Capstone Project-1

Hotel Booking Analysis

Team Members:

Kushan Sharma

Lavanya M

Kamal Mandal

Kishan Kumar Singh

Umanand Pandey

Content :

1. Problem statement
2. About our dataset
3. Preparing the dataset
4. Data Visualisation
5. Hypothesis
6. Conclusion

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 and accounts for **7.5 per cent of the country's GDP**.
- The growth in the hospitality sector and its contributions to the GDP will continue to be substantially higher than other sectors of the economy on the back of huge tourism potential in the country.

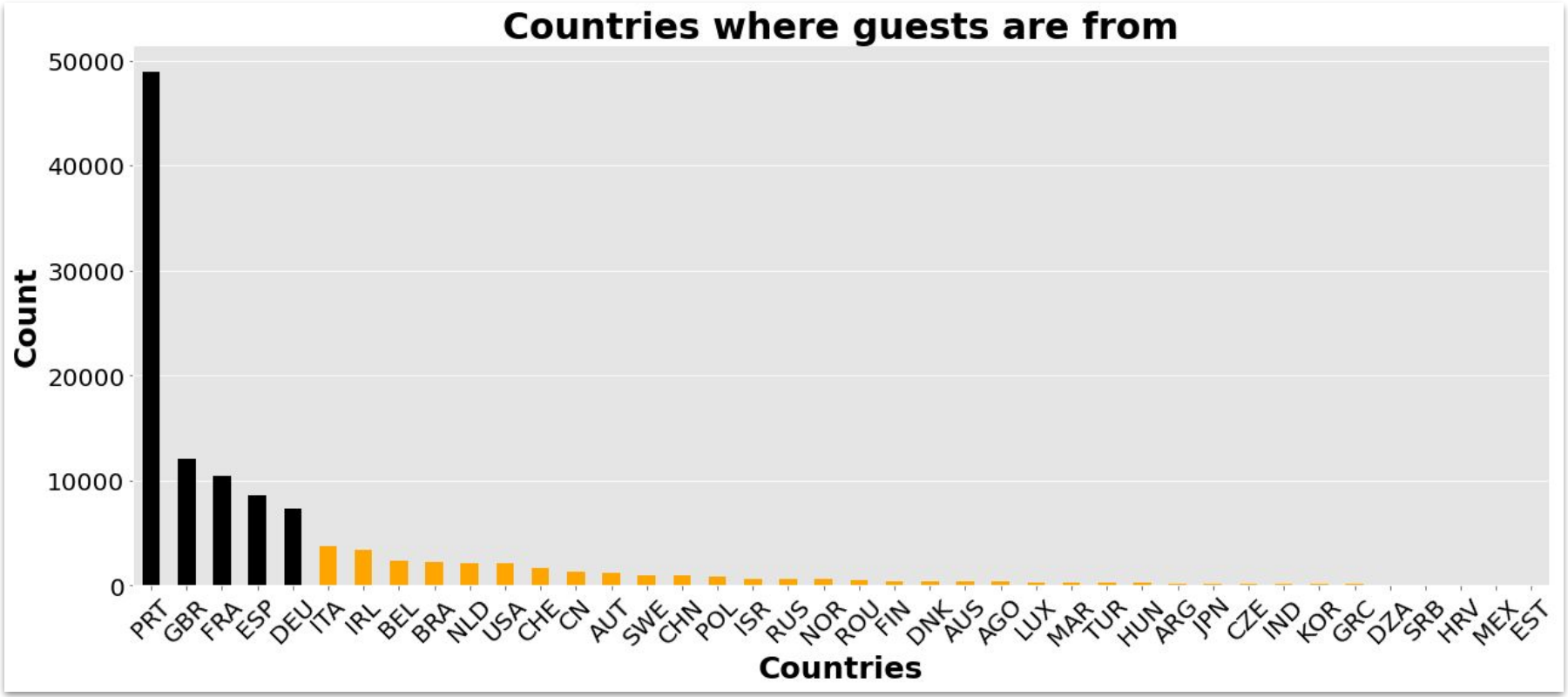
E D A

Preparing our dataset

- We imported libraries such as **Numpy, Pandas, Seaborn, Matplotlib and Plotly** to work on our dataset.
- Most of the **null values were present in columns - company and agent,** hence dropping these columns made sense.
- To account for outliers we used boxplots in different numeric columns and replaced/removed with specific values.
- Columns: hotel, is_canceled, lead_time, arrival_date_year, arrival_date_month, arrival_date_week_number,arrival_date_day_of_month, stays_in_weekend_nights, stays_in_week_nights,adults, children, babies, meal, country, market_segment, distribution_channel, is_repeated_guest, previous_cancellations, previous_bookings_not_canceled, reserved_room_type, assigned_room_type, booking_changes, deposit_type, agent, company, days_in_waiting_list, customer_type, adr, required_car_parking_spaces, total_of_special_requests, reservation_status, reservation_status_date. And 119390 rows.

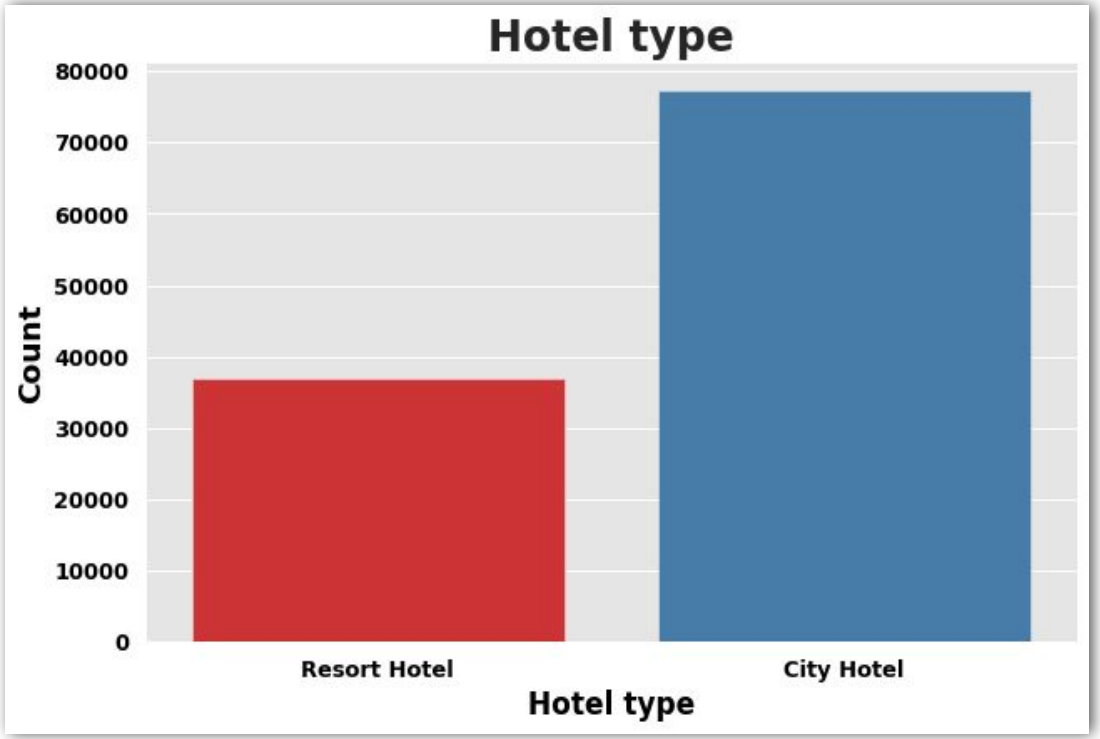
Visualization

Where do majority of guests are from?



