

# Capstone Project-1

## Hotel Booking Analysis

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# Why Hotel Booking Demand Analysis?

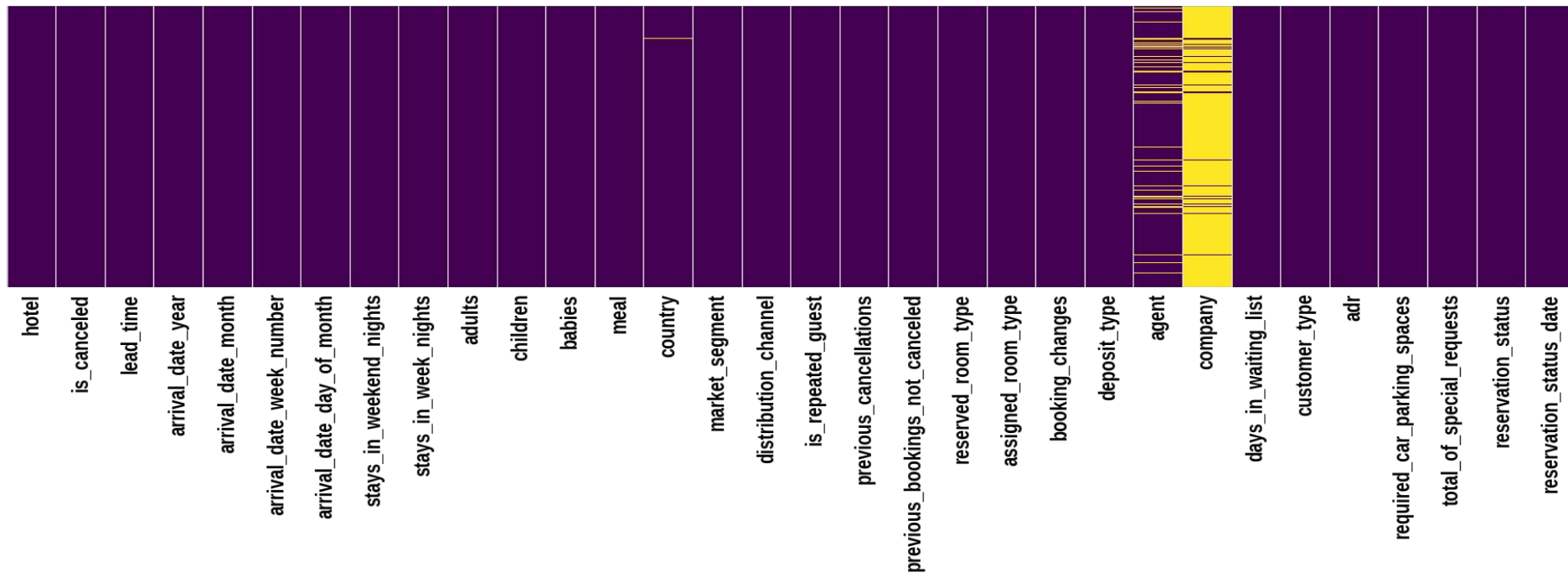
- Hospitality industry is **big contributor to economic growth of any country.**
- With a consistently growing middle class and increasing disposable income, the tourism and hospitality sector is witnessing a healthy growth.
- The growth in the hospitality sector and its contributions to the GDP will continue to be substantially increase.



# **E**xploratory **D**ata **A**nalysis

# Preparing our dataset

- Libraries used :Numpy, Pandas, Seaborn, Matplotlib and Plotly.
- Shape : **119390, 32**
- Most of the **null values** were present in columns - company and agent.

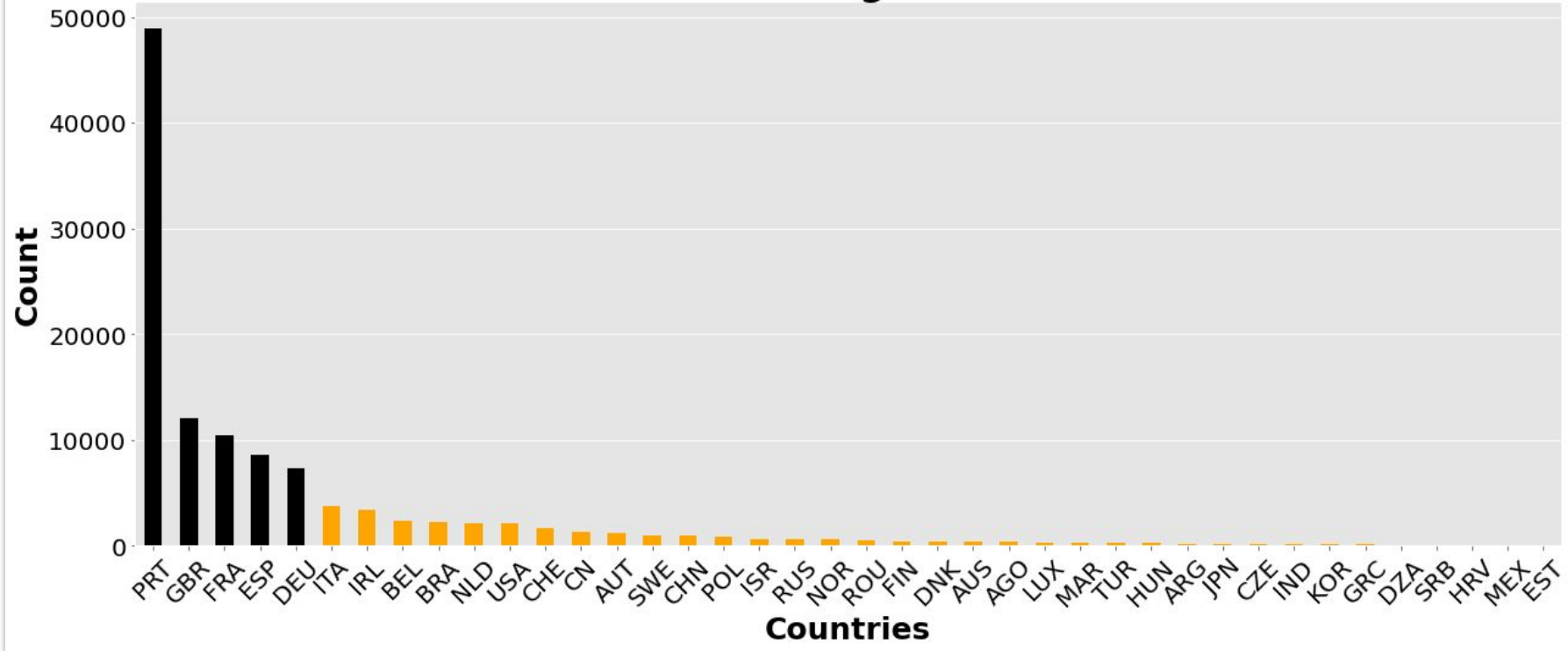


# Visualization



# Where do majority of guests are from?

## Countries where guests are from



- **Portugal, Britain, France, Spain and Germany** are the top five countries from where majority of guests come from.

