

Capstone Project

Hotel Booking Analysis

Aakash Ramnani

Points to Discuss:

- **Objective**
- **Data Summary**
- **Hotel Booking analysis (Country, Preferred Hotel, Average Stay, Room wise analysis)**
- **Distribution Channel analysis**
- **Month wise analysis**
- **Factors Affecting hotel booking cancellation**
- **Conclusion**

Objective

Analysis and discuss the given data set of hotel bookings for year 2015-2017.

Data Analysis of the given dataset is performed in the following ways :

- **Hotel Booking analysis – Where factors like country of booking, Preferred hotel type by guests, Average stay for each hotel type, Preferred room type, Room type with high average daily rate are analysed.**
- **Distribution Channel analysis – Where factors like most common channel used for hotel booking, Channel with high percentage cancelation, Channel with better revenue generating deal, Agent with most number of bookings are analysed.**
- **Month wise analysis – Where factors like monthly booking trends, Busiest Month for hotel, ADR for each month are analysed.**
- **Factors Affecting Hotel booking Cancellation – Where different factors like longer lead time, longer waiting time, room allocation, deposit policy that can affect hotel booking cancelation are analysed.**
- **And by doing the analysis we will finally discuss the insights found and conclude the project.**

Data Summary

Data set contains different variable crucial for analysis of hotel booking.

Few of them which we have frequently used are:

- **'hotel'** - Hotel (H1 = Resort Hotel or H2 = City Hotel)
- **'is_canceled'** - Value indicating if the booking was canceled (1) or not (0)
- **'lead_time'** - Number of days that elapsed between the entering date of the booking into the PMS and the arrival date
- **'arrival_date_month'** - Month of arrival date
- **'stays_in_weekend_nights'** - Number of weekend nights (Saturday or Sunday) the guest stayed or booked to stay at the hotel
- **'stays_in_week_nights'** - Number of week nights (Monday to Friday) the guest stayed or booked to stay at the hotel
- **'country'** - Country of origin. Categories are represented in the ISO 3155-3:2013 format
- **'distribution_channel'** - Booking distribution channel. The term "TA" means "Travel Agents" and "TO" means "Tour Operators"

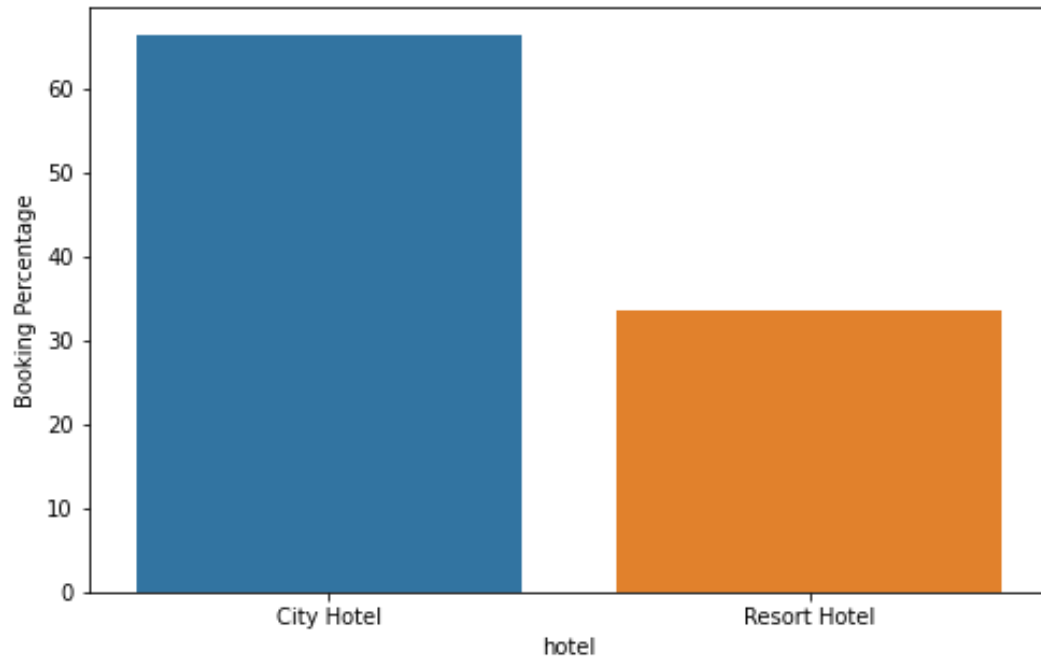
Data Summary(contd..)

- **'reserved_room_type'** - Code of room type reserved. Code is presented instead of designation for anonymity reasons.
- **'assigned_room_type'** - Code for the type of room assigned to the booking. Sometimes the assigned room type differs from the reserved room type due to hotel operation reasons (e.g. overbooking) or by customer request. Code is presented instead of designation for anonymity reasons.
- **'deposit_type'** - Indication on if the customer made a deposit to guarantee the booking. This variable can assume three categories: No Deposit – no deposit was made; Non Refund – a deposit was made in the value of the total stay cost; Refundable – a deposit was made with a value under the total cost of stay.
- **'agent'** - ID of the travel agency that made the booking
- **adr** - Average Daily Rate as defined by dividing the sum of all lodging transactions by the total number of staying nights
- **'days_in_waiting_list'** - Number of days the booking was in the waiting list before it was confirmed to the customer
- **'reservation_status_date'** - Date at which the last status was set. This variable can be used in conjunction with the Reservation Status to understand when was the booking canceled or when did the customer checked-out of the hotel

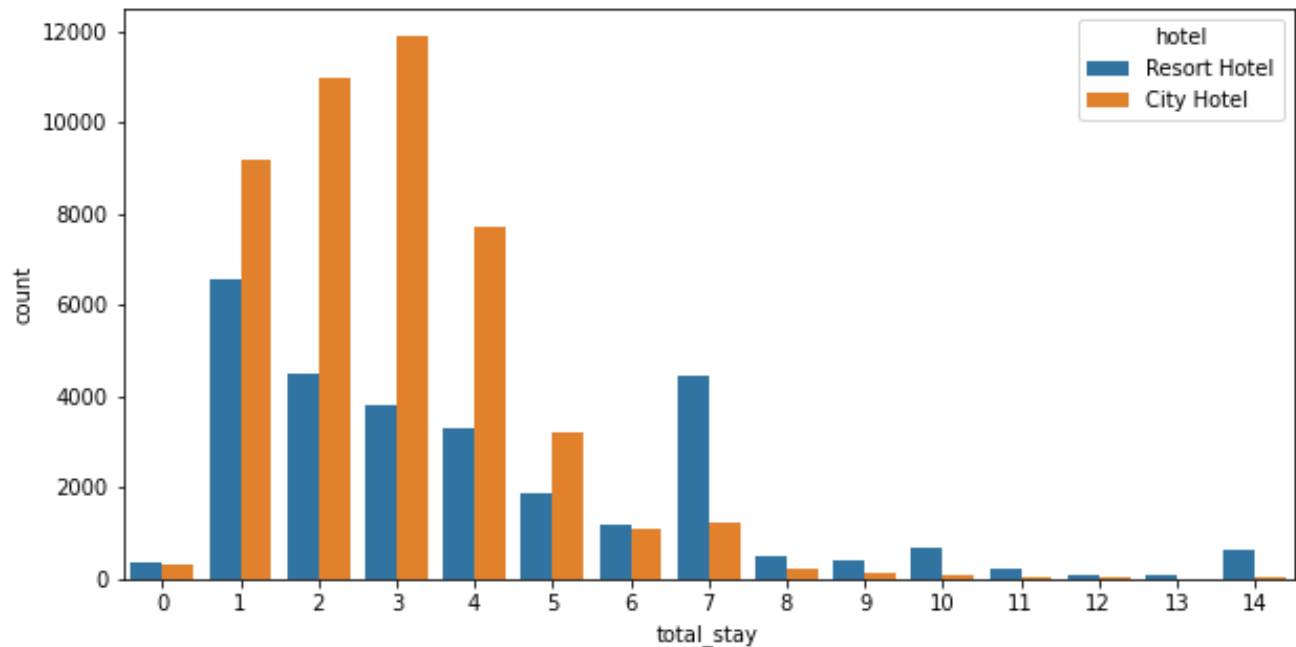
Hotel Booking Analysis

Following are the questions we have tried to find an answer for :