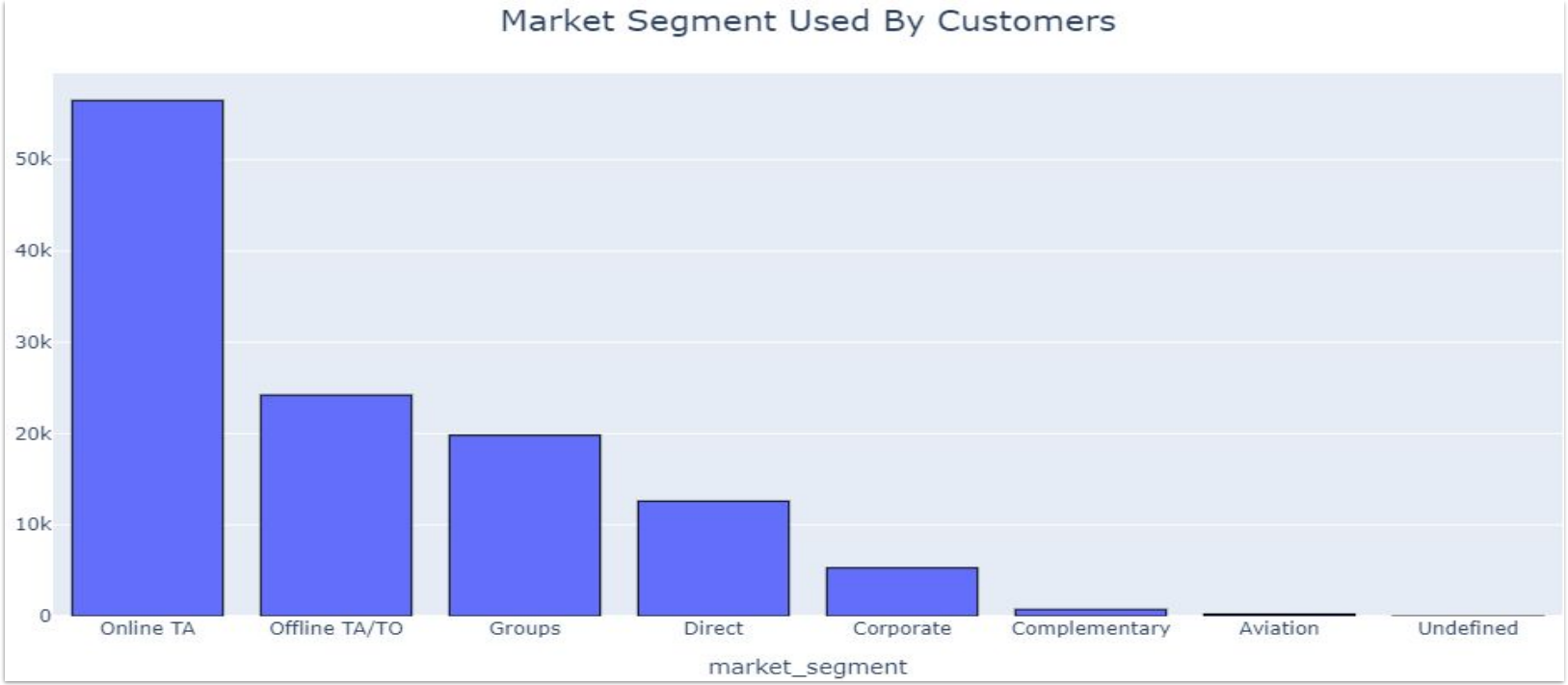
- **Portugal, Britain, France, Spain and Germany** are the top five countries from where majority of guests come from.

Are the number of both the hotels same or is it different?



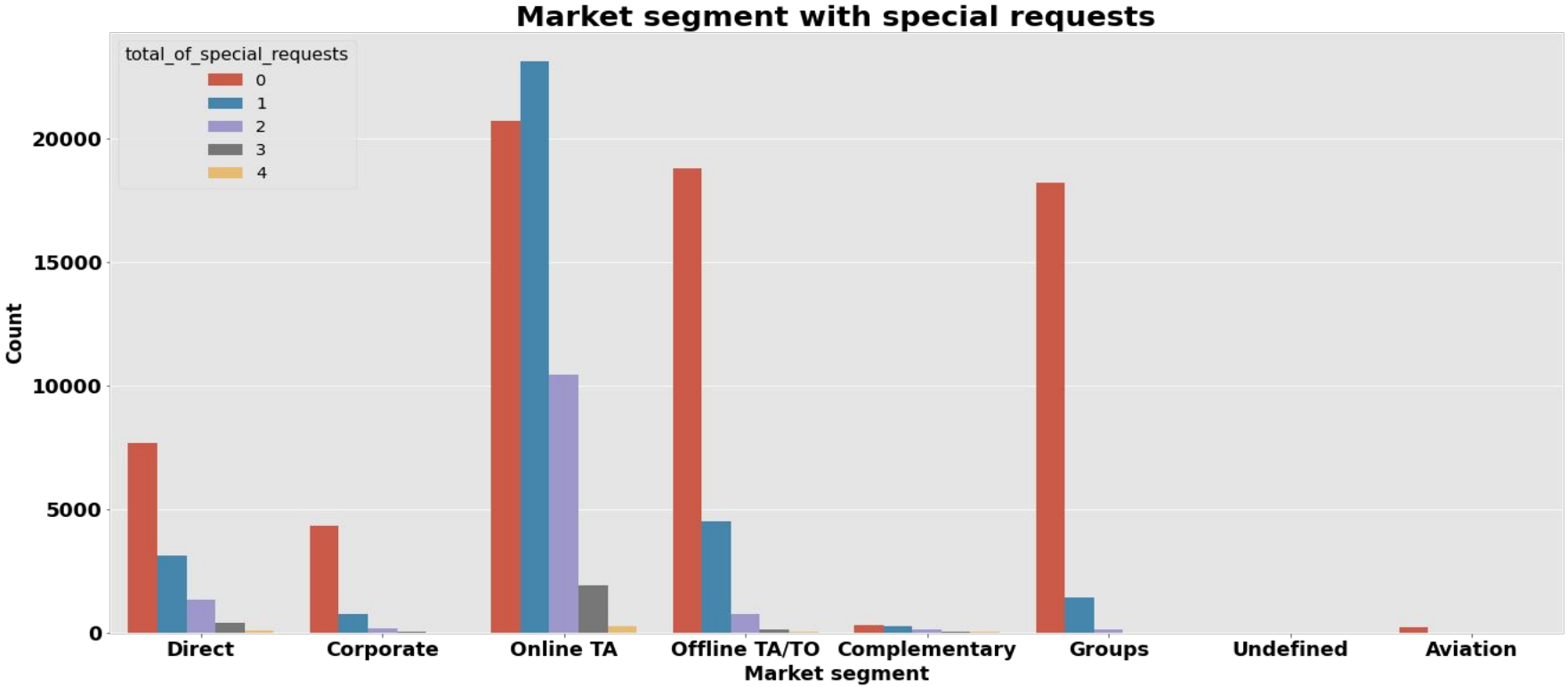
There are **twice the number of city hotels relative to resort hotels**. As seen, the bar chart resort hotels account for less than 50% of city hotels.

Popular market segments used by customers



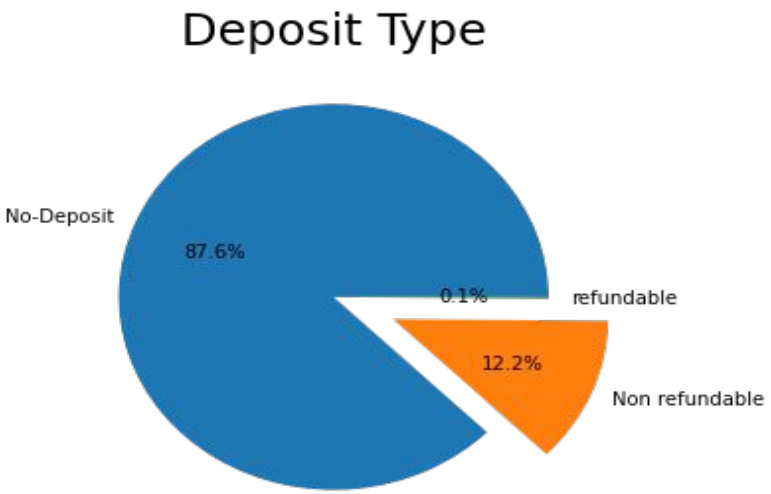
- **Online TA is the most popular market segment** occupying almost half of the market share with more than 50K customers.
- **Offline TA and groups are the other two major segments** having market share of around 20K respectively each.

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



- Online TA have disproportionate number of special requests.

