

INVESTIGATE BUSINESS HOTEL USING DATA VISUALIZATION

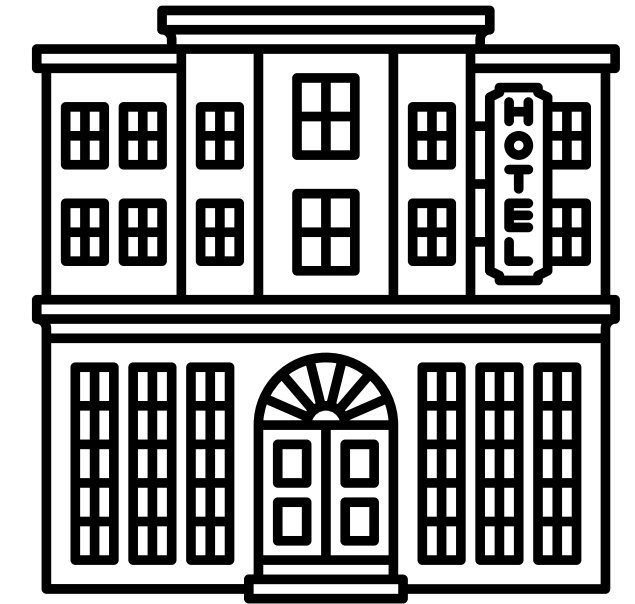
By Ariella Arima Aniendra



OVERVIEW

Context:

It is very important for companies to always analyze their business performance. Business performance analysis can help identify problems and then implement strategies to overcome these problems so that the company can reach its optimal potential.

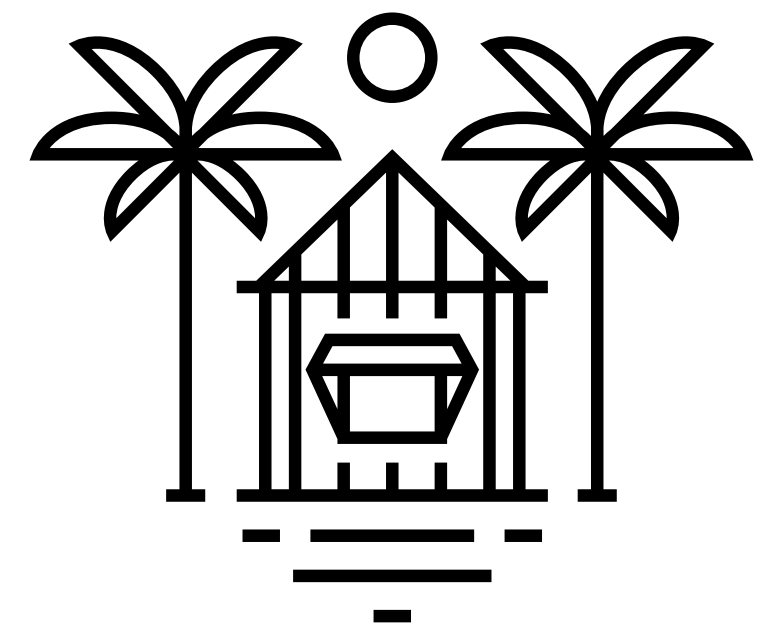


Problem:

There are two hotels, City Hotel and Resort Hotel.
At these hotels, reservation cancellations often occur.

What Am I Gonna Do?

This time I'm going to analyze customer behavior during hotel reservations and what factors influence reservation cancellation rates. The results of the insights that I found will later be presented through visualization for a better understanding.



