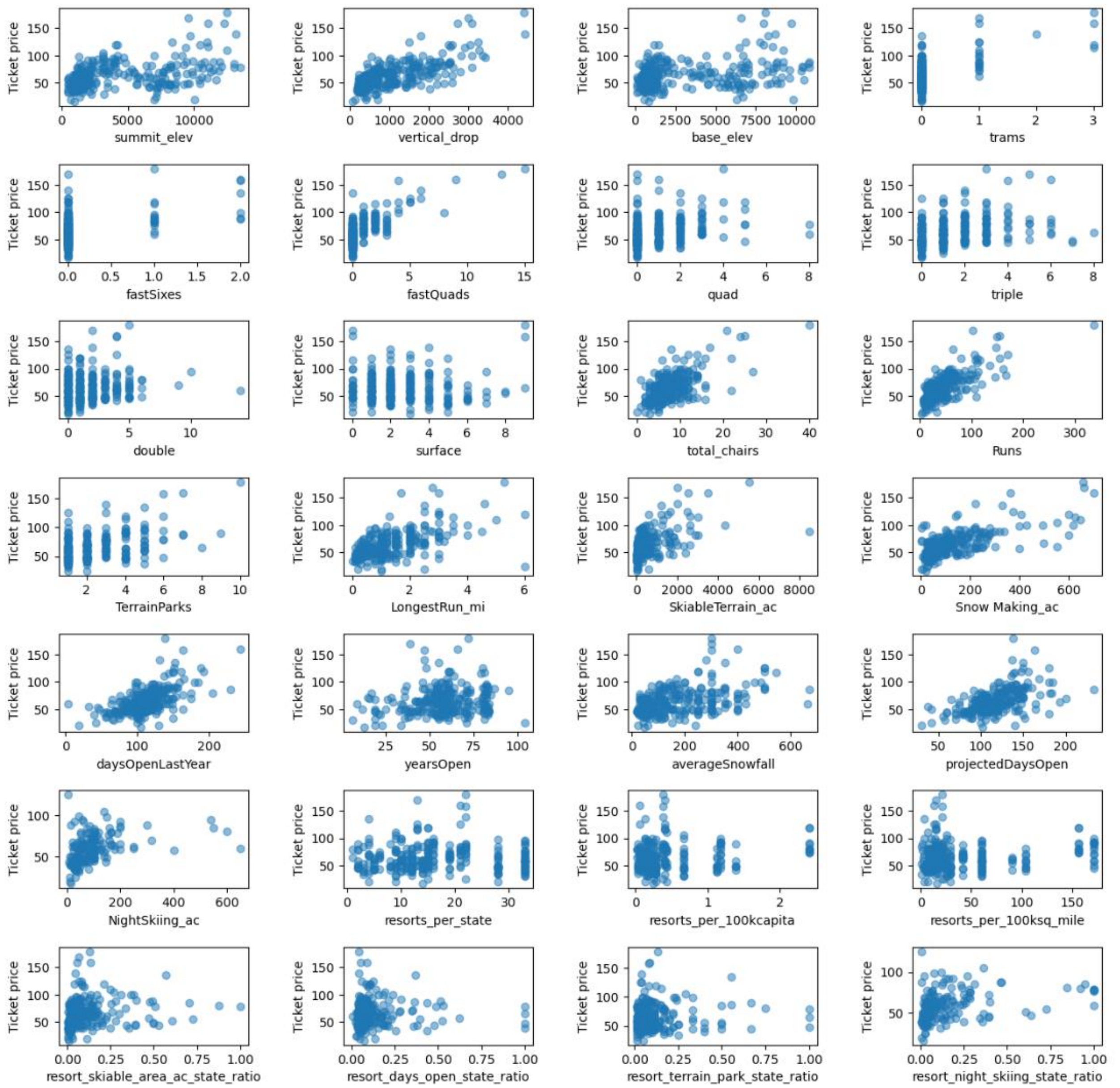

Fig2- Price vs Facility Features

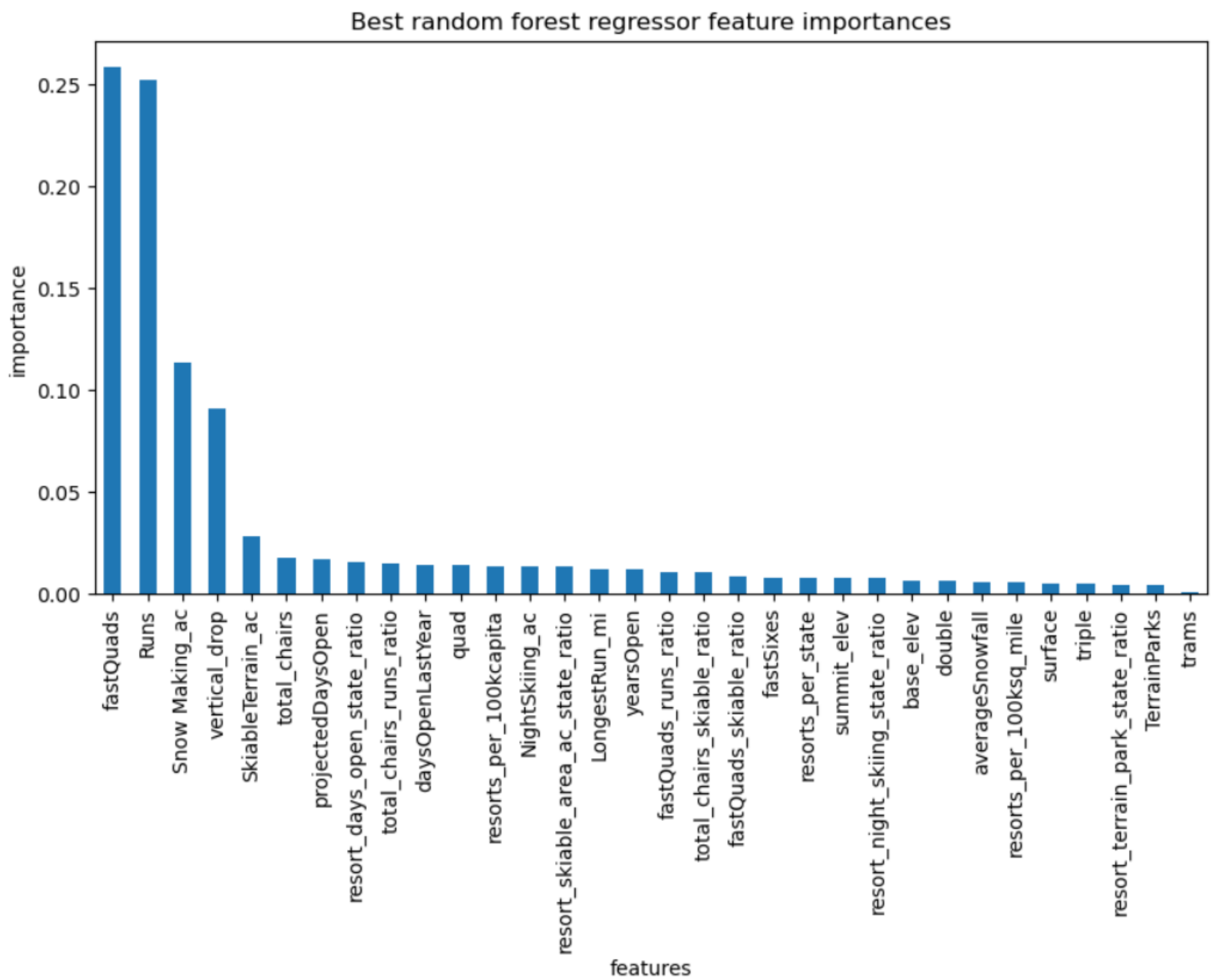

