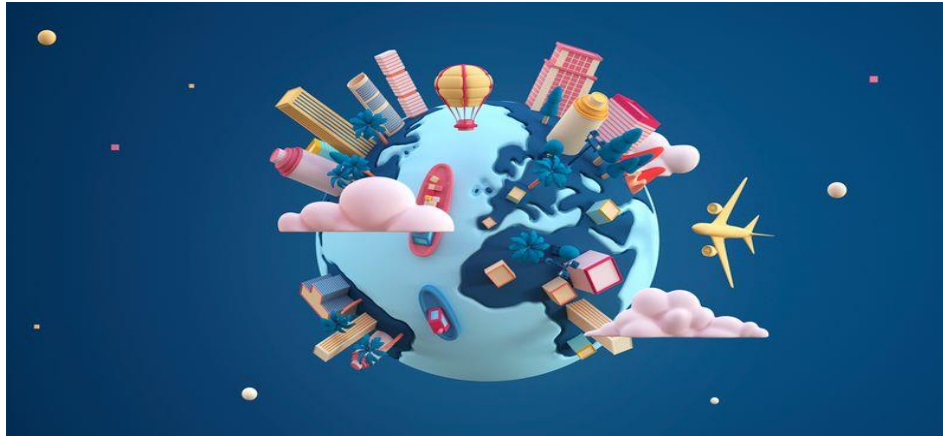# Capstone Project - 1
Hotel Booking Analysis

By:- Milan Ajudiya

Introduction:-

Hotel Booking is most important part, while we are going for vacation or Business stay or casual Trip It is not only Booking a hotel but it is how we optimize stay, Optimization means how can we get good facility in Hotel with best deal.

Continued..

As a Customer/Tourist , I would like to know about each hotel before booking.

Like if I plan a Trip than, what is the best time in year for booking , Which one is better for long stay , How long should I Stay to get optimum price , Which Hotel has couple Friendly and Family Friendly, particular hotel has repeated guest or not?, by this I can find behaviour of hotel with customers.

Steps:-

➢ **Step 1:-**

Data Exploration

➢ **Step 2:-**

Data Wrangling

➢ **Step 3:-**

Analysing data Though Visualisation Tool

➢ **Step 4:-**

Conclusion

Data Exploration:-

In exploration I found that data was pretty much clean except some of features having missing values. By using info() method I Draw same insights are:

Dataset has shape of (119390,32) where 119390 are raw of dataset and 32 are column/Features

Null values in Following Features/Column:
Children column   ➜ 4
Country column   ➜ 488
Agent column   ➜16340
Company column   ➜112593

Data Wrangling:-

Some feature are having Nan or missing Values this is called Null values, First Priority is to treat the Null values before deploying any operation.

Number of Null/Missing Values can be find using command .isnull().sum()

These Null values can be treated by either dropping null value row or by replacing them with average or mode value of that column/Feature. In this Dataset Null values in Country column replace with mode of that column while in Agent, Company and Children column replace with 0.

Analysing Data Through Visualisation Tool:-

Data Visualisation:- It is a graphical representation of information and data, by using visual elements like data, by, etc..

Dataset having two types of hotel , so firstly see share of both the hotel in the analysis by using count plot we can see the share Of booking in both type of hotel.

Types of Hotel:-

From count plot we can see that most Of Booking is from City Hotel so, city Hotel Has 66% of share and rest 34% share is Resort Hotel.

City hotel is more preferred by people compared to Resort hotel.
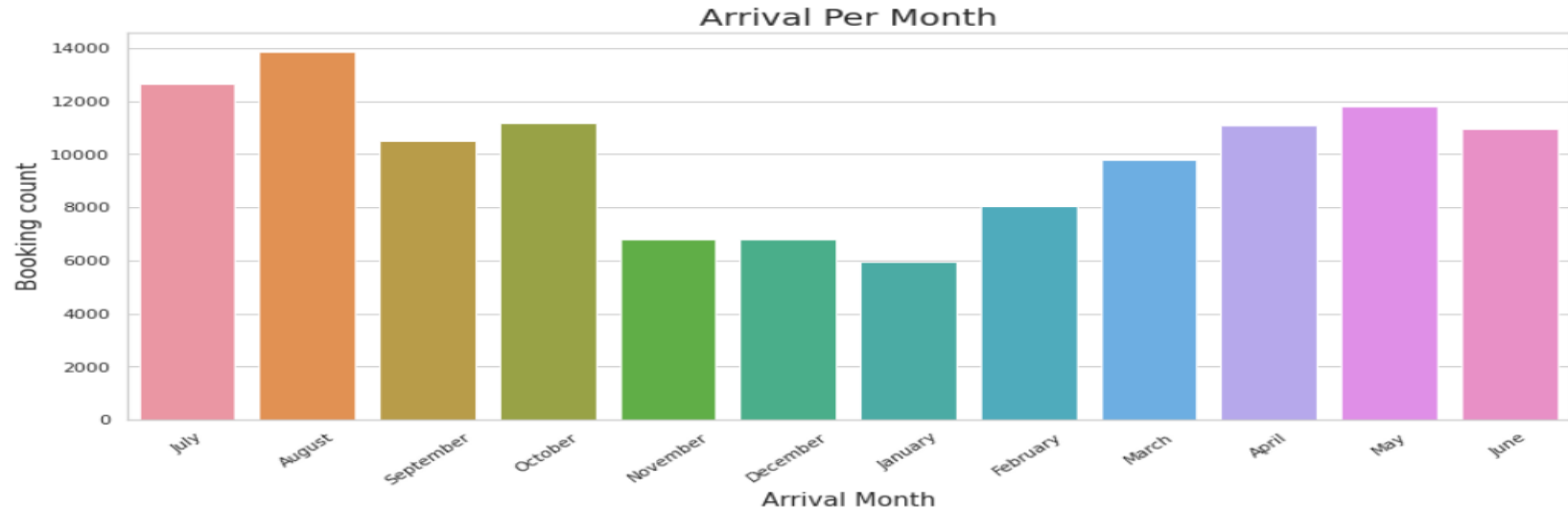

Booking in each hotel

Year wise booking:-

Year 2016 has Highest Booking almost Double Booking were made compared to previous year 2015.