- Which hotel type receives more number of booking ?**
- Which hotel type makes more revenue ?**
- What is the average stay for both the hotels ?**
- Which room type is mostly preferred by the guest ?**
- Which room type has higher ADR ?**
- From which country do guests book the most number of times ?**

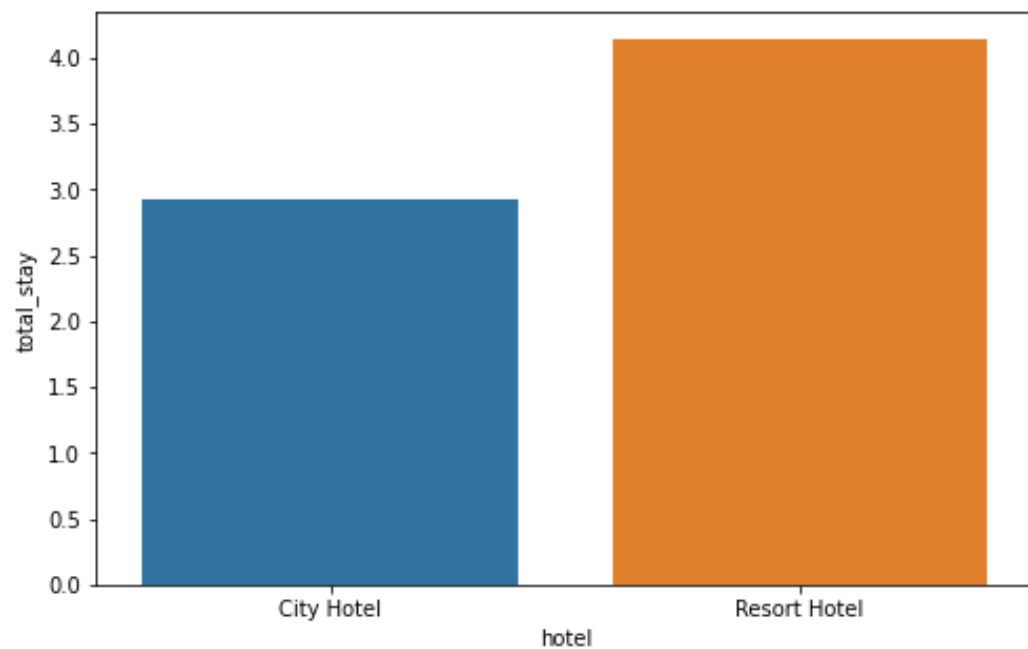


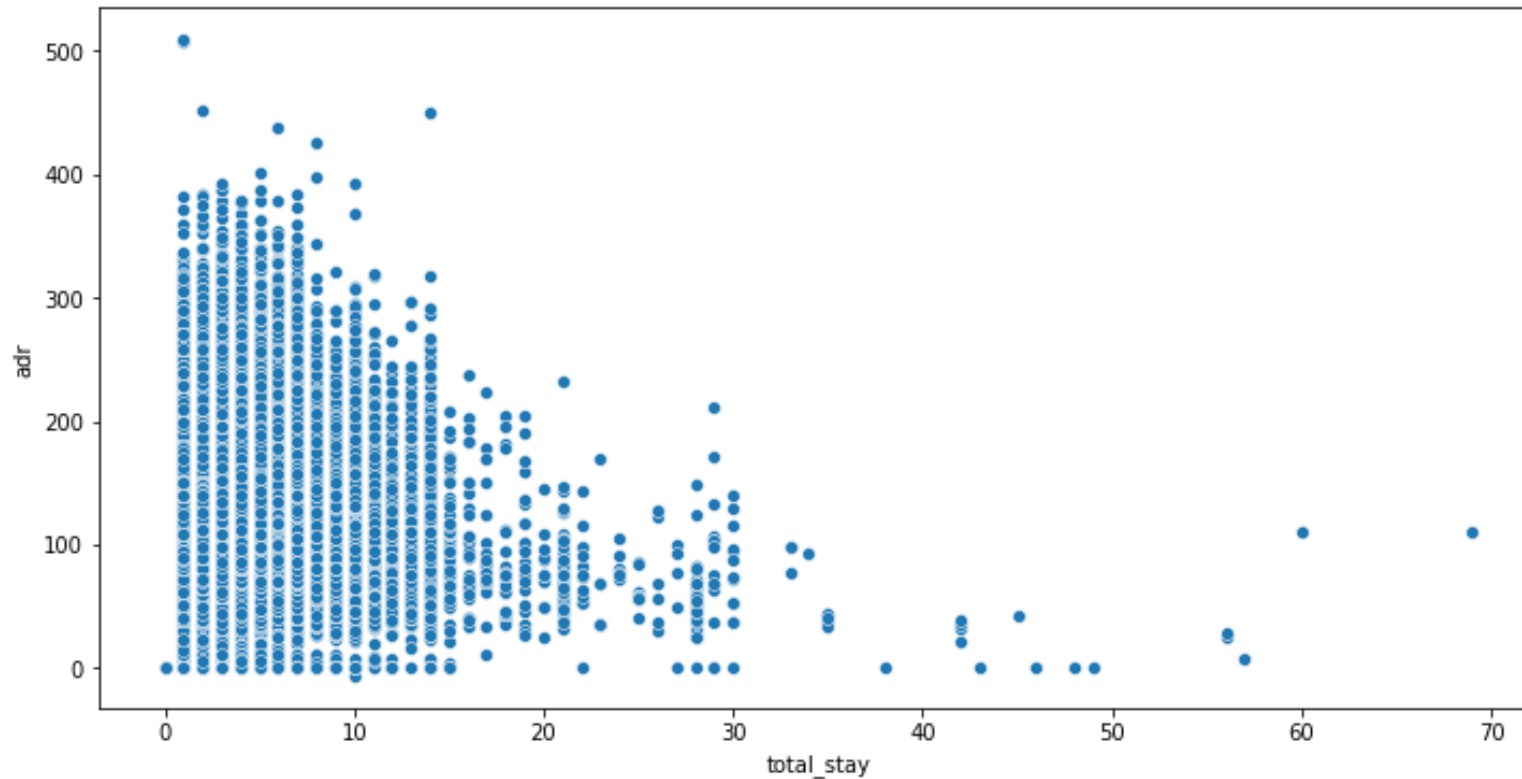
- **Out of all the bookings made 60% of booking is made for city hotels and 40% of booking is made for resort hotel.**
- **Revenue generated by city hotel is slightly higher than resort hotel.**



