Optimizing Ski Resort Ticket Prices Using Predictive Modeling

Big Mountain Case Study

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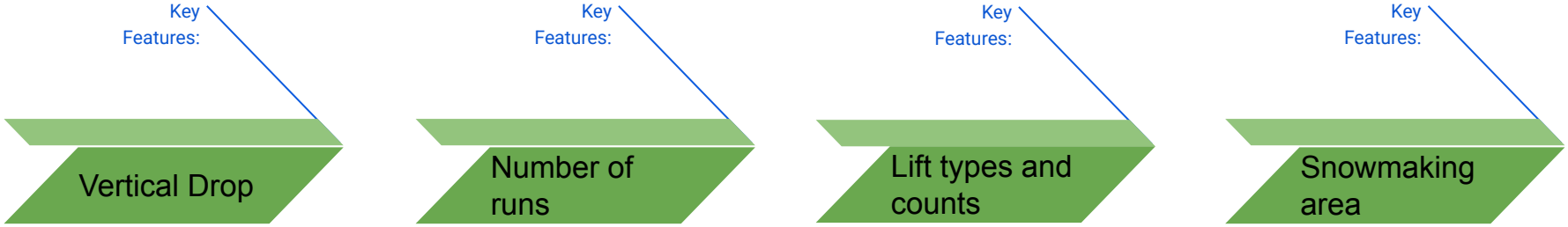
Business Problem:Is Big Mountain Underpricing Its Tickets?

Current ticket pricing may not reflect the value of the resort's features.

Data-driven approach to optimize pricing decisions.

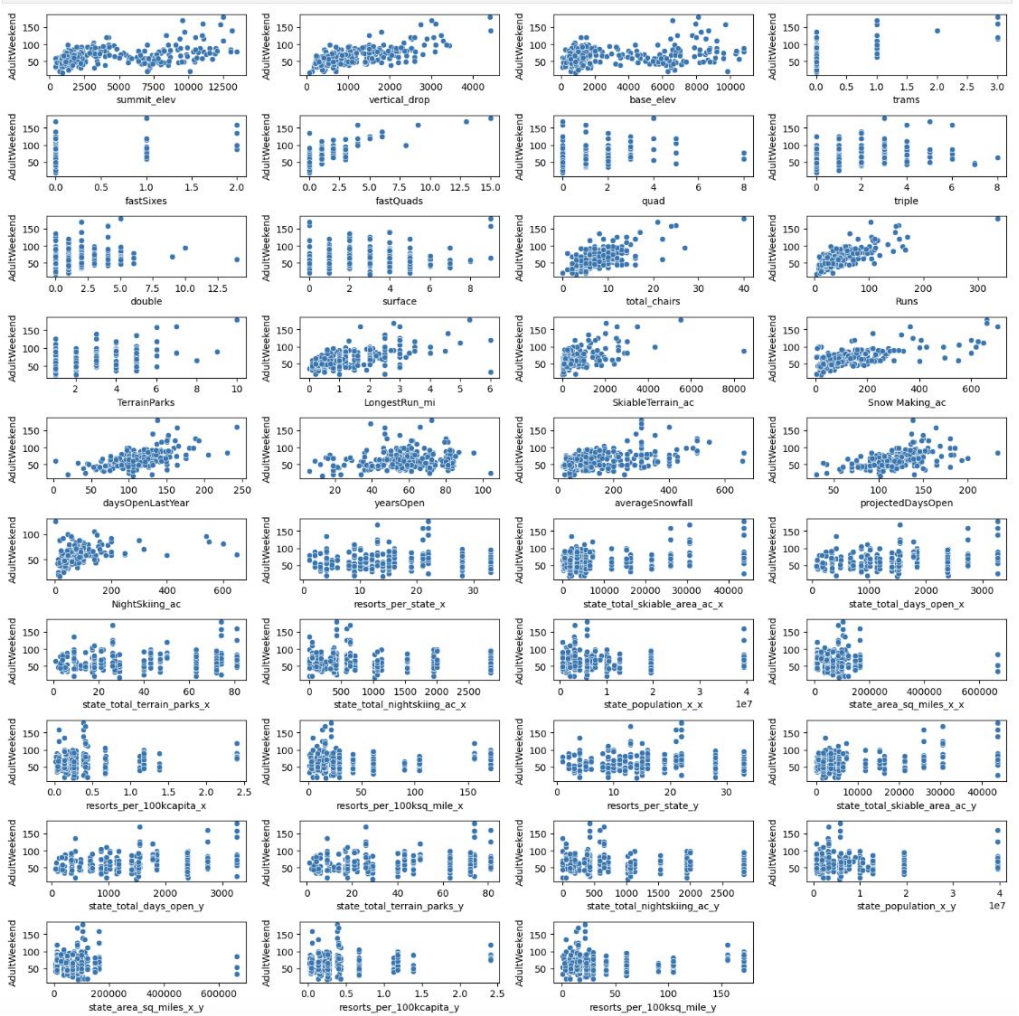
Predict fair ticket prices using resort features and test various upgrade scenarios.