While Bookings drop by almost 15% in 2017.

Booking in years
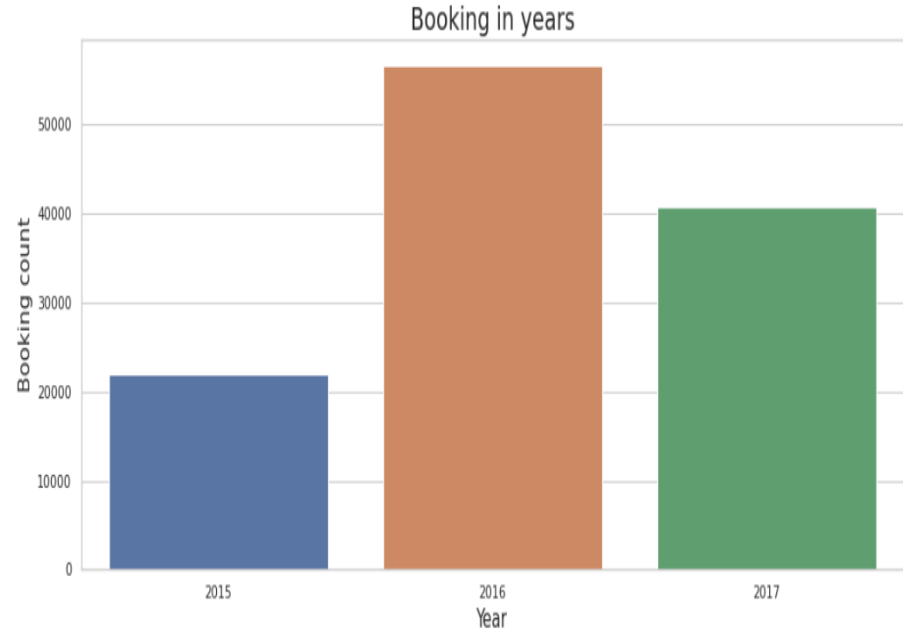
Top Arrival Month:-

Arrival Per Month

August has nearly 14000 bookings and July month has more than 12000 bookings, these both are more preferred by people.
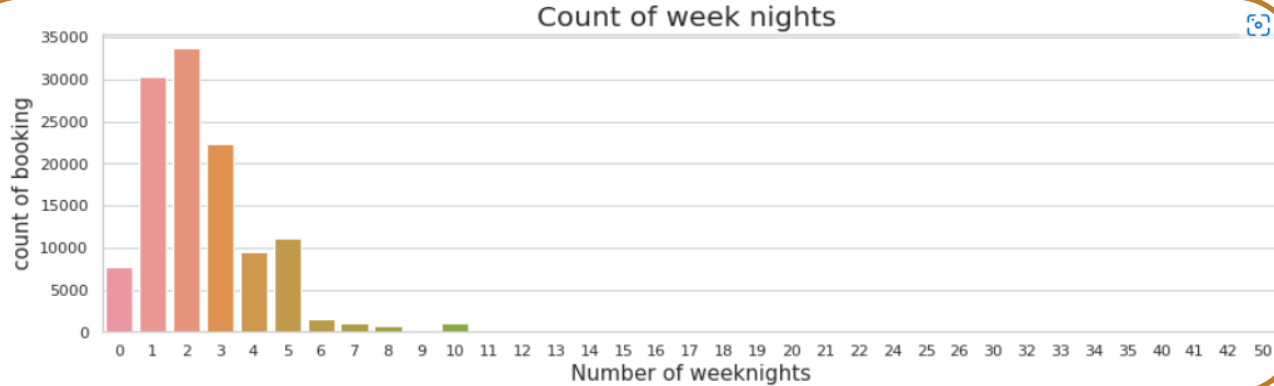while January has less than 6000 bookings and these month is least Preferred by people.

Percentage Of Cancellation:-

As see in Graph City hotel has 41% of Booking Cancellation while Resort hotel has 27% in Resort hotel.
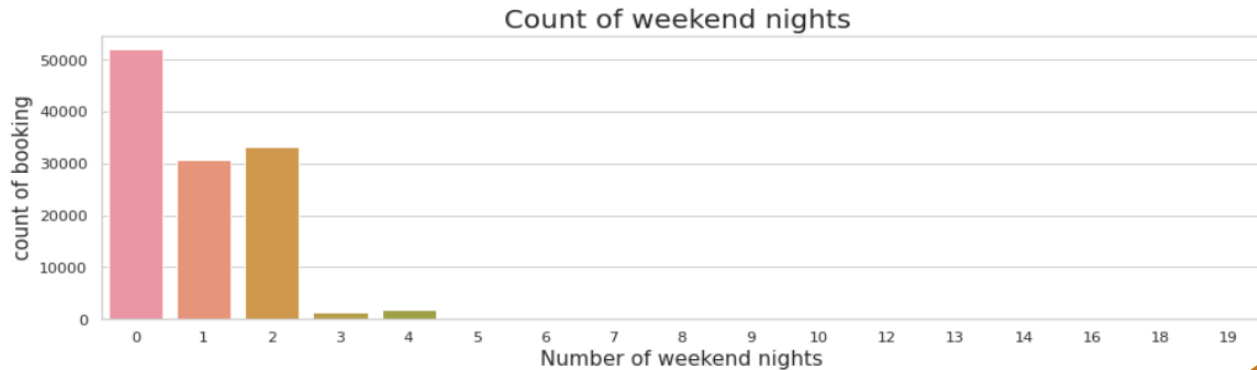
High Cancellation will effect on revenue of the hotel industry.

