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INVESTIGATE BUSINESS HOTEL USING DATA VISUALIZATION

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OVERVIEW

- **Overview:** The focus of this project is to understand our customers' behavior in booking hotels and its relationship with the hotel booking cancellation rate.
- **Objective:** The primary goal is to analyze the dataset to uncover trends and patterns in customer behavior that influence the hotel booking cancellation rate, helping to improve hotel business strategies.
- **Tools & Techniques:** Python, Jupyter Notebook, Data Cleaning, Data Visualization, Pandas, Matplotlib, Seaborn.

***DATA CLEANING
AND
PREPROCESSING***

**Handling Missing
Value**

Correcting unsuitable

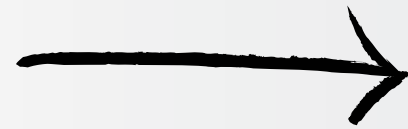
Correcting Dtype

**Drop Unnecessary
Data**

HANDLING MISSING VALUES

- There were 4 features with missing values: **children, city, agent, and company.**
- Children: NaN values were replaced with 0, assuming that the customer did not bring any children.
- City: NaN values were replaced with 'unknown', indicating that the city was not specified.
- Agent: NaN values were replaced with 0, assuming the customer did not book through an agent.
- Company: NaN values were replaced with 0, assuming the booking was personal and not through a company.

Correcting Unsuitable Data



Meal Column: The **undefined** values in the meal column were replaced with '**No Meal**', assuming the customer did not choose a meal package, whether breakfast or dinner.

Correcting Data Types



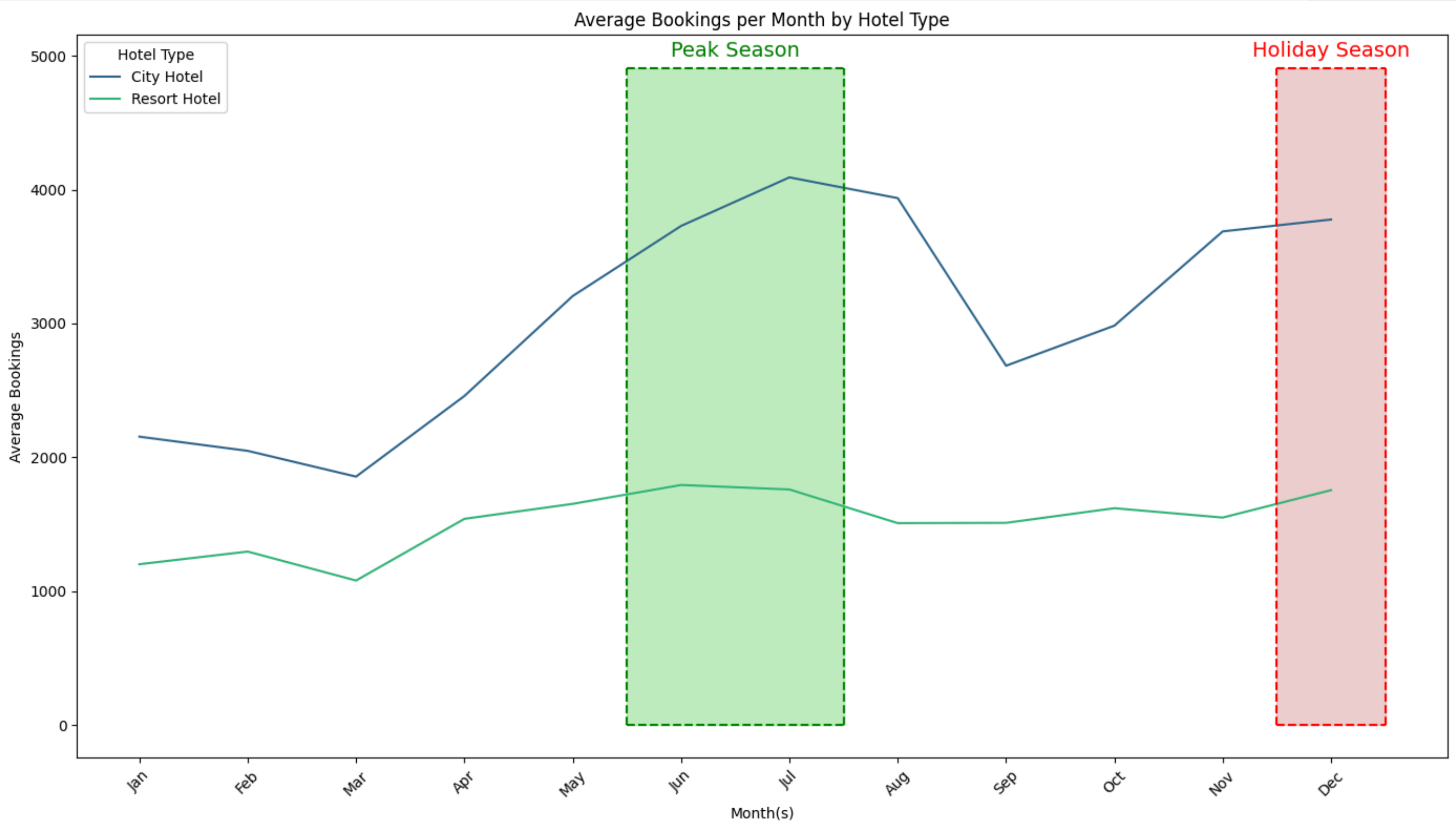
Data types were corrected **from float to integer** for the **children, agent, and company** columns since these should be whole numbers.

