

Hotel Booking Analysis

Capstone Project

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Points To Discuss

- ▶ Objective
- ▶ Data Summary
- ▶ Basic Univariate Analysis(Single Variable Findings)
- ▶ Bi-Variate Analysis(Factors affecting Booking and Cancellation)
- ▶ Multivariate Analysis(Considering the Factors which affect the Cancellation more. Performing Further analysis.)
- ▶ Conclusion

Objective

Using statistics and visualizations to analyze and identify trends in Hotel Bookings for year 2015-2017.

Steps of Analysis are:-

- ▶ Step 1 :- Univariate Analysis – On Analysis of singular Variables we will be able to analyze trends like most preferred hotel, Average cancellation rate, most preferred meal with stay, Most bookings are from which place and many more.
- ▶ Step 2 :- Bi-Variate Analysis – Combining different variables to find relation between them and Analyze trends like. Which hotel type has higher cancellation. Monthly Booking Trends etc.
- ▶ Step 3:- Multivariate Analysis – On finding significant relation between variables in step 2, we will further analysis them with more variables.

Data Summary

Dataset contains total of 30 variables. After the analyses on all of them, the variables which are most crucial to over analysis are described below:

Note: Code is presented instead of original values for many variables for anonymity reasons.

- **hotel** : Type of Hotel (H1 = Resort Hotel or H2 = City Hotel).
- **is_canceled** : Describes wether 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
- **meal** : Type of meal booked.
- **country** : Country of origin. Categories are represented in the ISO 3155-3:2013 format

Data Summary(contd)

- **market_segment** : Market segment designation. In categories, the term “TA” means “Travel Agents” and “TO” means “Tour Operators”
- **distribution_channel** : Booking distribution channel.
- **reserved_room_type** : Code of room type reserved.
- **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
- **total_of_special_requests** : Number of special requests made by the customer
- **Total_stay** : Total number of days Customer stayed.

Uni – Variate Analyses

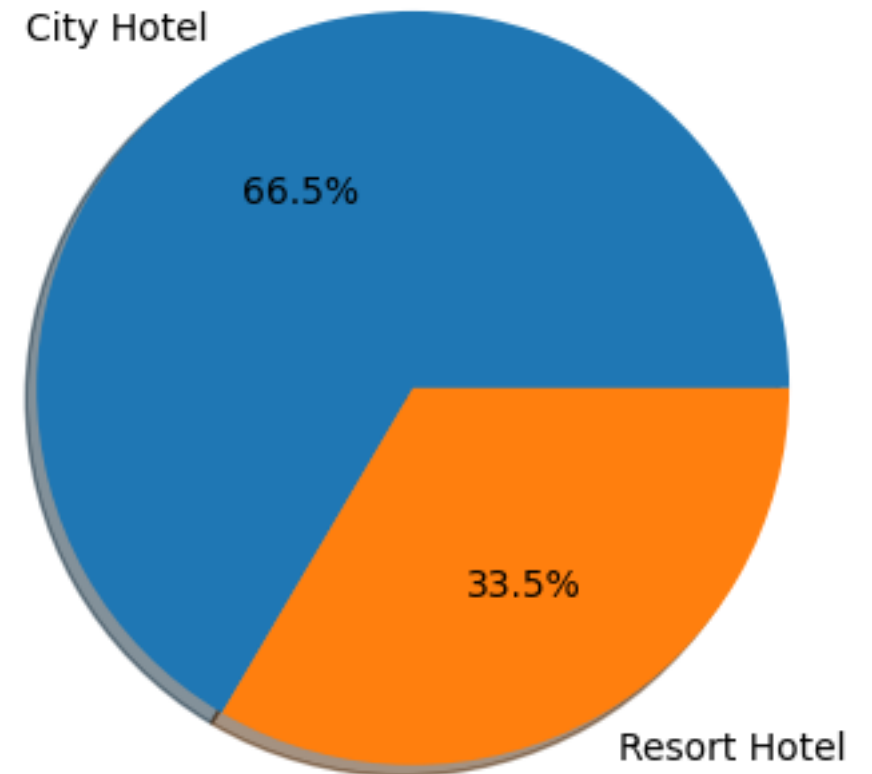
Analyses is done to understand trends like-

- ▶ Which Hotel type receives higher Bookings.
- ▶ What is the average cancellation rate.
- ▶ Monthly booking Trend.
- ▶ Meal type preferred by customers.
- ▶ Country wise Booking trend.
- ▶ Which Travel agent has highest bookings.
- ▶ Most preferred room type by Guest.
- ▶ Most preferred Booking channel.

Bookings received by different types of Hotels

- 66% bookings are done for city hotels.
- Only 33.5% bookings are done for Resort hotels.
- City Hotels Receive twice the number of bookings received by Resort Hotels.