Booking canceled in each hotel
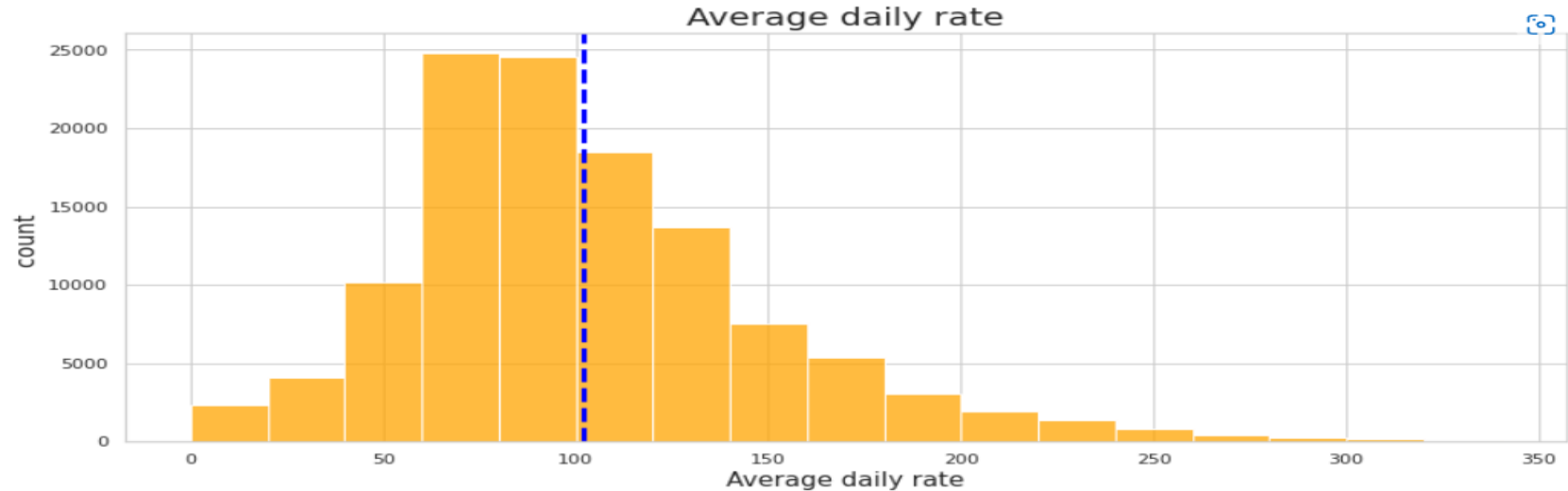
Night stay Duration:-

Most number of People preferred to stay for one to five weeknights, and very less number of people preferred to stay more than 6 days.

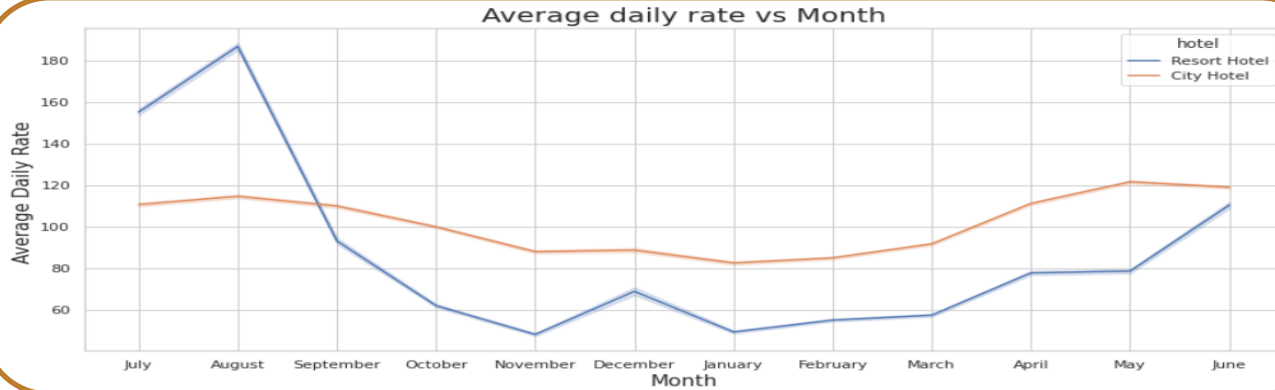People are preferred stay for one to two weekend nights.
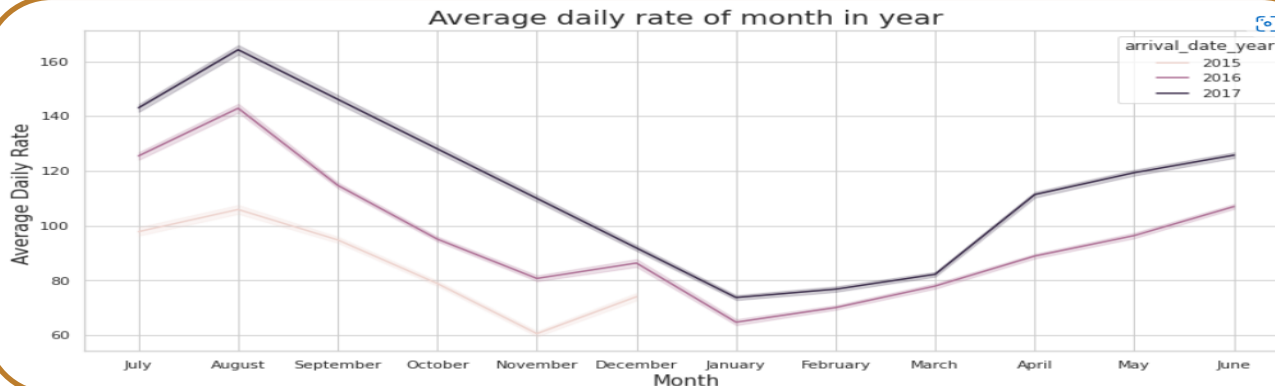
Average Daily Rate:-