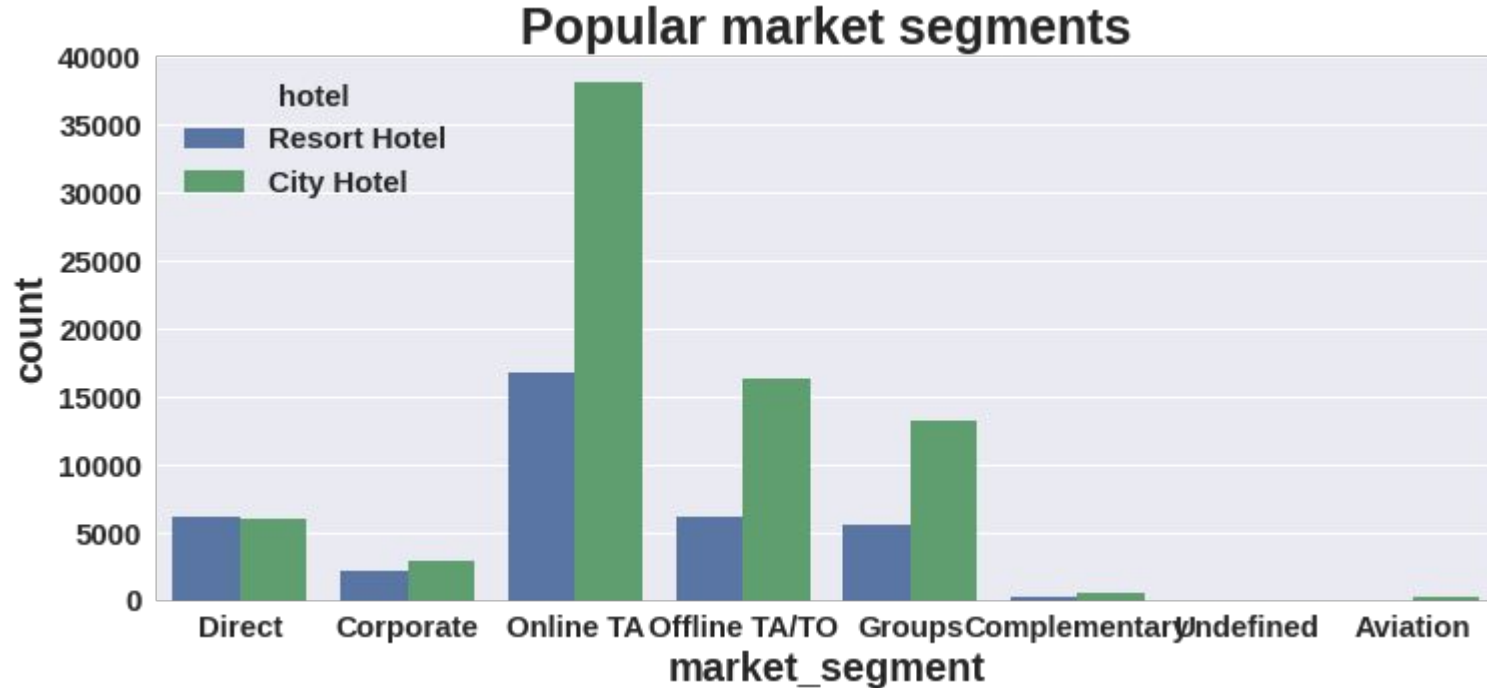
# Are the number of both the hotels of both types?



There are **twice the number of city hotels relative to resort hotels.**

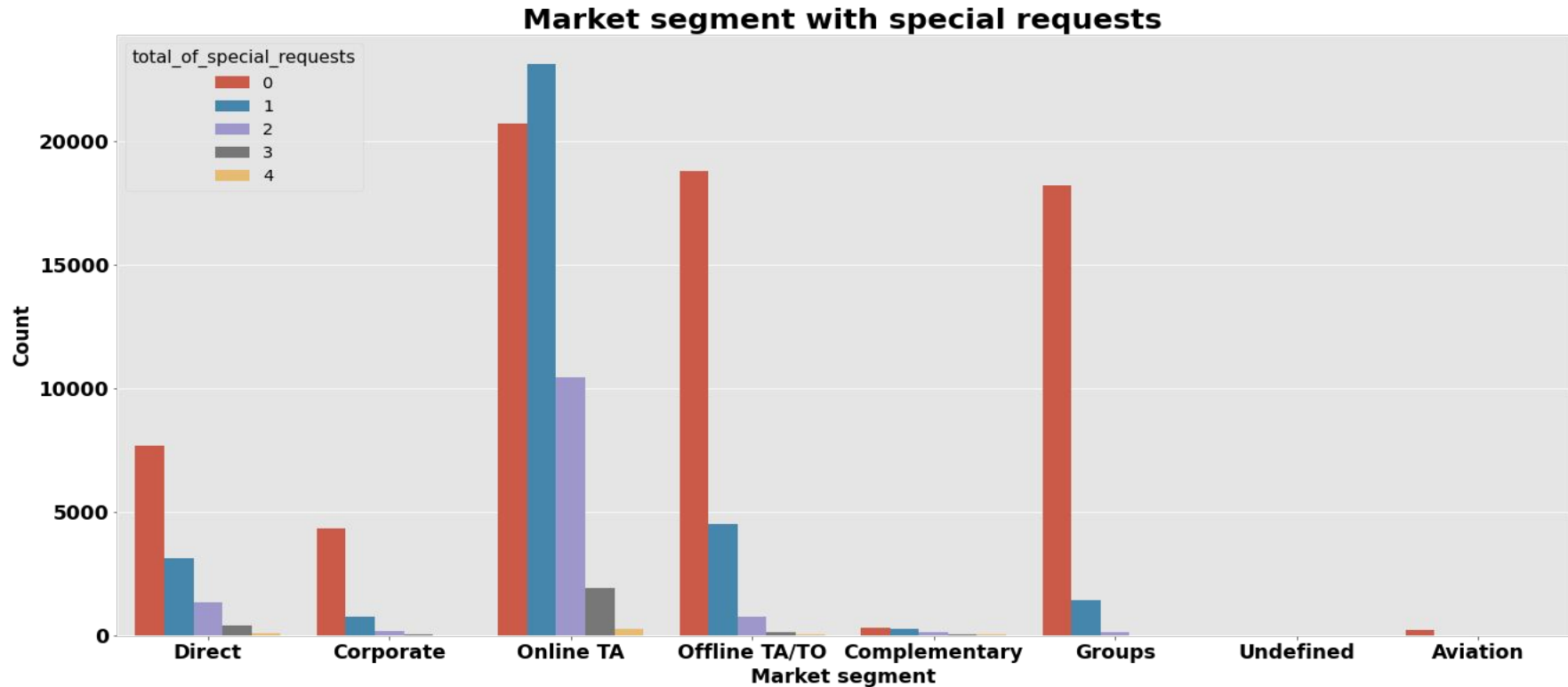


# Popular market segments used by customers



- **Online TA is the most popular market segment** occupying almost half of the market share with more than 50K customers.
- **Offline TA and groups are the other two major segments** having market share of around 20K respectively each.

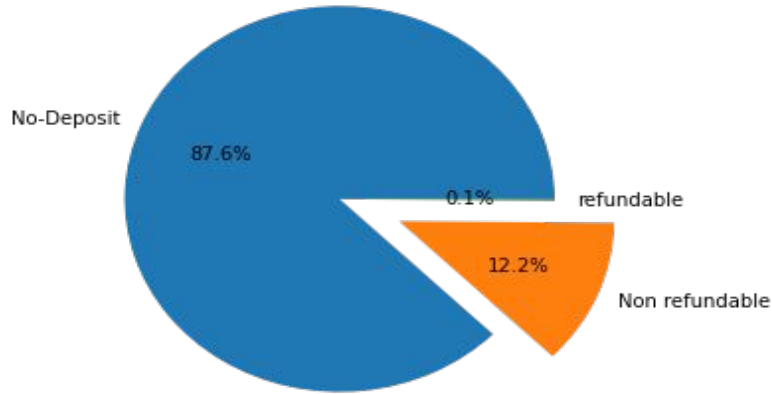
# From which market segment are we getting the most special requests?



- Online TA have disproportionate number of special requests.