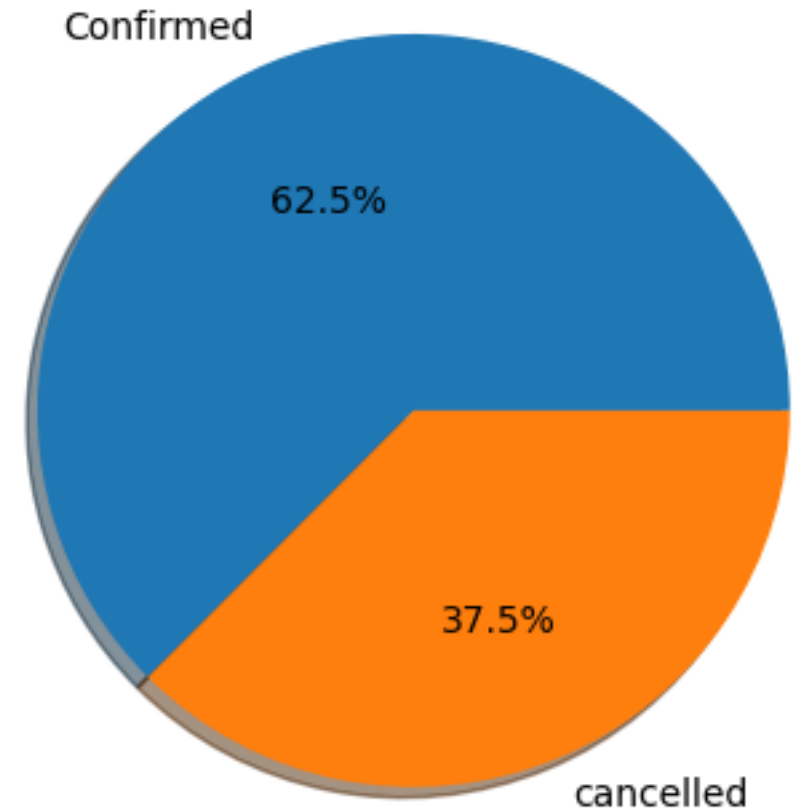
Hotel booking for diff. types of Hotel



Bookings getting Cancelled

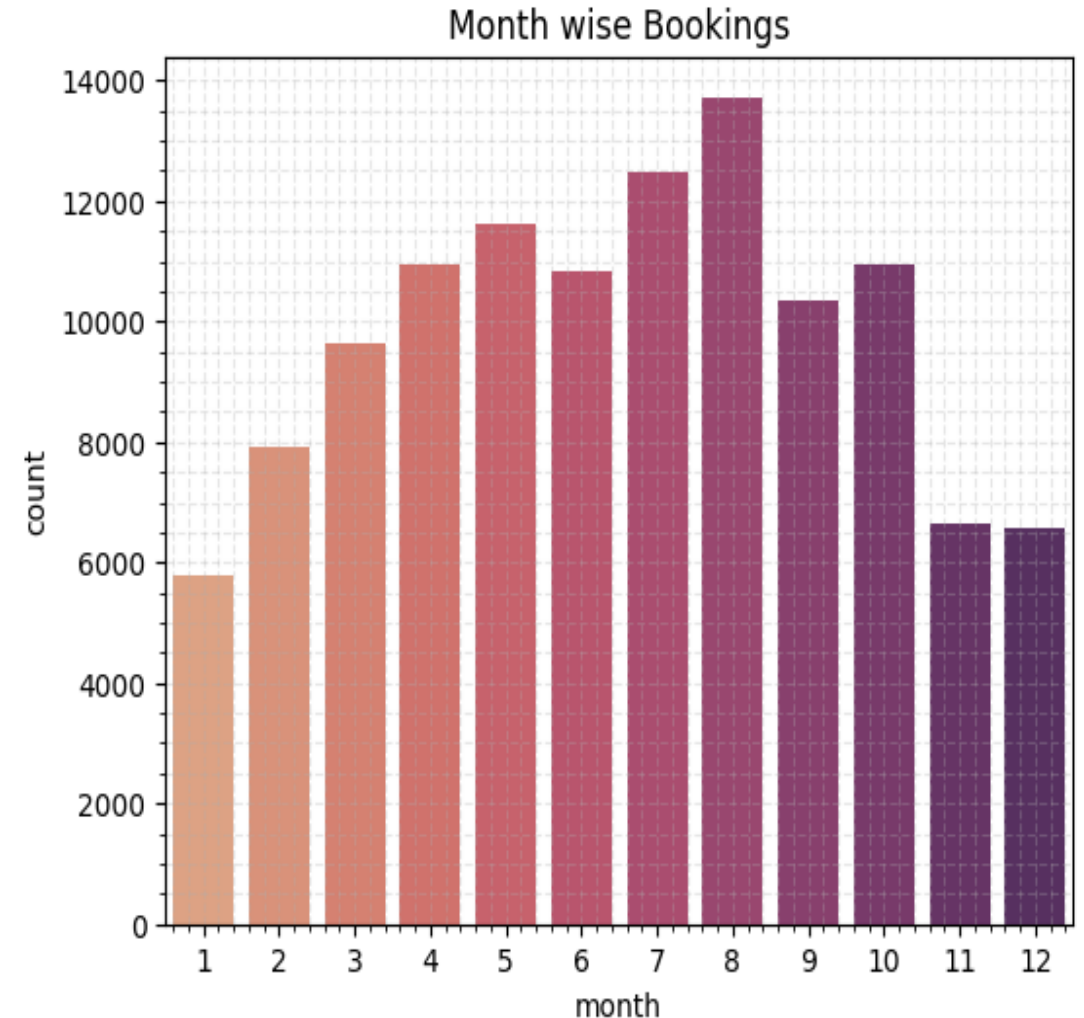
- 62.5% bookings are Actually successful.
- 37.5% bookings are Cancelled.
- 1 out of 3 Bookings gets cancelled.
- That can lead to missing targets.
- Empty room leading to losses.