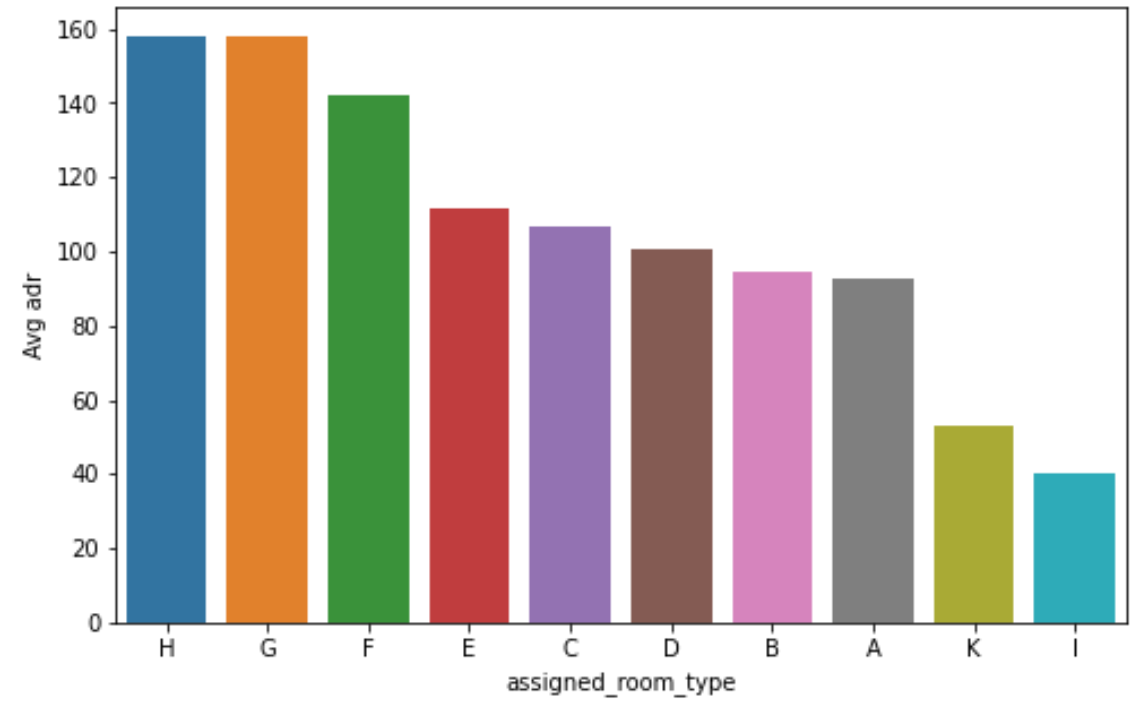
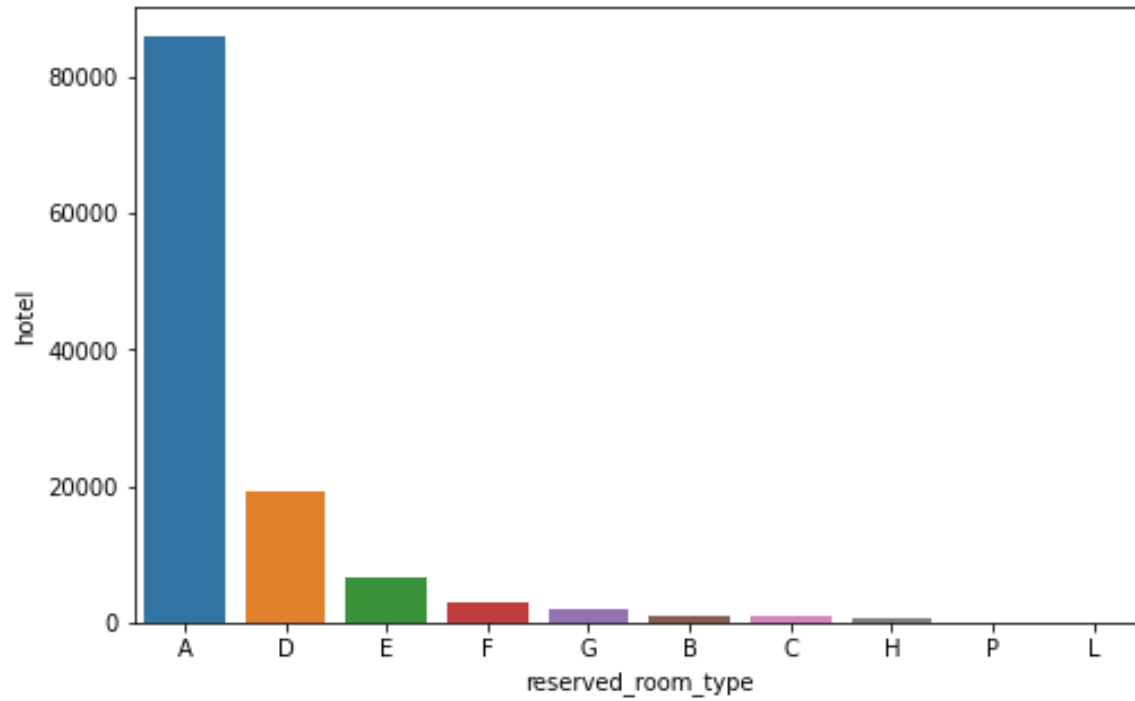
Guest Prefer City hotels for shorter stay duration and Resort Hotel for longer stay duration.

Average stay for guest is less than 5 days for both the hotels. Where it is 3 days for city hotel and 4 days for resort hotel.

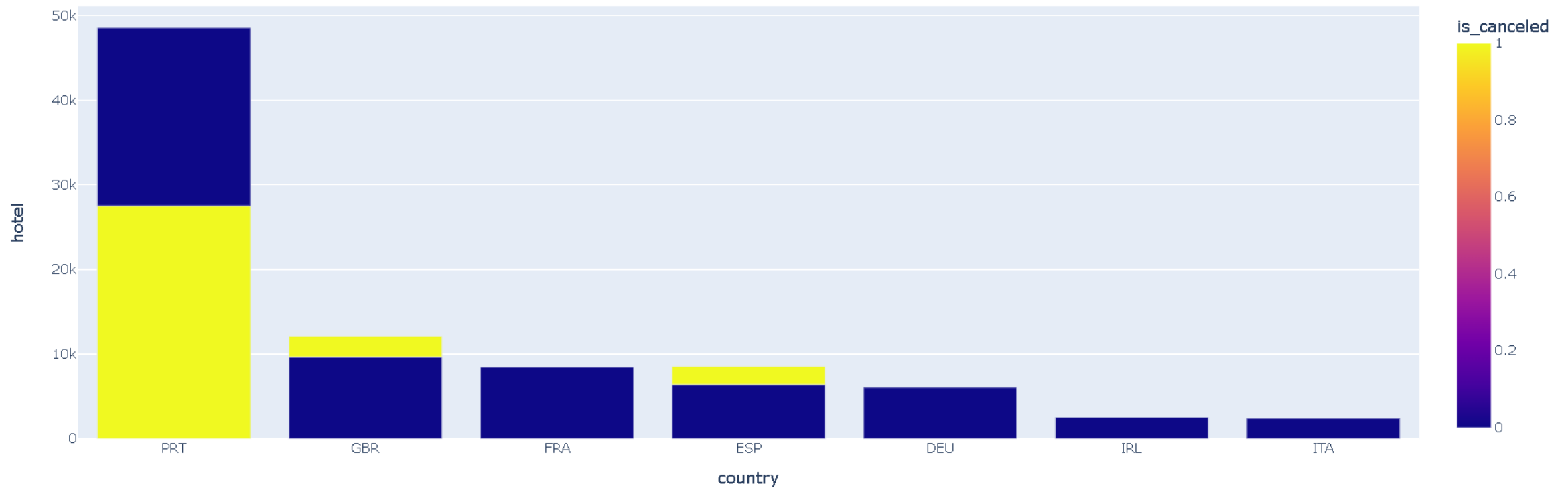




- **Scatter Plot indicates that as the stay increases, ADR decreases.**
- **Customers booking a longer stay are likely to get a better price for their stay.**



- **Most booked room type is room type 'A'.**
- **Room Type with highest ADR is room type 'H' and room type 'G'.**

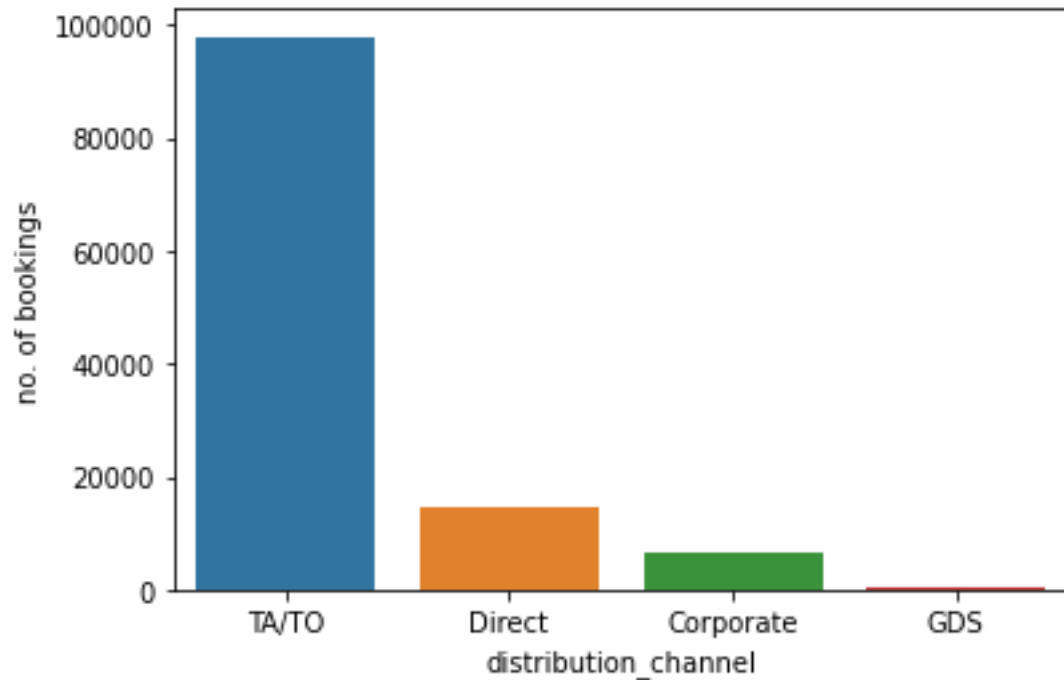


- **Most number of bookings are from Portugal.**
- **Almost 56% of bookings from Portugal gets cancelled.**