Fig3 – Feature Engineering Process.

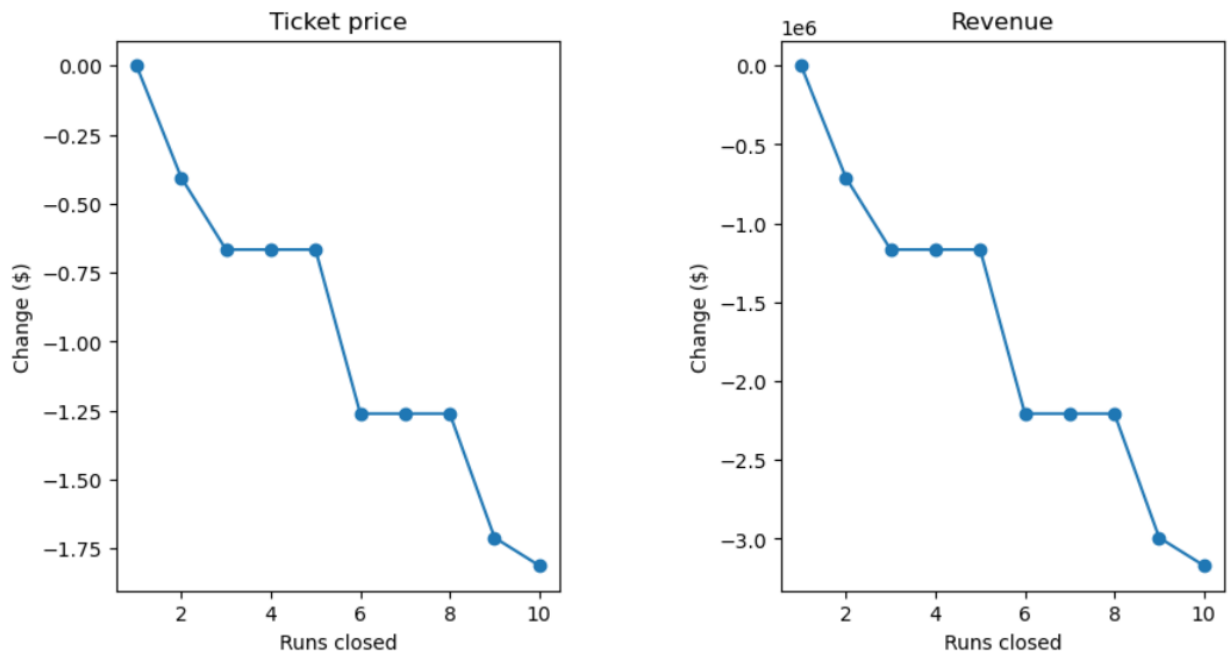

Fig4 – Model Performance Comparison