# How do deposit types affecting bookings?

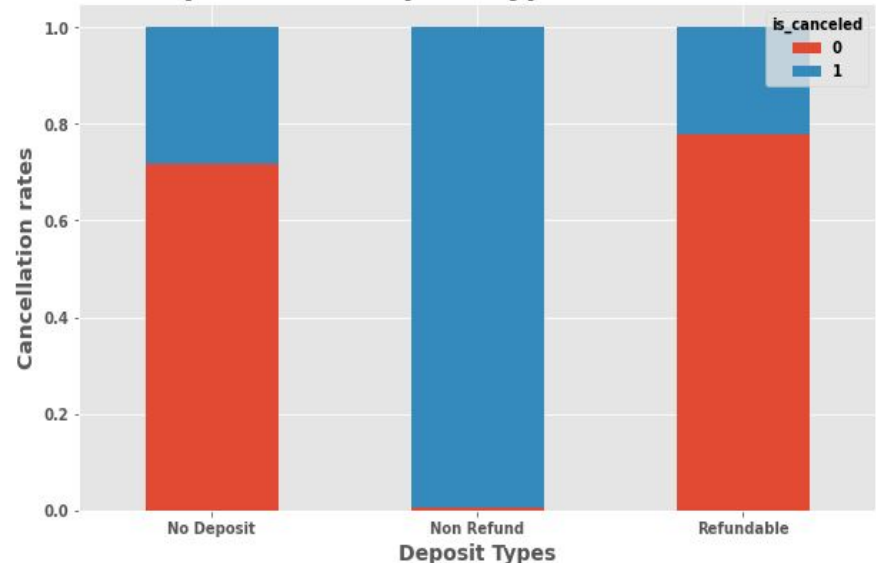
Deposit Type



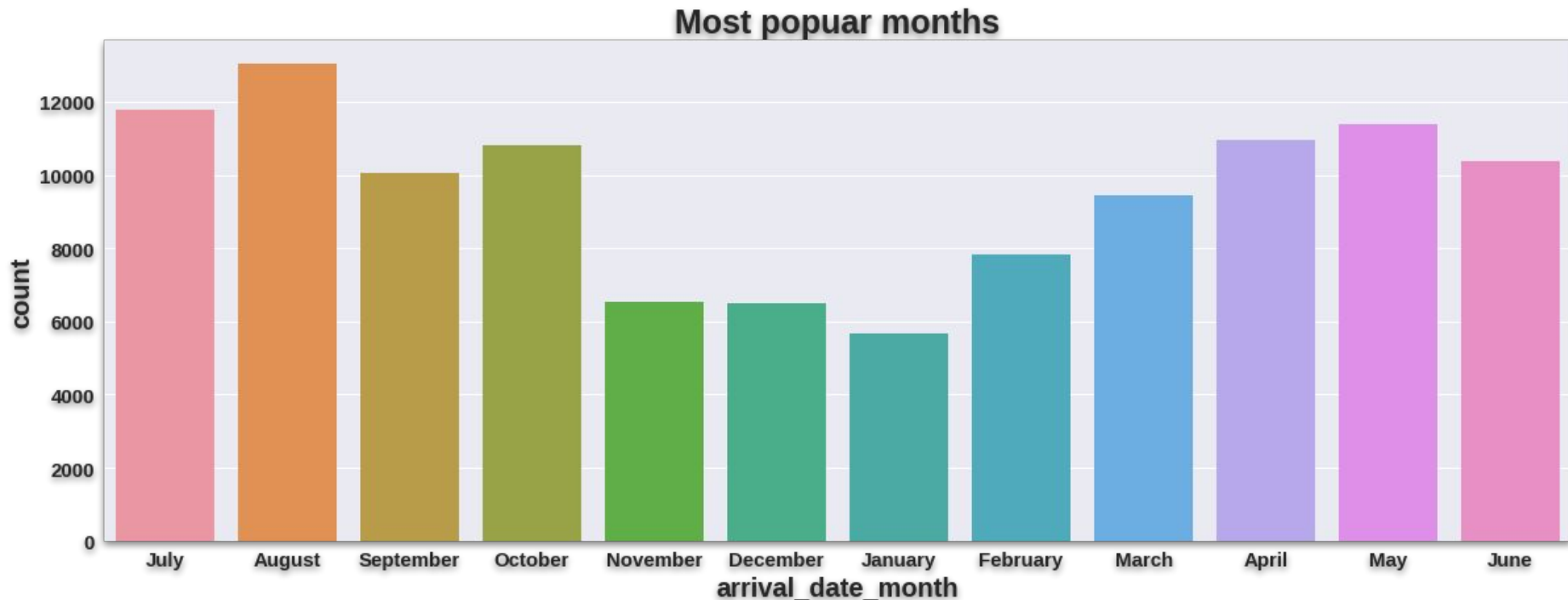
- Guests who have paid non-refundable deposit, **most of them have cancelled their booking.**
- Guests have paid either no deposit or refundable deposit are **likely to not cancel their booking with only 20% cancellation rates for each.**

- Out of all deposit type 87.5% people prefer No deposit type and only 12.2% people prefer Non-Refundable deposit type.
- Refundable deposit type is least preferred by the people.

