Capstone Project
Hotel Booking Analysis

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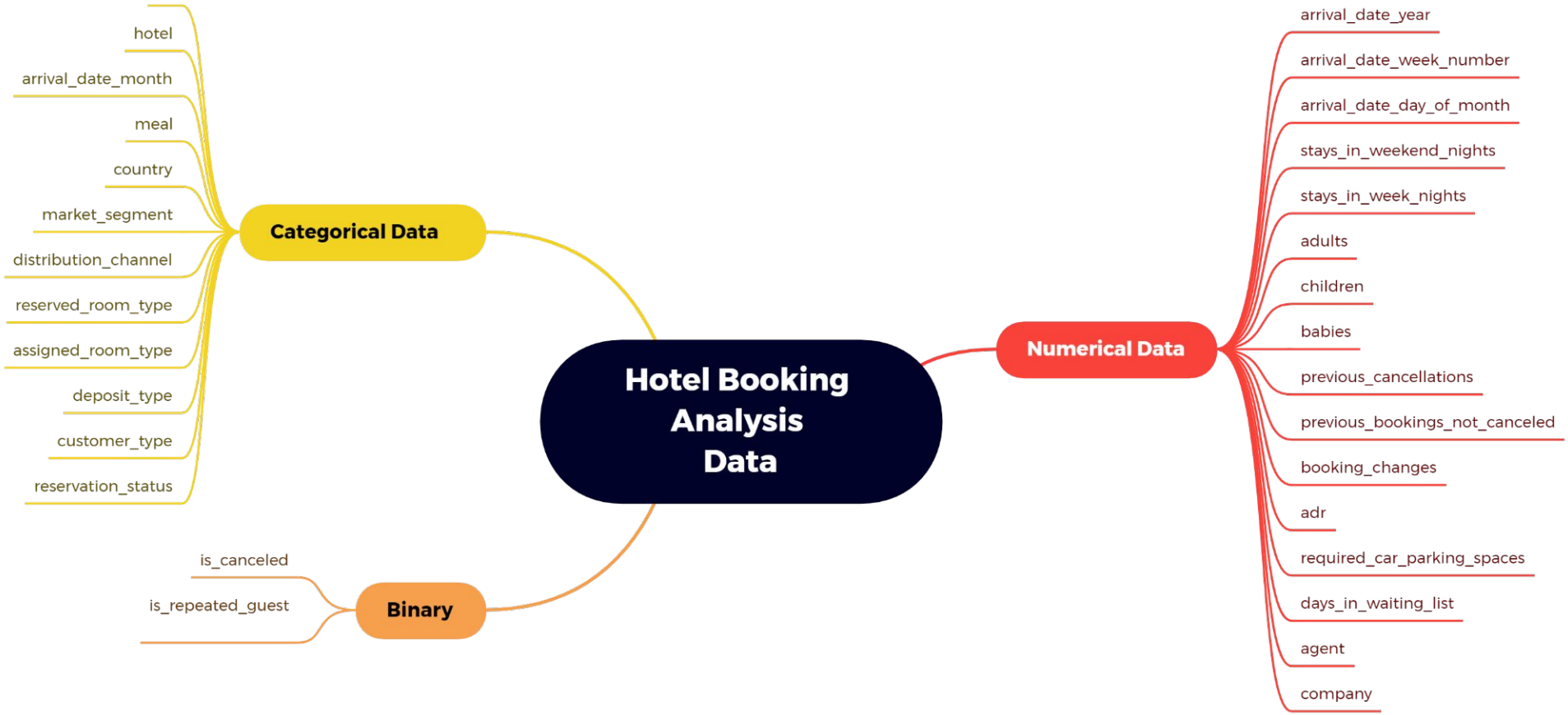
Points of Discussion:

- Defining Problem Statement
- Data Summary
- Data Pipeline
- Exploratory Data Analysis
- Observations
- Conclusion

Problem Statement

Explore and analyze the data to discover important factors that govern the bookings.

