

Problem Statement

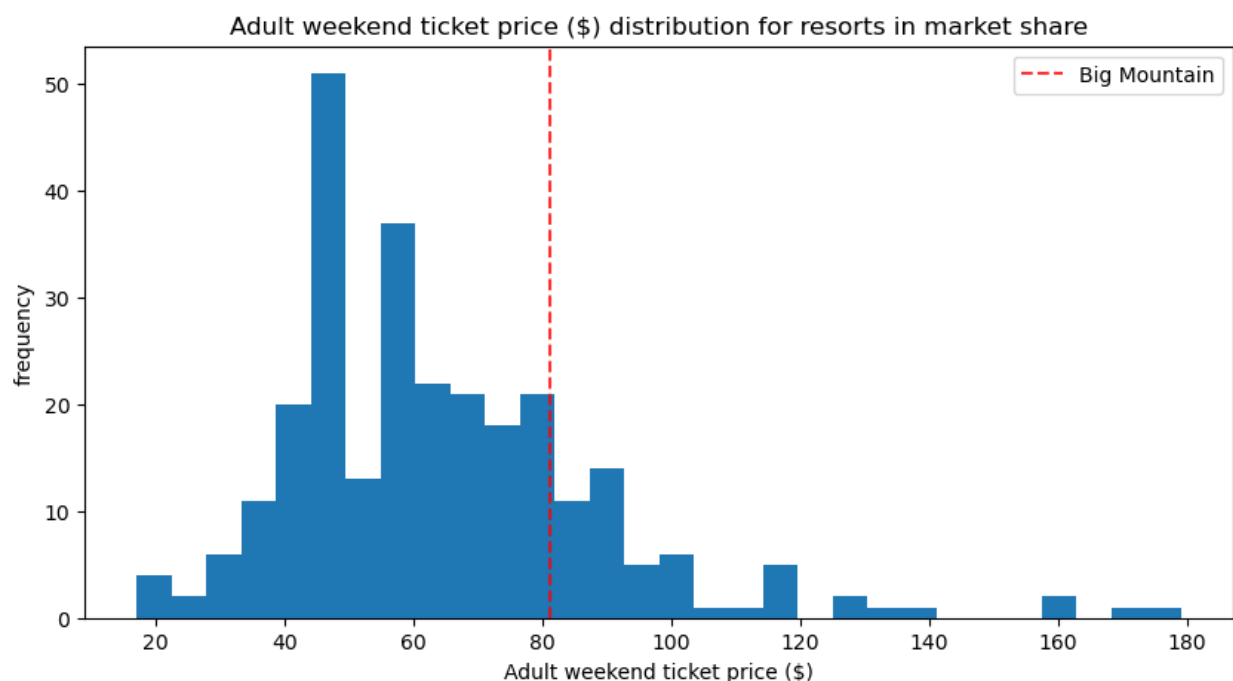
Big Mountain Resort is faced with the challenge of optimizing its pricing strategy to reflect the value and quality of the facilities it offers. The goal is to analyze the current market position, evaluate the potential for price adjustments, and explore the implications of various development scenarios to formulate a data-driven strategy for future growth and profitability.

Data Wrangling

The initial phase involved gathering and cleaning the data to ensure its reliability and accuracy. This process included handling missing values, removing duplicates, and structuring the data in a format that facilitates easy analysis. The data primarily focused on ticket prices, but it was identified that incorporating additional data on operational costs and customer feedback would provide a more comprehensive view for analysis.