Hotel booking Cancellation pie chart



Monthly Bookings Trends

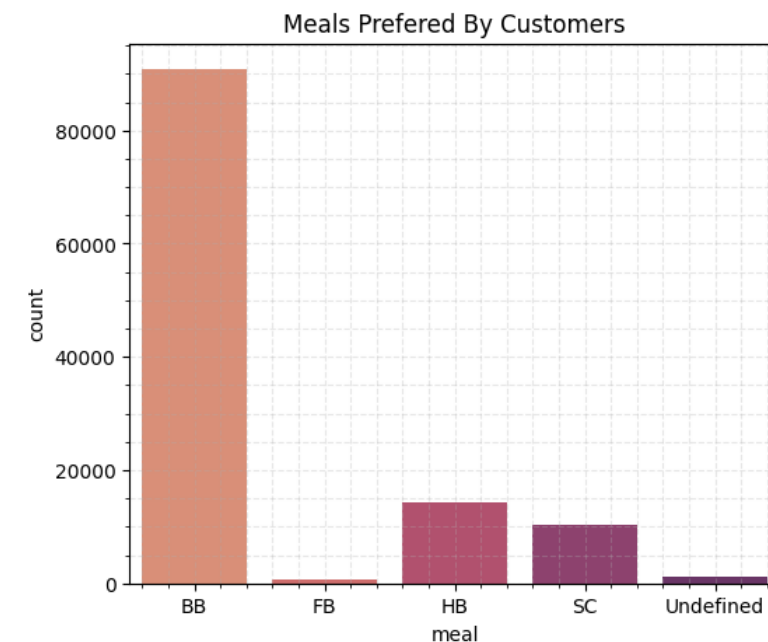
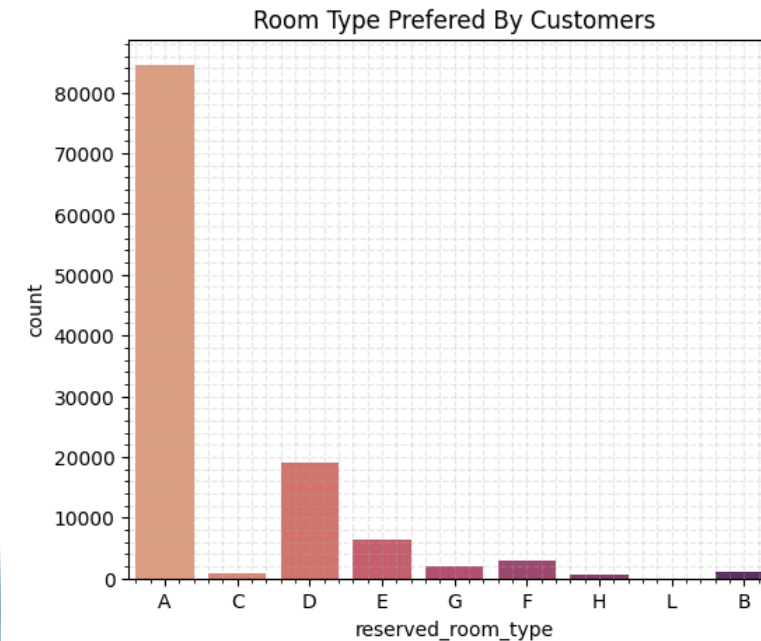
- August Month Has the highest Number of bookings.
- From start of the year, as the month pass by bookings Increase and they are highest in 8th month.
- After August we can see that there a significant drop in average monthly bookings.
- If a new venture is planned or promotions are being held than 4th or 5th month will be the best.