Distribution Channel Analysis

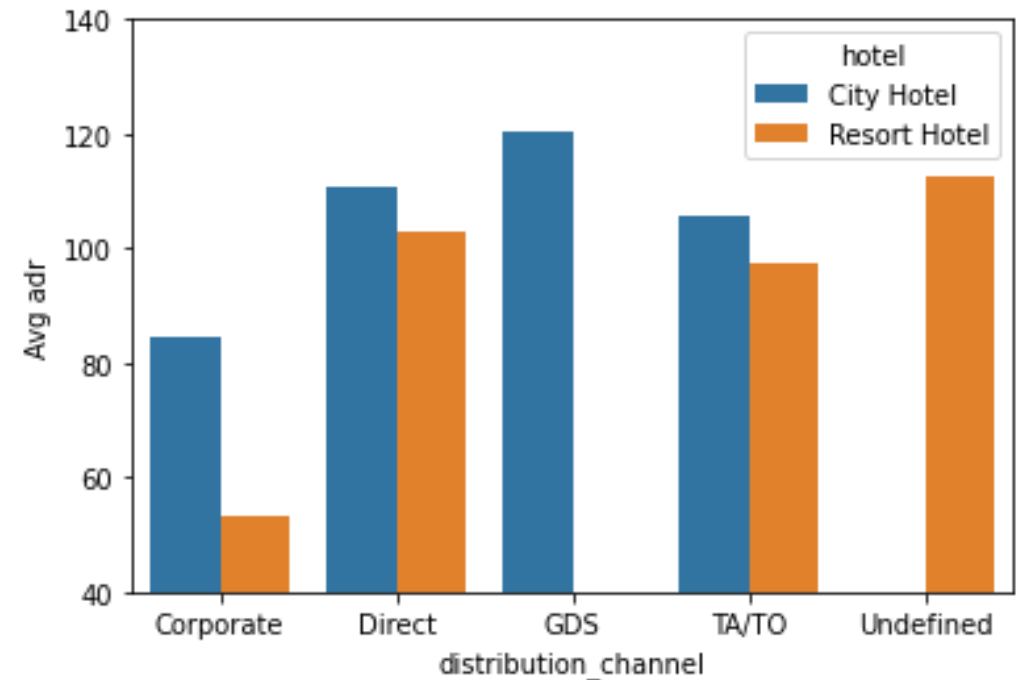
Following are the questions we have tried to find an answer for :

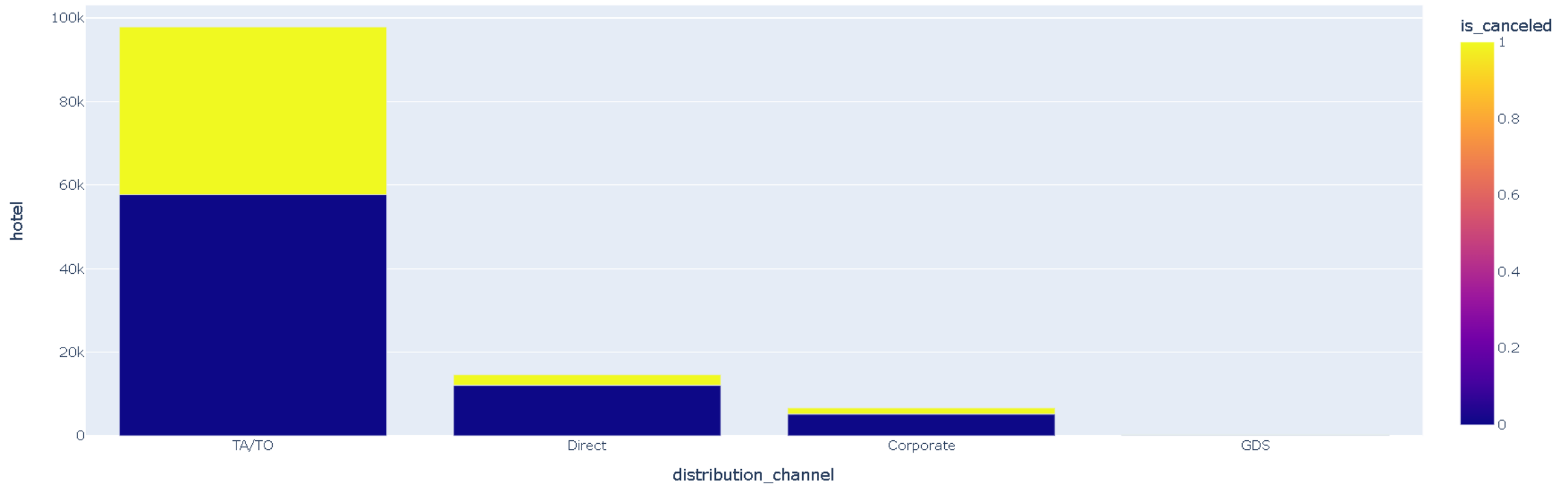
- **Which Distribution Channel is most commonly used ?**
- **Which Distribution Channel brings in the better revenue generating deal for hotel ?**
- **Which Distribution Channel as most percentage cancellation ?**
- **Which agent has the most number of bookings.**