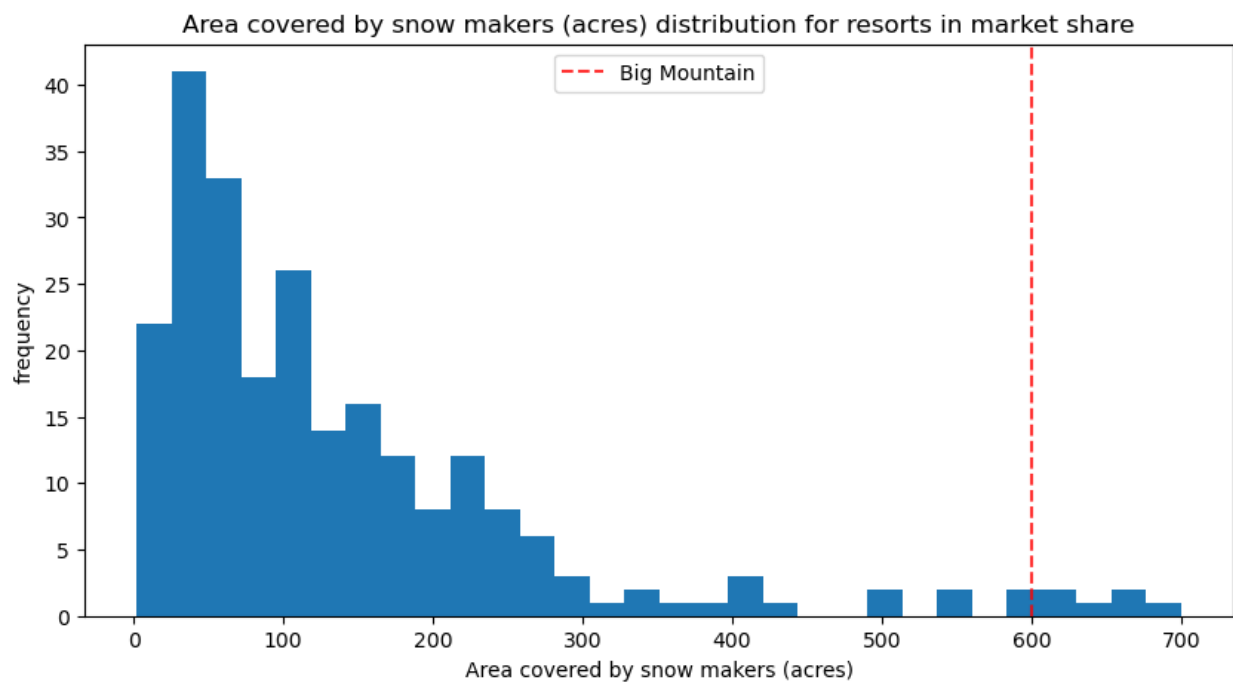
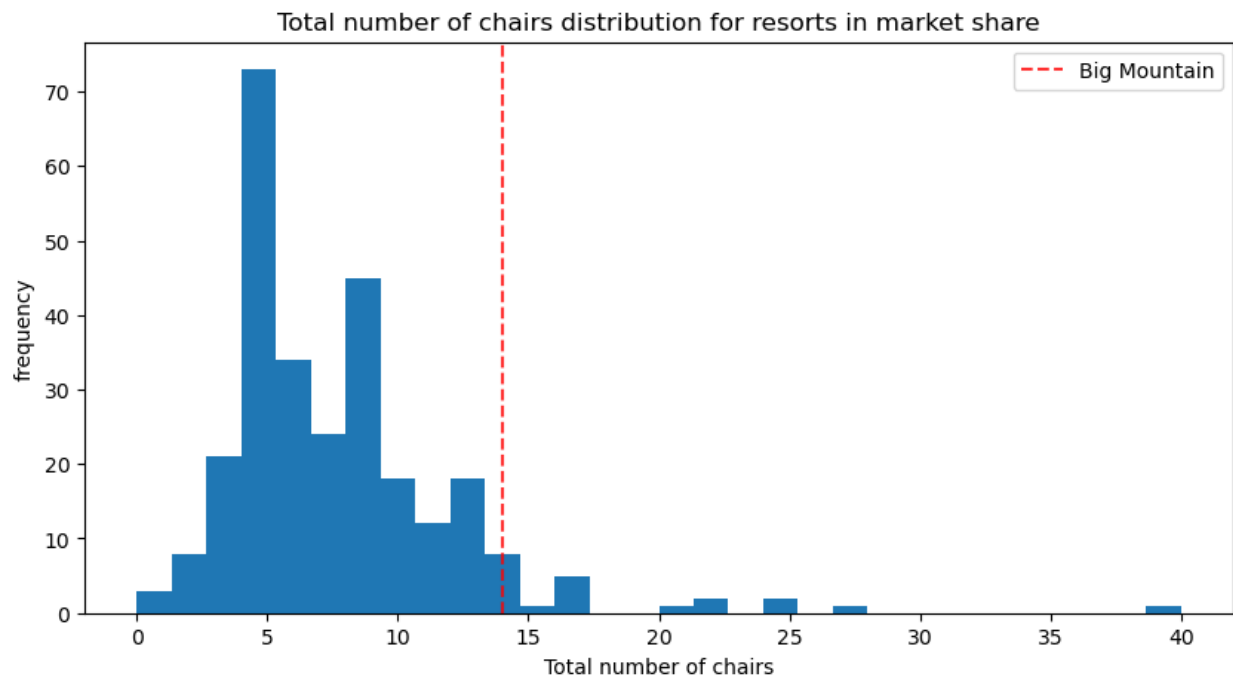
Exploratory Data Analysis

