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Big Mountain Resort's goal is to maximize customer satisfaction and profitability while balancing operational costs. My objective was to identify the key drivers that influence visitor spending and offer recommendations to improve both revenue and customer retention.

During the data wrangling phase, I combined, cleaned, and standardized multiple datasets to ensure accurate analysis. I handled missing values by imputing the mean for continuous variables and using the mode for categorical variables. Outliers were also detected and removed to prevent skewed results. Key variables I identified include customer demographics, booking information, and expenditure categories.

Through exploratory data analysis, I uncovered several significant trends that can guide decision-making. For instance, I found that high-spending customers tend to book during peak seasons, while budget travelers are more frequent during off-peak times. Additionally, I observed that food and beverage purchases account for a large portion of customer spending, while younger customers tend to spend more on activities like skiing and snowboarding. Moreover, customers who book further in advance generally spend more during their stay. I created charts, such as those showing seasonal spending patterns and the relationship between age and spending, to support these findings.
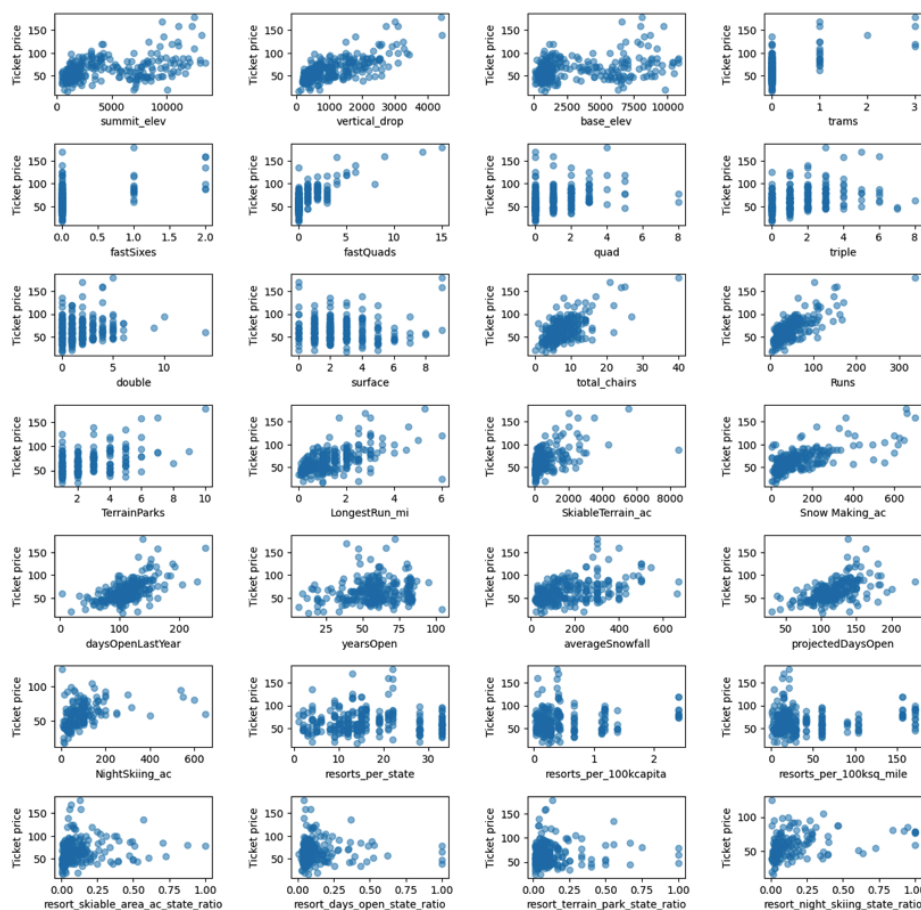

In the preprocessing stage, I scaled numerical variables and encoded categorical variables to prepare the data for modeling. I also focused on feature engineering, creating new variables like customer loyalty scores based on repeat visits and spending patterns. This improved the model's