Dropping Unnecessary Data:

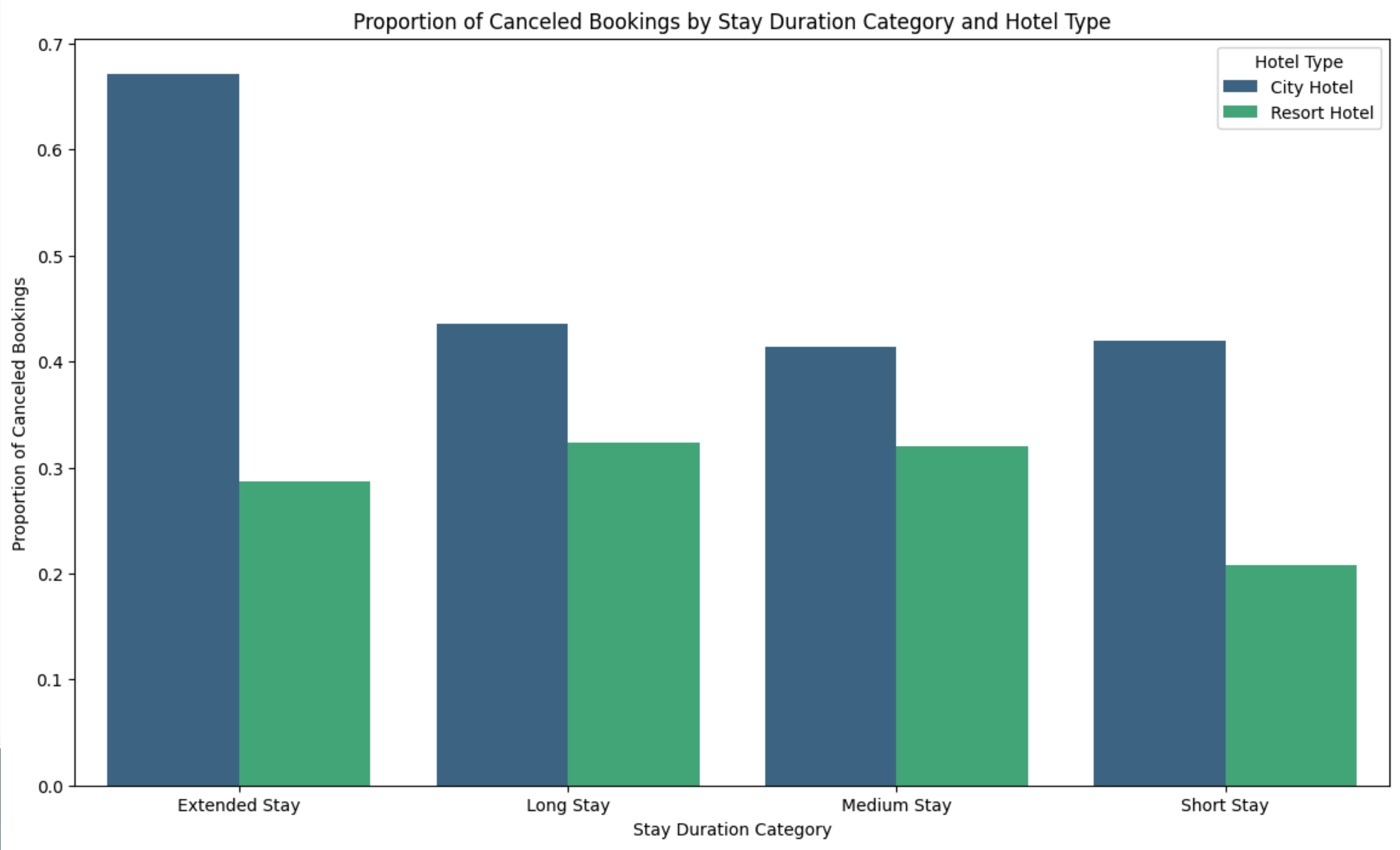


- New Column total_guest: Created by summing the adults, children, and baby columns, and rows with a total of 0 were removed.
- New Column stay_duration: Created by summing the stays_in_weekend_nights and stays_in_weekdays_nights columns, and rows with a total of 0 were removed.