Relationship between deposit types and cancellation rates

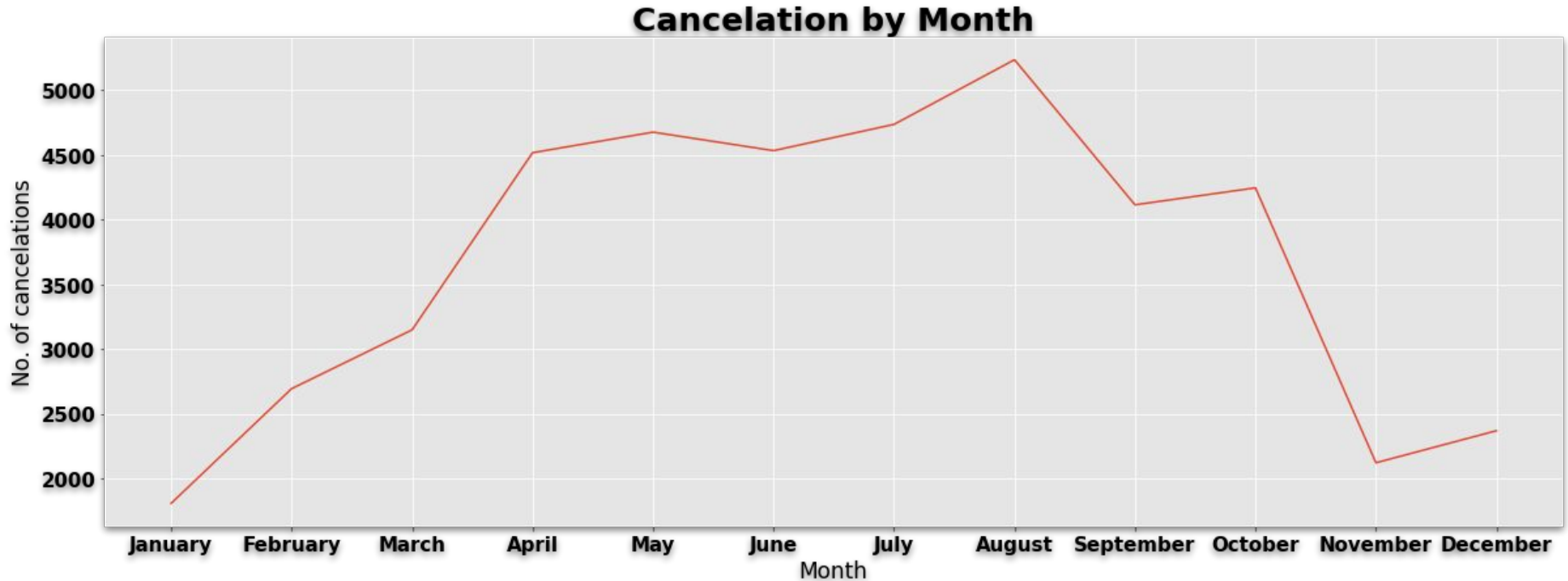


# Most Popular Month



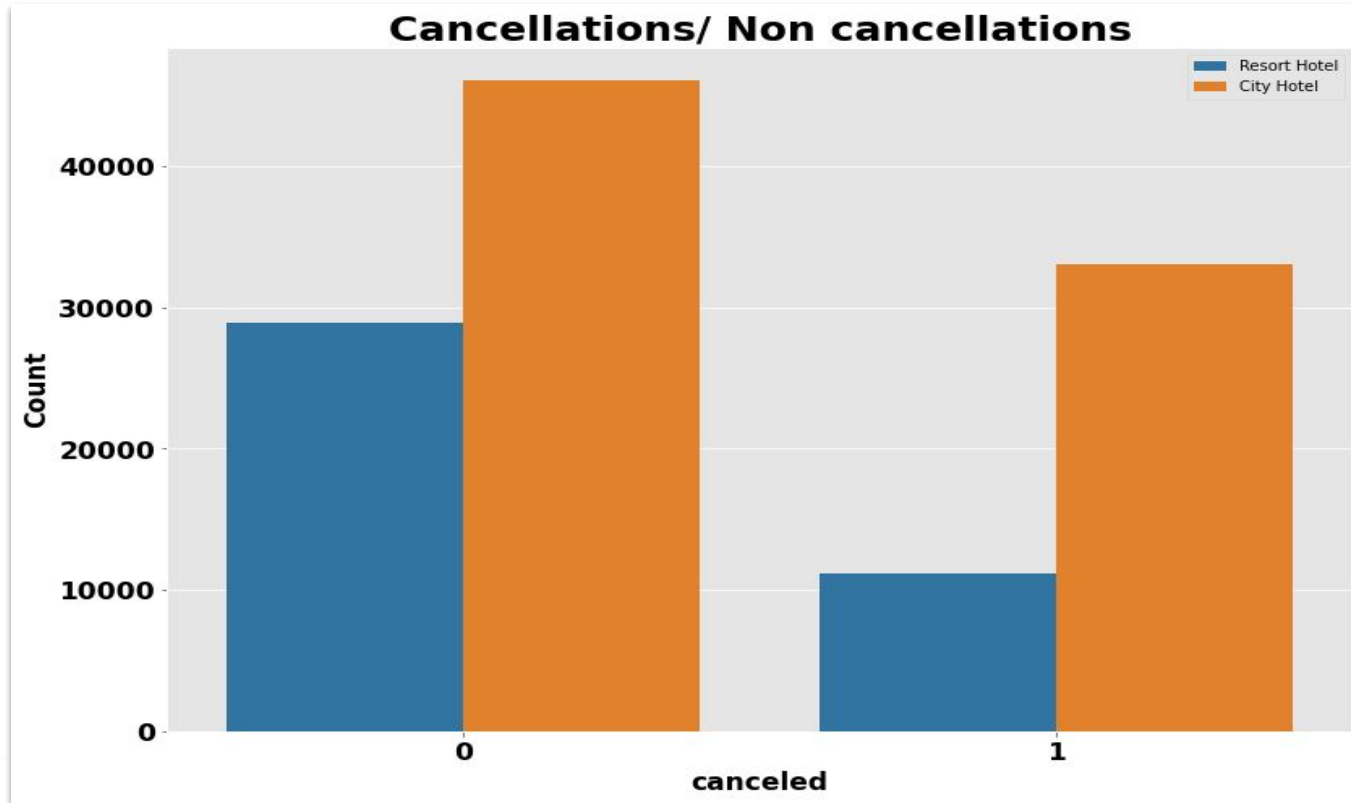
- Most popular months are May, June, July and August (highest).

# Cancellation levels over months



- Over the year, most number of cancellations happened during the summer season from April-August.
- Winter season from November - January experienced the least number of cancellations.

# Cancellation levels for both the hotels



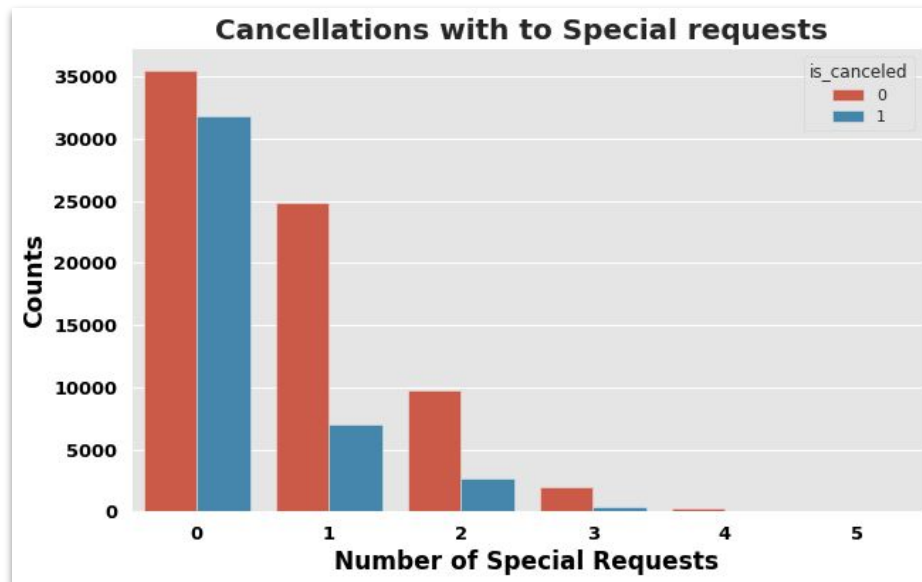
- By analyzing above graph we can say that the City Hotel is most popular among people because it both got cancelled and booked the most.