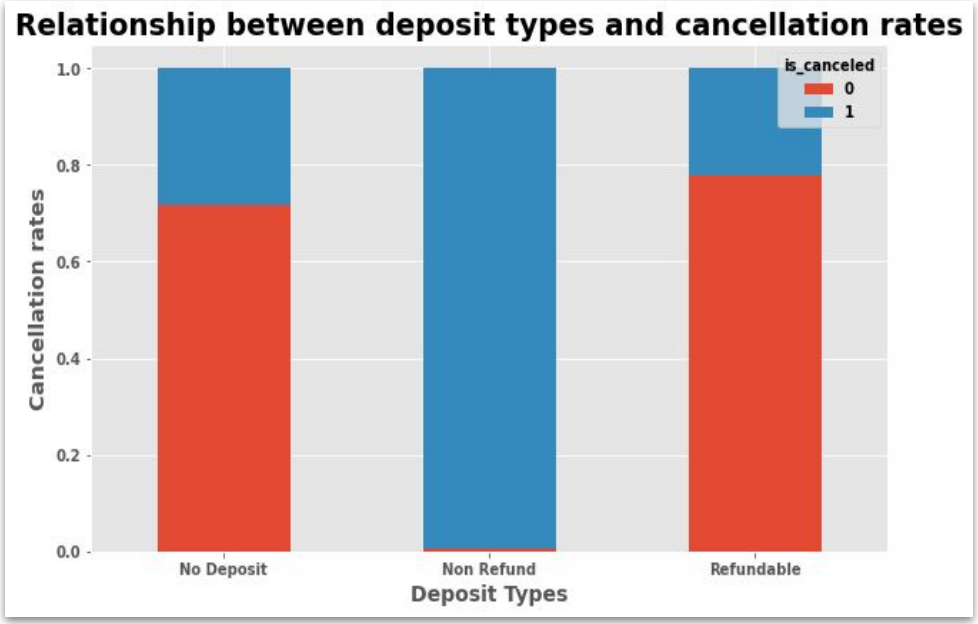
How is exactly deposits affecting our bookings?



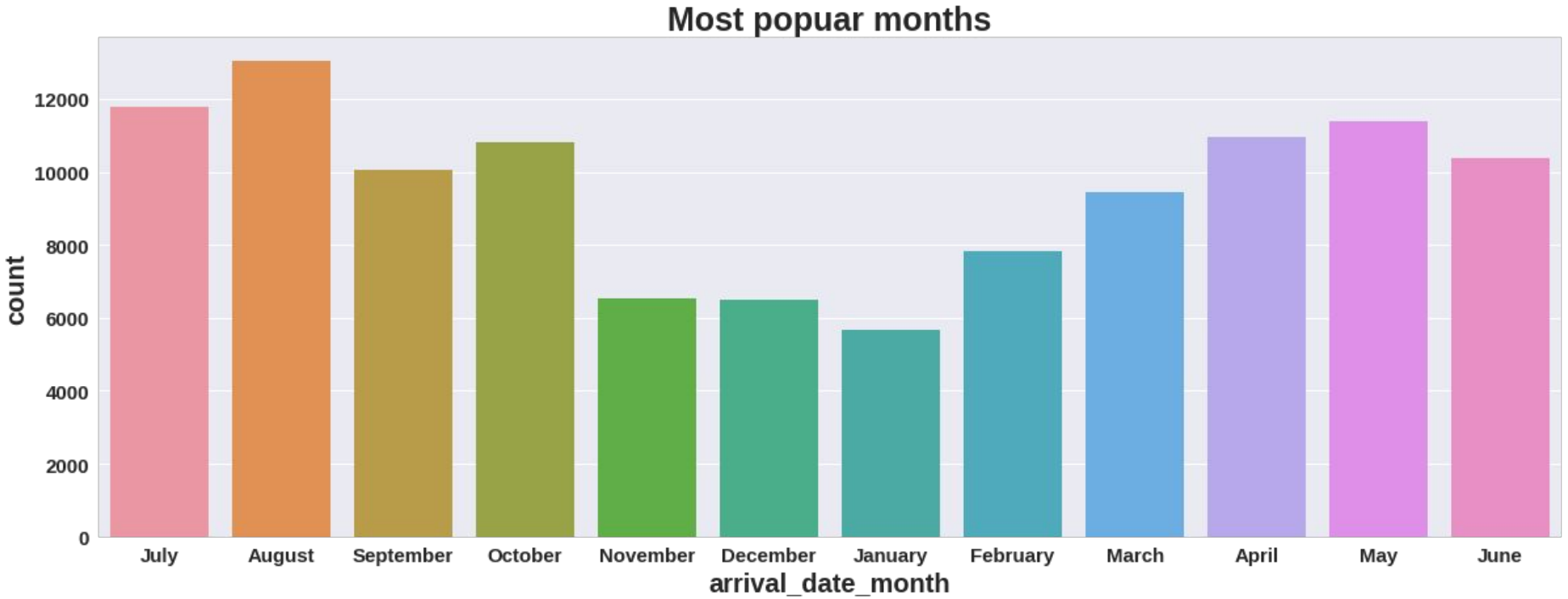
- Out of all deposit type 87.5% people prefer No deposit type and only 12.2% people prefer Non-Refundable deposit type.
- Refundable deposit type is least preferred by the people.

- Customers who have paid non-refundable deposit, **most of them are bound their booking.**

- Customers have paid either no deposit or refundable deposit are **likely to not cancel their booking with only 20% cancellation rates for each**.

