Project Overview: Analyzing Hotel Booking Cancellations

Objective:

The goal of this project is to analyze hotel booking data to understand cancellation patterns and provide actionable insights to the management. The project explores key factors influencing cancellation rates and proposes strategies to reduce cancellations and improve customer retention.

Data Overview:

The dataset consists of 119,390 bookings from two types of hotels: City Hotel and Resort Hotel. The data includes various attributes such as lead time, booking status, customer type, market segment, and more.

Steps:

1. **Data Cleaning:**
   - Missing values were handled by removing columns with a high percentage of missing data (e.g., `company`, `agent`) and rows with null values.
   - Outliers in the `adr` (average daily rate) column were identified and removed to ensure accurate analysis.
2. **Key Insights:**
   - **Overall Cancellation Rate:**
     - 37% of all bookings were canceled.
     - City Hotel had a higher cancellation rate (41.8%) compared to Resort Hotel (27.2%).
   - **Booking Lead Time:**
     - Longer lead times were associated with higher cancellation rates.
     - Customers with a lead time greater than 60 days showed a significant likelihood of canceling.
   - **Market Segment:**
     - Online Travel Agents (OTA) had the highest cancellation rate, followed by groups.
     - Direct bookings showed the lowest cancellation rate, indicating customer loyalty.