This Graph is Follow Gaussian Distribution.
Average Daily Rate is in between 50 to 150,Dotted line is Mean of ADR.
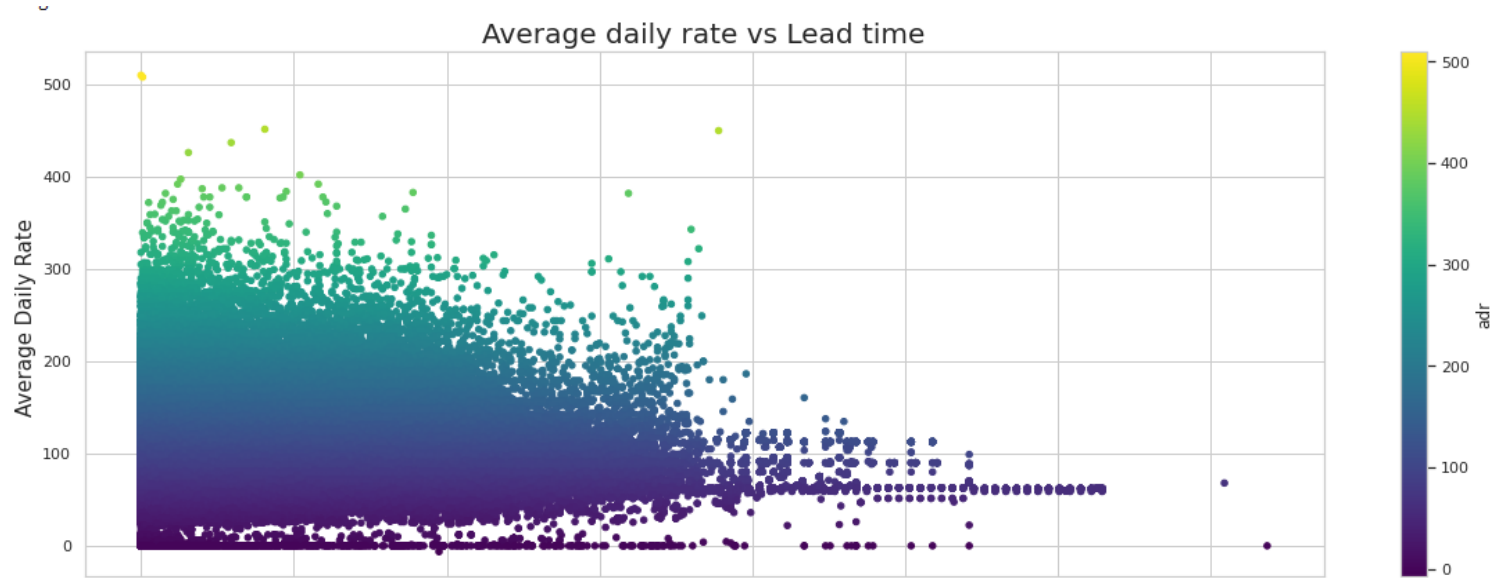
ADR vs Month and Year:-

Average daily rate vs Month

ADR is high in month of July and August for Resort Hotel, while City hotel has High ADR in month of May,June,July and August Month.

Average daily rate of month in year

ADR is high in month of July and August in Year of 2017 while January Has Lowest ADR in all 3 years.

ADR vs Lead time:-

Average daily rate vs Lead time

As see in Scatter plot Lead time affects the Average Daily Rate as Lead Time Increase Average Daily Rate is Decreases.

Lead time:- It is the time between Booking date of hotel till arrival date of customer or check in date of customer.

Lead time play very important role in hotel industry, ex: if customer is booked room and he is not check in for long time at that time hotel can not give that room to other customer because that room is already booked, that will affect on ADR of hotel.

Average Waiting days in hotel:-

As see in Graph Average Waiting days in city hotel is 3, And almost 0 days in resort hotel.

It is may be because of Resort hotel has full sized luxuries facilities with full service accommodation and amenities, and very less people can afford resort hotel so waiting days are less in resort hotel.