TOOLS

PROGRAMMING LANGUAGE



Python

PYTHON LIBRARY



DATA VISUALIZATION



Matplotlib



seaborn

PROCESS

1

Data Exploration

2

Data Pre-Processing

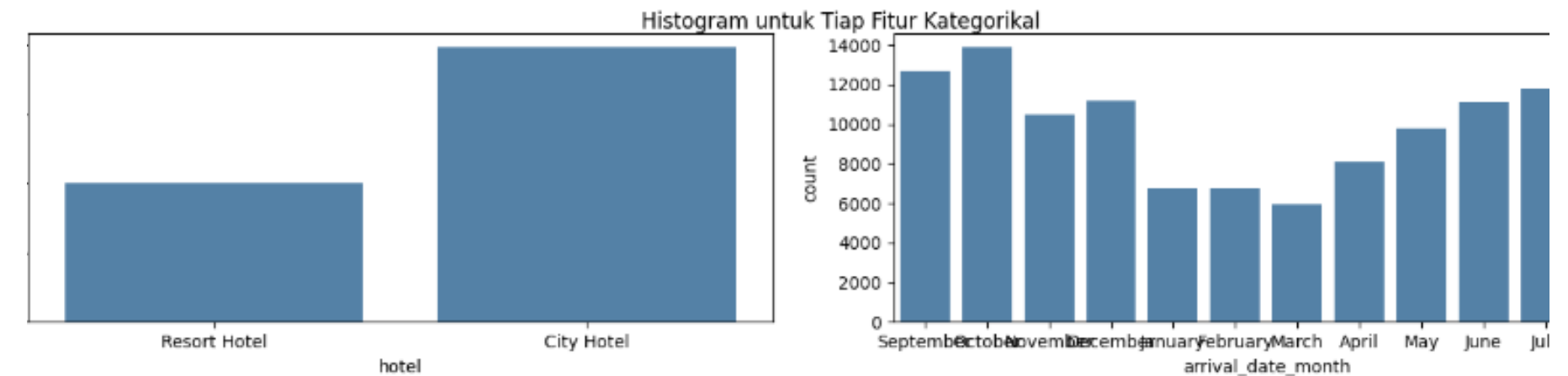
3

Analysis and Data
Visualization

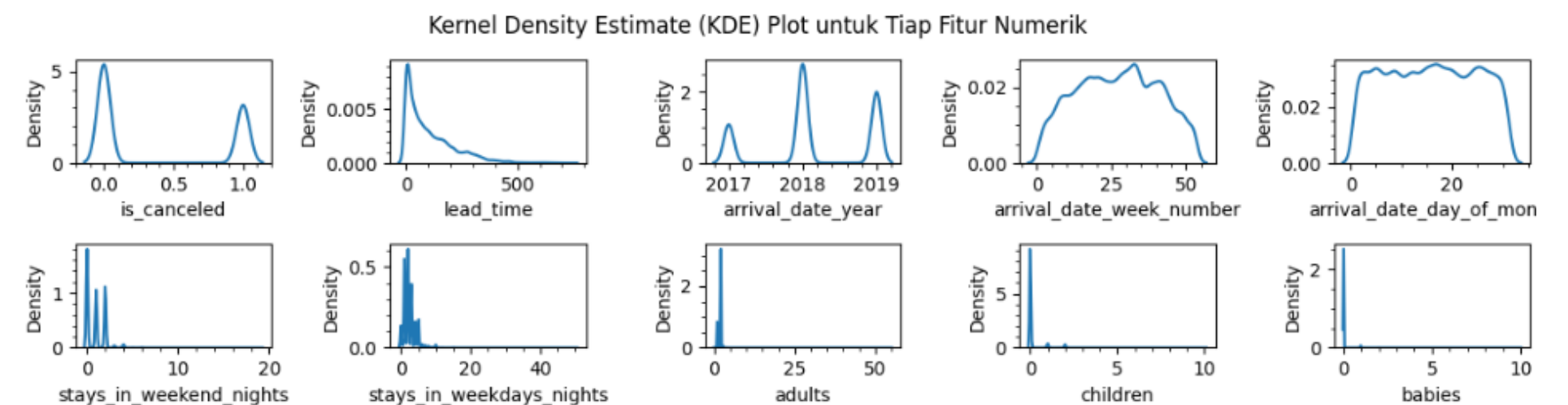
1 DATA EXPLORATION

Task Done:

- Checking Data Type, Data Null, and grouping data by category.
- Explore insights from the dataset using descriptive statistical analysis.