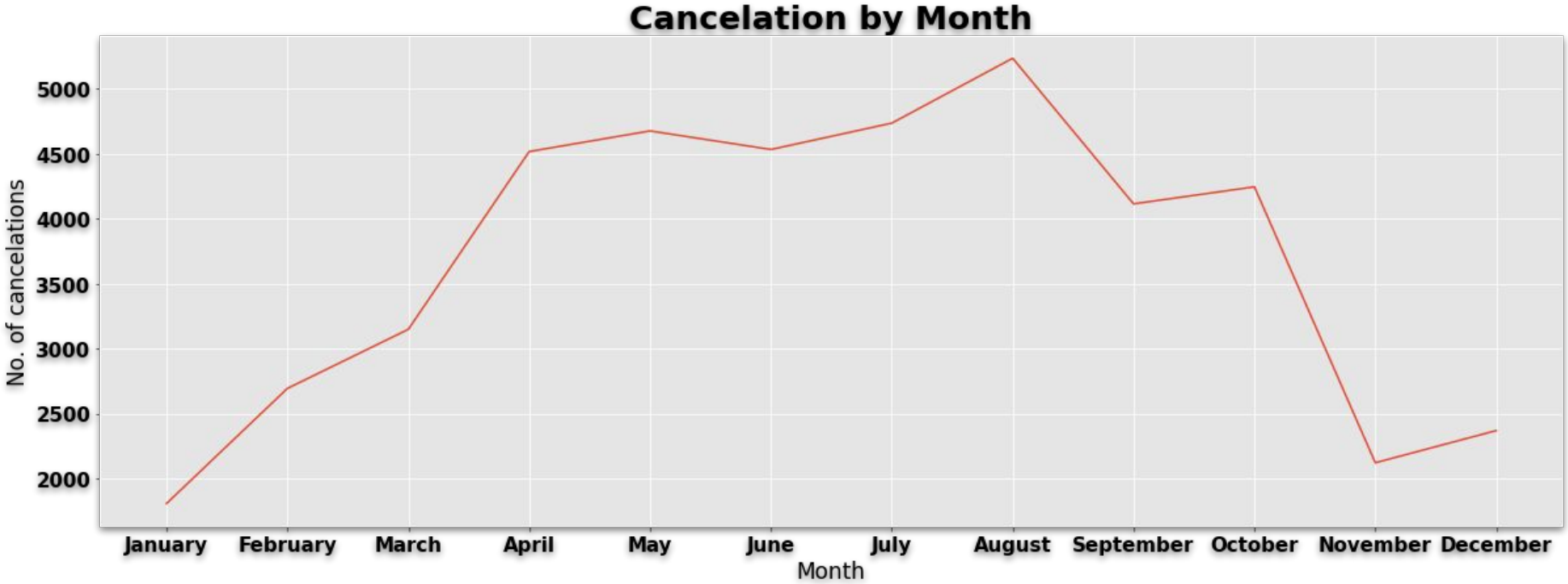


Most Popular Month



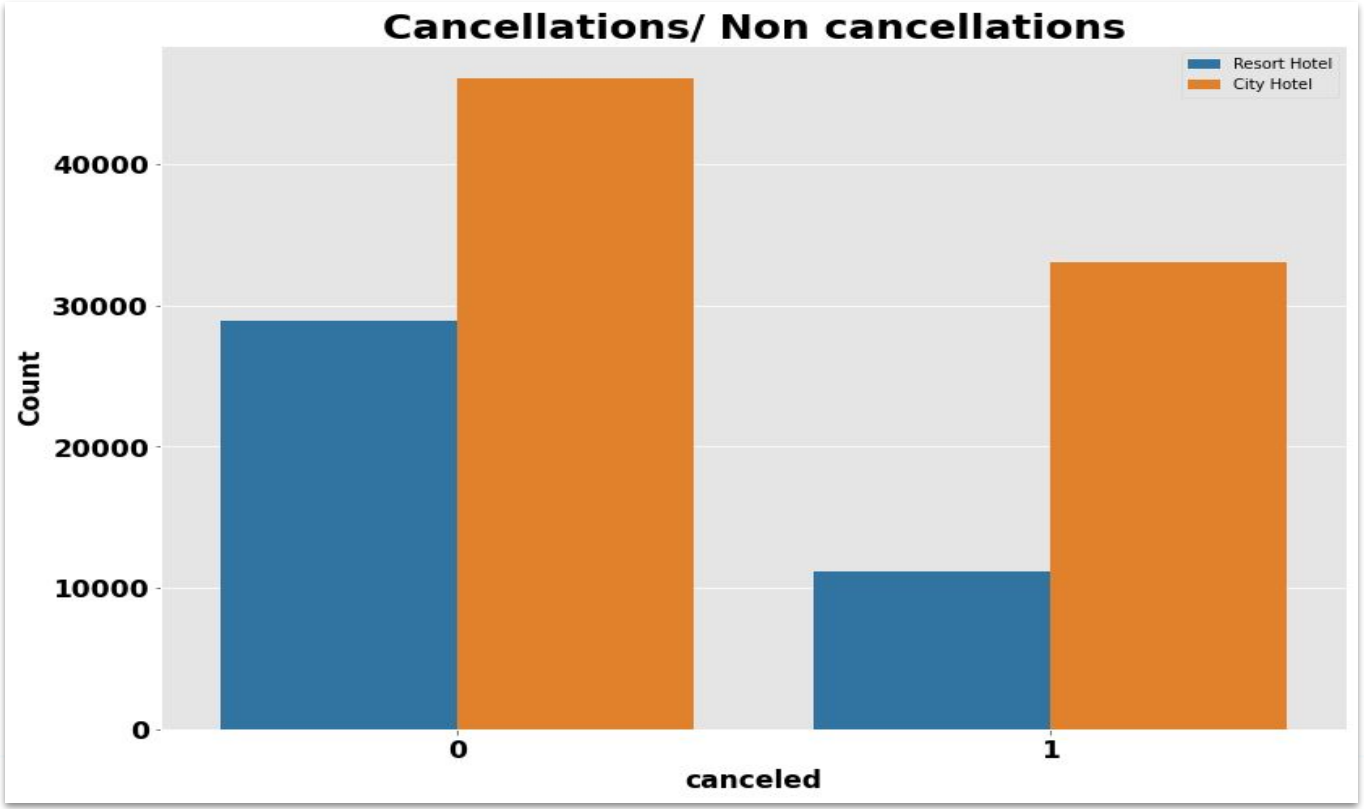
- Most popular months are May,June,July and August(highest)

Are cancellation levels same or different over months?



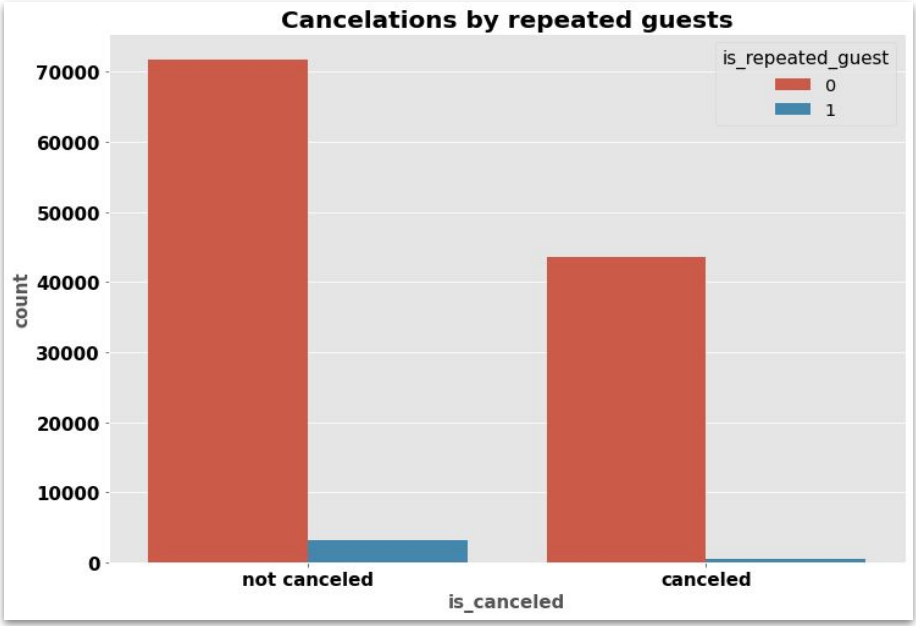
- Over the year, most number of cancellations happened during the summer season from April-August.
- Winter season from November - January experienced the least number of cancellations.

Cancellation levels for both the hotels



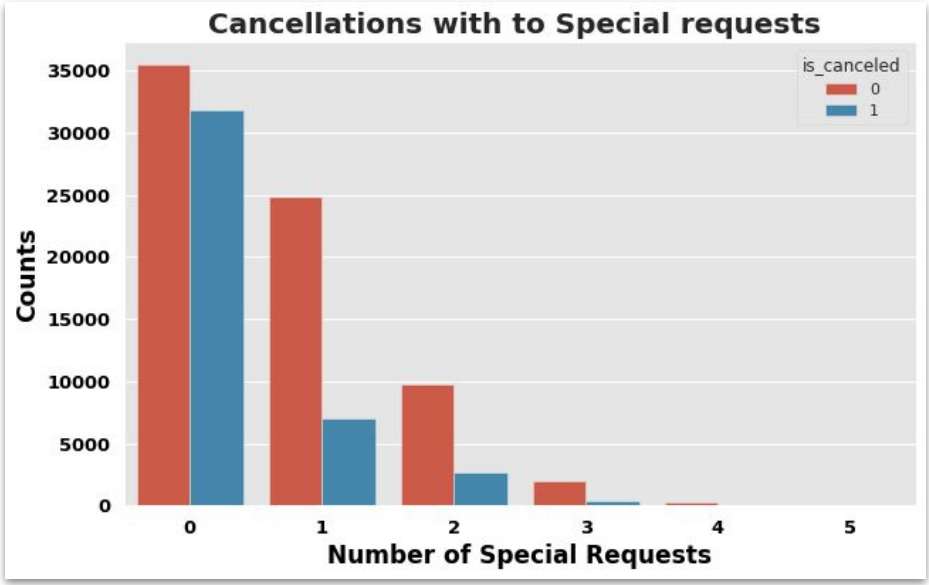
- By analyzing above graph we can say that the City Hotel is most popular among people because it both got cancelled and booked the most.