average waiting days in each hotel
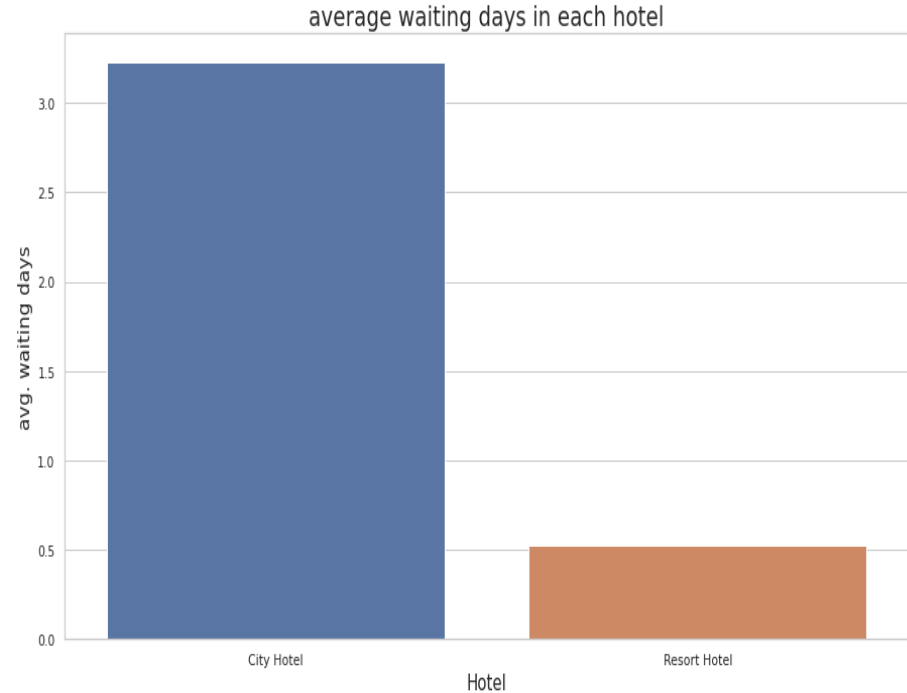
People from Top 10 Country:-

Top 10 country with most no of customer
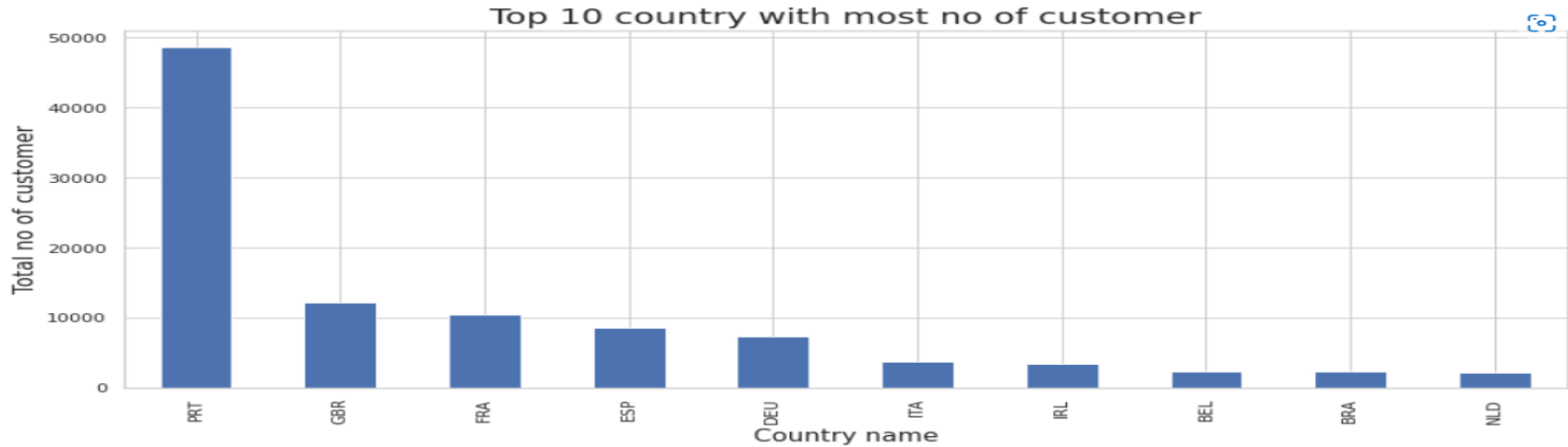
Portugal, UK, France, Spain and Germany are the top country from this country most of the Booking were made.
Portugal top with 48590 bookings followed by Uk is 12129 ,France 10415 Spain 8568 ,Germany 7287,Most Bookings are from European countries.

Type of meal:-

Bed and Breakfast most popular meal package (77%) while Booking Hotel, and Full Board Meal package is least popular(0.6%) among the all meal packages.
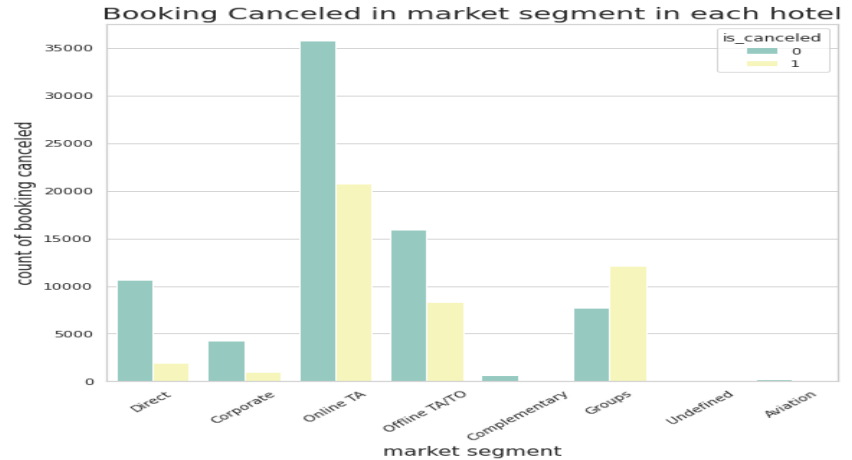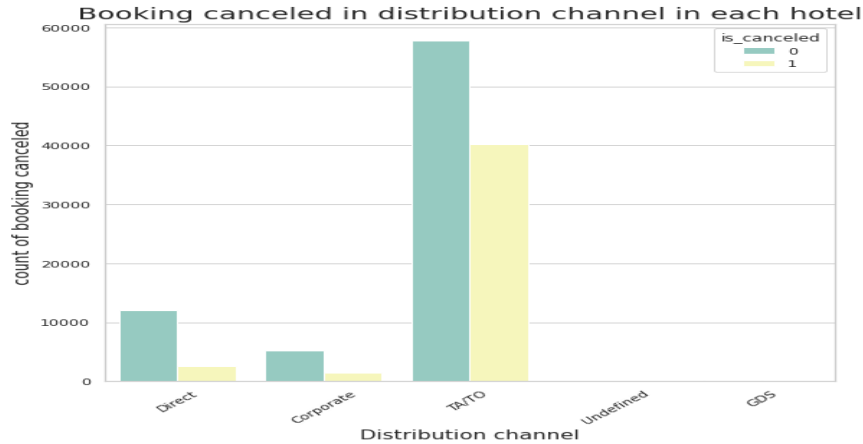