What did we use ? Dataset: U.S ski resort features + ticket prices



Target Variable :

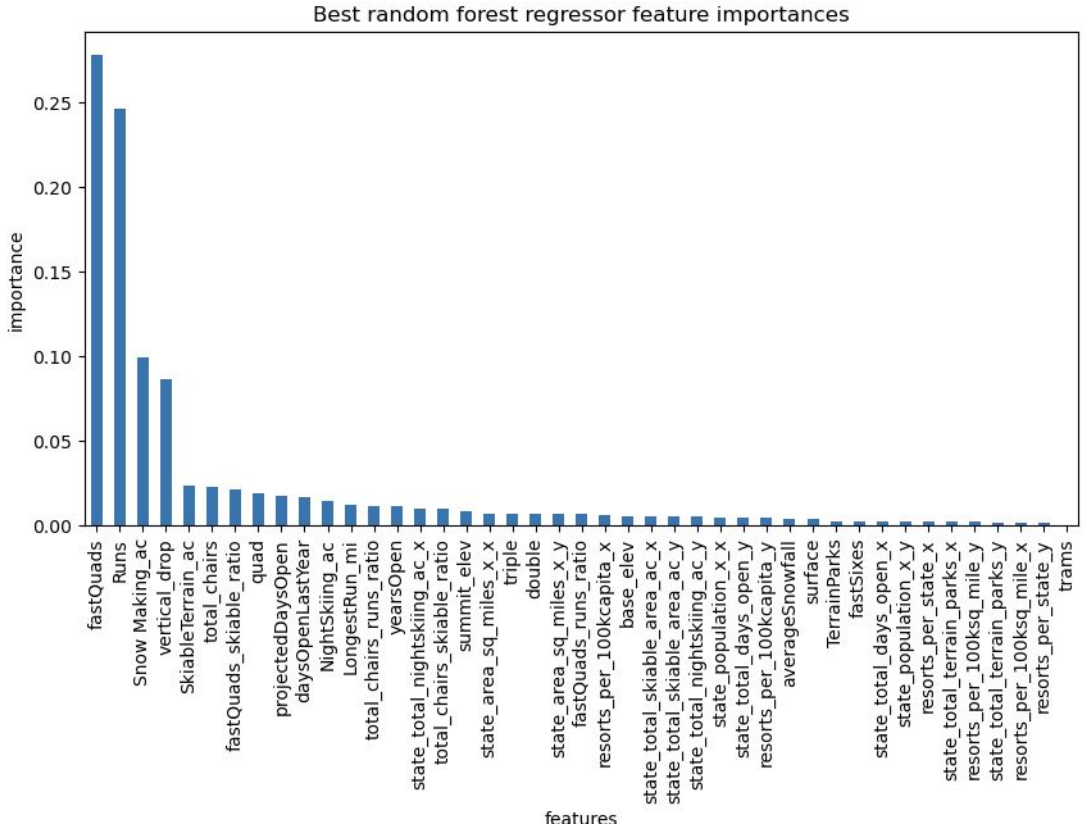
Adult Weekend Ticket Price



Strong Positive Relationships

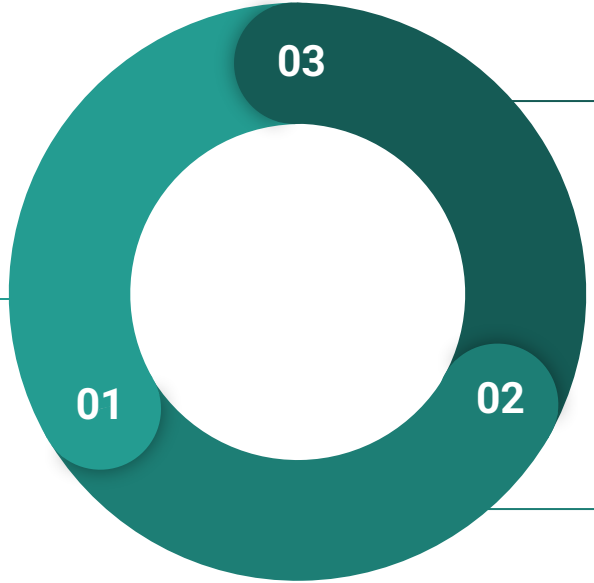
- **Vertical Drop**: Higher vertical drop is clearly associated with higher ticket prices.
- **Total Chairs** and **Runs**: Resorts with more lifts and runs charge more.
- **SkiableTerrain_ac**: Larger skiable area generally leads to higher prices.
- **Snow Making_ac**: More snowmaking capacity correlates with increased pricing.

Big Mountain Is Likely Undervalued



Recommendation: Increase ticket price to better reflect facility value and use the model to guide strategic upgrades.