# Different factors affecting cancellations

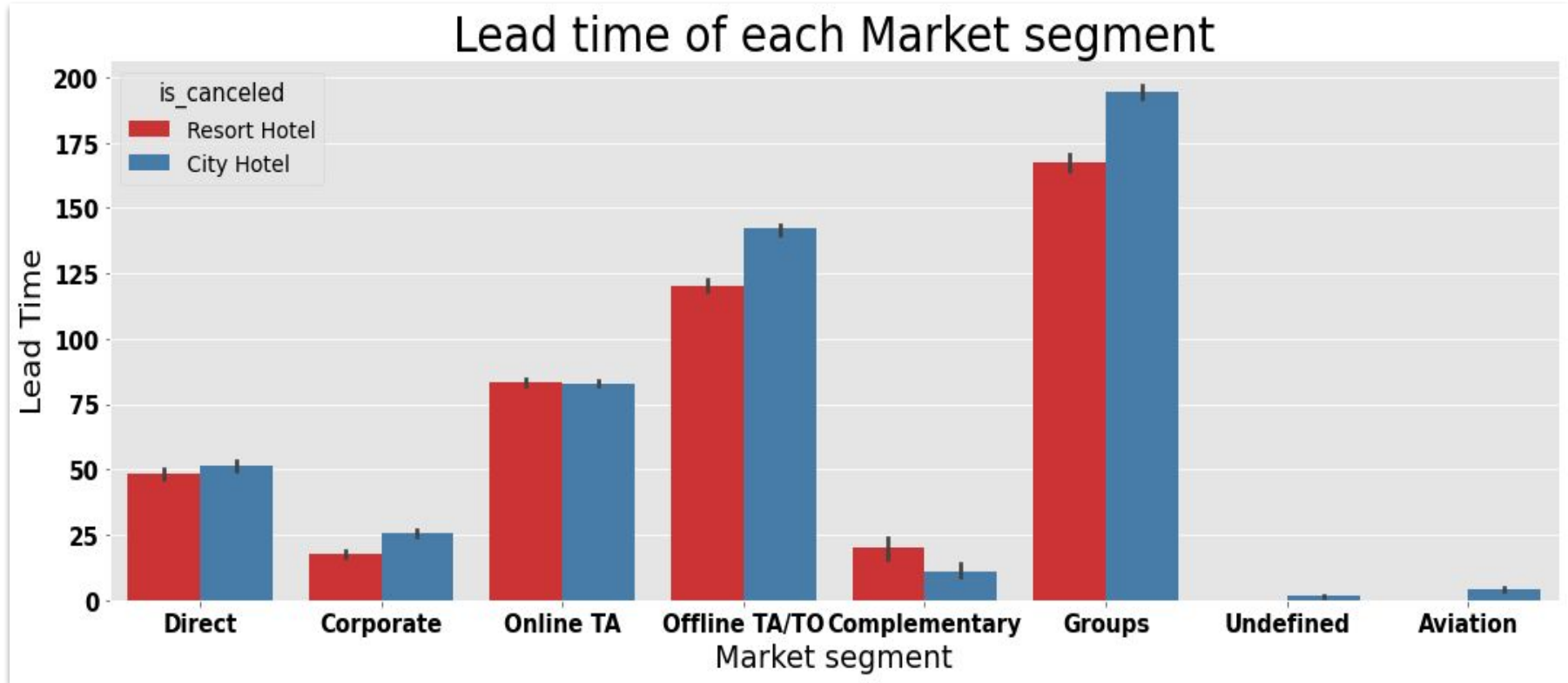


Repeated guests cancels the less compared to non repeated guests.

Guests who have more than 1 or more special requests are less prone to cancel.



# Lead time of various market segments



- Groups have the highest lead time, while aviation has the least lead time.



# Lead time and hotel cancellations



- Irrespective of the hotel type, guest generally cancel their bookings with high lead time.
- Moreover, it also becomes evident that if the lead time crosses 80-82 days then, the customer is bound to cancel their booking.

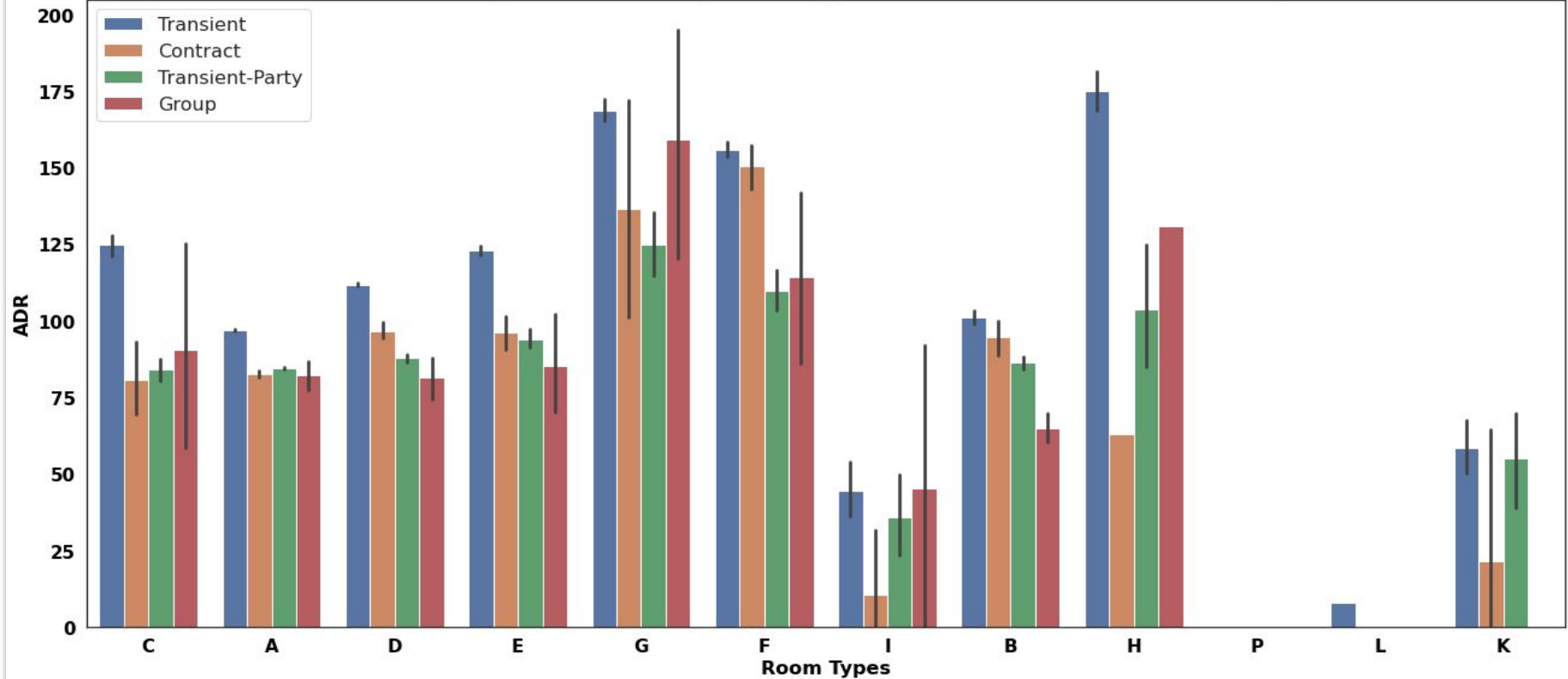
# Market segment and days in waiting list



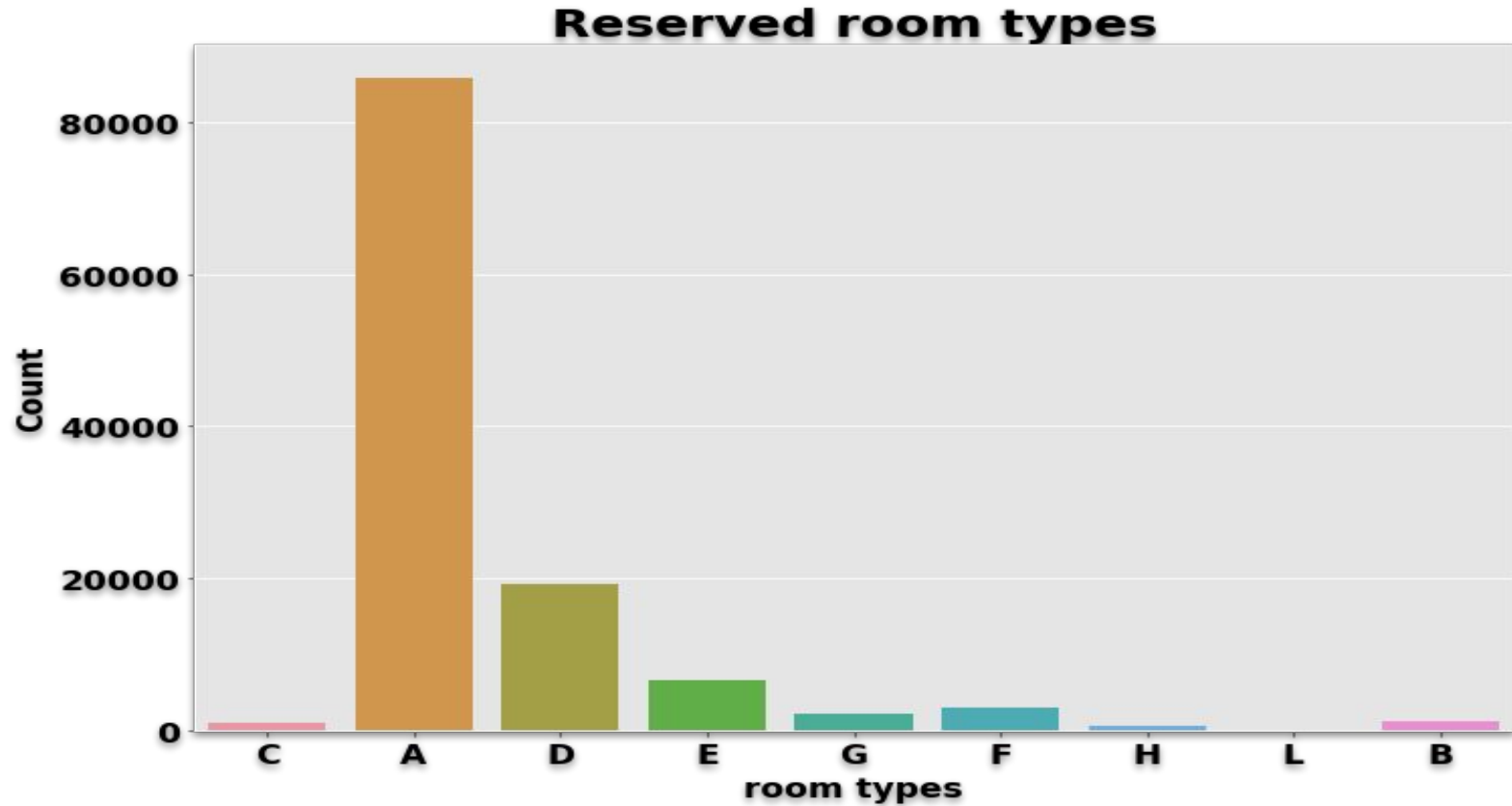
- From the graph we can conclude that through the 'Groups' and offline TA/TO market segment customers might have to wait for more than 200 days.
- Complementary and Aviation market segment have the least waiting days.