Room and Meal preferred by Customers

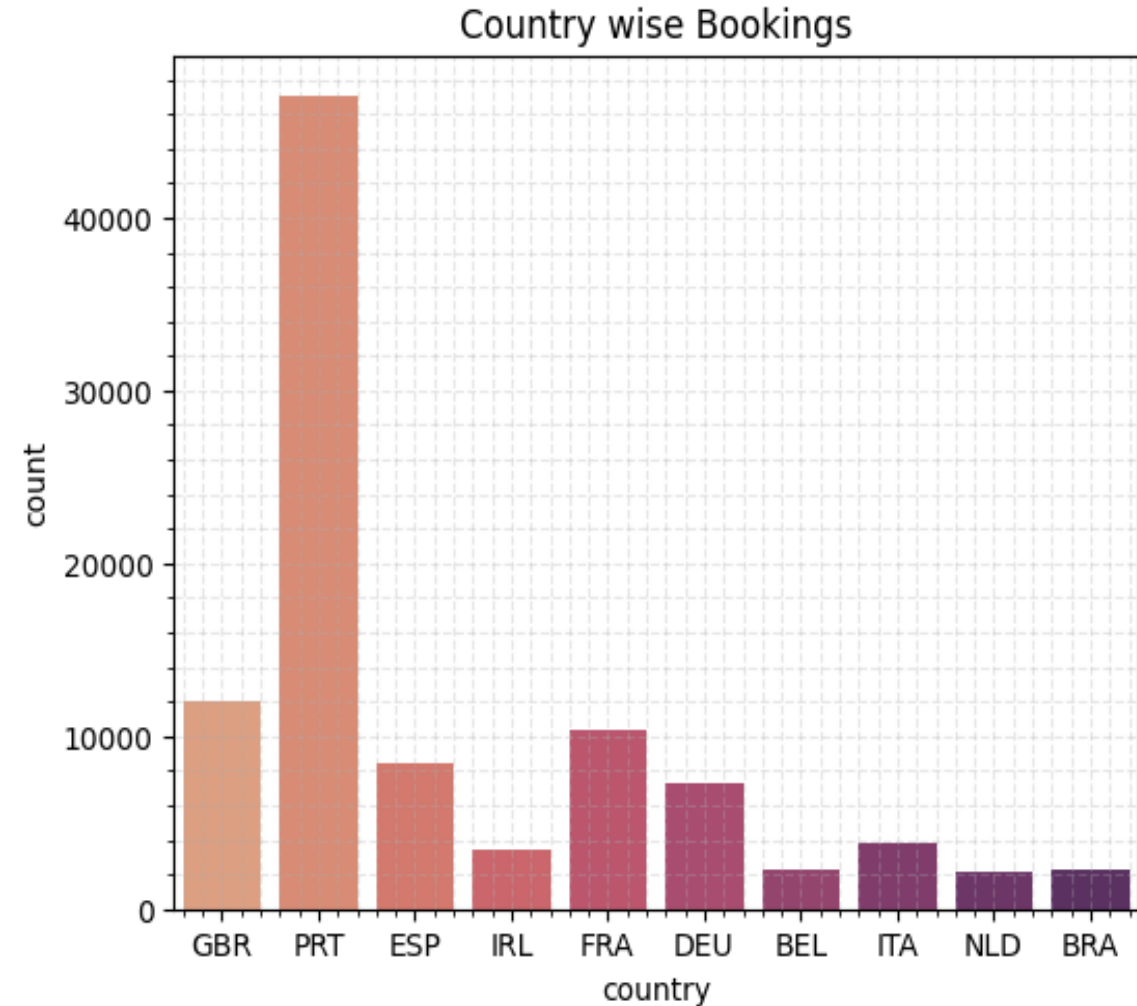
- Room A is the most Preferred Room Type.
- If planning a new Hotel. The Ratio of the rooms should be set accordingly.
- Majority of the customers prefer BB Bread and Breakfast, with there stay.
- As it is preferred by majority customer having a better BB Options can surely increase the sales.
- On the Other hand if a special offer is applied with other meals it can easily increase the business.

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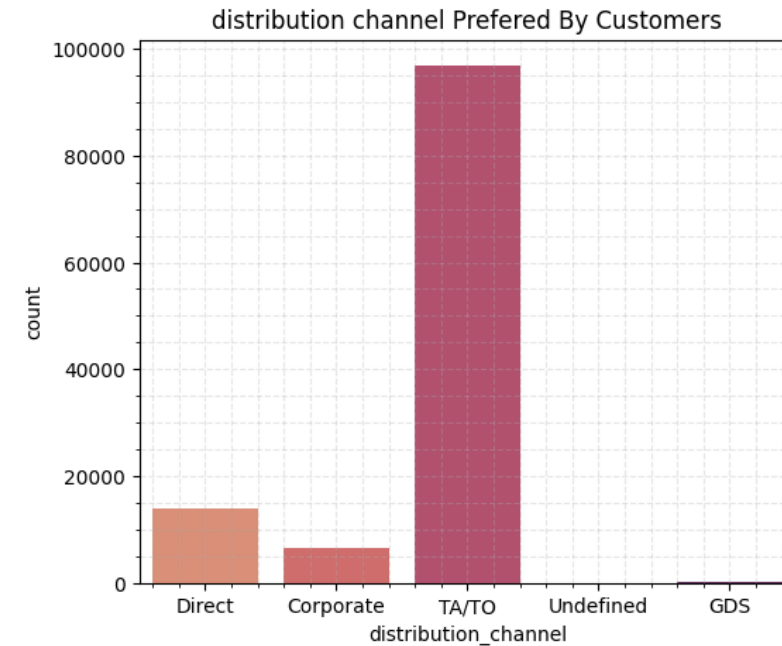
Country wise Bookings Done.

- Portugal has contributed to the highest number of bookings
- If any promotion is to be carried out than Portugal will be the best country to do so. As it has Highest amount of bookings.



Agent wise and distribution channel booking analysis

- More than 80% of the guest Preferred Booking via a Travel agent or a tour operator.
- So, a promotion planned directly targeting the Tour operators will have better results than the promotions directly targeting the customers.
- On further analysis the performance by the agents/operator.
- Agent 9 has the highest number of bookings
- Business With Agent 9 can result in higher booking for new venture.