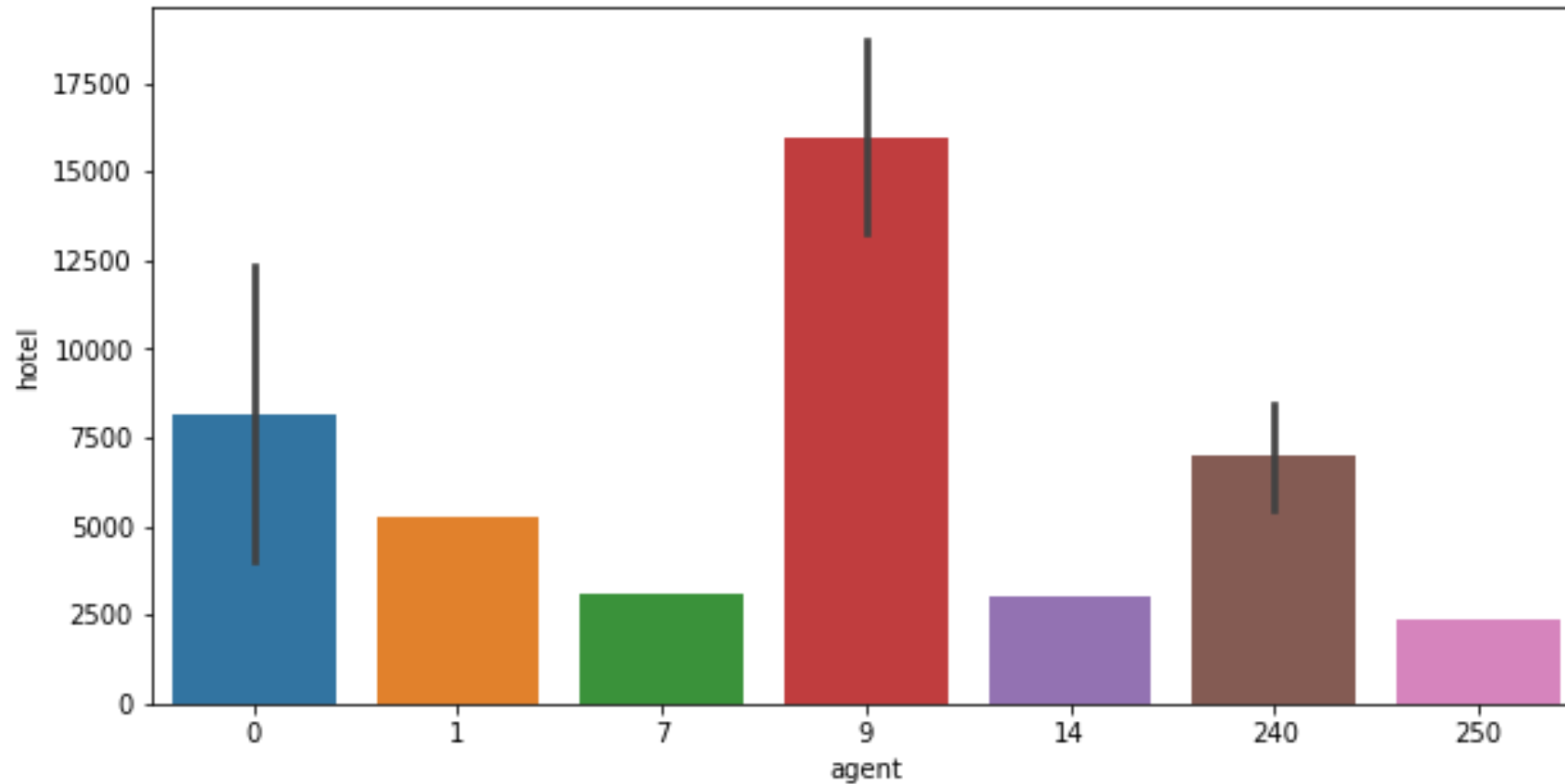
**Most commonly used
Distribution Channel is TA/TO
(Travel Agent/Travel Operator).**

- **GDS channel bring the better revenue generating deals for city hotel.**
- **GDS which is better revenue generating distribution channel for city hotel has negligible contribution in generating revenue for Resort Hotel.**
- **Resort Hotel should work on increasing the outreach on GDS channel as well to bring in better revenue generating deals.**





- **The graph shows the booking to cancellation ratio for Distribution channels.**
- **TA/TO has the highest number of bookings.**
- **However 41% of TA/TO bookings gets cancelled.**

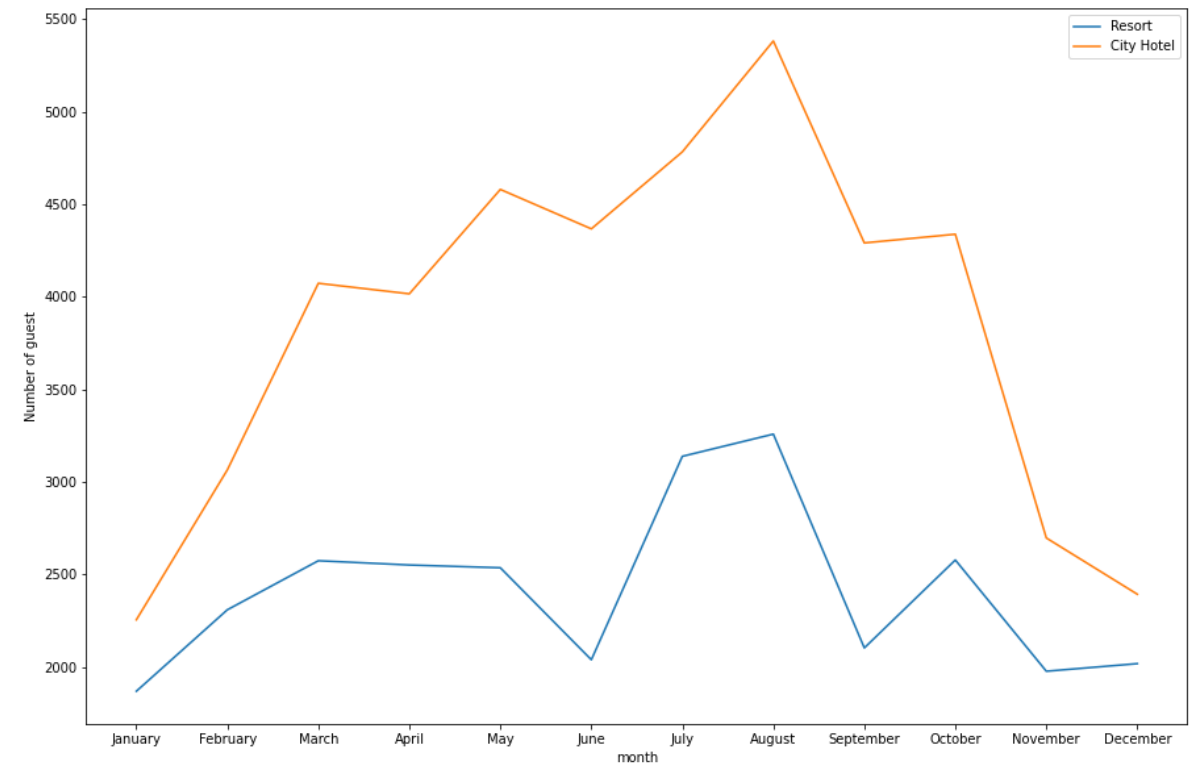
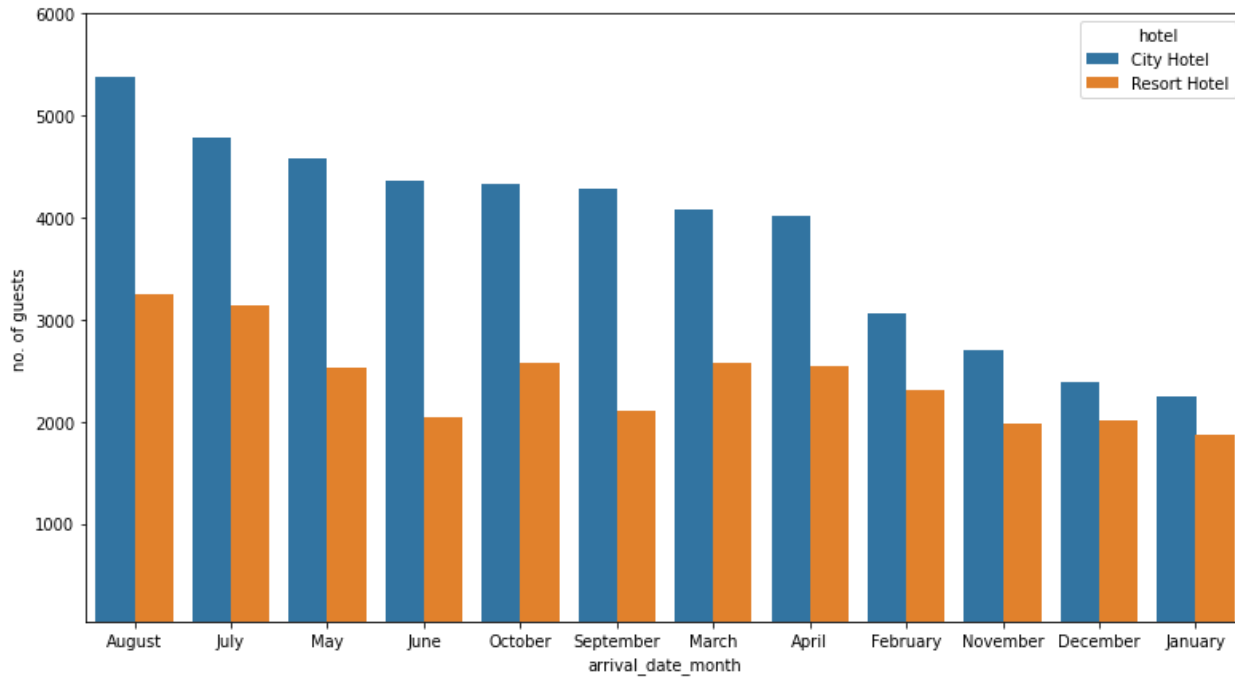