How We Built the Model



Tools
Python (pandas, sklearn), matplotlib

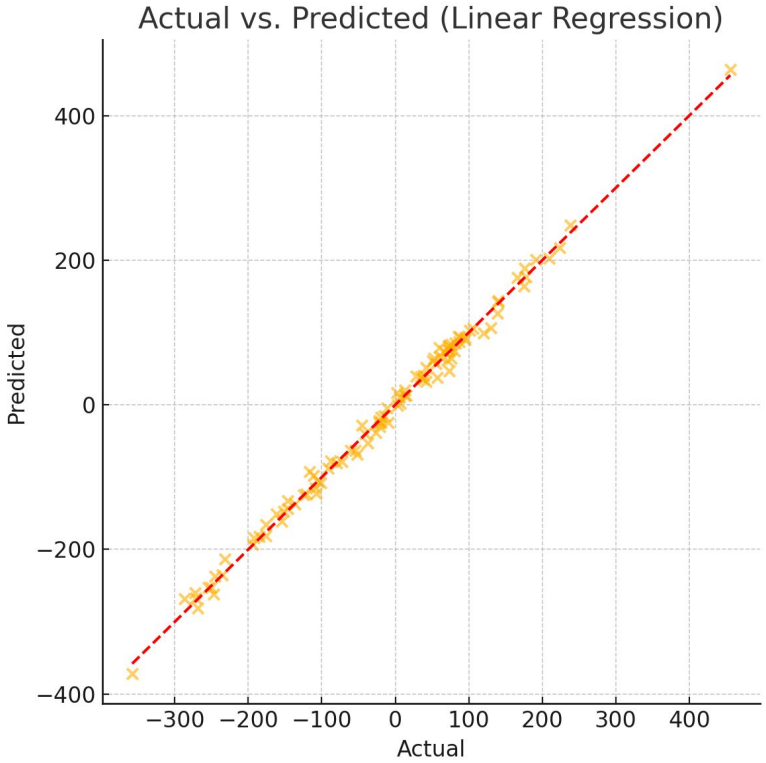
Models Used

Baseline (mean)
Linear Regression
Random Forest
Regression

Evaluation Metrics

R^2
MAE
MSE

Actual vs.Predicted Prices



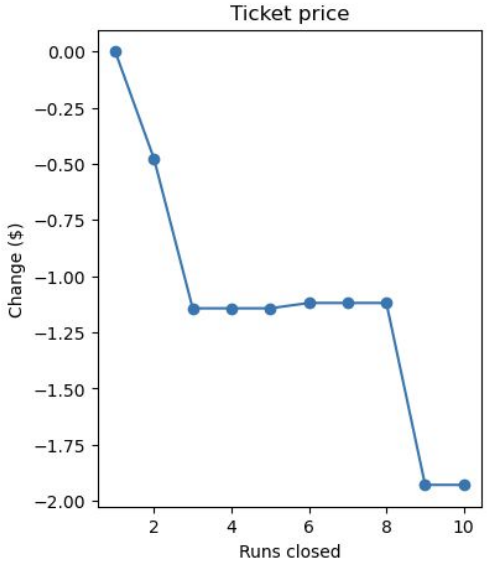
- Random Forest outperforms Linear Regression
- Strong alignment between predicted and actual prices
- Minimal overfitting observed

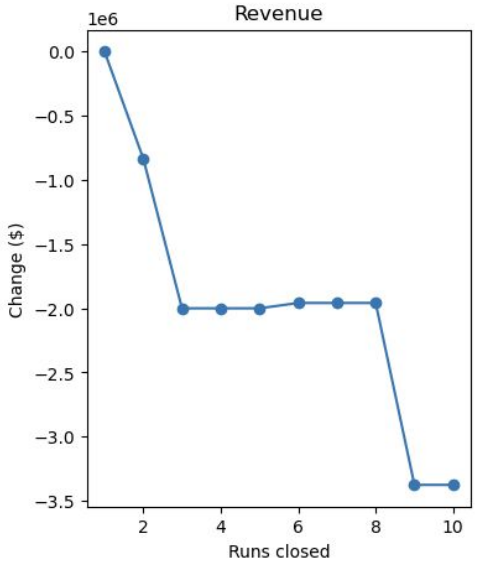
How Good Was the Fit?

- Residuals show mostly random distribution (no major bias)
- Learning curve indicates solid generalization with current data
- Cross-validation confirms model stability

What if we upgrade the resort ?

Scenario 1: Add chairlift and run → Moderate price lift





The model says closing one run makes no difference.

Closing 2 and 3 successively reduces support for ticket price and so revenue.

If Big Mountain closes down 3 runs, it seems they may as well close down 4 or 5 as there's no further loss in ticket price.

Increasing the closures down to 6 or more leads to a large drop.

What if we upgrade the resort ?

Scenario 2: Add vertical drop → High impact

Scenario 3: Add 2 acres of snowmaking → Negligible effect

Wrap-Up

- Big Mountain may be underpriced compared to similar resorts.
- Data shows clear ROI on high-impact upgrades (lifts, terrain).Could justify a price increase of more than $8, covering the lift’s cost while boosting profit
- Recommend building a dashboard or tool for business analysts to explore price scenarios independently.

Next: Add cost and visitor volume data for full profitability modeling.