Meal Type in Hotel
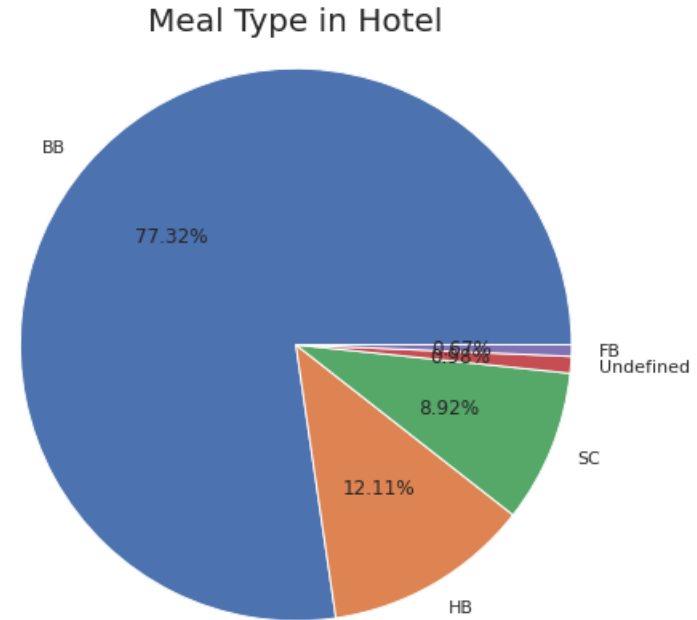
Lead time vs cancellation:-

plot of lead time vs cancelation
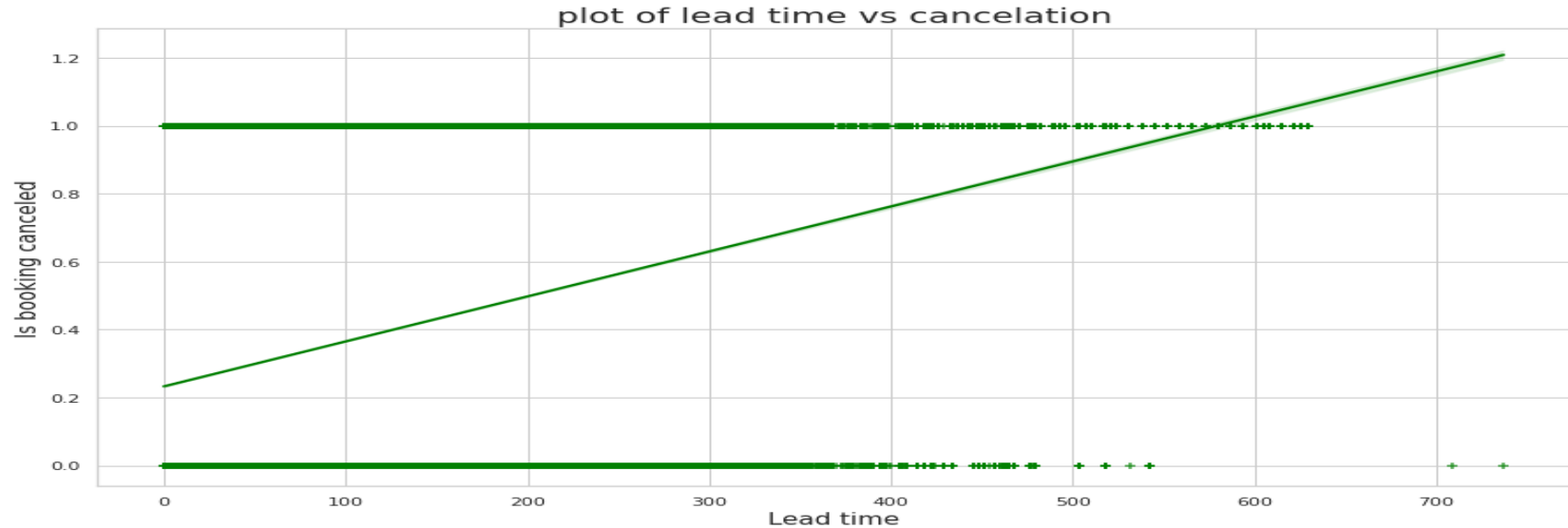
Cancellation of Booking is directly Related to Lead time, as see in regplot as Lead time is increases Cancellation of Booking is also Increases.
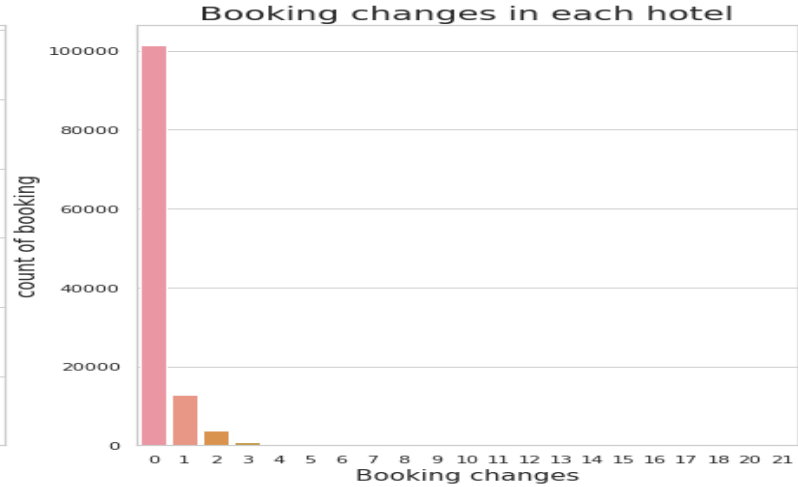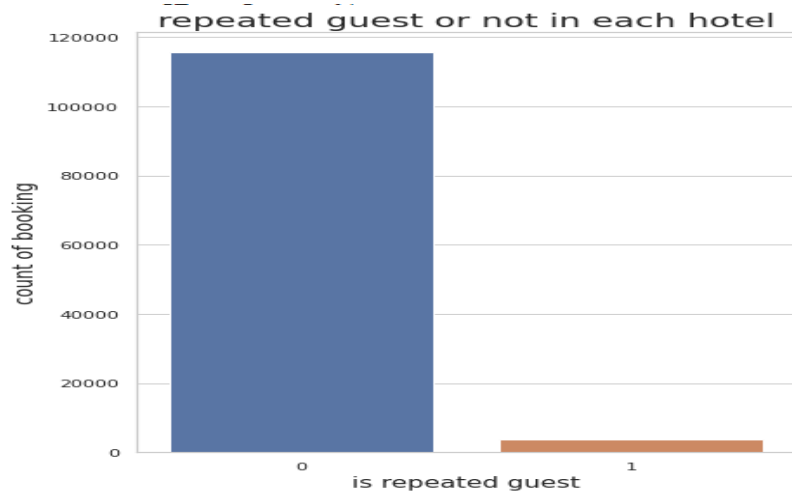
Distibution and market channel:-