	count	unique	top	freq
hotel	119390	2	City Hotel	79330
arrival_date_month	119390	12	October	13877
meal	119390	5	Breakfast	92310
city	118902	177	Kota Denpasar	48590
market_segment	119390	8	Online TA	56477
distribution_channel	119390	5	T/ATO	97870
deposit_type	119390	3	No Deposit	104641
customer_type	119390	4	Personal	89613
reservation_status	119390	3	Check-Out	75166



[Click here for detail codes](#) 

2

DATA PRE-PROCESSING

Task Done:

- Perform data cleansing, handle missing and error values, and feature engineering.

```
# Handling null values feature 'company' & 'agent'
ca = ['company', 'agent']
for col in ca:
    df_clean[col].fillna(0, inplace=True)

# Handling null values feature 'city' & 'children'
df_clean.dropna(subset=['city', 'children'], inplace=True)
```

```
#Check
df_clean.isna().sum().sum()
```

0

```
# Fix the data type
df_clean['children'] = df_clean['children'].astype('int64')
df_clean['agent'] = df_clean['agent'].astype('int64')
df_clean['company'] = df_clean['company'].astype('int64')
```

[Click here for detail codes](#) 

3 ANALYSIS AND DATA VISUALIZATION

Task Done:

1. Analyzing the data to get insights, my analyses are about:
 - Monthly Hotel Booking Analysis Based on Hotel Type
 - Impact Analysis of Stay Duration on Hotel Bookings Cancellation Rates
 - Impact Analysis of Lead Time on Hotel Bookings Cancellation Rate
2. Visualize insights for a better understanding.

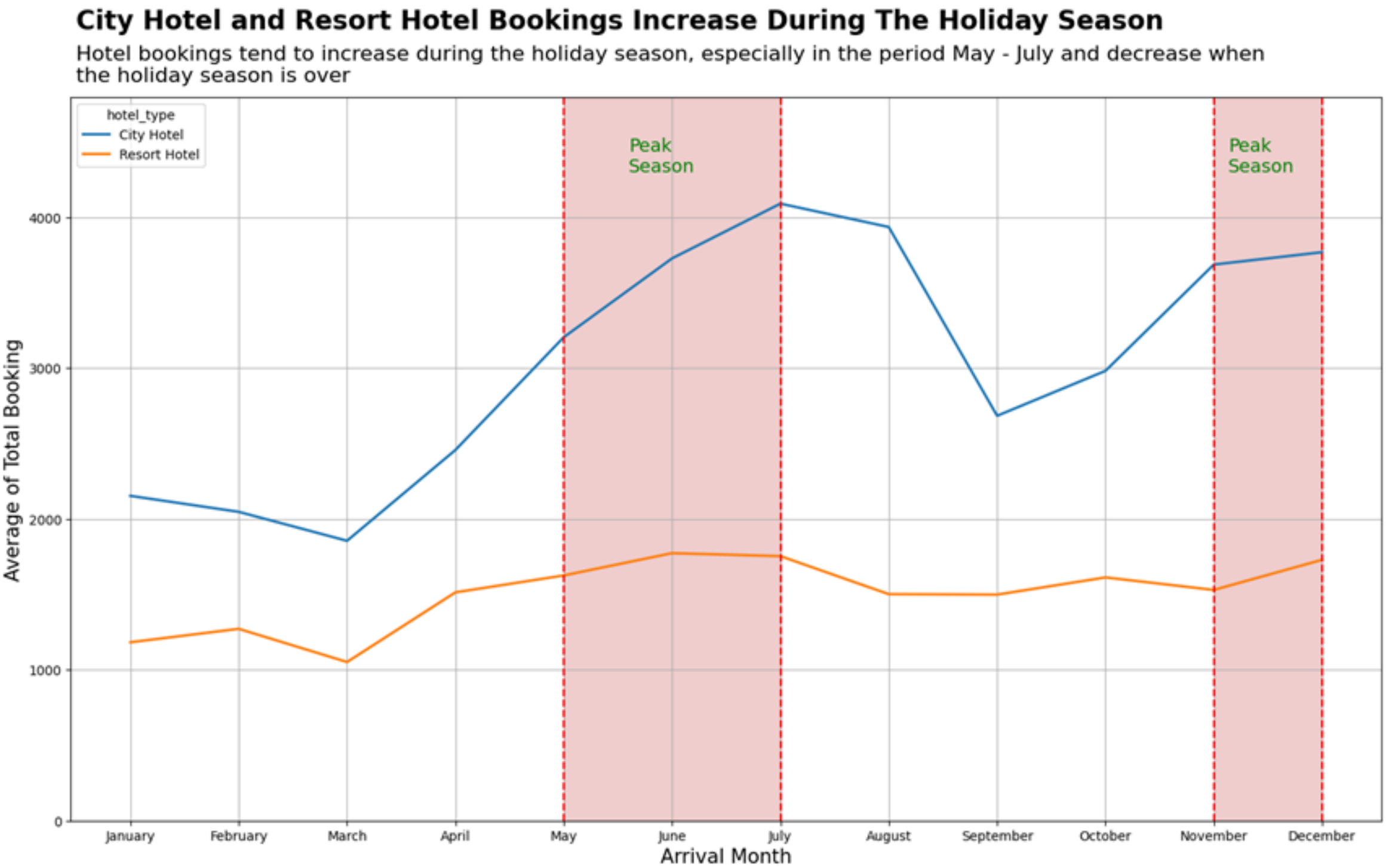
	hotel_type	arrival_month	unique_year	total_booking	avg_booking
4	City Hotel	January	2	4307	2154.0
16	Resort Hotel	January	2	2366	1183.0
3	City Hotel	February	2	4097	2048.0
15	Resort Hotel	February	2	2545	1272.0
7	City Hotel	March	2	3712	1856.0
19	Resort Hotel	March	2	2104	1052.0