# Exploring ADR, room types and customer groups

Relationship between ADR, Room types and different Customer Groups



- Rooms G, F and H are the most profitable and popular rooms
- Transient customer group pay the highest ADR for all the room types.

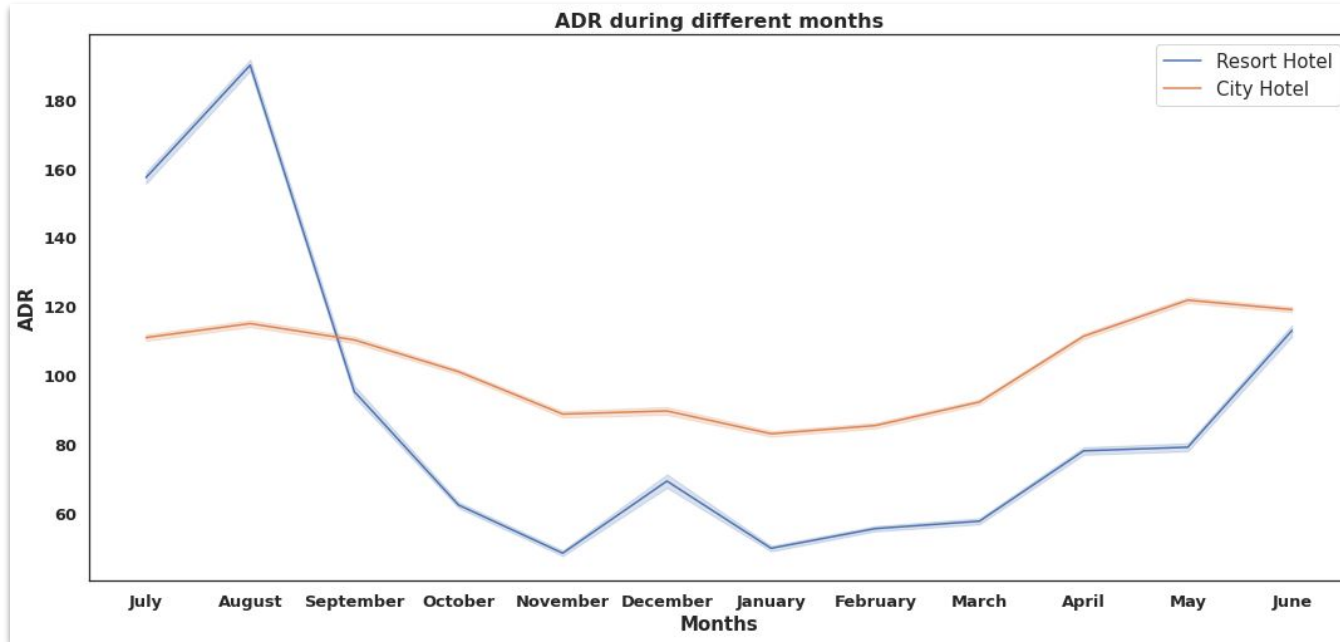


- Room type A is the most booked popular room type followed by D and E.

# Hypothesis

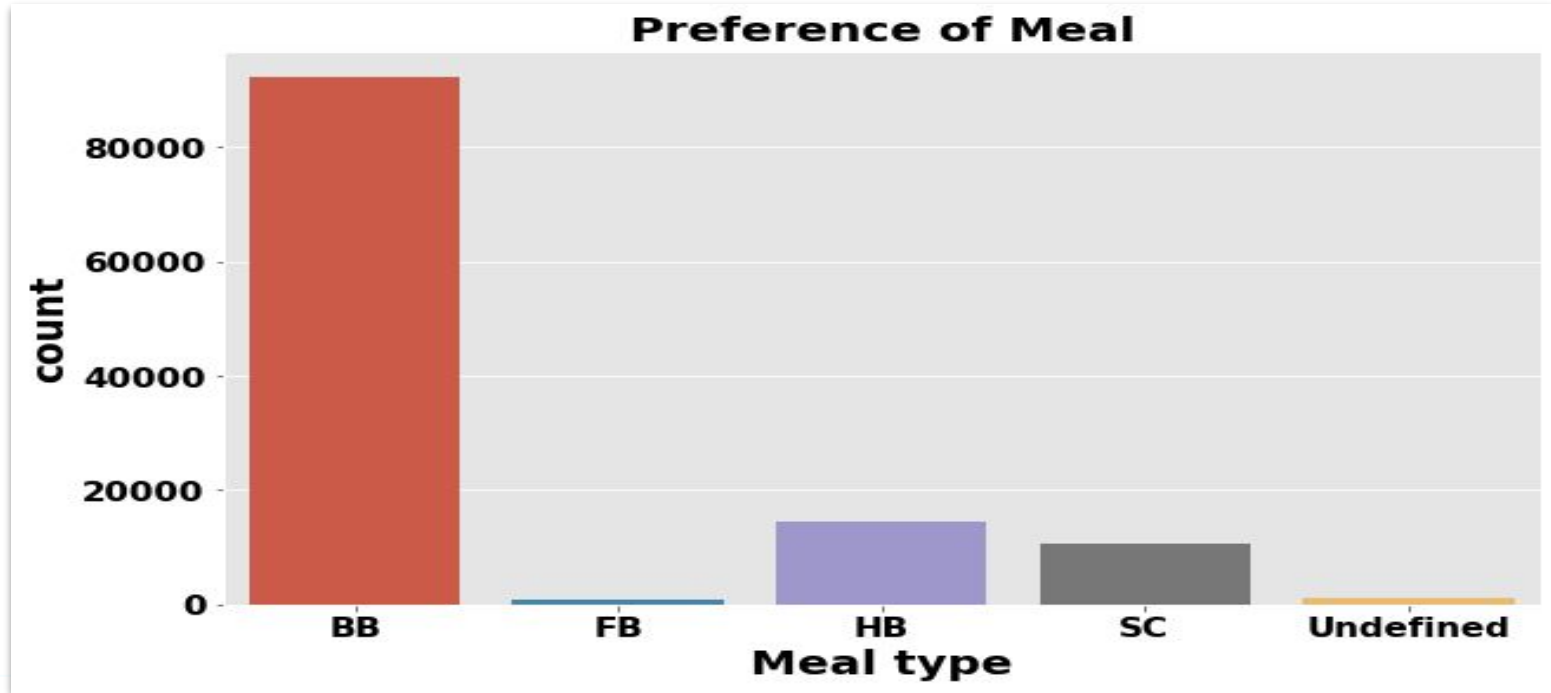


# Best time to visit the hotel



- During the summer season, it costs around €(150-130) and €(120-110) to book a room in the city and resort hotel respectively.
- However, it can be seen **in the winter season there is a sharp decline in the average daily rate** to book a room in the hotels.
- **There is almost 45% drop in the ADR to book a room in city hotel and 15% decline to book a room in the resort hotel** in the winter season.