Data Summary



Data Summary

The provided data set has following different columns of variables necessary for hotel bookings:

hotel: The category of hotels, which are two city hotel and resort hotel.

is_cancelled : The value of column shows if the booking was cancelled or not. Values[0,1], where 0 indicates not cancelled and 1 indicates the cancellation.

lead_time : The time between reservation and actual arrival.

stayed_in_weekend_nights: The number of weekend nights stay per reservation.

stayed_in_weekday_nights: The number of weekday nights stay per reservation.

meal: Meal preferences per reservation, which are:

Undefined/SC – no meal package

BB – Bed & Breakfast

HB – Half board (breakfast and one other meal – usually dinner)

FB – Full board (breakfast, lunch and dinner)

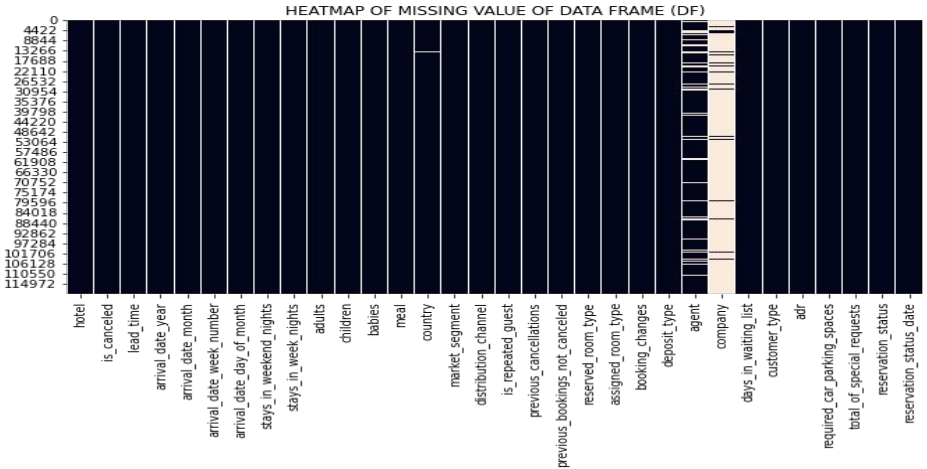
Data Summary

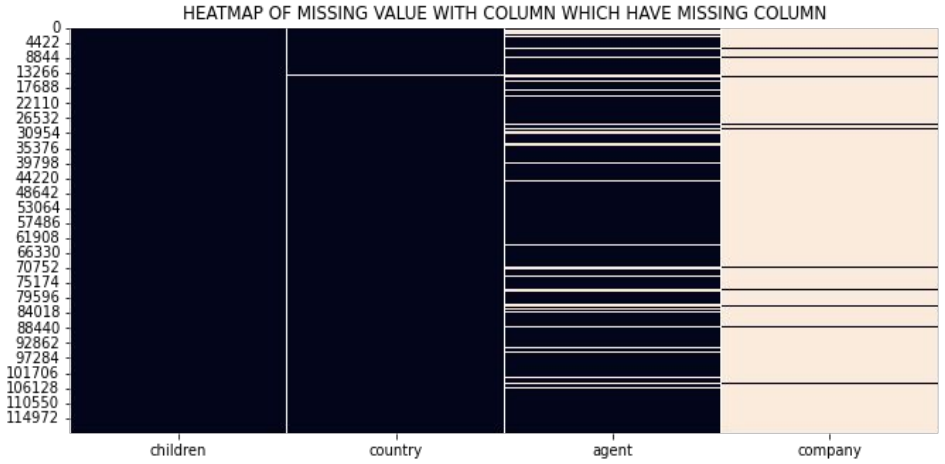
Country: The origin country of guest

market_segment: This column shows how reservation was made and what is the purpose of reservation. Eg, corporate means corporate trip, TA for travel agency and TO for tour operators.
distribution_channel: The medium of booking was [Corporate, Direct, GDS, TA/TO, undefined]
Is_repeated_guest: Shows if the guest have arrived the hotel before or not.Values[0,1]-->0 indicates no, and 1 indicates yes.
days_in_waiting_list: Number of days between actual booking and the transaction.
customer_type: Type of customers(Contract, group, transient, transient party, etc.)

Data Pipeline

- Data Processing: In the first part, we have imported necessary libraries and data set. We then used these libraries to understand the data.
- Data Cleaning: After understanding the data, we got to know about the null values and discrepancies in the data. We replaced the null values with 0 for numerical data and ‘undefined’ for categorical data.