- **Agent no.9 has the most number of bookings and also the most high percentage cancellations.**

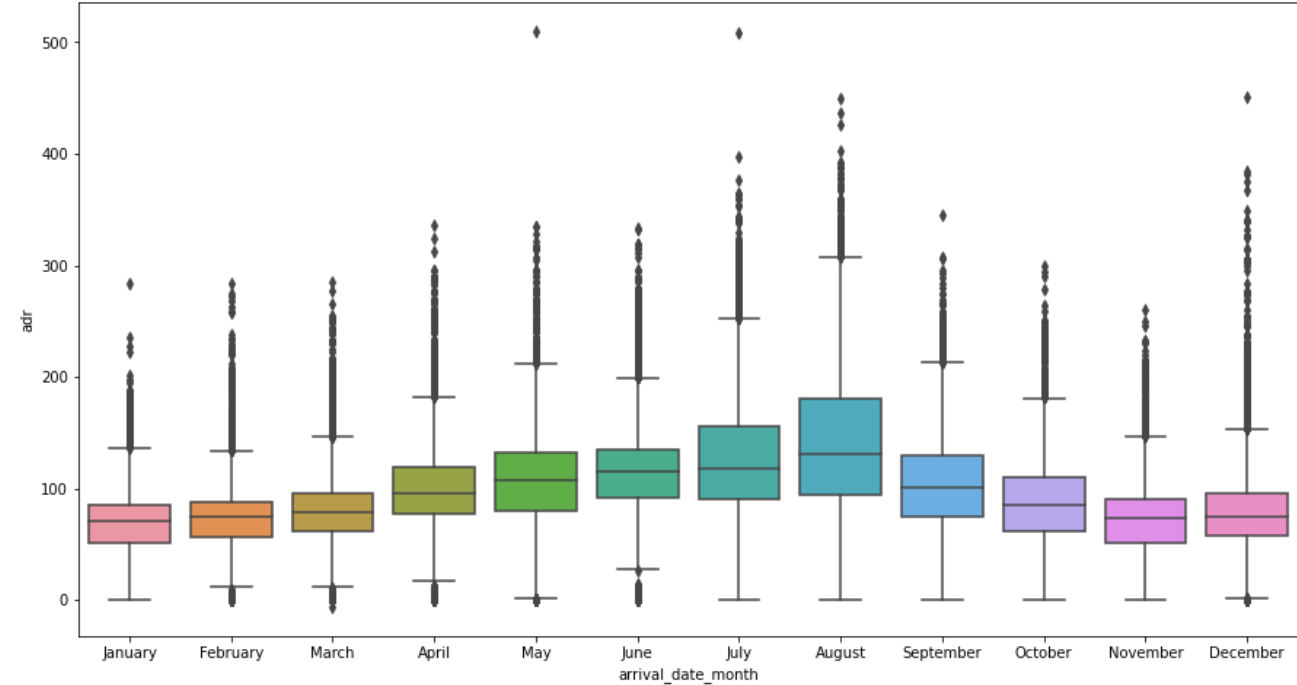
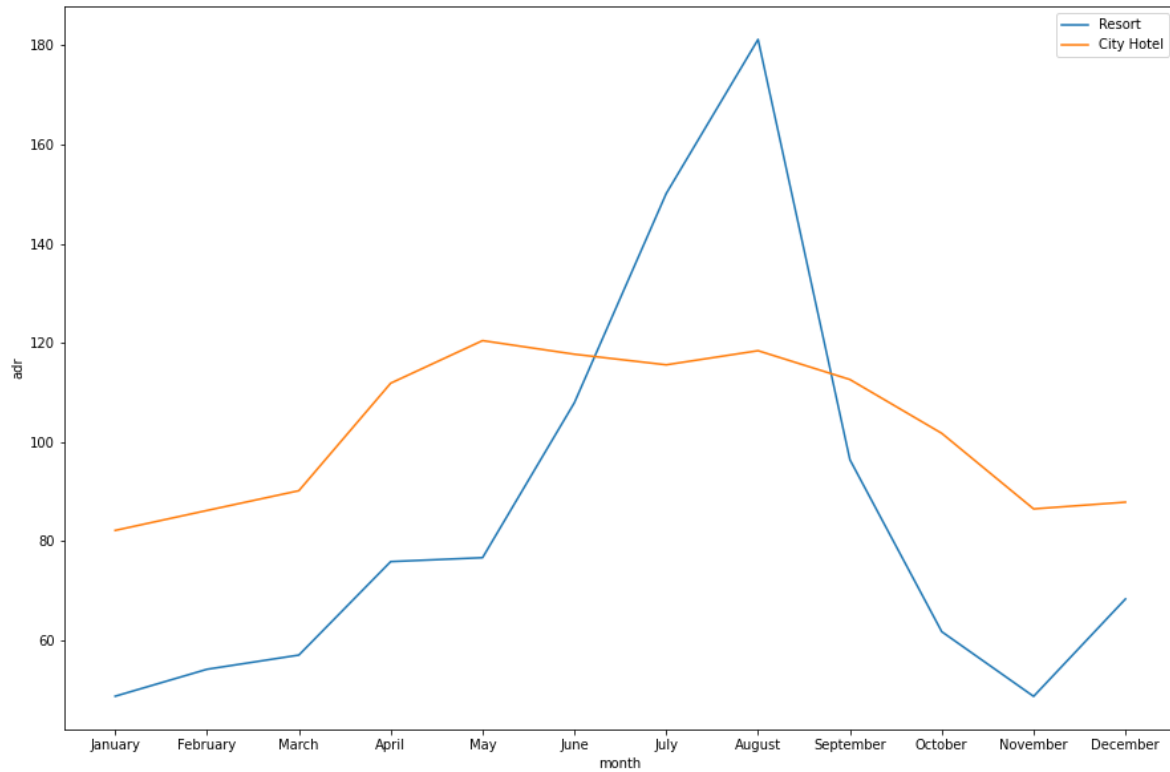
Month Wise Analysis

Following are the questions we have tried to find an answer for :

- Which are the busiest months of the year for the hotels ?**
- What is the booking trend around the year for the hotels ?**
- What is the impact on ADR every month across the year ?**



- **August and July are the busiest months of the year for the hotels.**
- **Hotels can see the rise in guests from beginning of the year, reaching its peak at august and the number decreases gradually as it reaches the end of the year.**
- **There is a drop in bookings in the month of June and September for Resort Hotels.**