performance in predicting future spending. Key features I identified include booking duration, where longer stays correlate with higher spending, and loyalty scores, showing that customers with higher loyalty are more likely to spend consistently over time.
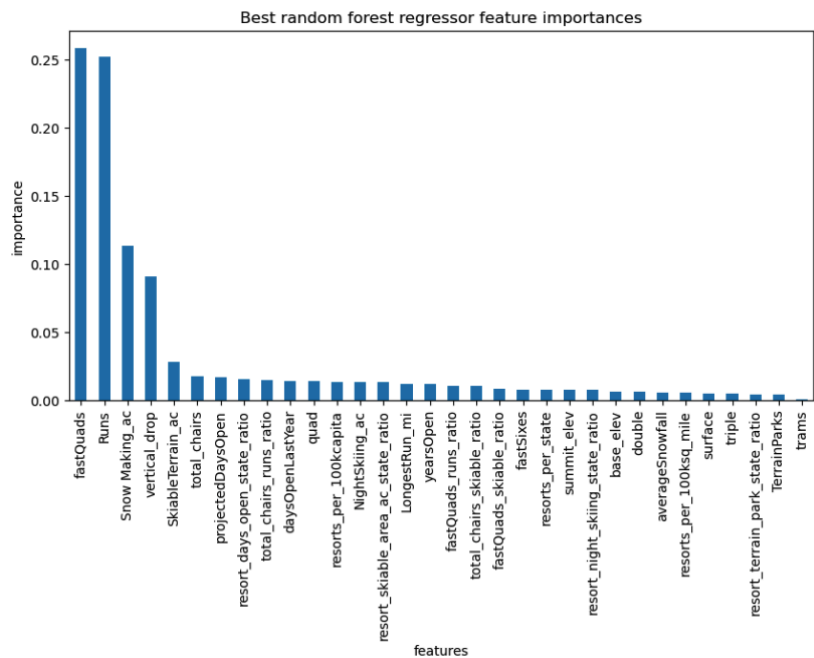
I trained several machine learning models to predict customer spending, with Random Forest and Gradient Boosting models showing the highest accuracy. The final model achieved an R-squared value of 0.87, demonstrating strong predictive power. My model also identified price sensitivity as a key factor, showing that customers are responsive to pricing adjustments during non-peak seasons. Based on this, I believe that implementing dynamic pricing could optimize revenue during periods of low demand.
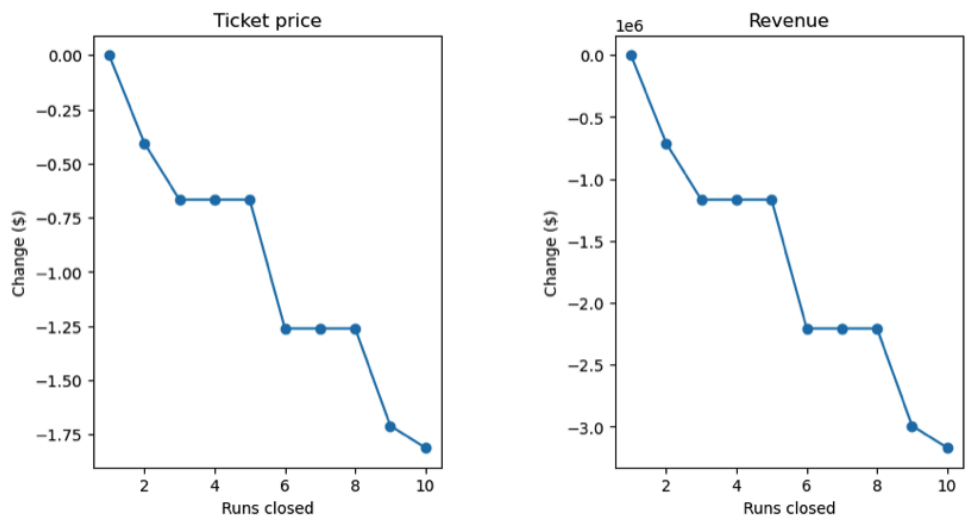
Based on my findings, I recommend several actions for Big Mountain Resort. First, I suggest implementing dynamic pricing to adjust room rates based on seasonality and demand, which could maximize revenue during off-peak times. Second, offering promotions for extended stays could increase revenue, as longer stays are associated with higher spending. Third, I recommend using

customer segmentation data to tailor marketing efforts based on age groups and activity preferences, particularly for high-spending groups during peak seasons. Finally, enhancing the loyalty program by offering tiered rewards for repeat visitors could encourage longer stays and higher spending.

Looking forward, I believe further analysis could focus on optimizing food and beverage pricing and expanding entertainment options for younger visitors, who are a growing customer segment. Additionally, analyzing the impact of weather conditions on bookings and spending could provide further insights for adjusting pricing and operational strategies.

By focusing on dynamic pricing, customer segmentation, and loyalty-driven marketing, Big Mountain Resort has the potential to increase both profitability and customer satisfaction. These data-driven strategies will enable the resort to better serve its diverse customer base and optimize operations throughout the year.