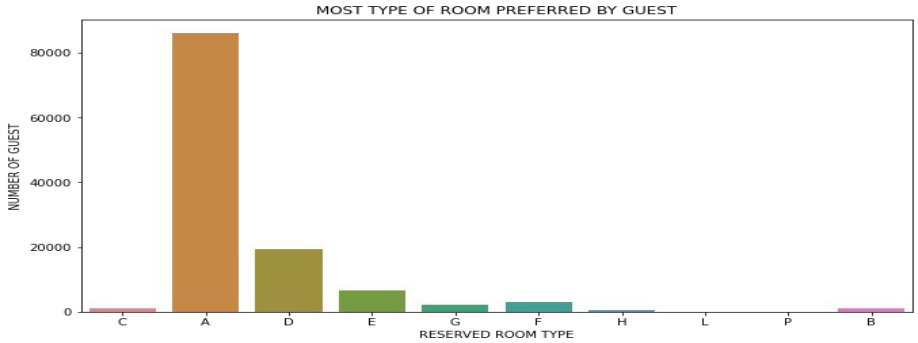
Data Pipeline(continued)

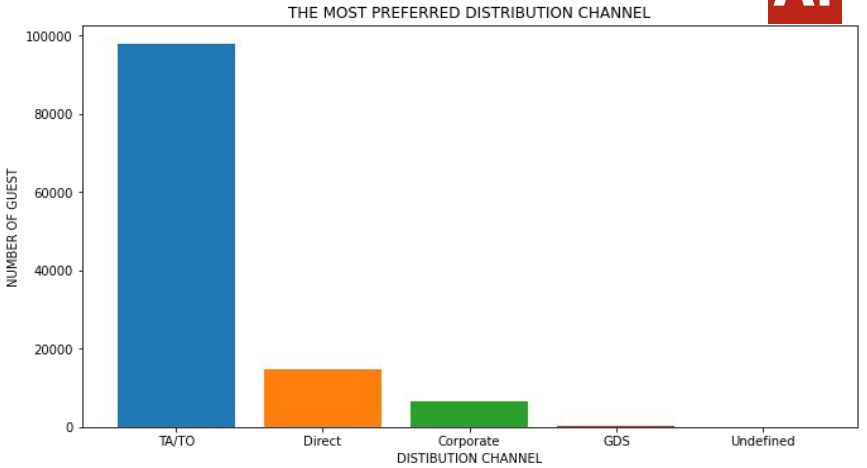
- Exploratory Data Analysis: After Cleaning the data set, we did some exploratory data analysis using tables and graphs to derive the observations from the data and get the solution to the problem statement.

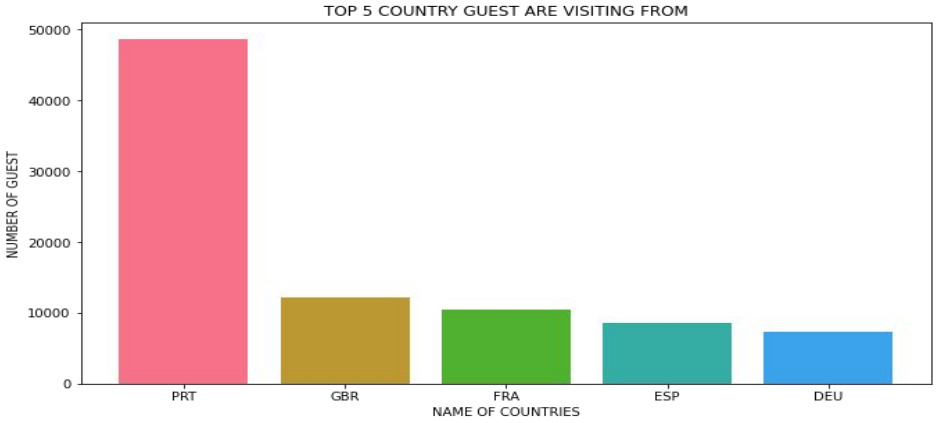
Exploratory Data Analysis

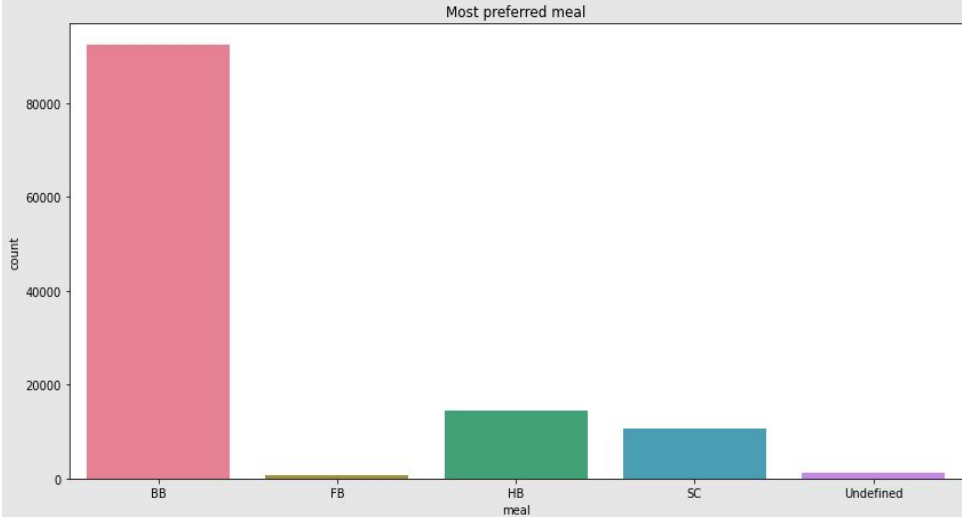
Univariate Analysis:

- While doing univariate analysis of given hotel booking dataset, we answered the following questions:
- Which distribution channel gave most of the bookings?
- Which room type is in most demand?
- From which country most of the customers are coming?
- What is the most preferred meal by customers?







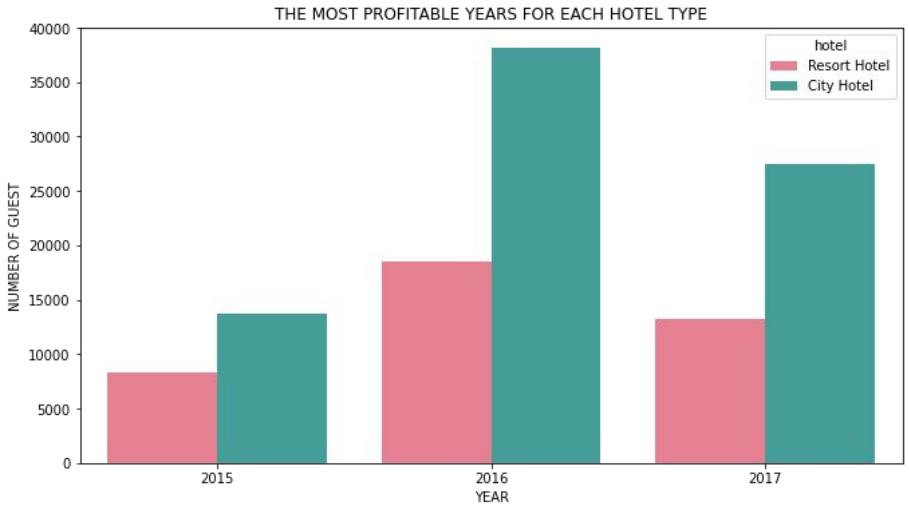


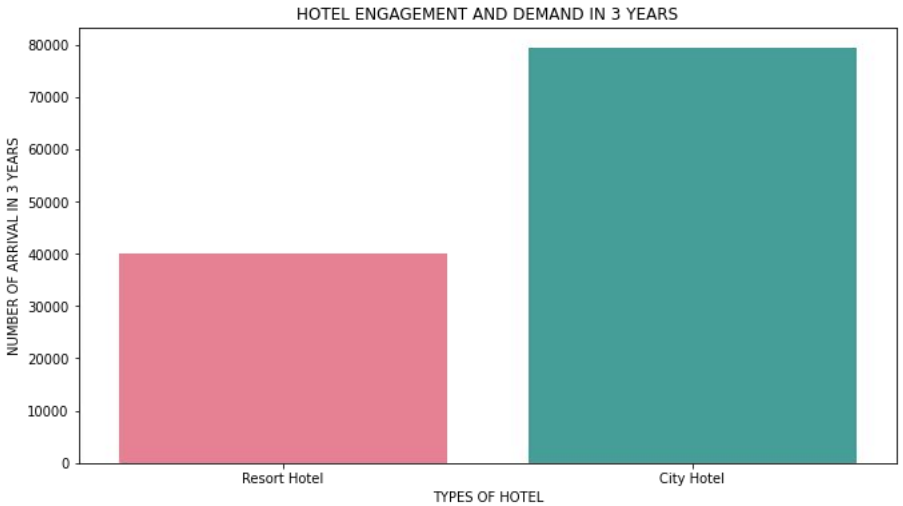
(1) Type A room is in most demand.
(2) Most booking were made from online travel agents.
(3) Most customers are from Portugal.
(4) Most customers prefer Bed and breakfast meal type.