# Most popular meal type?

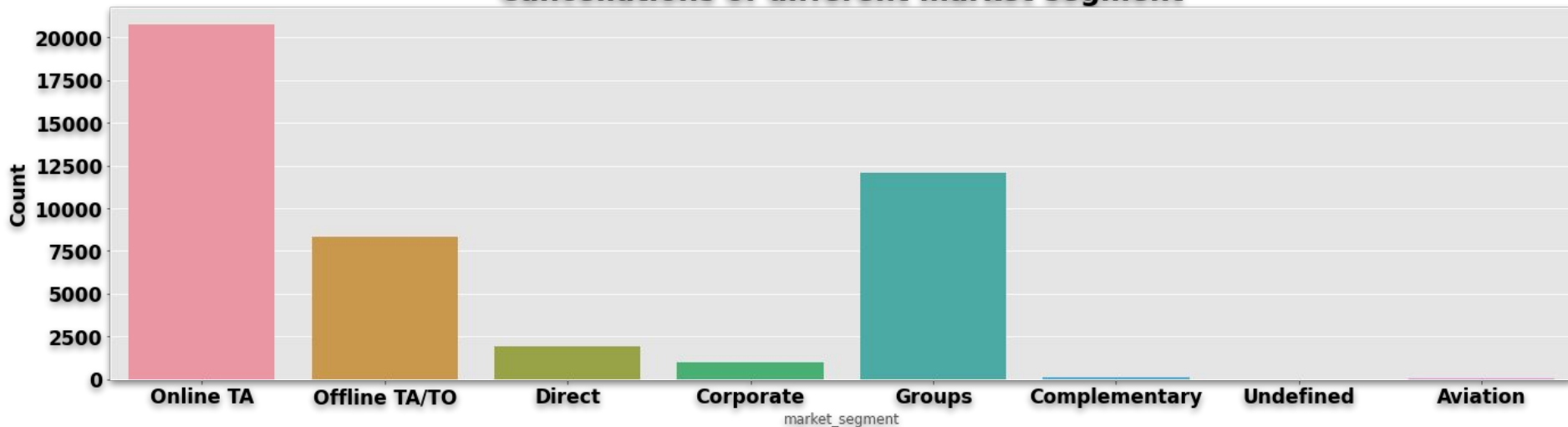


- BB Meal plan is most popular meal plan followed by HB.

# Which market segment is getting cancelled the most ?

- Almost 95%, cancellations are from online TA , offline TA and group segments.
- Online TA has the highest cancellations of around 50%, followed by groups and offline TA.

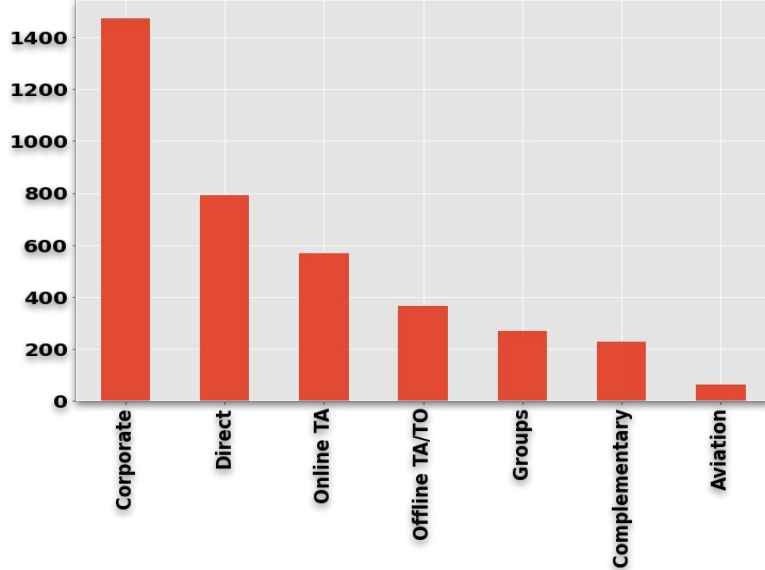
**Cancellations of different market segment**





# Which market segment is preferred by repeated and non repeated guests.?

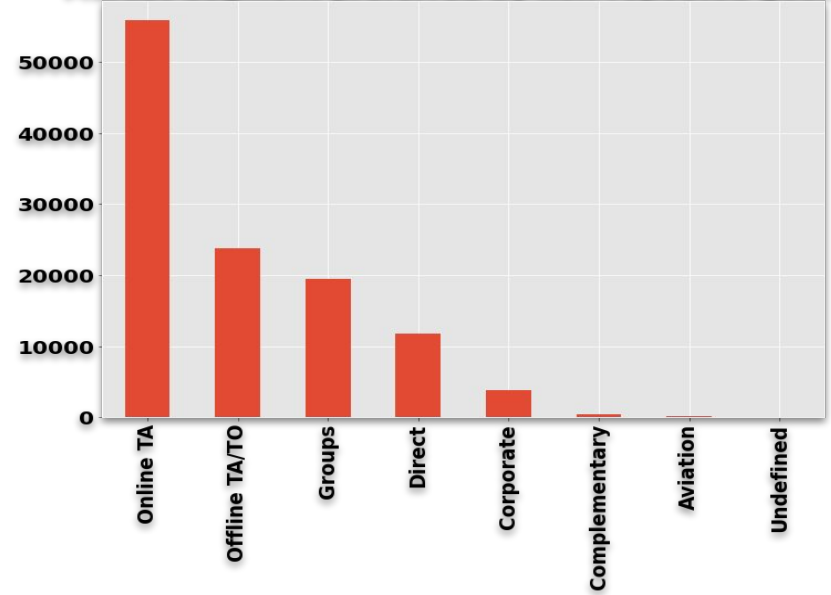
Market Segment preferred by repeated guests



## Repeated guests:

- Corporate is the most popular market segment for their bookings.