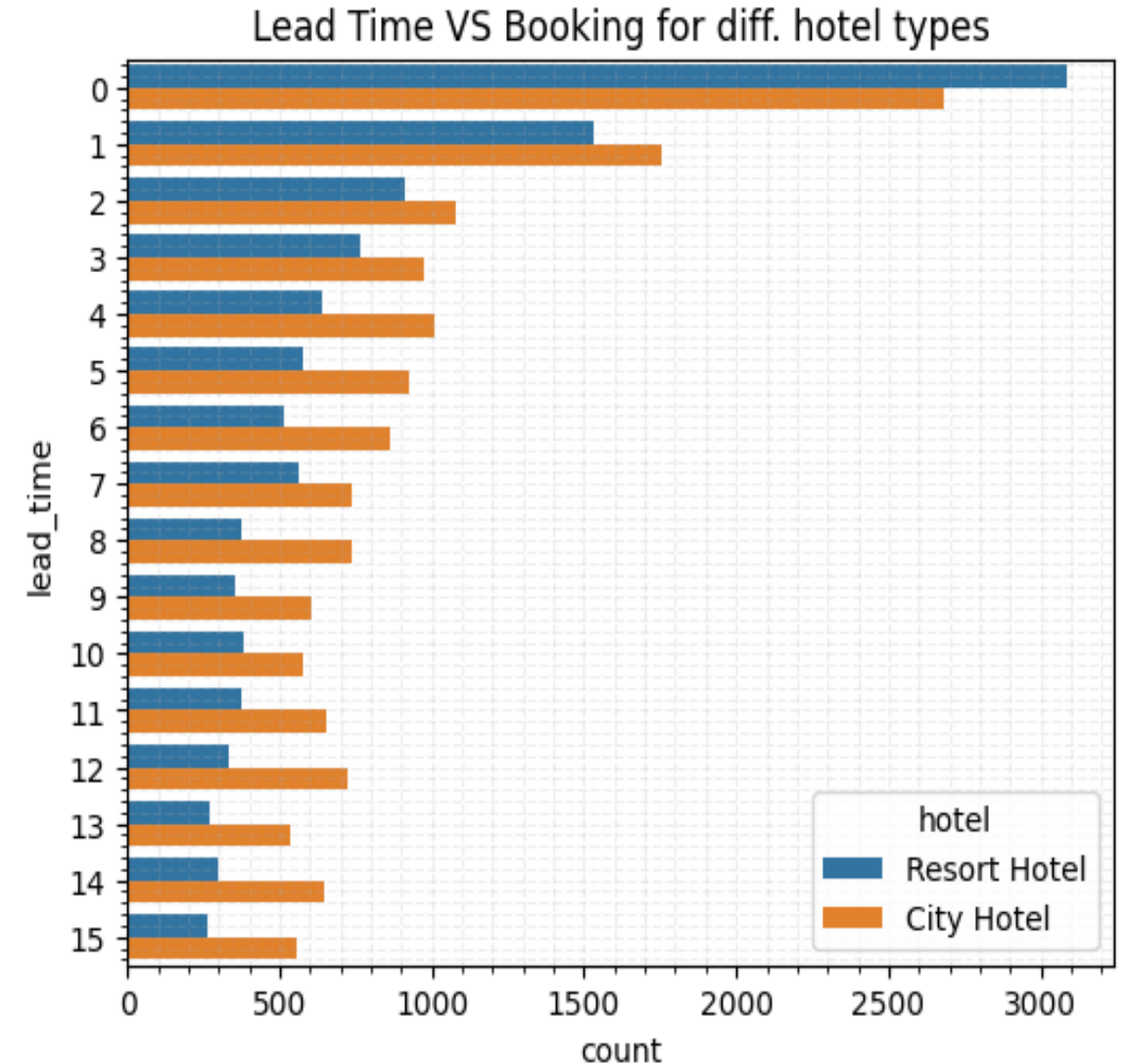
Bi – Variate Analyses

Analyses is done to understand trends like-

- ▶ Bookings and cancelation received by different hotel types
- ▶ Monthly trend analysis of Booking for different hotel types
- ▶ Average ADR Vs Total Stay Analyses
- ▶ Cancelation of bookings Vs Customer special request rate Analyses.
- ▶ Cancelation of bookings by Different market segment Analyses.
- ▶ Lead time vs booking for different hotel types
- ▶ Country wise analysis of cancellations

Lead time vs booking for different hotel types

- . As the lead time increases number of bookings decreases.
- Resorts Have much higher same day bookings
- Now as we know that resorts have only 33% less bookings than City Hotel but same day bookings are higher for Resorts.
- If proper promotions are done to get prior bookings than resorts can have higher number of bookings.



Bookings and cancelation for diff. hotel types

- Resort Hotel - 25% Booking get cancelled
- City Hotels - More than 40% bookings get cancelled.
- Previously, we saw that City hotels receive Twice as many as city hotel bookings.
- On performing Bi Variate analysis we found that City Hotels have 15% higher cancellation rate.
- So, overall City Hotels have 1.5 times confirmed booking compared to Resorts.