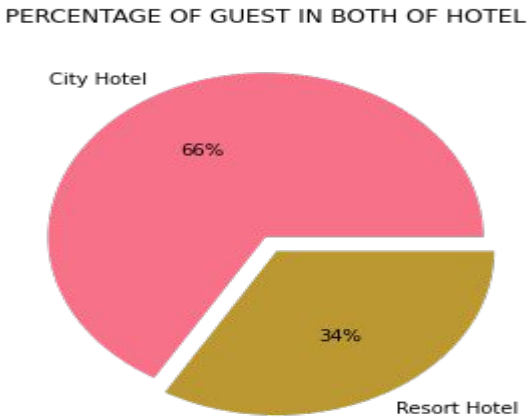
Hotel wise Analysis

While doing hotel-wise analysis of the given hotel booking dataset, we answered following questions:

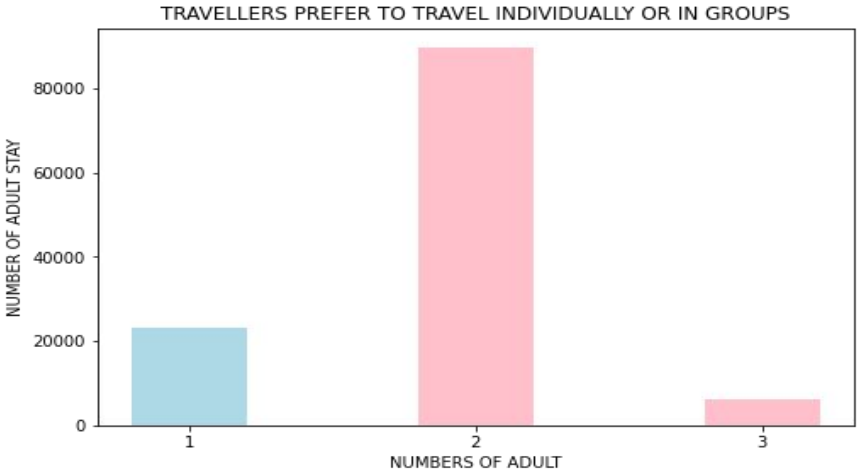
- Which hotel type was more engaging and in most demand?
- Which hotel type receives more guests?
- Which hotel type makes more revenue?
- Which type of guests have most check-ins?
- What is most preferred stay length in each hotel?
- Which hotel have higher and how much customer returning rate?