[Click here for detail codes](#) 

MONTHLY HOTEL BOOKING ANALYSIS BASED ON HOTEL TYPE

DATA VISUALIZATION



[Click here for detail codes](#) 

MONTHLY HOTEL BOOKING ANALYSIS BASED ON HOTEL TYPE

INSIGHTS AND RECOMMENDATION:

- The hotel's peak seasons are May–July and November–December. It is possible in May–July due to the semester break for Indonesian students and in November–December it is possible because of the Christmas and New Year holidays.
- The hotel reservation rate is lowest between January and March. This could be owing to a dearth of public holidays, the start of a new school year for children, and the fact that it is still early in the year.
- To optimize hotel resources outside of peak season, this can be done by offering holiday deals promos at the beginning of the year.

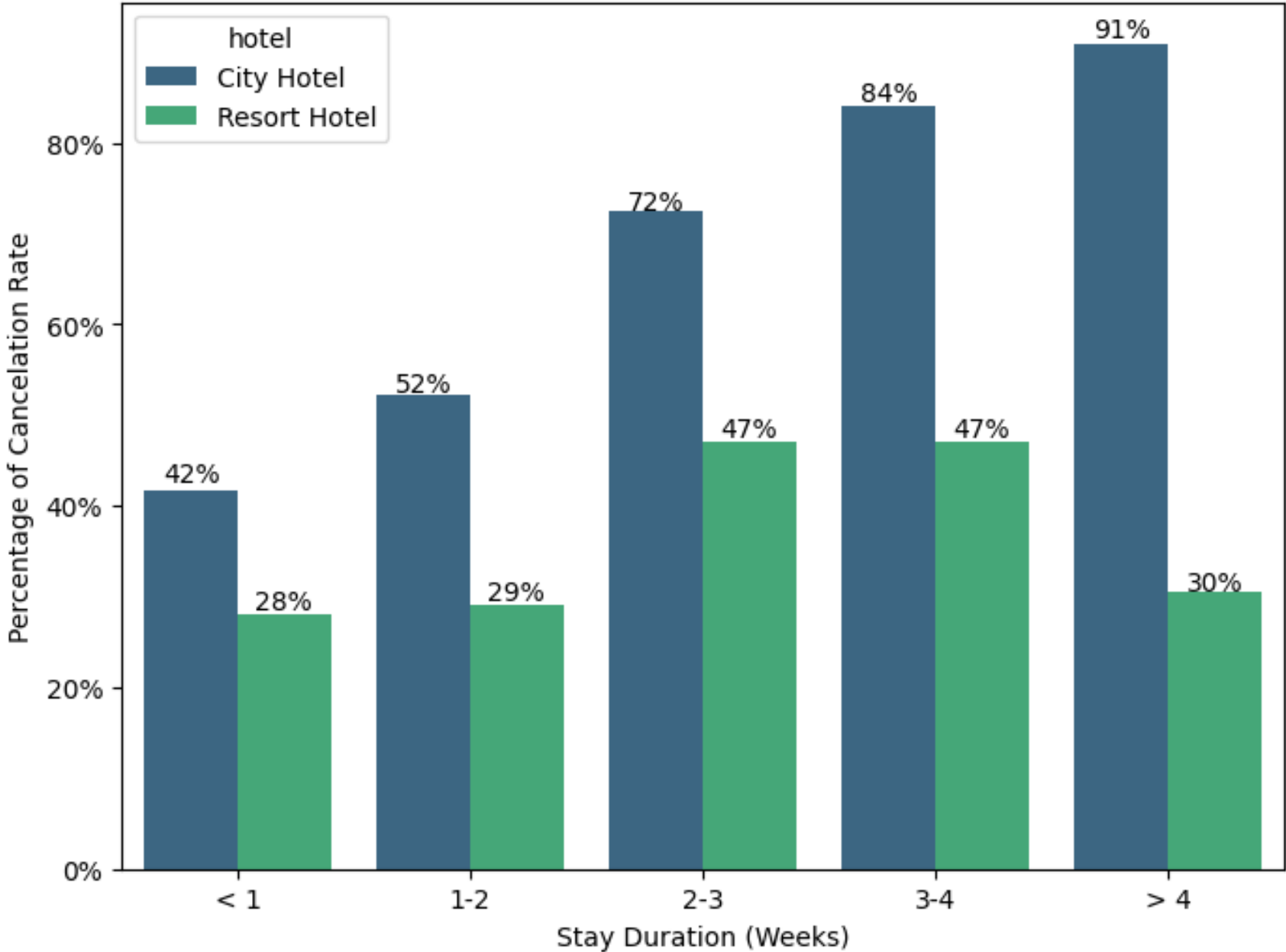
IMPACT ANALYSIS OF STAY DURATION ON HOTEL BOOKINGS

CANCELLATION RATE

DATA VISUALIZATION

Positive Trend on Total Nights and Cancellation Rate (%)

The bulk of hotel reservations for longer stays, on the whole, have a higher cancellation rate. However, resort hotel have a low cancellation rate for stays longer than four weeks compared to city hotel.



[Click here for detail codes](#) 