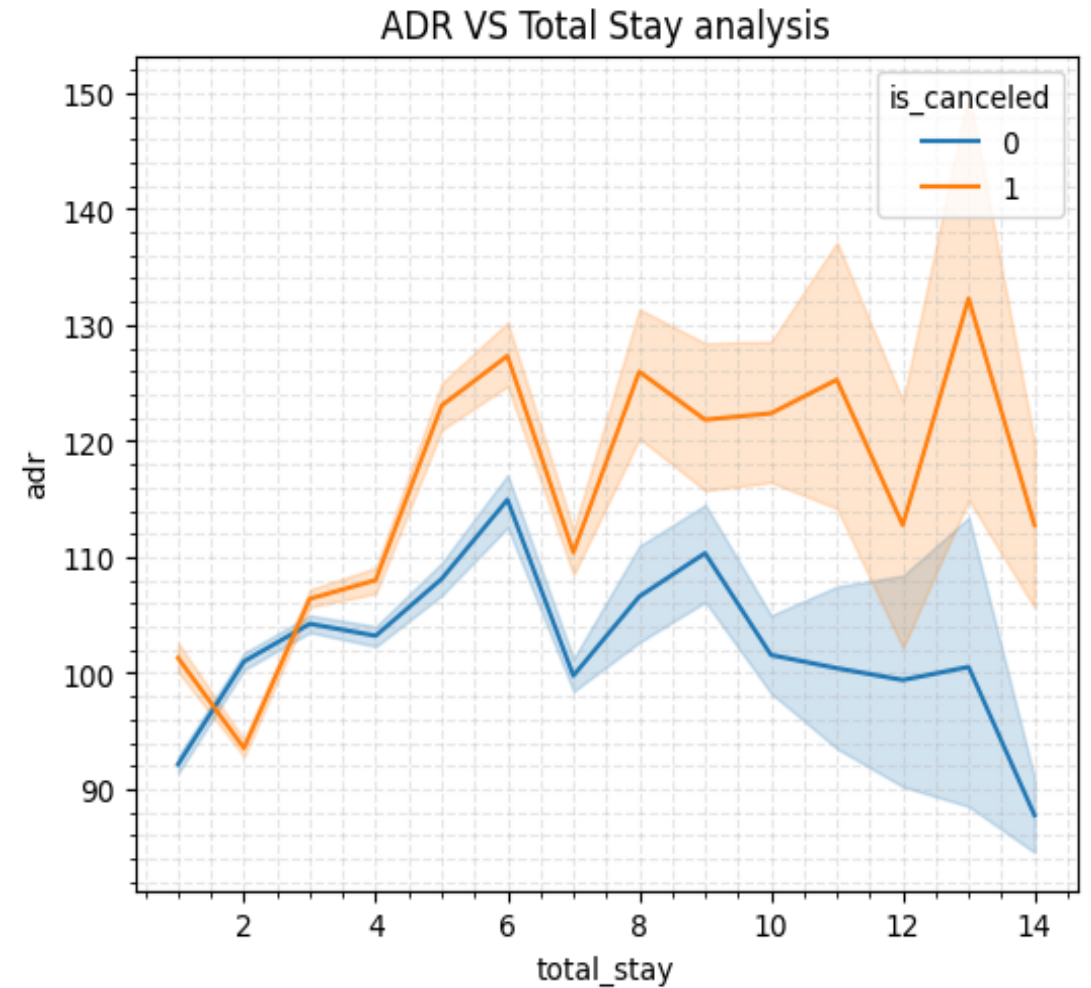
Monthly trend analysis of Booking for diff. hotel types

- As the months proceed and the bookings increases. city hotel have the higher rise booking percentage compared to resort hotels. And the difference again decreases at the end of the year.
- 4th or 5th month will be the best for new promotions. As there will be chances for maximum return. On the Other Hand After 9th month there is decreasing trend.
- Resort Hotels should promote Better to get equally good number of bookings as the trend increases.



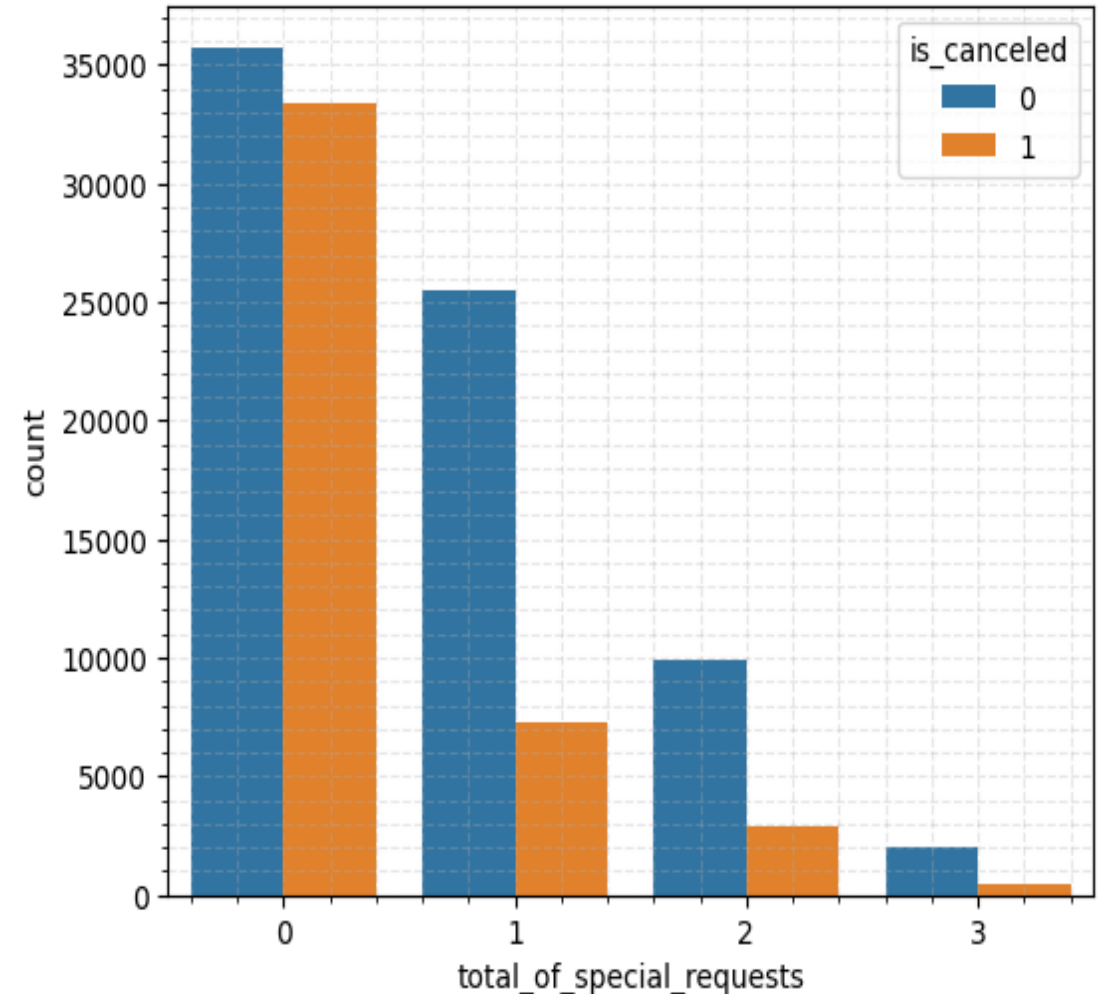
Average ADR Vs Total Stay Analysis.