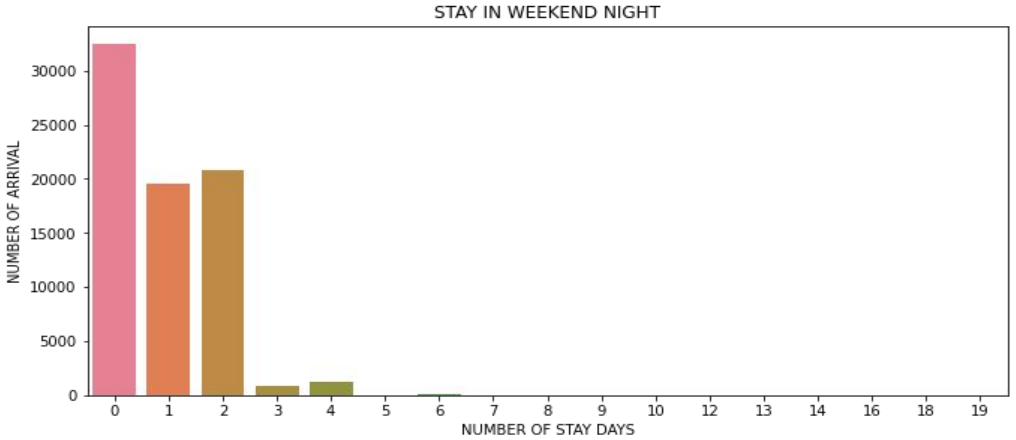


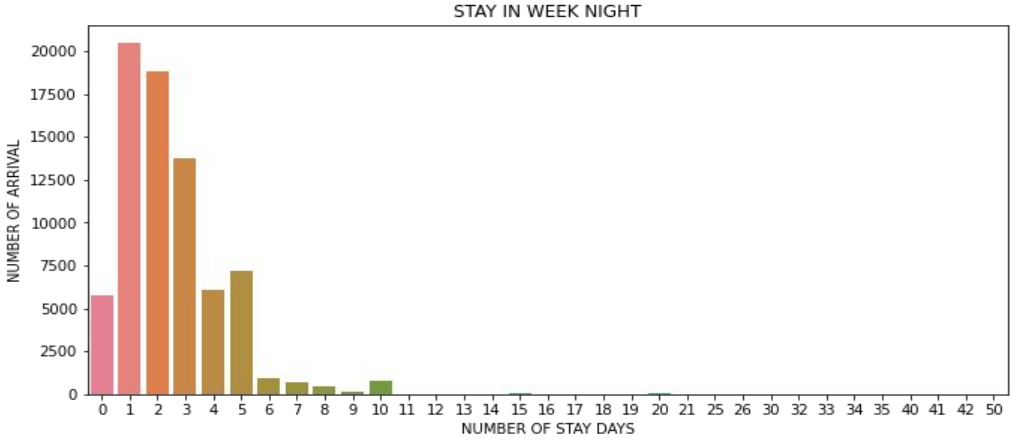




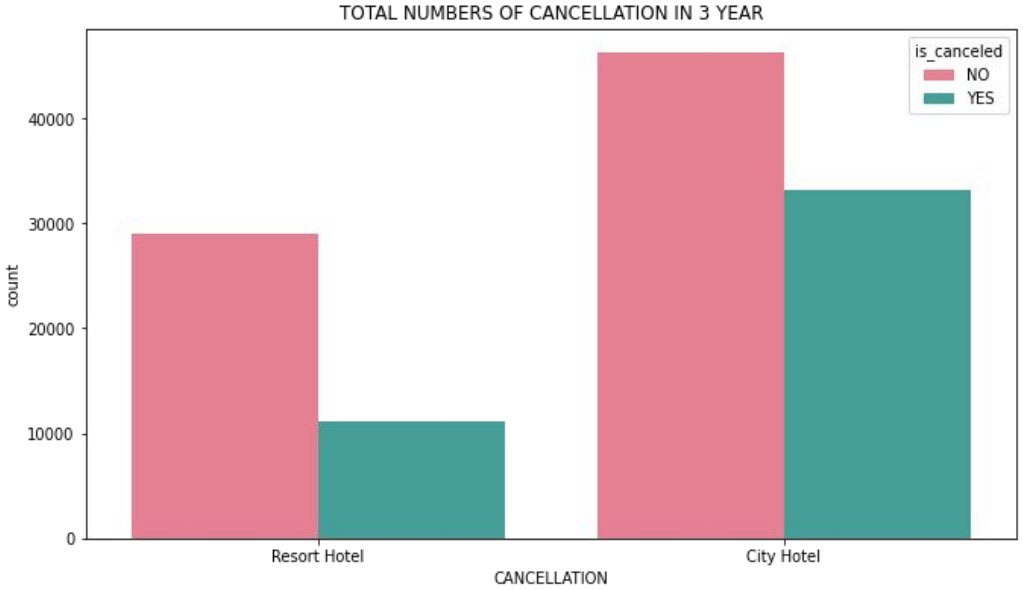
- With the above graph, it is evident that city hotels are more engaging and in demand. Hence, city hotels are more profitable.







- Couples have more check-ins than any number of guests.
- Majority of the travellers who arrived at the hotel on weekend left the hotel on the same day.
- Majority of the travellers who arrived at the hotel on week day left the hotel next day.