Different factors affecting cancellations

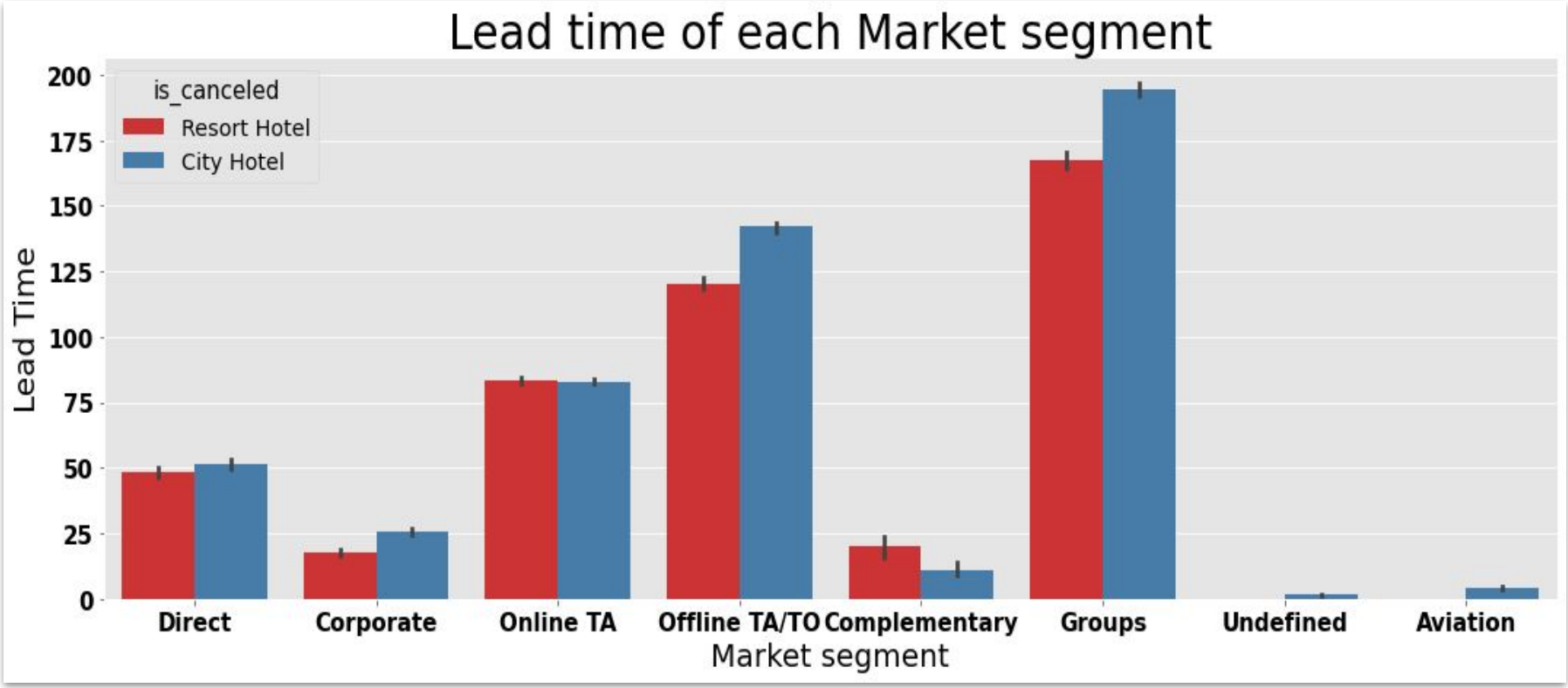


Repeated guests cancels the less compared to non repeated guests.

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



Lead time of various market segments

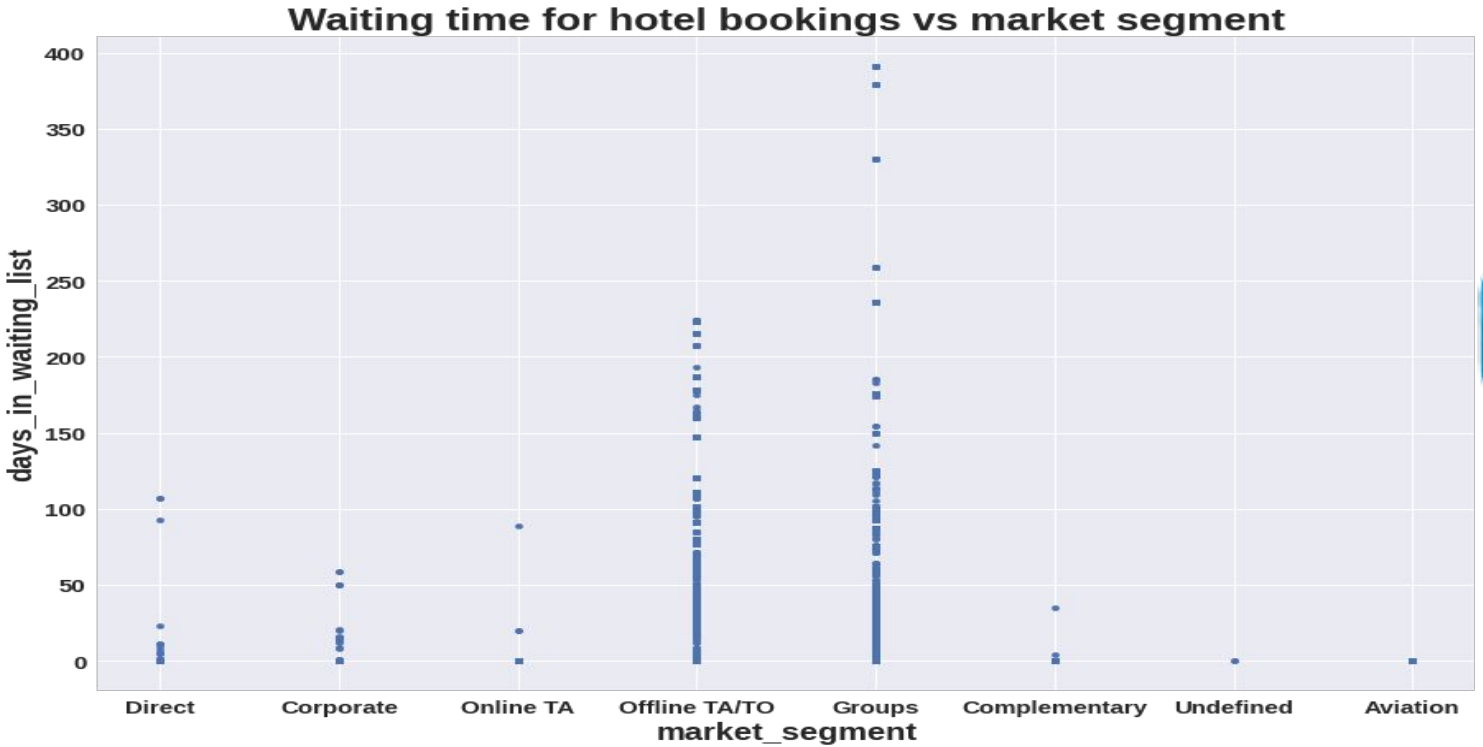


- Groups have the highest lead time, while aviation has the least lead time.

Is lead time really affecting our hotel cancellations?

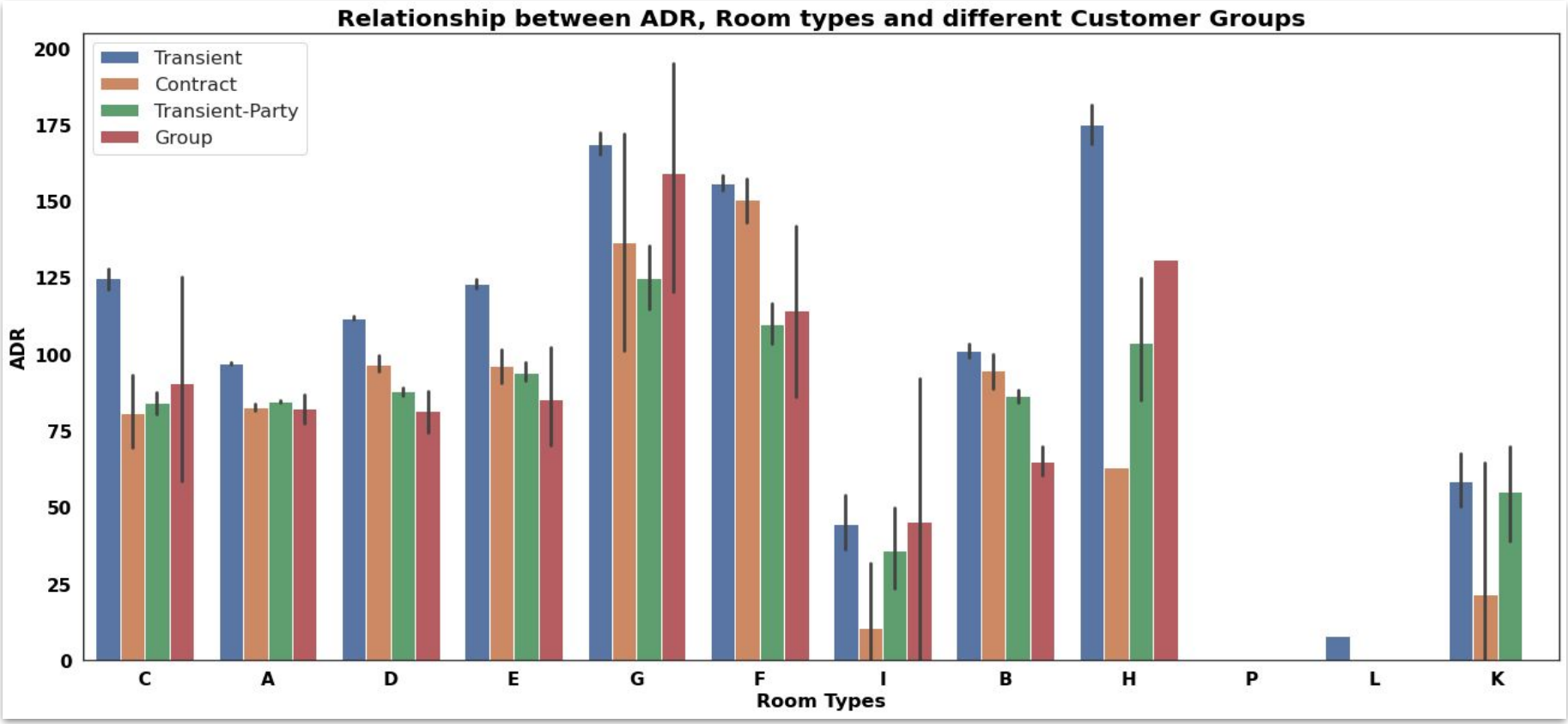
- Irrespective of the hotel type, customers generally cancel their bookings with high lead time.
- Moreover, it also become evident that if the lead time crosses 80-82 days then, the customer is bound to cancel their booking.