- ADR initially increases but then later decreases for both cancellation and successful bookings.
- when the adr is higher there are higher chances of cancellation.
- Also, the pricing should be decided keeping in mind the total stay of the customer as the customers with longer stay are expecting lower adr as seen in the graph.



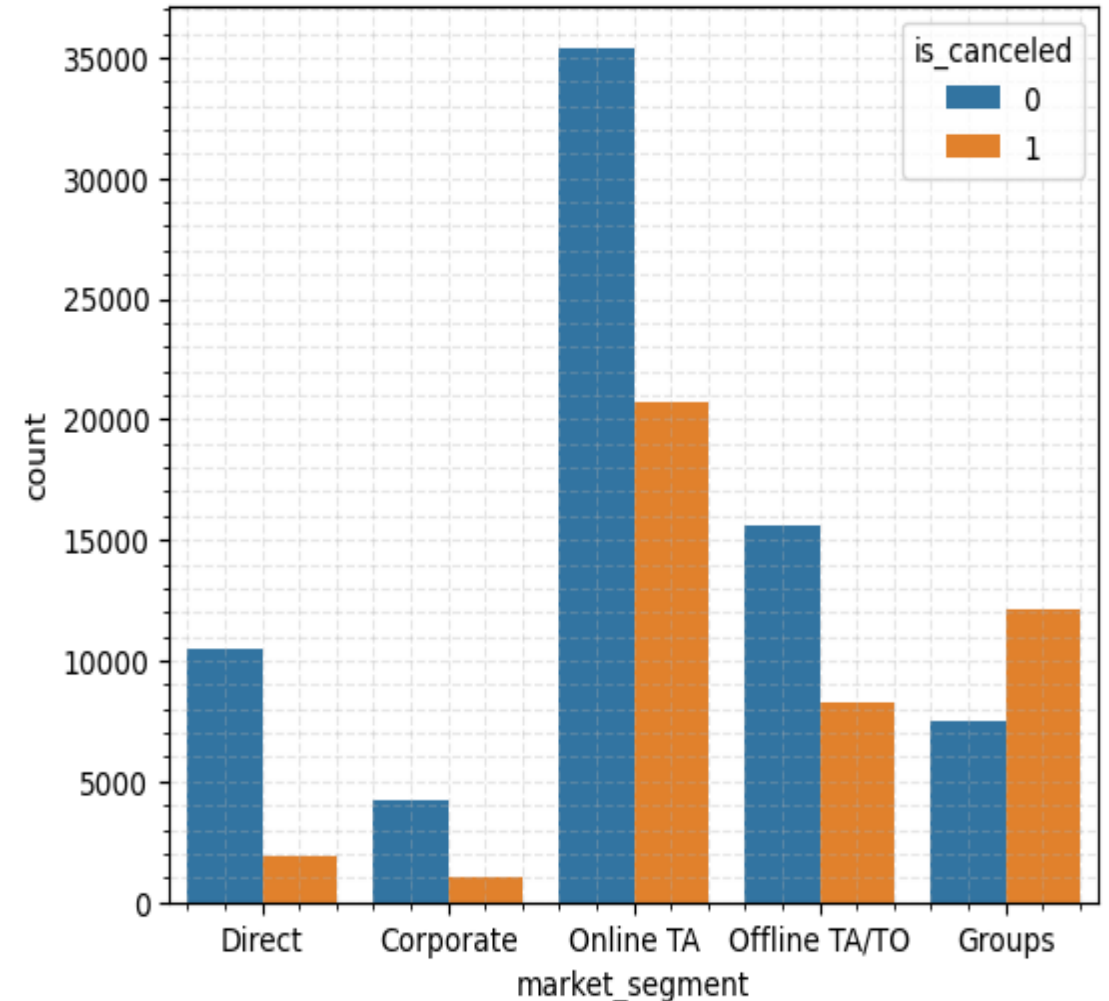
Cancellation of bookings by Cx request rate Analyses.