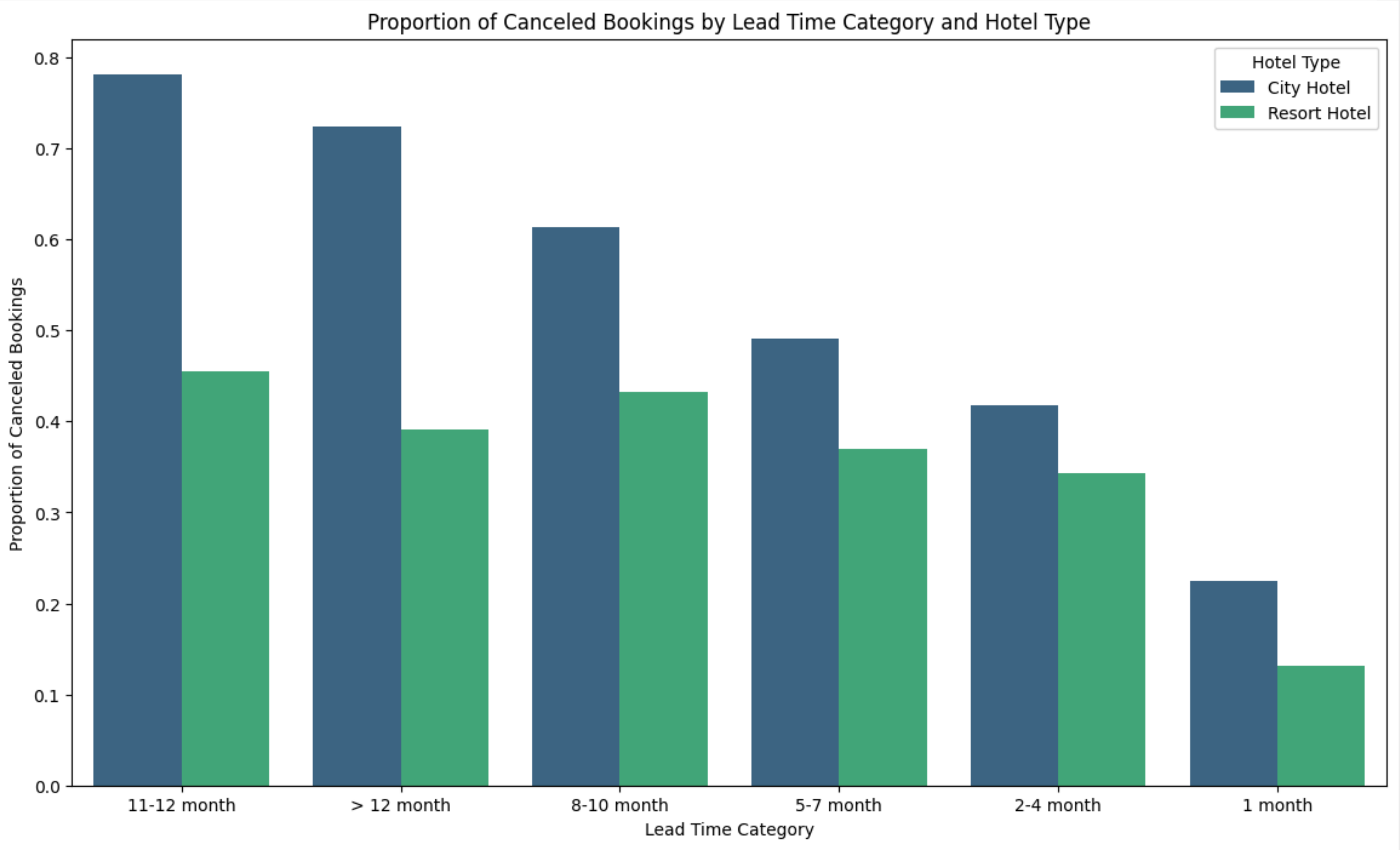
ANALYZED BOOKING TRENDS BASED ON HOTEL TYPES TO UNDERSTAND SEASONALITY AND BOOKING BEHAVIORS.



PROPORTION OF CANCELED BOOKINGS BY STAY DURATION CATEGORY AND HOTEL TYPE



PROPORTION OF CANCELED BOOKINGS BY LEAD TIME CATEGORY AND HOTEL TYPE



Key Findings

Booking Trends:

- The highest bookings for both types of hotels occur in **June and July**. These months coincide with **school holidays** and **festive holidays**.
- In **August and September**, there is a significant **drop in bookings**. For the other months, there are no long holidays or long weekends, so hotel bookings are not as high as during peak season.
- In **December**, hotel bookings increase again, coinciding with school **holidays**, **Christmas**, and **New Year**.
- **City Hotels are more popular** among customers, consistently showing higher bookings compared to resort hotels.

Key Findings

Proportion of Canceled Bookings:

- **The longer the booked stay duration**, the higher the likelihood of **cancellation**.
- **The greater the lead time between booking and check-in**, the higher the probability that the **customer will cancel the booking**.

Recommendations

- **Targeted Marketing During Peak Seasons:**

Increase marketing efforts in the months leading up to June, July, and December to capitalize on the high demand during school holidays and festive seasons. Special promotions or packages could be offered to attract more customers.

- **Dynamic Pricing Strategy:**

Implement dynamic pricing that adjusts based on demand fluctuations, especially during peak and off-peak seasons. This can help maximize revenue during high-demand periods and attract more bookings during slower months like August and September.

Recommendations

- **Promotions for Longer Stays:**

Offer special deals or discounts for longer stays to reduce the likelihood of cancellations. Providing additional incentives, such as complimentary services or upgrades for extended stays, could encourage customers to commit to their bookings.

- **Focus on City Hotels:**

Since city hotels are more popular, consider investing in more amenities, services, or marketing for these locations. Highlighting the convenience and attractions of city hotels in promotional campaigns could further enhance their appeal.