   - **Impact of Special Requests:**
     - Bookings with special requests had a lower cancellation rate, suggesting that personalized customer service might reduce cancellations.
   - **Seasonality:**
     - Cancellations peaked during the summer months (June to August), which could be tied to more flexible vacation plans.
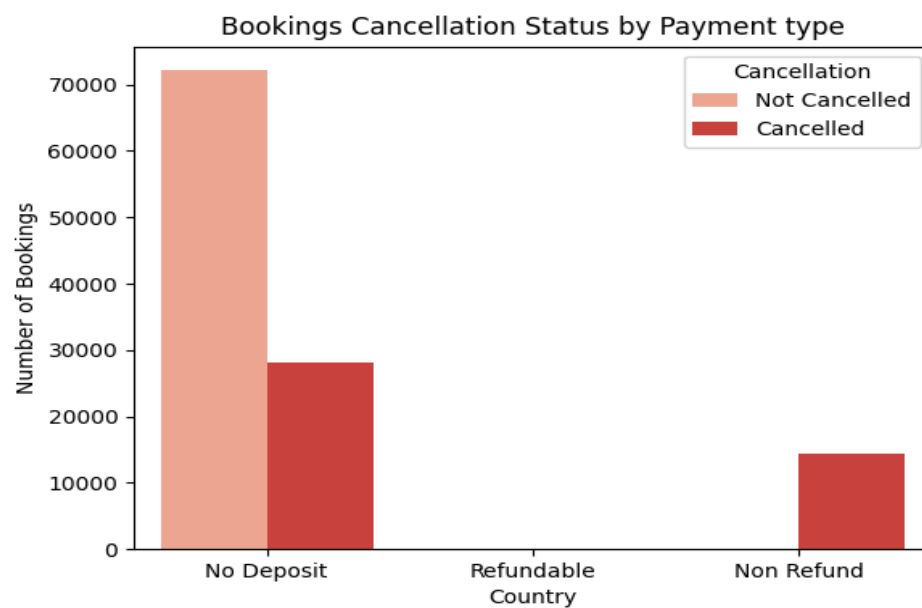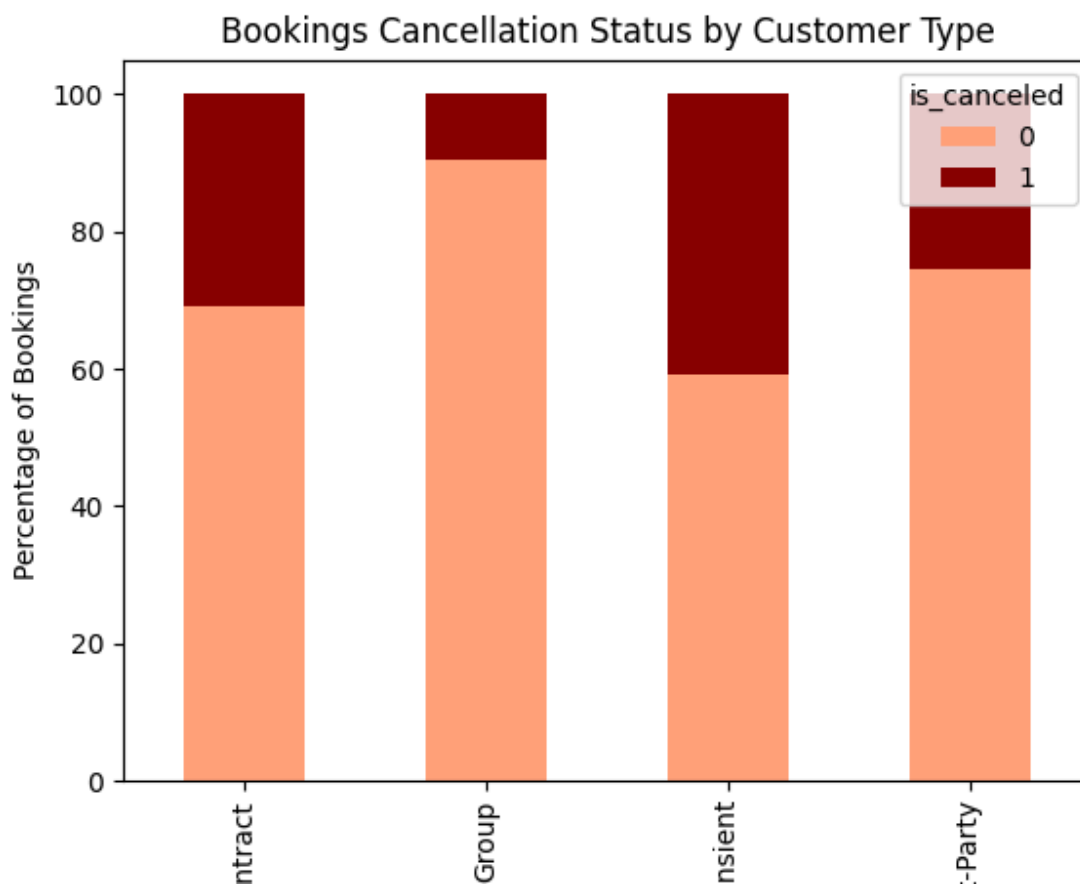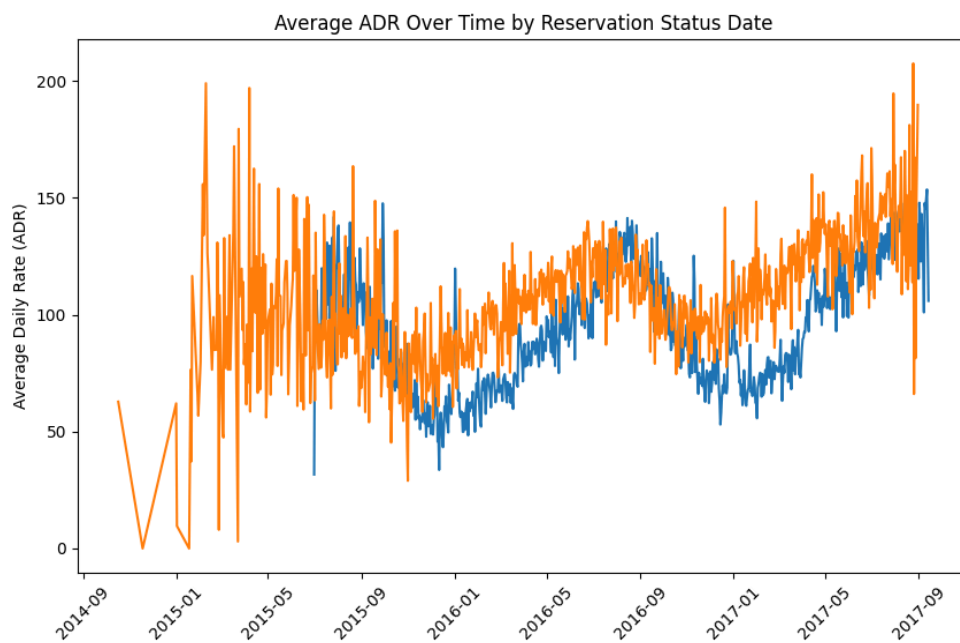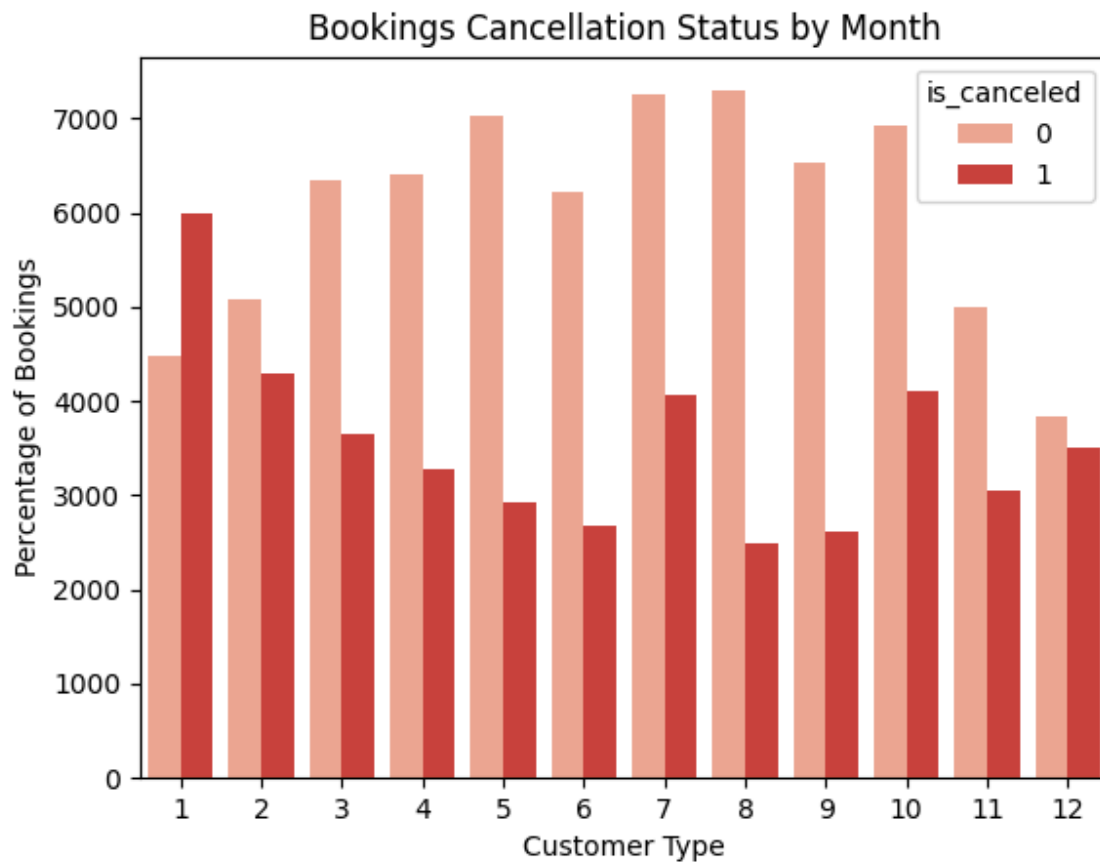
3. **Visualizations:**
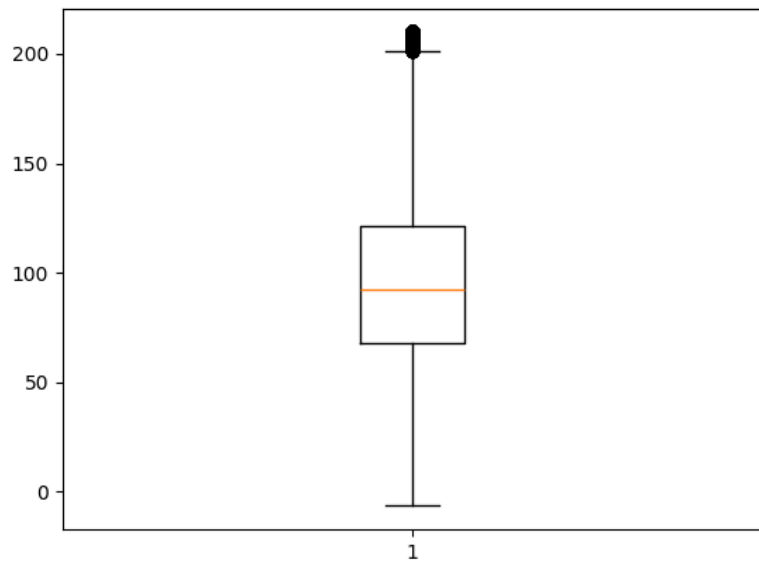
The range of hotel price
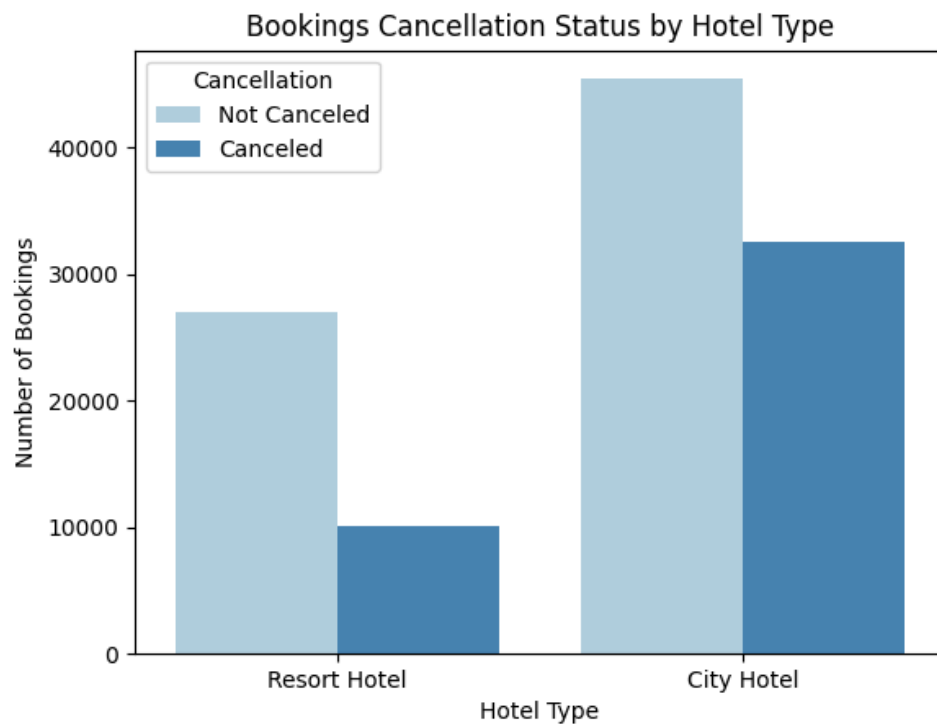
A bar chart comparing cancellation rates between City Hotel and Resort Hotel.