Which market segment has the highest days in waiting list?

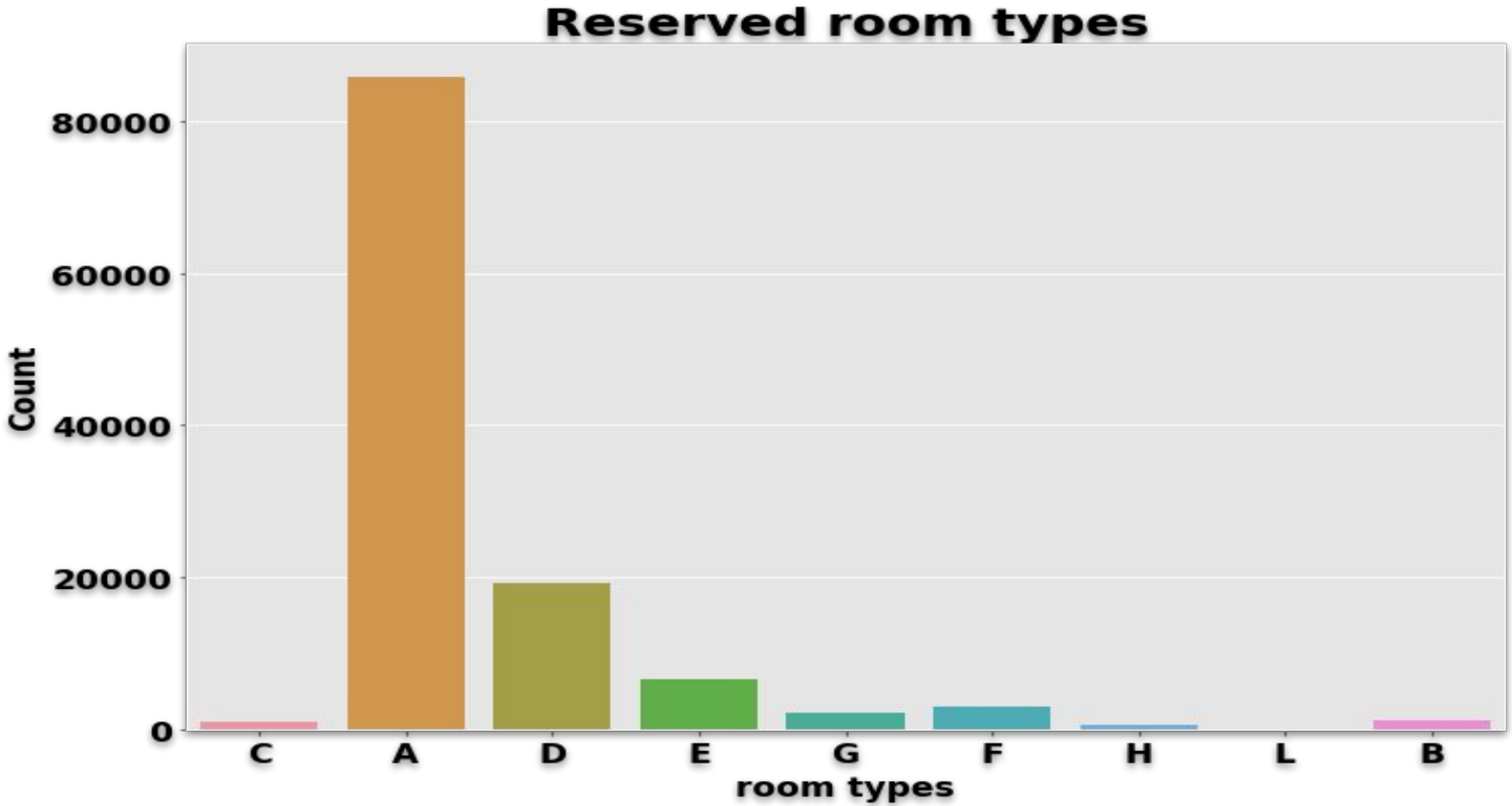


- From the graph we can conclude that through the 'Groups' and offline TA/TO market segment customers might have to wait for more than 200 days.
- Complementary and Aviation market segment have the least waiting days.

Exploring ADR, room types and customer groups



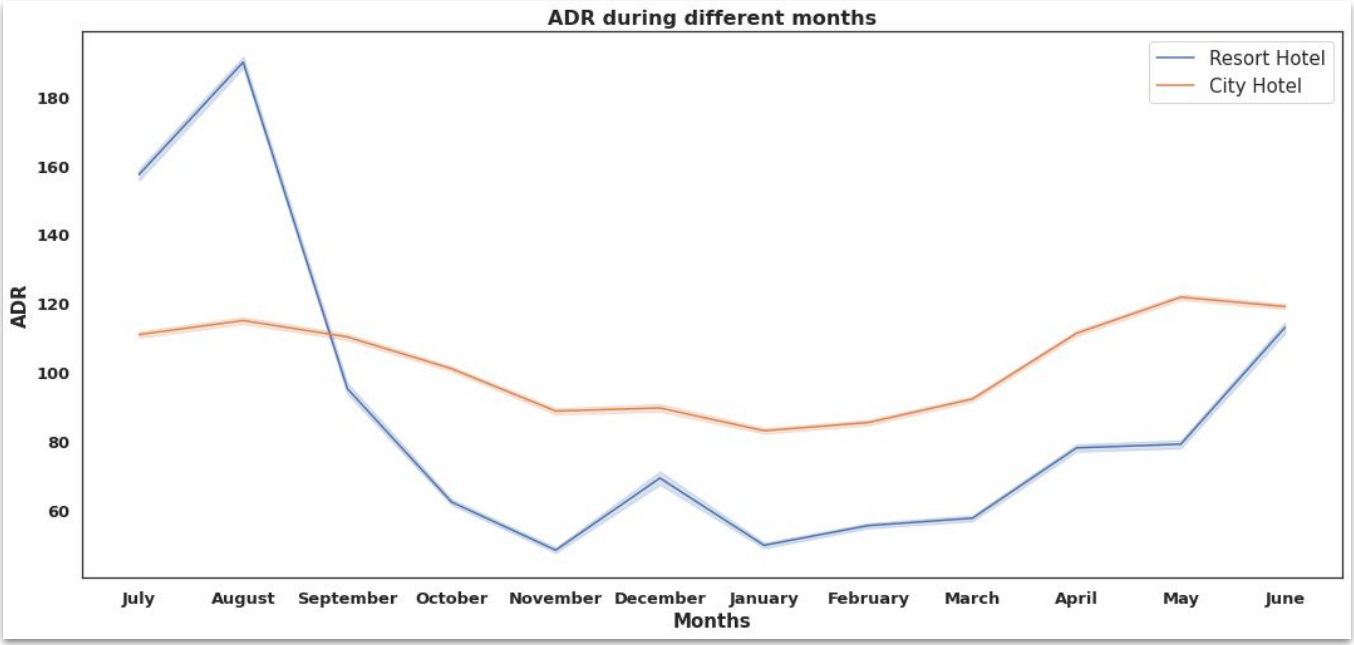
- **Rooms G, F and H** are the most profitable and popular rooms
- **Transient customer group pay the highest ADR** for all the room types.