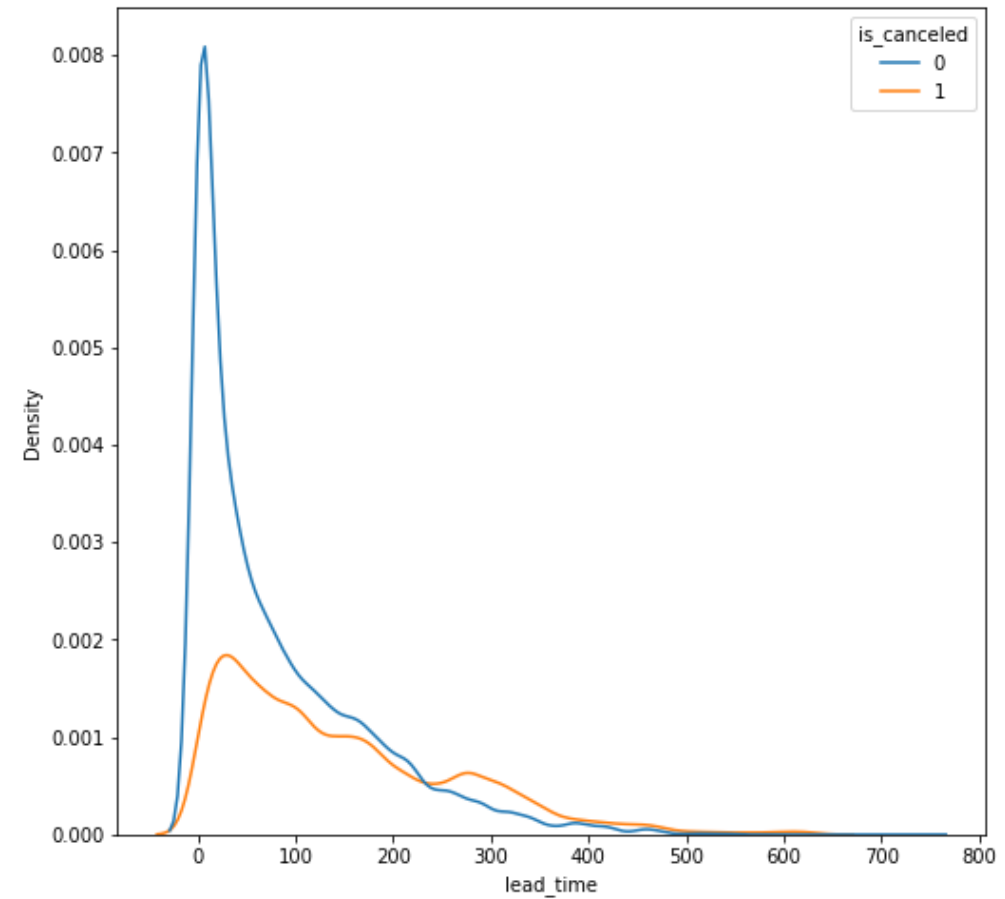
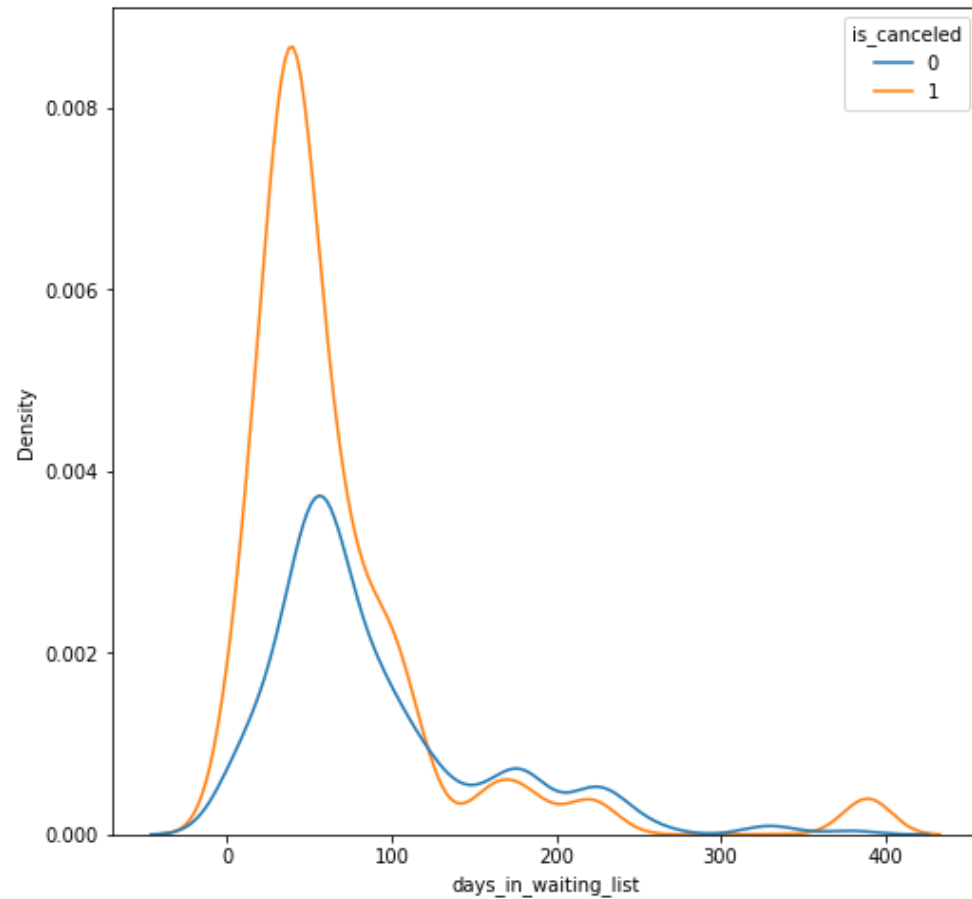


- **Average ADR keeping rising from beginning of the year and reaches its peak in august month and then gradually decreases as it reaches end of the year.**
- **However there is slight increase in the average ADR value for December month, it can also be inferred that hotels make better deals with higher ADR during that month.**

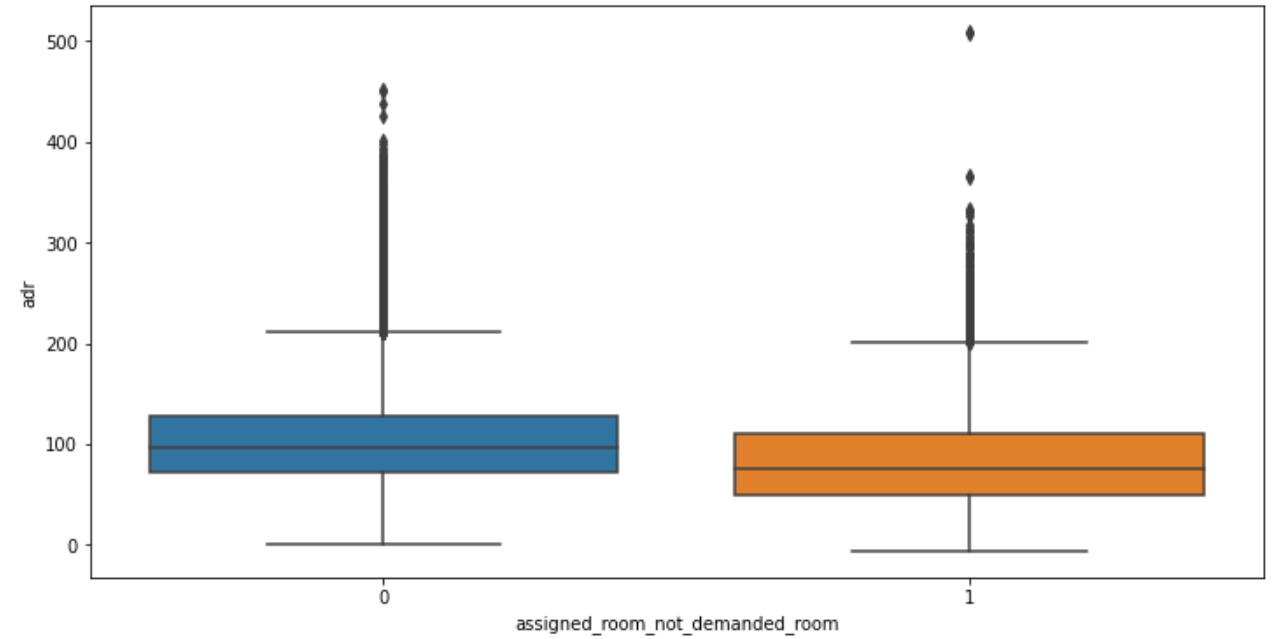
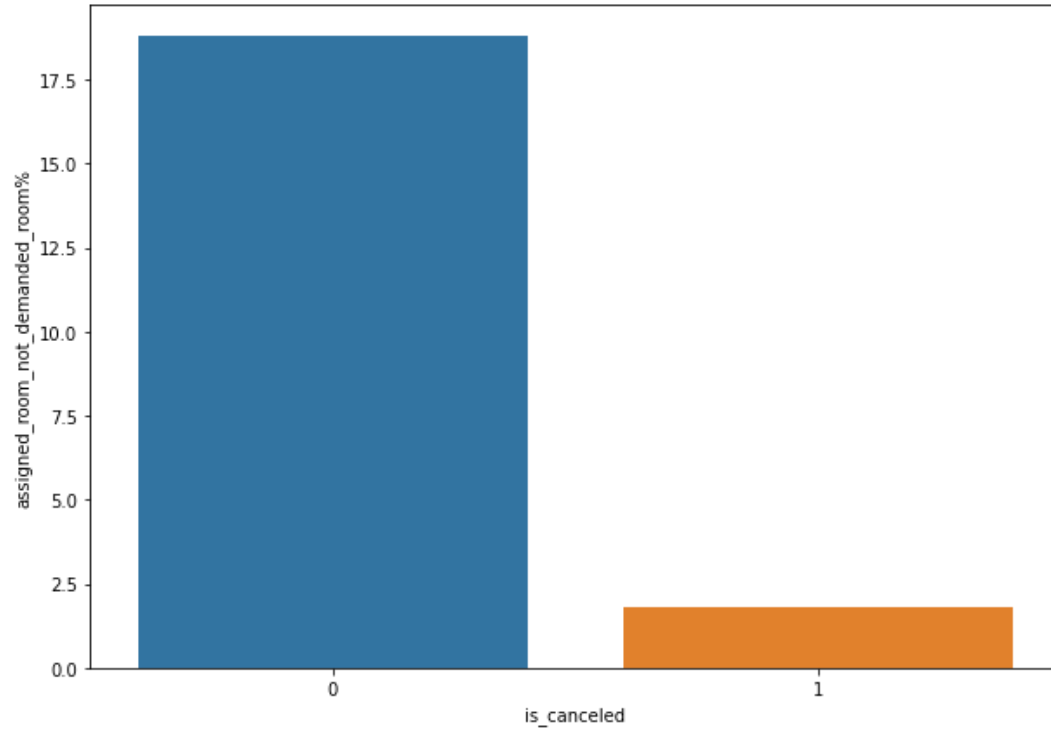
Factors affecting Cancellations