Bookings Cancellation Status by Customer Type

Bookings Cancellation Status by Payment type

A bar chart comparing cancellation rates between City Hotel and Resort Hotel.

Bookings Cancellation Status by Month

Average ADR Over Time by Reservation Status Date

- ○ **Total Cancellation Rate:**

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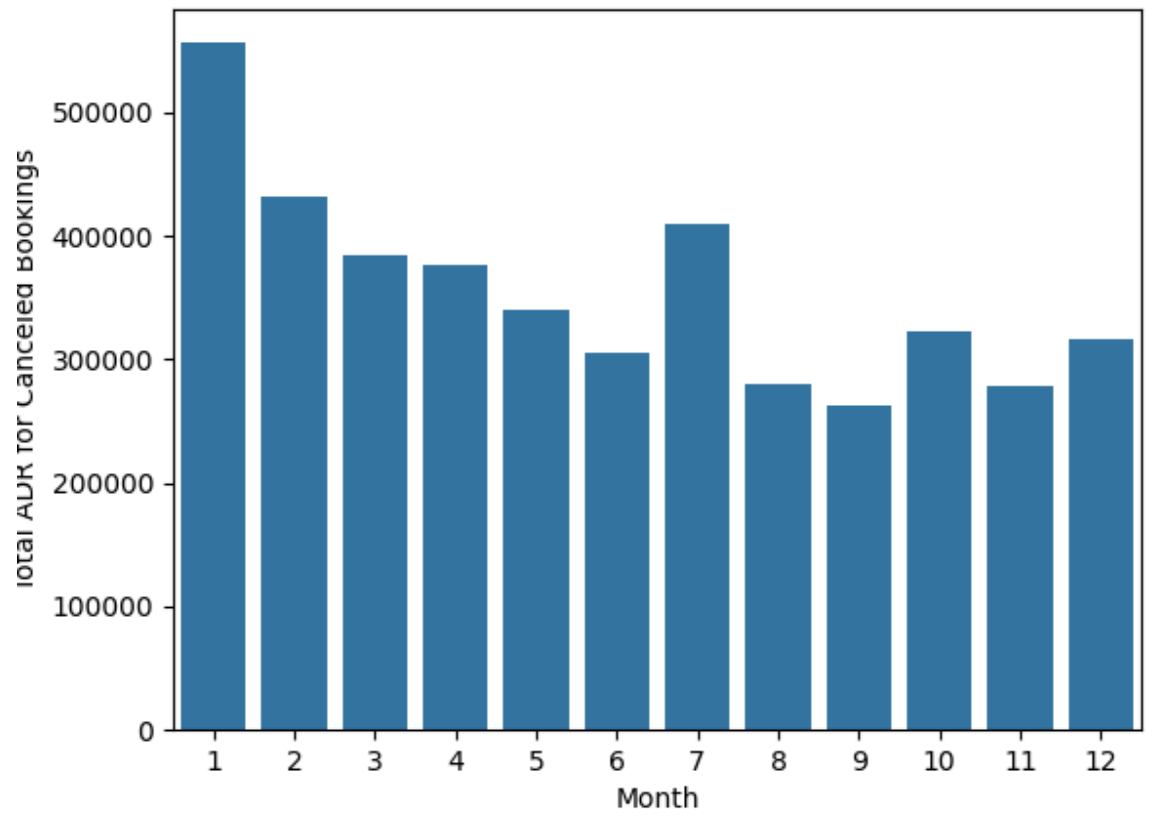
Top 10 Countries with the Most Cancellations
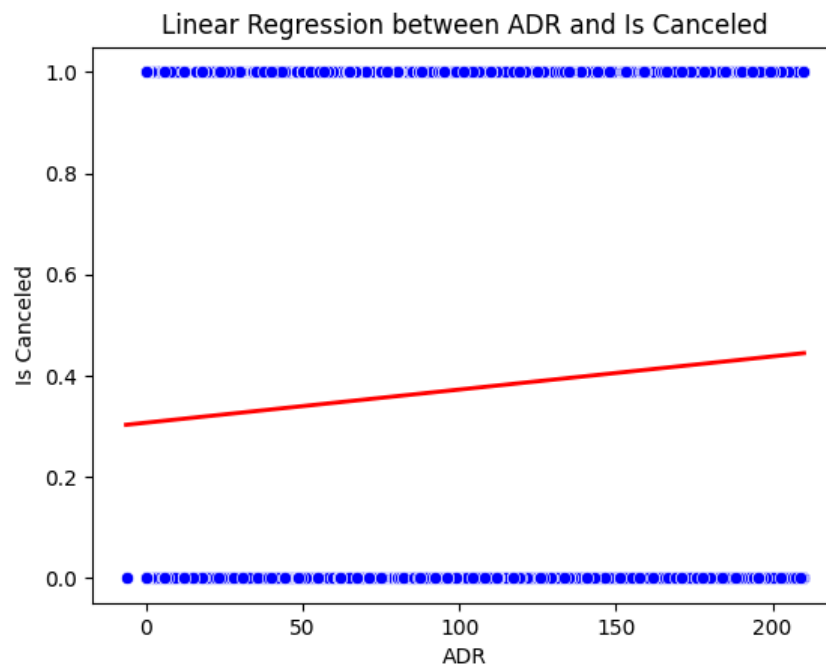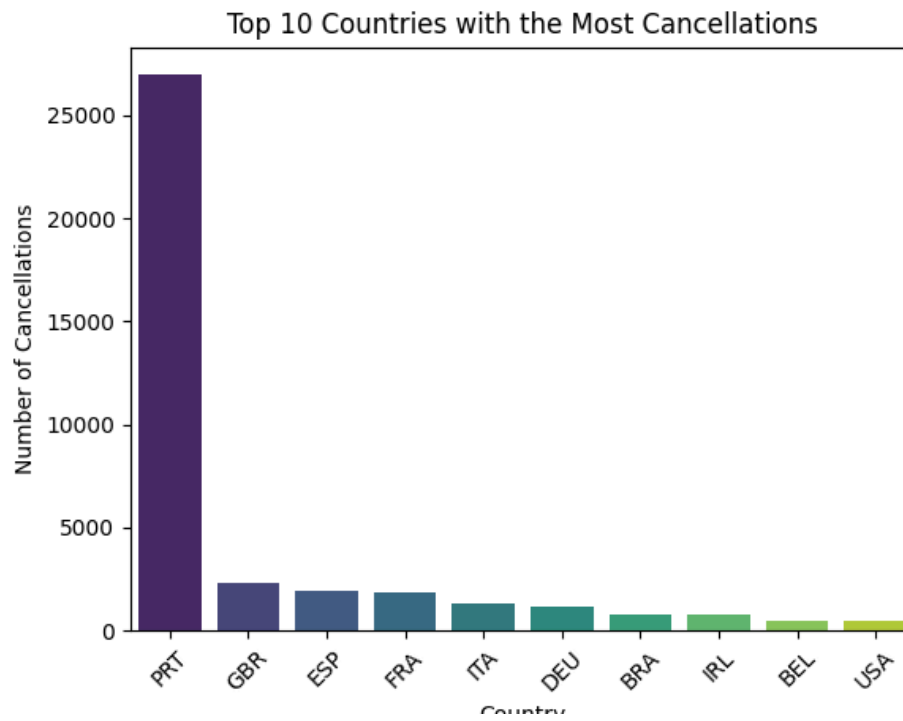