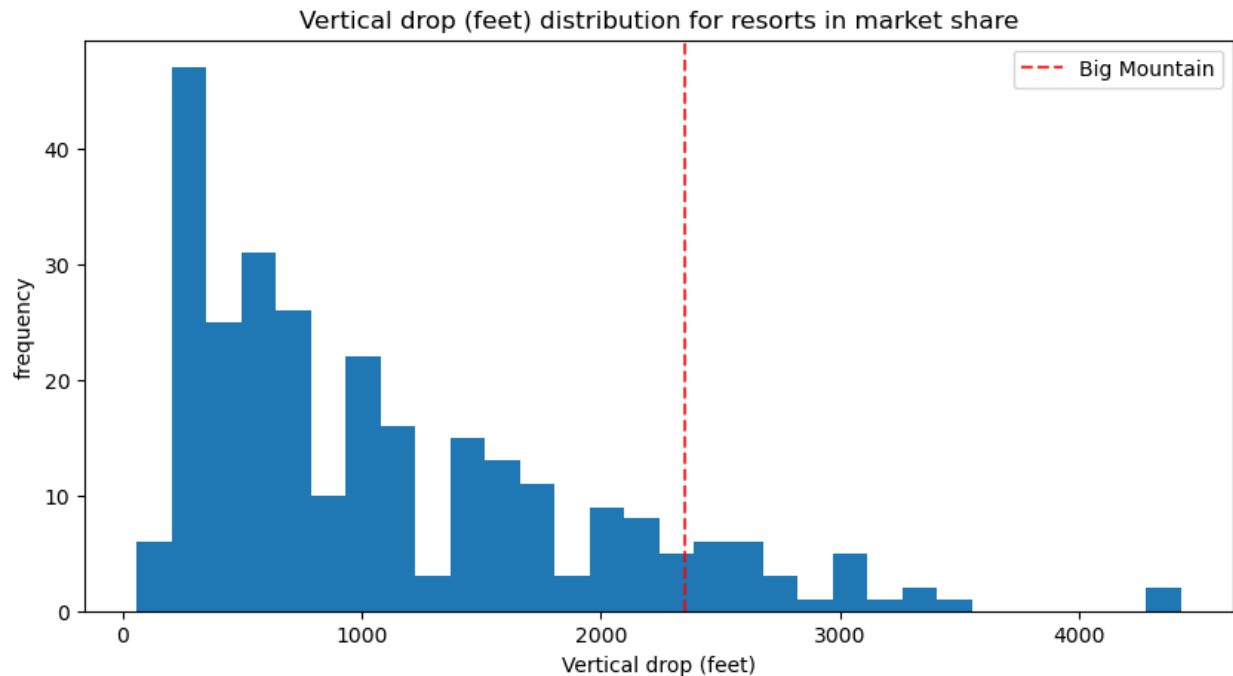
During the exploratory data analysis, various trends and patterns were identified. Big Mountain Resort already holds a significant position in the market, with superior facilities in terms of snow-making area, vertical drop, and chair availability. The analysis also revealed a potential for increasing the ticket prices, given the quality of facilities offered by the resort.



Model Preprocessing with Feature Engineering

Feature engineering involved identifying and selecting the most relevant features that influence the pricing strategy. This process included analyzing the impact of various facilities like vertical drop, snow-making area, and chair availability on the ticket prices. The features were then used to develop a predictive model to analyze different scenarios and their potential impact on pricing.