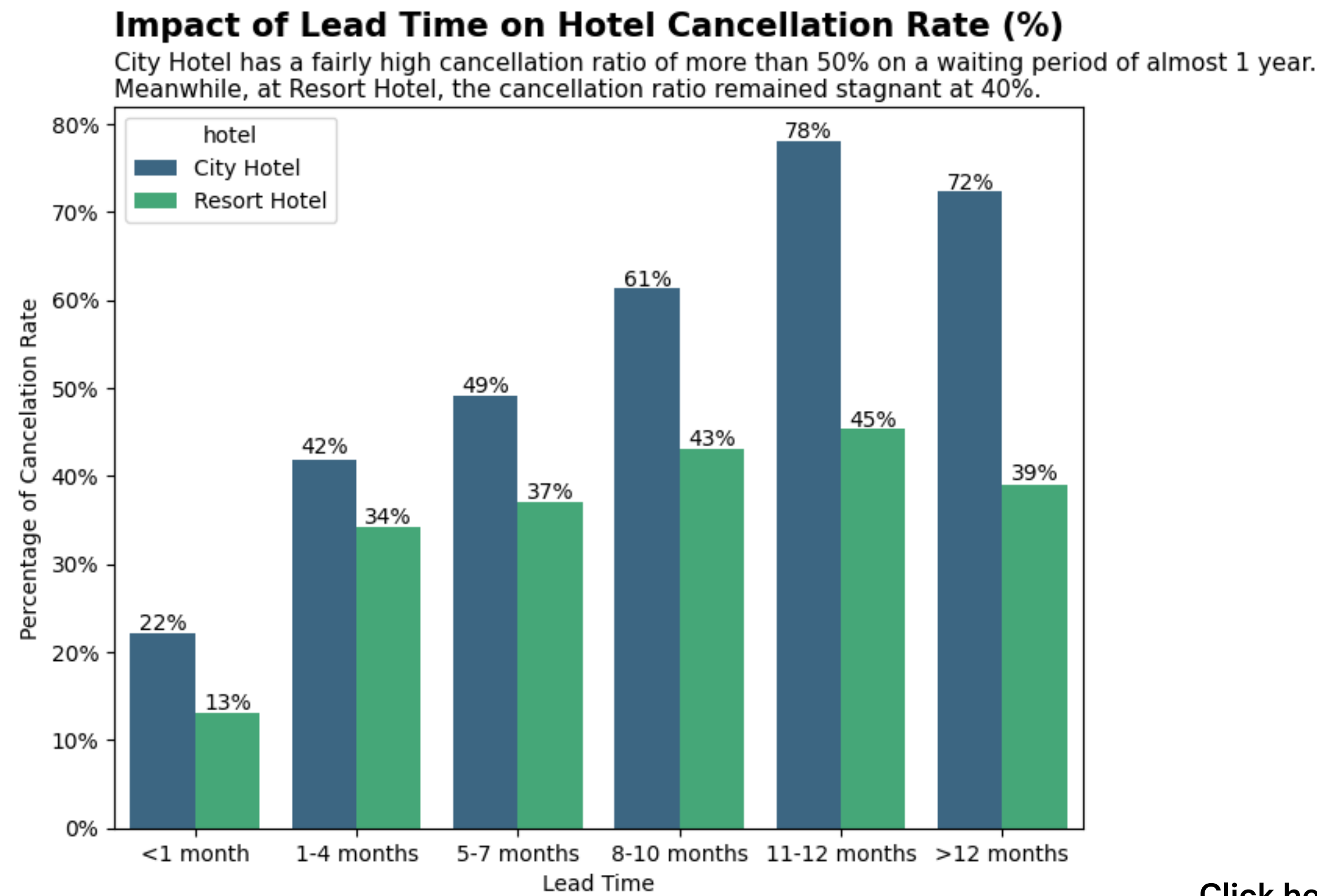
IMPACT ANALYSIS OF STAY DURATION ON HOTEL BOOKINGS CANCELLATION RATES

INSIGHTS AND RECOMMENDATION:

- High cancellation rates at both hotels depending on length of time of reservation. This is likely because the longer the stay, the higher the hotel bill. Customers may check other options such as price comparison, which leads to cancellation of hotel reservations.
- In the future, the hotel can implement a cancellation policy to reduce the cancellation rate. The longer the booking period, the higher the cancellation fee.

IMPACT ANALYSIS OF LEAD TIME ON HOTEL BOOKINGS CANCELLATION RATE

DATA VISUALIZATION



[Click here for detail codes](#) 

IMPACT ANALYSIS OF LEAD TIME ON HOTEL BOOKINGS CANCELLATION RATE

INSIGHTS AND RECOMMENDATION:

- City Hotel have the highest cancellation rate with a lead time of 10 months to 1 year, while Resort Hotel have a stable cancellation rate of around 40%.
- City Hotel that are located in the city center and are used frequently for events or business are likely to be prone to cancellations due to schedule changes or better deals elsewhere. On the other hand, Resort Hotel which are more geared towards vacations or recreation have customers who are more attached to their schedules.
- The cancellation rate is higher when the lead time is almost one year, and the lead time is less than 1 month has the lowest cancellation rate. Companies can set maximum booking limits and consider deposit requirements to reduce the chance of cancellation.