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

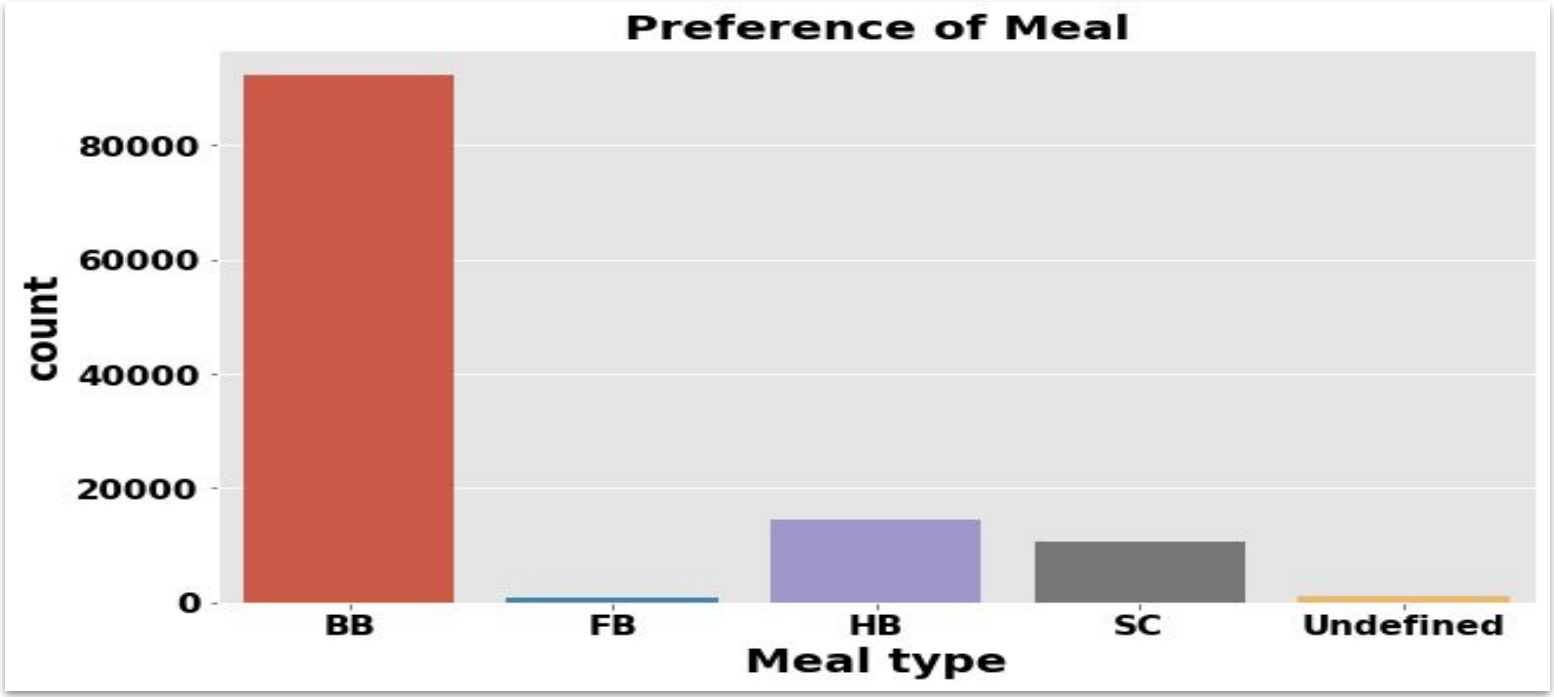
Hypothesis

What is the best time to visit the hotel?



- During the summer season, it costs around €(130-150) and €(110-120) 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.

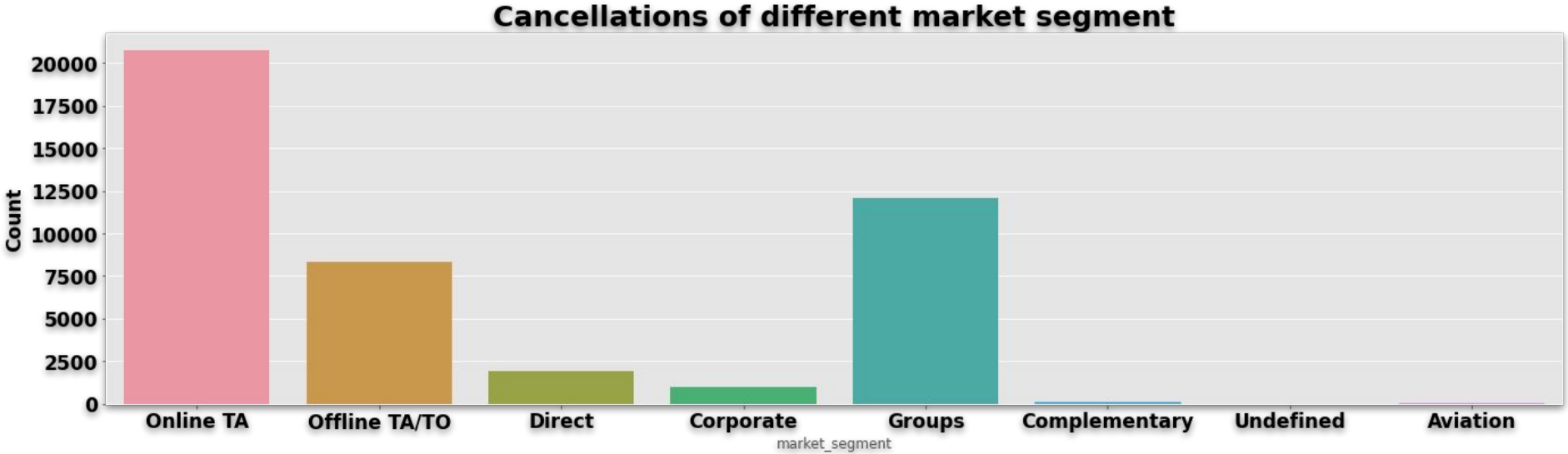
Which is the most popular meal type?



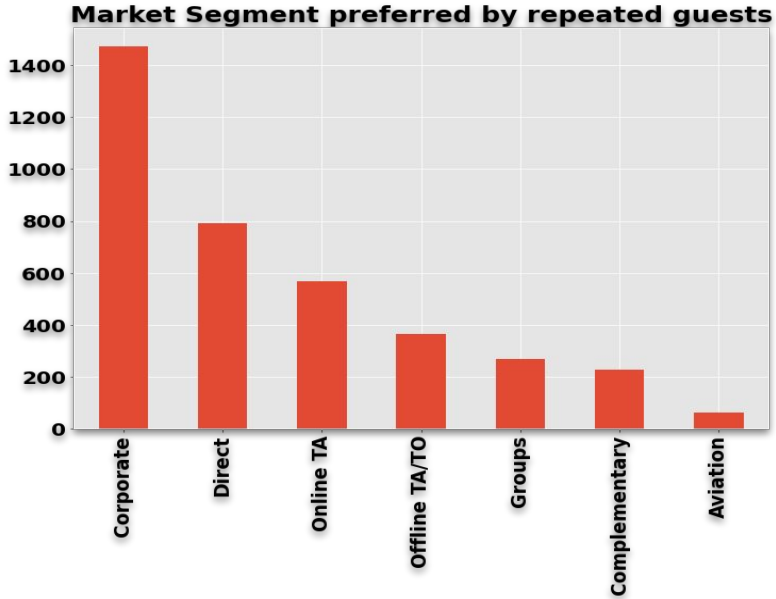
- **BB Meal plan is most popular meal plan followed by HB.**
- By analyzing the above graph we can say that most people eat their breakfast at hotel and for lunch and dinner they may go to eateries so here we can **collaborate with different eateries and we can refer people to the eateries of their preference.**
- And we can provide some coupon code to the customers and whenever they **use our coupon code at any eateries we will get some commission in return.**

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.

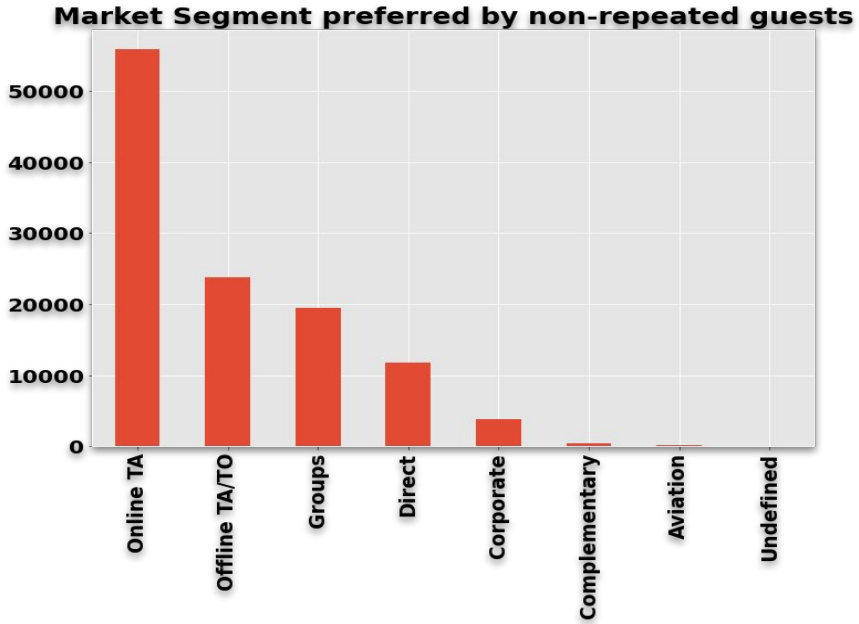


Is online TA the most preferred market segment?