Linear Regression between ADR and Is Canceled
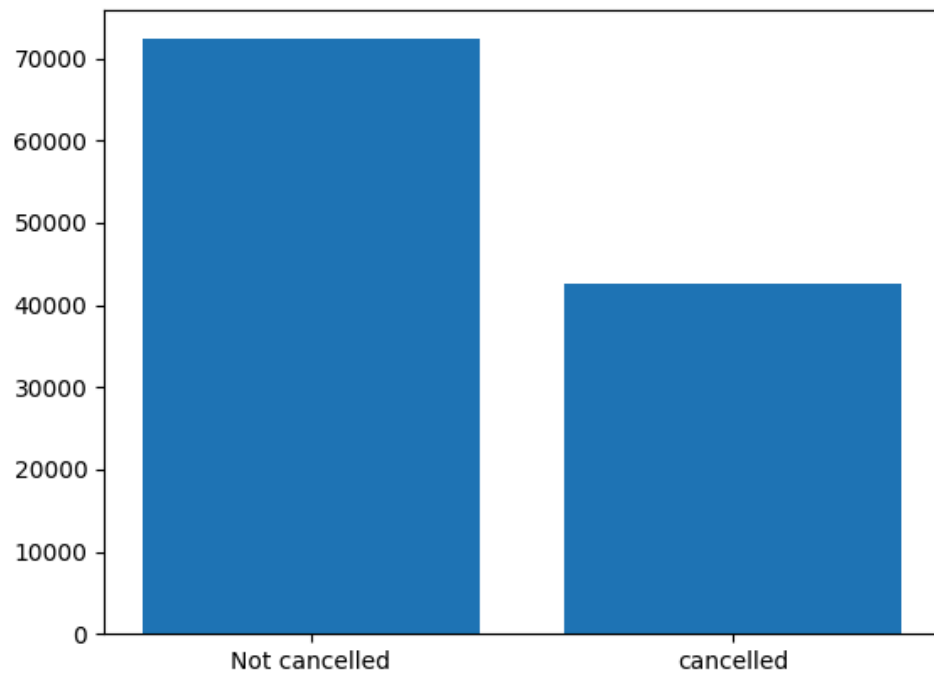
The relation between hotel price and cancellation rate

4. **Recommendations:**
    - **Targeted Marketing for Direct Bookings:**
        - Increase incentives for direct bookings to reduce reliance on OTAs.
    - **Flexible Booking Policies:**
        - Offer flexible booking options for early bookings with a longer lead time to reduce cancellations.
    - **Enhancing Customer Experience:**
        - Encourage guests to make special requests and personalize their stay, which may lead to fewer cancellations.
    - **Seasonal Promotions:**
        - Introduce promotions during peak cancellation months to secure bookings and reduce the likelihood of cancellations.

Conclusion:

This analysis highlights the importance of understanding customer behavior and booking patterns to manage cancellations effectively. By implementing the suggested strategies, the hotel can potentially decrease cancellation rates and increase revenue.