Market Segment preferred by non-repeated guests

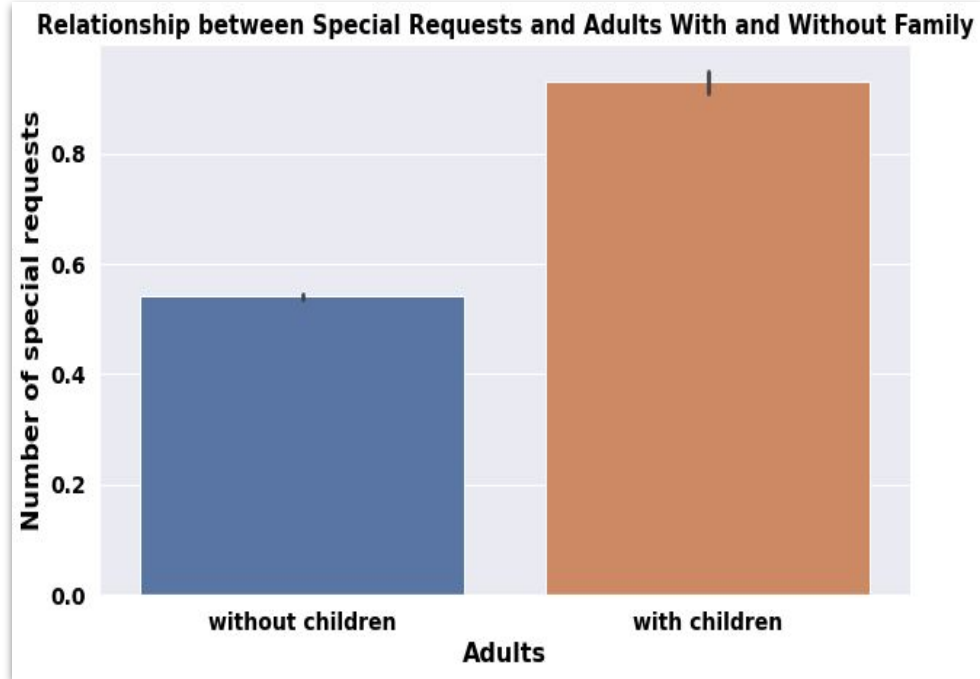
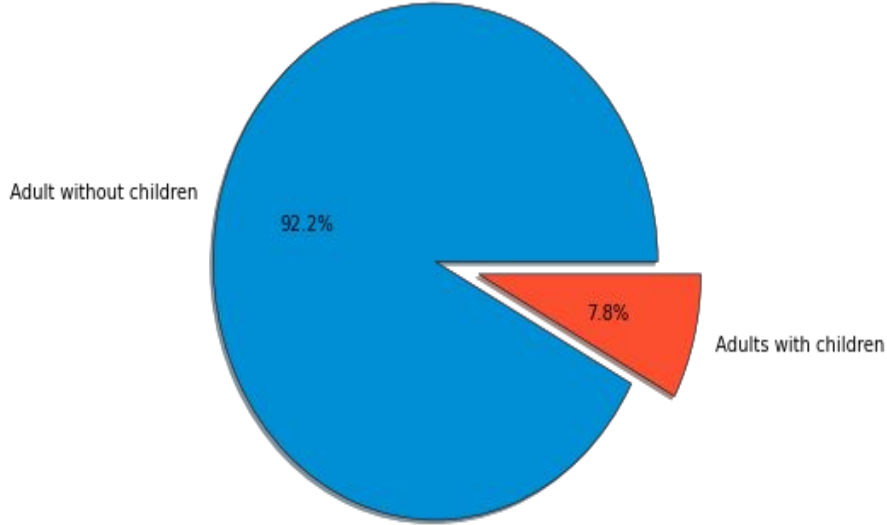


## Non-repeated guests:

- Online TA is most preferred by non-repeated guests.

# Do adult with family have more or less special requests?

Proportion of adults with and without any children



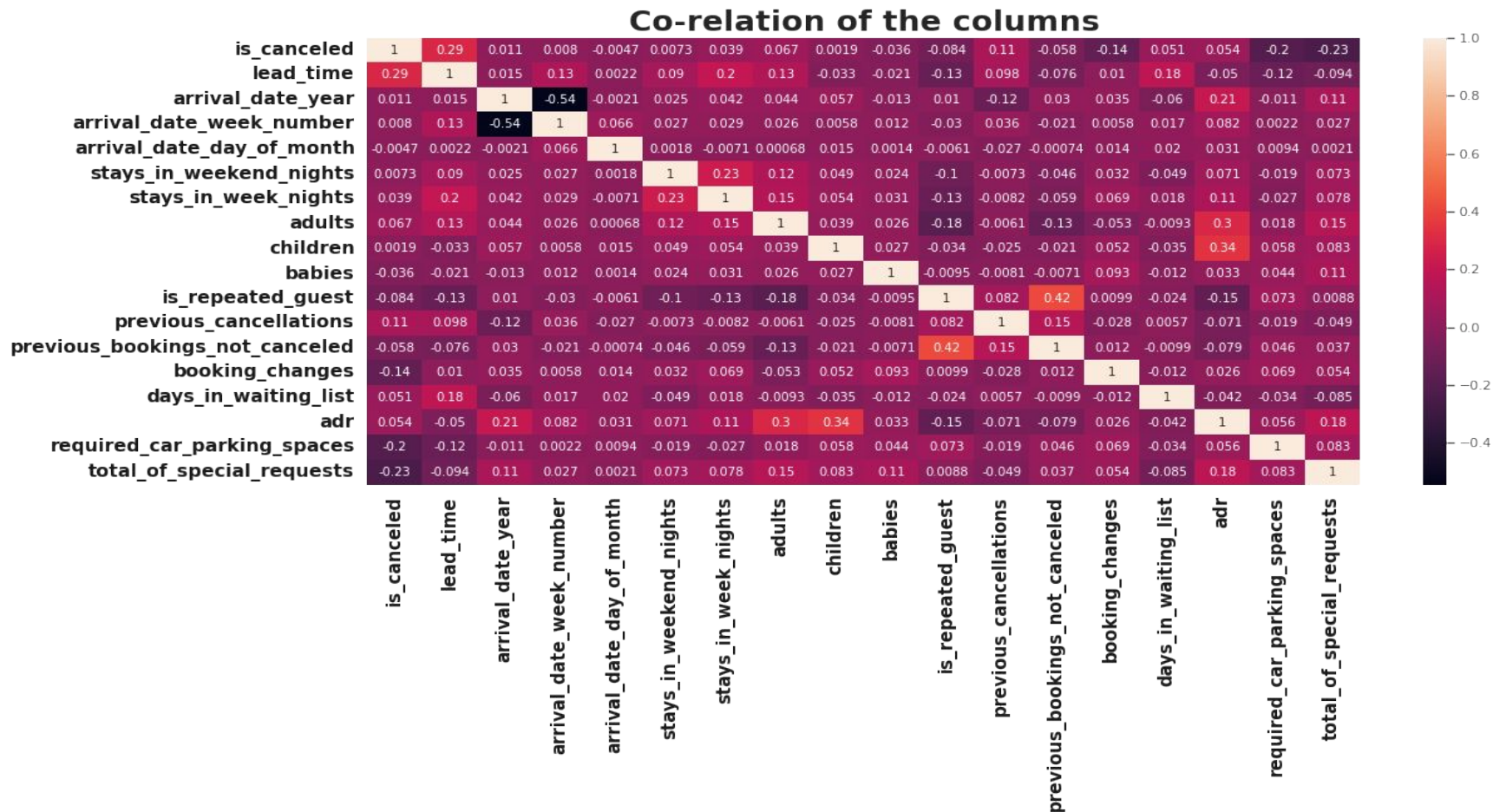
Travelling without any children is the preferred mode travelling among adults as **92% of adults prefer to travel without any children.**

# Has the market segment changed over the years?



- Online booking segment has grown over the years and reach its peak in 2016.
- Corporate witnessed insignificant increase in the three years
- Groups and offline TA also saw significant increase over the three years
- Direct remained same for the 3 years.
- Aviation and complementary has remained stagnant

# Extracting the correlation of the dataset using Heatmap.



# Conclusions

- May-August happens to be the busiest months but so the hotels should target more customers and try to do more business during these times.
- It is quite clear most customers travel in pairs and bringing children or babies along is very rare so the hotels could advertise in ways that attract couples more.
- Hotel has very few repeated guest, feedback can be collected to plan strategies accordingly. Hotel should collaborate with online marketing companies to advertise itself.
- Majority of the hotels booked are city hotel. Definitely need to spend the most targeting fund on those hotel.
- Majority of the guests are from Western Europe. We should spend a significant amount of our budget on those area.
- Given that we do not have repeated guests, we should target our advertisement on guests to increase returning guests.
- Set Non-refundable Rates, Collect deposits, and implement more rigid cancellation policies.
- Encourage Direct bookings by offering special discounts.

**Thank you**