Repeated guests:

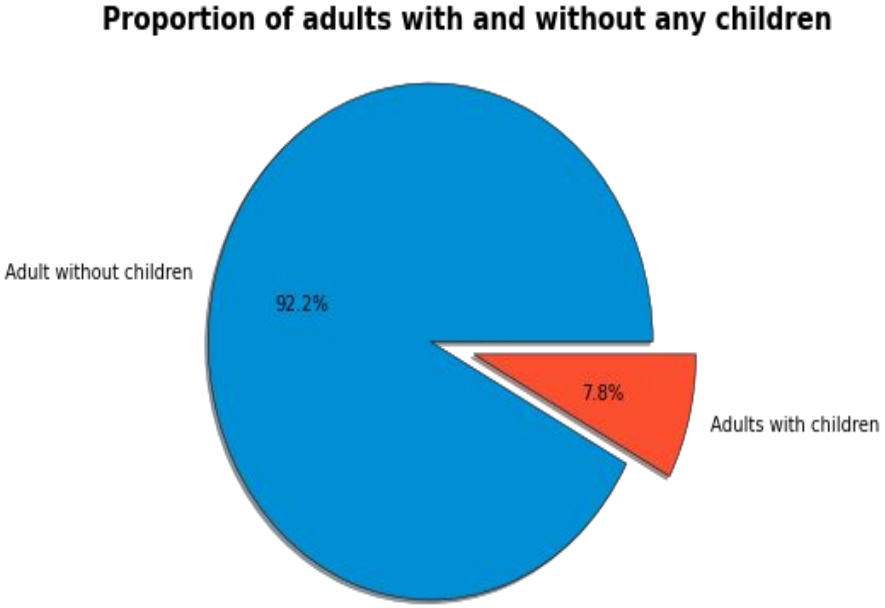
- **Corporate is the most popular market segment** for their bookings.
- Direct and online TA are the other two popular market segments

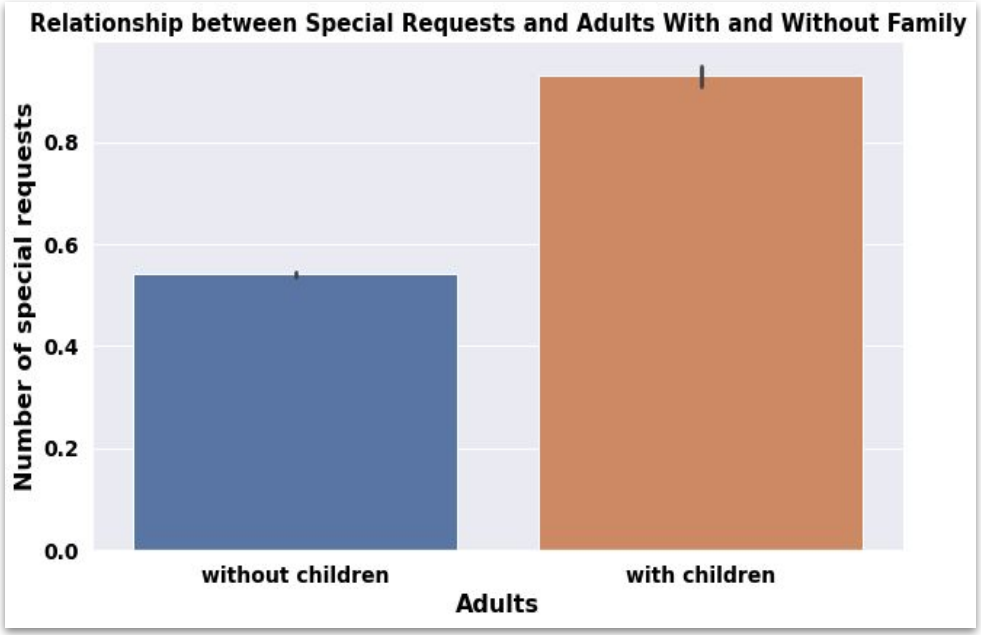


Non-repeated guests:

- **Online TA is most preferred by non-repeated guests.**
- Offline TA, groups and direct are the other popular channels.

Do adult with family have more or less special requests?



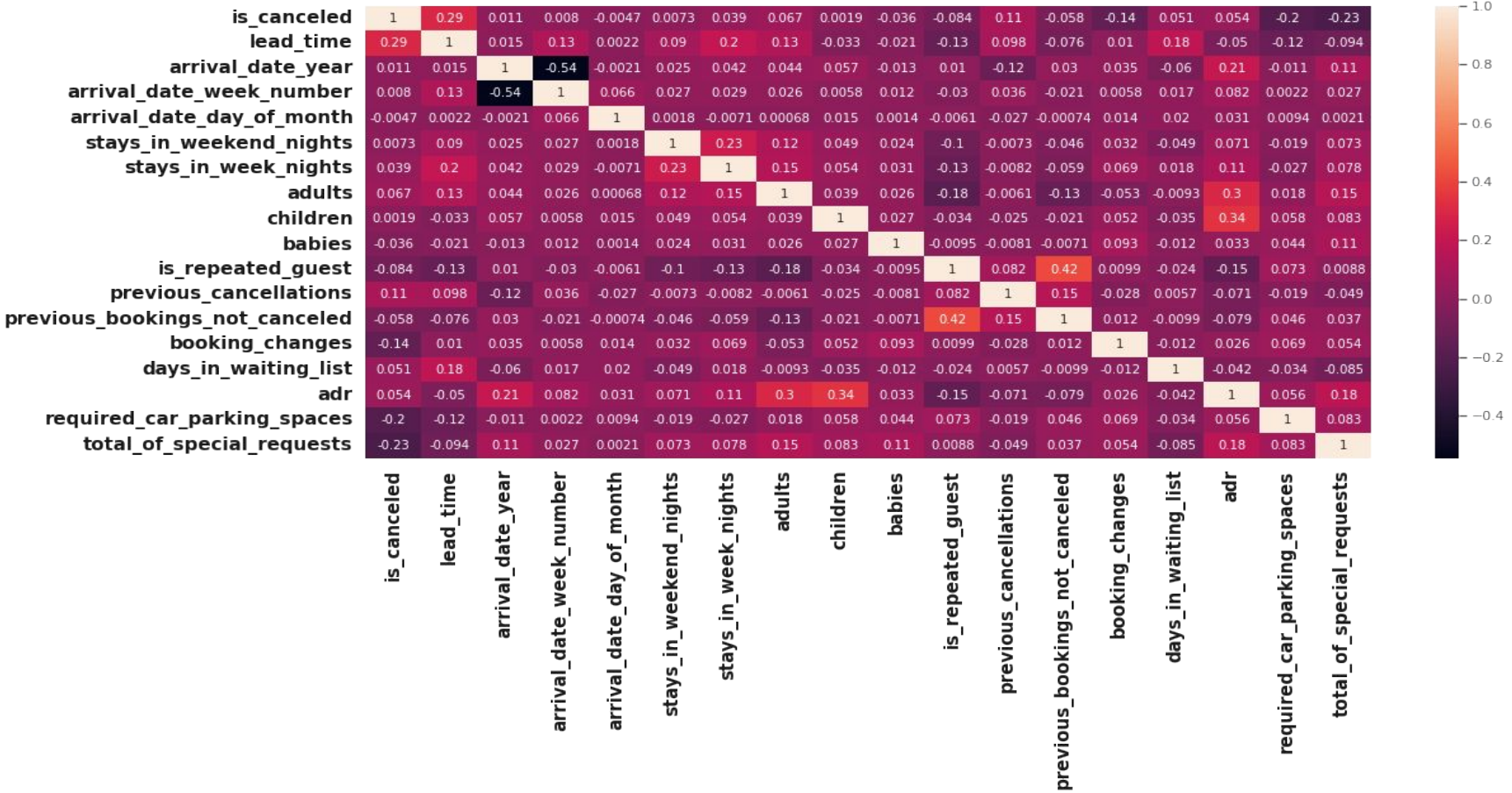


Travelling without any children is the preferred mode travelling among adults as **92% of adults prefer to travel without any children.**

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 🎯

- Resort hotels tend to have less bookings in comparison to city hotels so they need to work on their marketing strategy and promote the hotels more, especially on social media.
- 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 are very rare so the hotels could advertise in ways that attract couples more and also business travellers.
- Most people eat their breakfast at hotel and for lunch and dinner they may go to eateries so here we can **collaborate with different eateries and we can refer people to the eateries of their preference.** And we can provide some coupon code to the customers and whenever they **use our coupon code at any eateries we will get some commission in return.**
- Hotel has very few repeated guest, feedback can be collected to plan strategies accordingly.
- Hotel should collaborate with online marketing companies to advertise itself.

Thank you