Following are the questions we have tried to find an answer for :

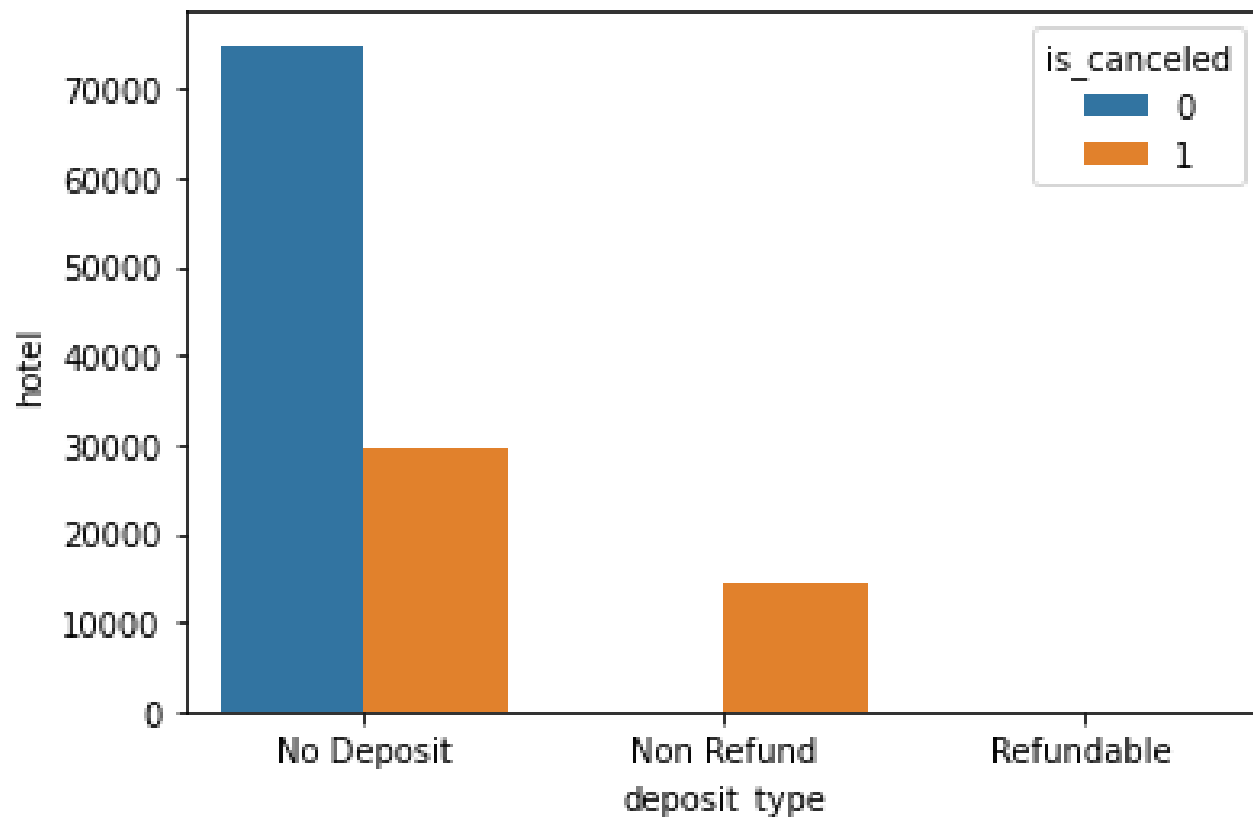
- What is the impact of lead time on cancellations ?**
- What is the impact of waiting period on cancellation ?**
- Do, not getting assigned the same room as booked has any impact on cancellation?**
- What is the impact of room allocation on ADR ?**
- What is the impact of deposit policy on cancellation.**



- **Graphs for both `days_in_waiting_list` and `lead_time` are almost similar and they both indicate that there is no significant effect of both lead time and waiting period on cancellations.**



- **As the graph shows there is no significant effect of room allocation on cancellations.**
- **However not being assigned the same room as demanded has some of effects on average daily rates for hotels. People not getting the same room as demanded tend to pay lower price for the room.**



- **Booking and cancellations numbers for hotels with refundable deposit policy is significantly low.**
- **Cancellations for the hotels with non-refundable deposit policy are comparatively very high.**
- **There is no significant effect on cancellations for hotel with no deposit policy.**

Conclusion

- **Out of all the bookings made 60% of booking is made for city hotels and 40% of booking is made for resort hotel.**
- **For longer stay Resort hotel is preferred and for shorter stay city hotel is preferred.**
- **Revenue generated by city hotel is slightly higher than resort hotel.**
- **Average stay for guest is less than 5 days for both the hotels. Where it is 3 days for city hotel and 4 days for resort hotel.**
- **Most reserved room type is room type A.**
- **Room type H and G have highest ADR.**
- **Highest number of bookings are from TA/T0.**
- **41% of bookings via TA/T0 gets cancelled.**

Conclusion(contd..)

- **Agent No. 9 has most number of booking.**
- **GDS distribution channel brings in better revenue generating deals for hotels.**
- **Most number of bookings are from Portugal.**
- **Almost 56% of bookings from Portugal gets cancelled.**
- **July and August Are the busiest month of the year for hotels.**
- **Hotels experiences a rise in ADR from beginning of the year and reaches its peak at august and then gradually decrease towards the end of the year.**
- **lead time, Waiting time and not getting the same room as reserved has no significant impact on cancellation.**
- **Not getting same room as reserved results into slight decrease in adr.**
- **Longer stay result in lesser ADR value.**

Solution to Business Objective

- **Most of the cancellations are from Portugal and the distribution channel used is TA/T0. Lead time, Waiting Period and not getting the same room as reserved have no significant effect on cancellations. And hotels with refundable deposit policy have less number of cancellation than the ones with non refundable deposit policy. Imposing a refundable deposit policy for all the guest from Portugal can bring a change in cancellation rate.**
- **TA/T0 is most common channel used for booking hotels however higher percentage of cancellation are also from TA/T0. Introducing a small cancellation fee can probably reduce the number of cancellation.**

Solution to Business Objective(contd..)

- **Distribution channel like GDS is not focused on for resort hotel where as it has worked well for city hotel. So resort hotels should improve there price point to cope up with the GDS fees and improve their listing on GDS channel to get better deals.**
- **Room type H and G have higher average daily rate. A good offer with better marketing strategy, marketing Room type H and G can bring in more revenue.**
- **Most number of guest tend to travel in July and August. A marketing campaign around this months, right price point and better add on services can bring in more guest and thus hotel can generate more revenue.**

Thank You..!!

Capstone Project

Hotel Booking Analysis

Aakash Ramnani