Booking Through (TA/TO) Distribution channel has higher Cancellation Rate.

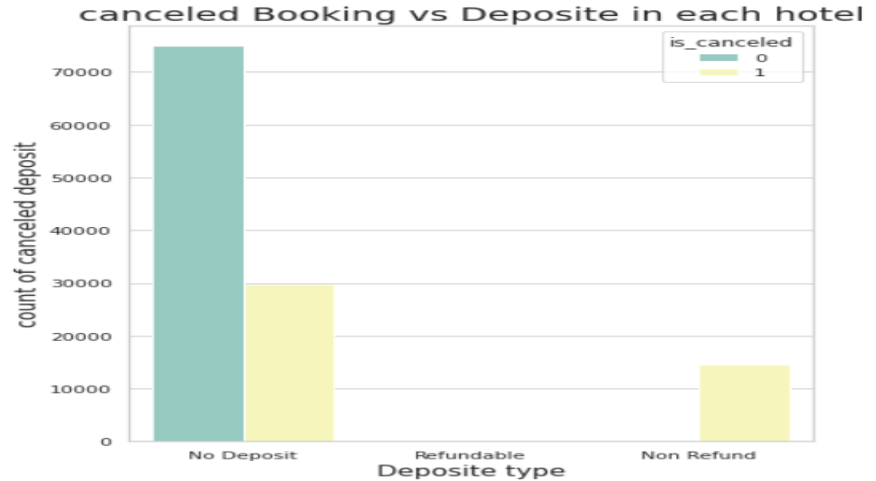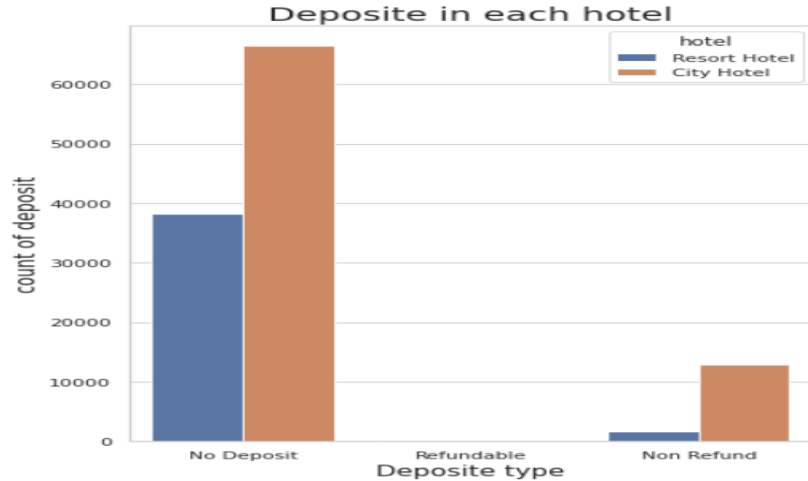Market segment (Online TA/TO and Offline TA/TO and Groups) has high Cancellation Rate.