Recommendations:

A

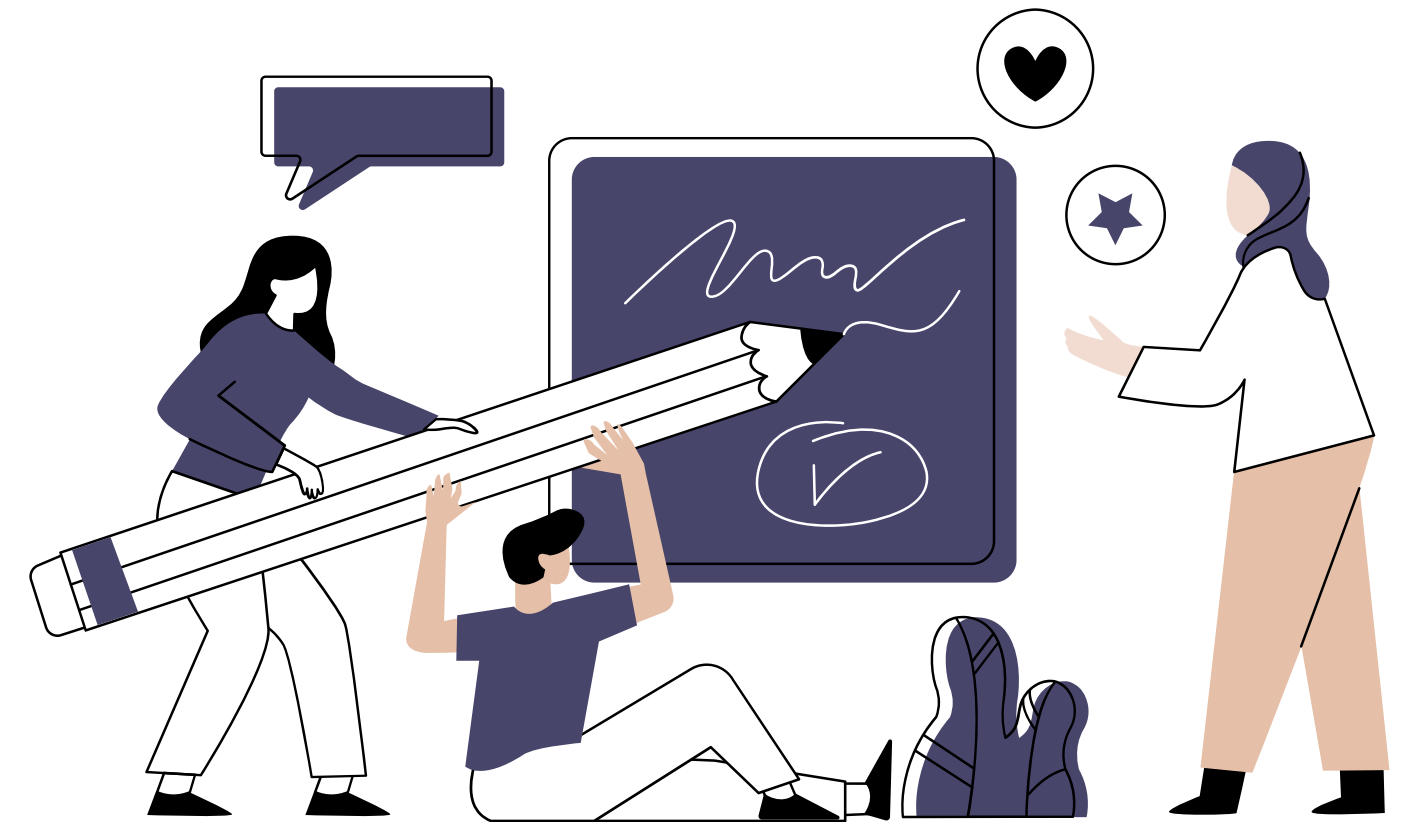
To optimize hotel resources outside of peak season, this can be done by **offering holiday deals promos** at the **beginning of the year**.

B

The hotel can **implement a cancellation policy** to reduce the cancellation rate. The longer the booking period, the higher the cancellation fee.

C

The hotel can **set maximum booking duration limits** and **consider deposit requirements** to reduce the chance of cancellation.





Thankyou!

Let's brainstorm some ideas and you can reach me at:

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