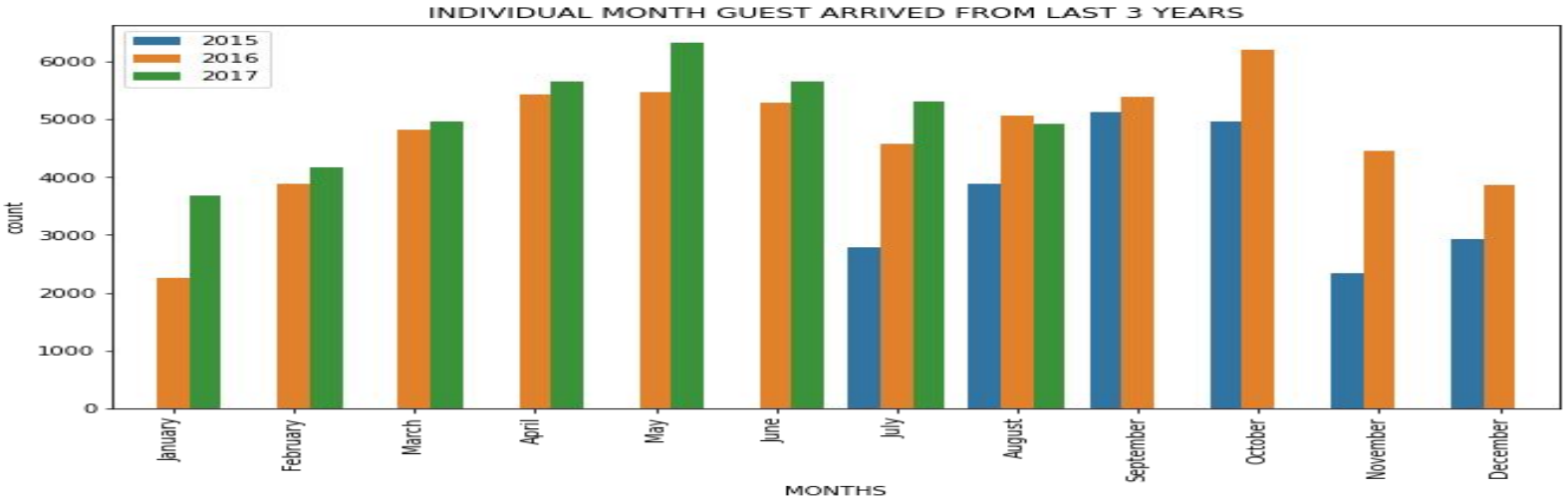


- City hotels receives a higher number of guests than the resort hotels. However, the cancellation rate is more for city hotels.
- City hotels have a higher number of repeat customers. However, the ratio of repeat customers is more for resort hotels as the city hotels receives a higher number of guests than the resort hotels.

Time wise Analysis

While doing time-wise analysis of given hotel booking dataset, we answered the following question:

What are the busiest months for hotels?

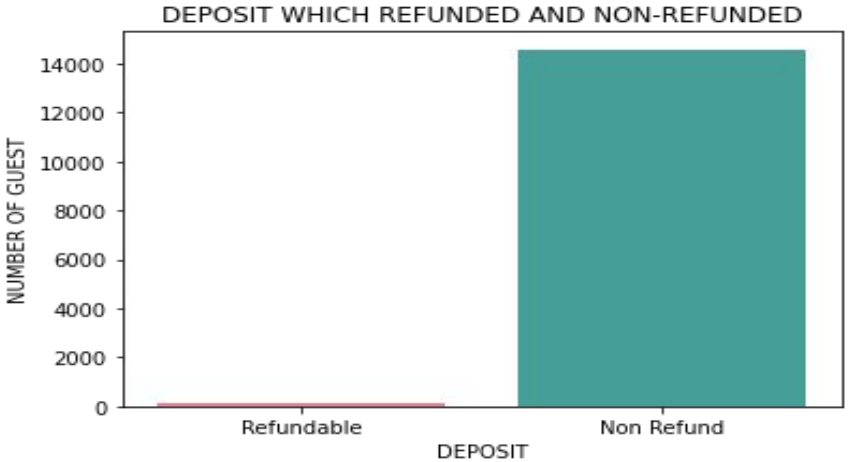


- May is the busiest and profitable month for the hotels in 2017.
- On an average, May-June are the most busier and profitable month for the hotels.