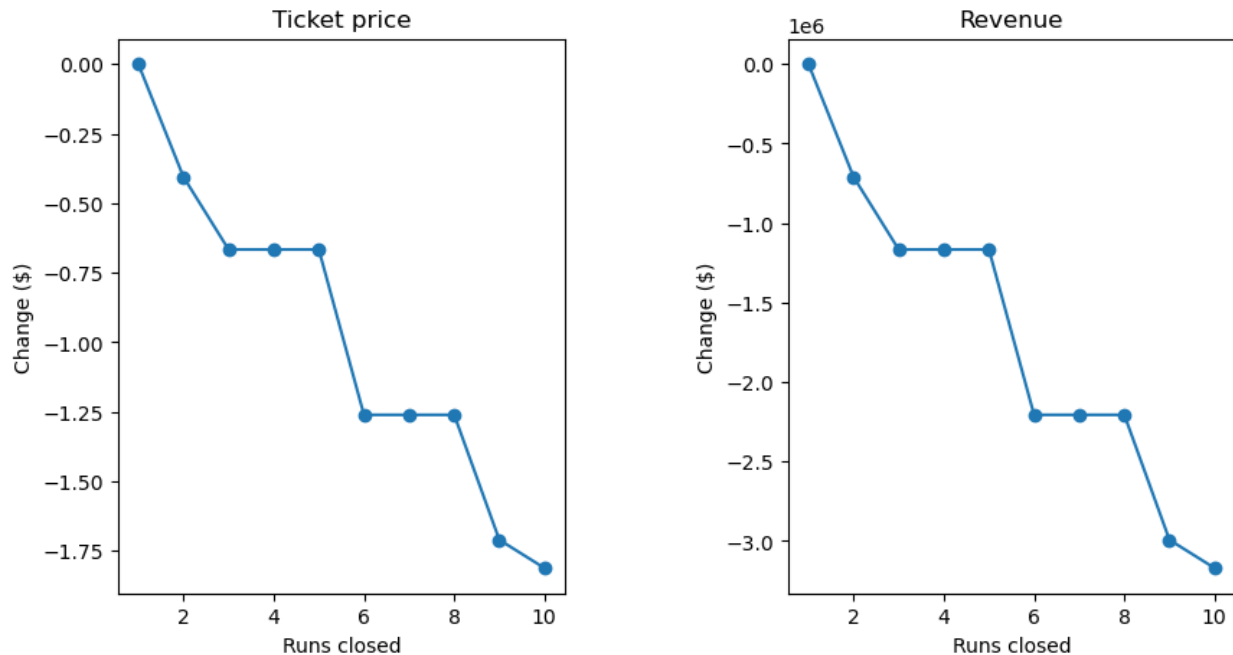


Algorithms Used to Build the Model with Evaluation Metric

The model was built using a combination of linear and random forest algorithms. The linear model helped in identifying the features that have a significant impact on pricing, while the random forest model, chosen for its better performance, was used to predict the potential outcomes of different scenarios. The evaluation metric used was the mean absolute error, which helped in understanding the potential error margin in the predictions.

Winning Model and Scenario Modelling

The random forest model emerged as the winning model due to its superior performance in predicting outcomes. Scenario modelling was conducted to analyze the implications of various developments, including adding new runs, increasing vertical drop, and installing additional chair lifts. The scenarios were evaluated based on their potential to increase ticket prices and generate additional revenue.



Pricing Recommendation

Based on the analysis, it is recommended that Big Mountain Resort considers increasing the ticket price up to \$95.87. This adjustment is supported by the superior facilities offered by the resort and the potential increase in revenue, as indicated by scenario 1, which could amount to approximately \$3,474,638 over the season.

Conclusion

The data analysis and modelling have provided valuable insights into the potential strategies that Big Mountain Resort can adopt to enhance its market position and profitability. By leveraging its superior facilities and adopting a data-driven pricing strategy, the resort can look forward to a future of sustained growth and success.

Future Scope of Work

Looking ahead, there is a scope for further enhancing the model by incorporating additional data on operational costs and customer feedback. Developing a user-friendly tool that allows business analysts to explore various scenarios independently would be a valuable asset for the business. Moreover, continuous monitoring and analysis of market trends and customer preferences will help in making informed decisions and planning future developments effectively.

Insights/Trends and Recommendations

The problem statement outlined the necessity for Big Mountain Resort to optimize its pricing strategy and explore potential avenues for development. The analysis successfully identified key insights and trends, particularly highlighting the resort's strong market position due to its superior facilities. The recommendations derived from these insights are aligned with the initial

problem statement, proposing a data-driven approach to enhance profitability while maintaining customer satisfaction.

Model/Metrics Methodology

Addressing the problem statement required the development of a robust model to analyze the current market position and the potential impact of various development scenarios. The methodology adopted for building the model has been clearly delineated, showcasing the use of linear and random forest algorithms and the rationale behind choosing the latter for its superior predictive capabilities. The evaluation metric, mean absolute error, was chosen to quantify the potential error margin in the predictions, thus providing a realistic and reliable foundation for the pricing recommendations.

Scenario Modelling

Scenario modelling was a critical component in addressing the problem statement, which necessitated an exploration of different development scenarios and their implications on pricing and revenue. The scenario modelling was conducted meticulously, evaluating various scenarios including adding new runs, increasing the vertical drop, and installing additional chair lifts. This modelling directly responds to the problem statement by offering concrete data on how different developments can influence the ticket pricing, thereby aiding in informed decision-making.

Conclusions/Recommendations/Future Scope of Work

The conclusions and recommendations drawn from the analysis are directly aligned with the problem statement. The data analysis not only validated the potential for a price increase but also outlined viable development scenarios that can further enhance the resort's market position and profitability. The future scope of work, which includes enhancing the model with additional data and developing a user-friendly tool for business analysts, is a forward-looking approach that promises to keep the resort on a path of sustained growth, thus addressing the initial problem of optimizing strategies for future developments.