London Housing Price Prediction

Contents

Problem Identification

- 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 information on how these changes might influence market-supported ticket pricing.
- A data-driven pricing model is necessary to estimate fair ticket prices, assess the revenue impact of facility changes, and guide strategic decisions.
- Management is exploring both cost-cutting by closing least-used runs and revenue-growing strategies such as adding lifts or 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 the vertical drop and lift infrastructure.
- The model suggests a potential price increase of around \$2 could be supported, leading to aroound \$3.47M additional seasonal revenue.
- Closing up to 10 of the least used runs has minimal price impact but could lead to around \$1.7M–\$3.1M in revenue loss.
- Enhancing vertical drop with a new chairlift significantly improves pricing support, especially when combined with snow-making expansion.
- Recommend moving forward with pricing adjustments and evaluating vertical drop expansion, while testing limited run closures cautiously.

Model Building & Evaluation

- Built predictive models to know how features support ticket pricing.
- Random Forest was selected for its superior performance and ability to capture non-linear relationships.
- Evaluation metrics: R^2 (explains price variability) and RMSE (average prediction error).
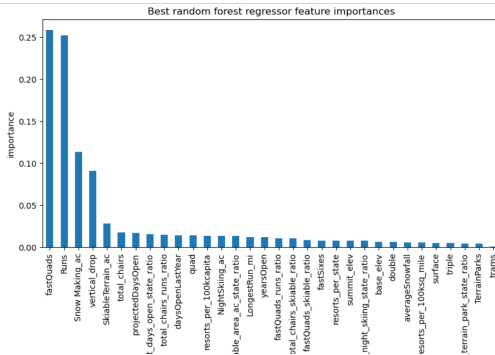

Figure 1: Feature Importance from Random Forest Model

Model Building & Evaluation

- Big Mountain currently charges $81 for a ticket.
- The model predicts that 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 price of the ticket 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.

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.
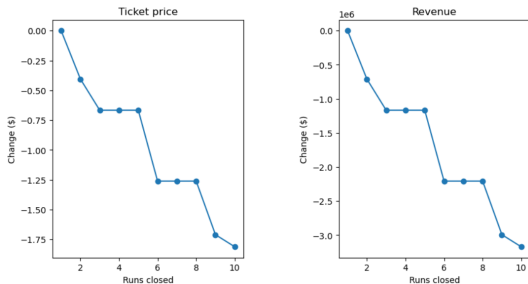- It is recommended best to limit closures to 3-5 runs for cost-cutting without major revenue impact.

Figure 2: Revenue Loss vs. Runs Closed

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 snow making which gives the same +$1.99 support.
- Scenario 3: Extend longest run by 0.2 mi and add 4 acres snow making gives no change in price.
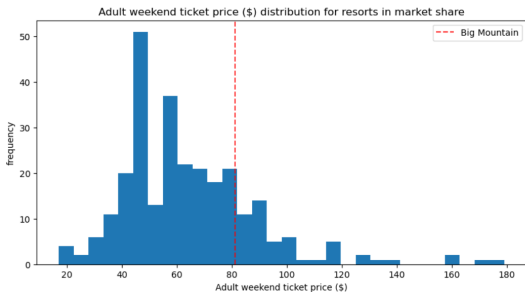- Enhancing vertical drop showed the highest return on investment.

Figure 3: Ticket Price Distribution

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.

Thank you!