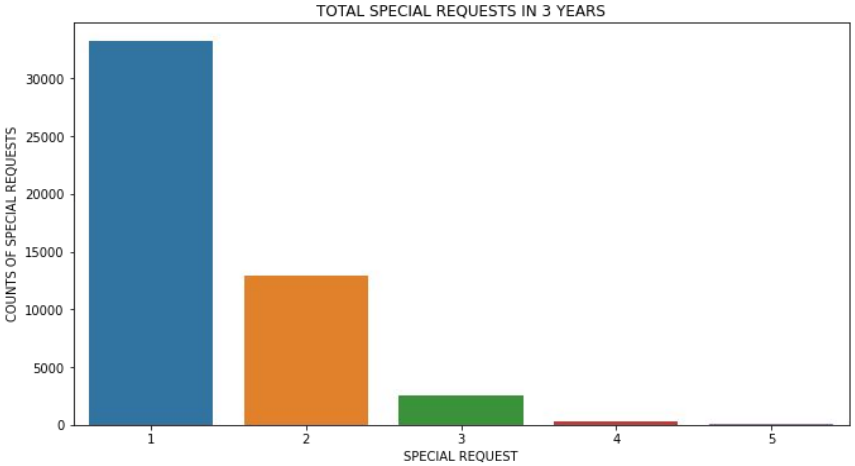
Some other important questions

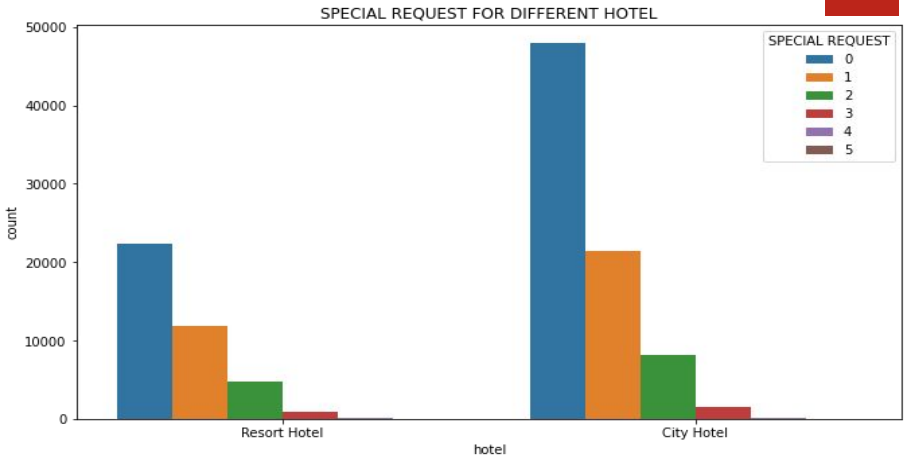
Some other analysis are also done, which are as follows:

- How is the deposit type affecting the profit?
- Which hotel type received more special requests?
- How many special requests were received?

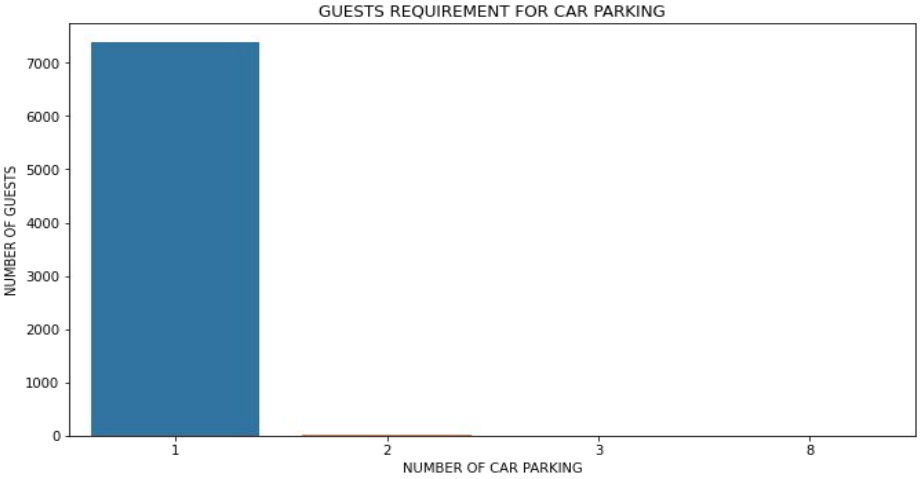


- Non-refundable deposits tends to convert to a successful transaction.





- City hotels have received the most special requests.
- 1 number of special requests is the highest.
- 1 car parking was needed for most of the guests.



Observations Summary

- Type A room is in most demand.
- Most booking were made from online travel agents.
- Most customers are from Portugal.
- Most customers prefer Bed and breakfast meal type.
- City hotels are more engaging and in demand. Hence, city hotels are more profitable.
- City hotels receives a higher number of guests than the resort hotels. However, the cancellation rate is more for city hotels.
- City hotels have a higher number of repeat customers. However, the ratio of repeat customers is more for resort hotels as the city hotels receives a higher number of guests than the resort hotels.
- Non-refundable deposits tends to convert to a successful transaction.
- May is the most busier and profitable month for the hotels in 2017.
- On an average, May-June are the most busier and profitable month for the hotels.
- City hotels have received the most special requests.
- 1 number of requests is the highest.
- 1 car parking was needed for most of the guests.

Conclusion

- Around 60% bookings are for City hotel and 40% bookings are for Resort hotel, therefore City Hotel is busier than Resort hotel.
- Mostly guests stay for less than 5 days in hotel, and for longer stays Resort hotel is preferred. City hotels can offer bundled offers like 2 days and 3 nights, or 4 days and 5 nights, etc in order to increase the customer stay.
- Both hotels have significantly higher booking cancellation rates and very few guests less than 3 % return for another booking in City hotel. 5% guests return for stay in Resort hotel. Hotels can provide offers and discounts to the repeat customers in order to increase the number of repeat customers.
- Most of the guests came from European countries, with most no. of guest coming from Portugal. Hotels can work on attracting other countries guests with special offers and discounts along with organizing an event, etc.
- Guests use different channels for making bookings out of which most preferred way is TA/TO. Hotel can offer incentives for higher bookings.
- Non-refundable bookings tend to convert to a successful transaction.
- May is the busiest and profitable month for the hotels in 2017.
- On an average, May-June are the most busier and profitable month for the hotels.
- Couples are the most common guests for hotels. Hence, hotels can plan services according to couples needs to increase revenue.