Repeated guest and booking changes:-

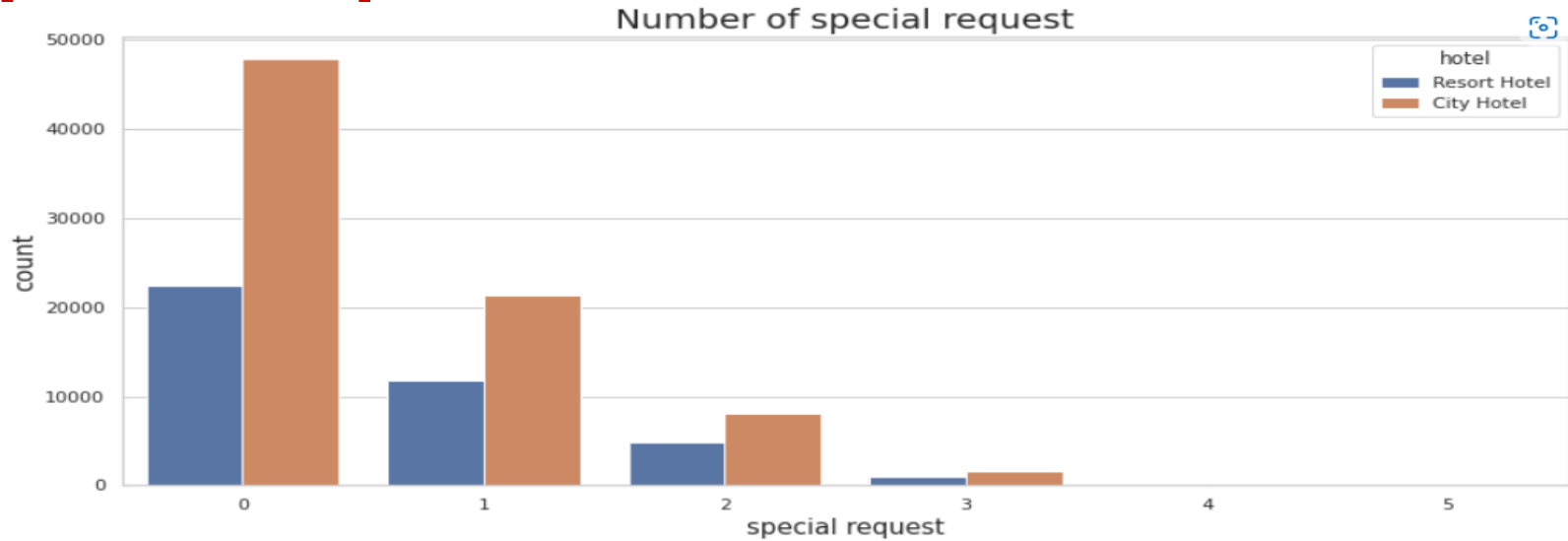Only 4% of people are repeated in both hotel this may be loyal customer to the hotel which are repeated.

Almost 85% people are not changes Booking.

Type of Deposit:-

- No Deposit type is most popular in each resort and city hotel may this is the reason of higher cancellation in hotel, that gives flexibility to customer to book hotel without deposit.

# Special request:-

From graph see that special request is maximum 3 but the number of people who made special request is more in city hotel, this may be because of more number of people are visit to city hotel.

Car parking space:-

As see in Bar graph more number of people are not require car parking space.

Very less number of people require car parking space.

Require car parking space
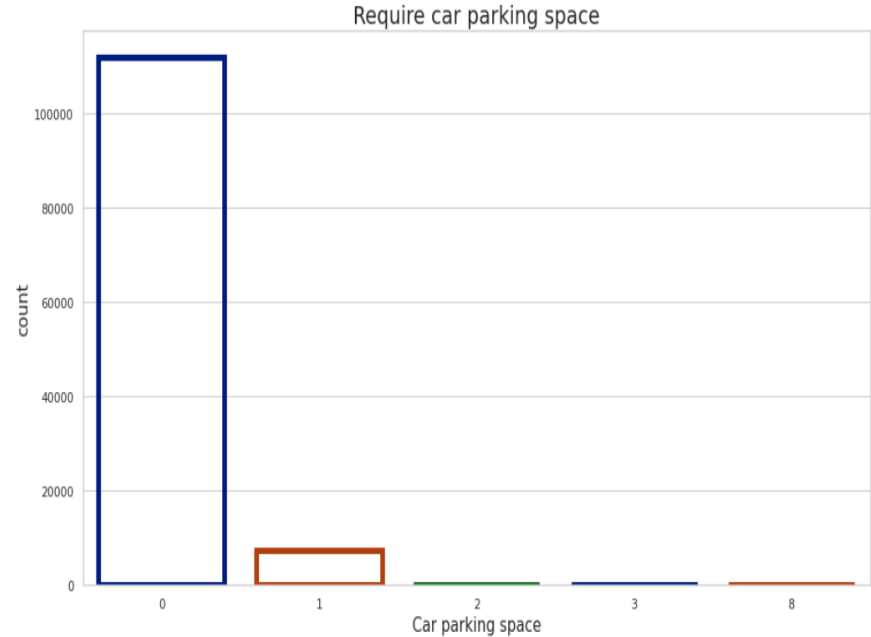
Conclusion:-

- City hotel is More booked (65%) than resort hotel.
- More than double bookings were made in 2016 compared to previous year 2015, but Bookings are decrease almost by 15% in 2017.
- Most Booking were made from July to August and least booking were made start and end of the year.
- if you are planning a vacation at city hotel than you can visit jun,july,auguest,september for low cost of booking.
- if you are planning a vacation at resort hotel than you can visit January to may and October, November and December month for low cost of booking.

Continue...

- Portugal,Uk,France,Spain and German are top counties from most guest come.
- Couple(two people) is most popular accommodation type, so hotel can make arrangement plan accordingly.
- People stays one to five days in hotel while less people who stay more than 6 days in hotel in weeknights , While both city and resort hotel has almost similar stay on weekend nights.
- City Hotel has 41% of Cancellation rate While Resort Hotel Has 27% Cancellation rate.

Continue...

- Average Waiting Days in city hotel is approximately 3, while almost 0 days in resort hotel.
- No Deposit Type of Booking is More popular in both type of Hotel.
- Lead time is directly Related to Booking Cancellation as Lead time Increases Chance of Booking Cancellation also Increases.
- Average Daily Rate is in between 50 to 150.

Reference:-

- Matplotlib Library Documents
- Seaborn Library Documents
- Greek for Greeks
- Analytics vidhya

Thank you