- Bookings with special request have only 20% chance of cancellation. On the other hand bookings without any special request have higher chances of cancellation around 50%.
- At the time of Bookings customer should be specifically asked for any special request that they would like to be taken care of. That would indirectly let us know how much cx is serious about the booking. Also, will help the business to plan accordingly.



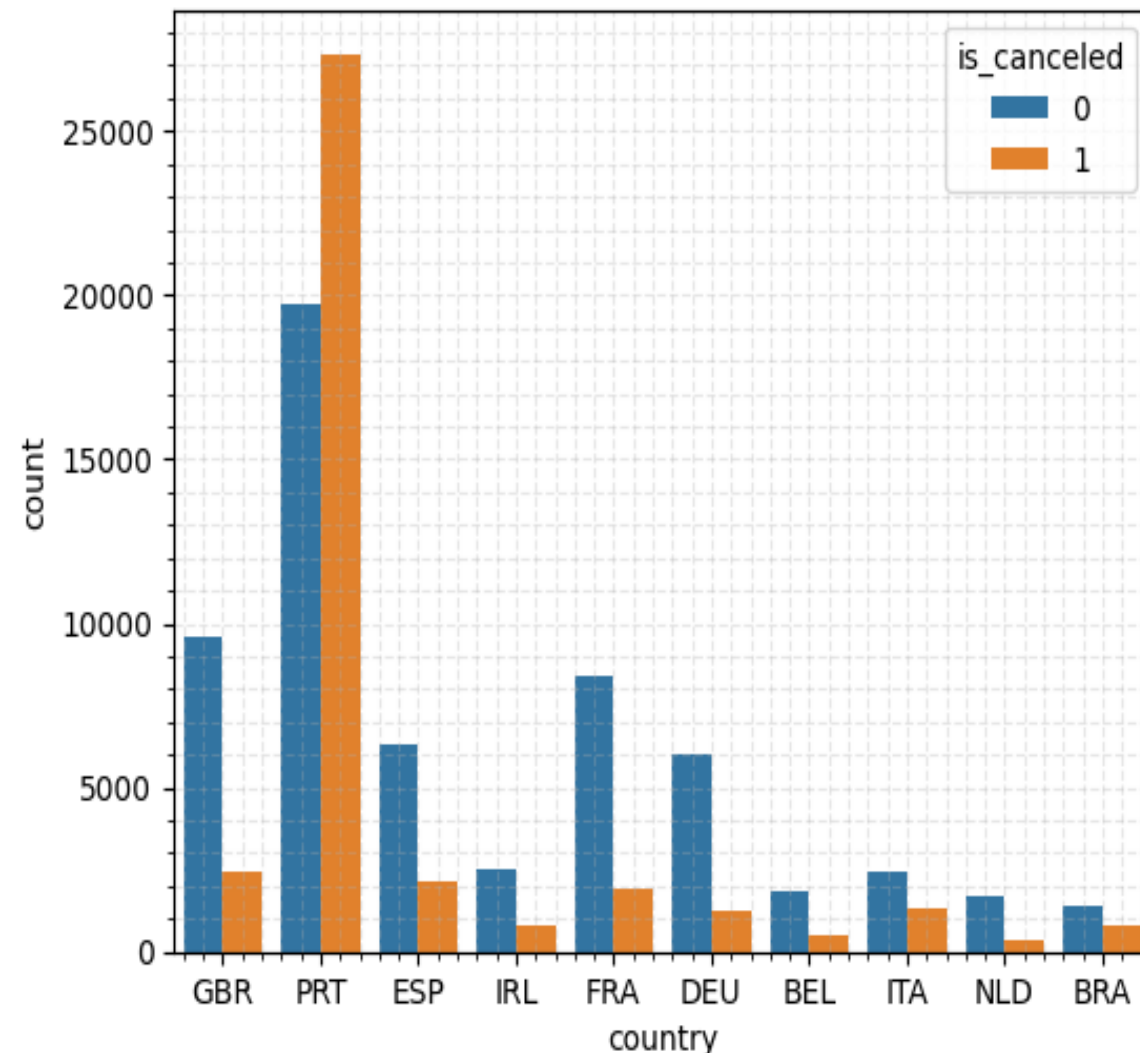
Cancellation of bookings by Diff. market segment Analyses.

- Groups have the Highest cancellation rate.
- Tour Agents and Tour Operators have high amount of cancellation.
- Different market segments have large difference in there cancellation rate.
- Direct and corporate customer have very less chances of booking getting cancelled.
- But any booking from Group has more than 66% chances of cancellation. Also groups have more number of rooms reserved. And for any such cancellation it will lead to higher loss.



Cancellation of bookings vs country wise Analyses.

- Portugal has highest booking rate compared to others but the cancellation rate is far more worst. around 66% i.e. every 2/3 bookings are getting cancelled. this can have a heavy negative impact on the business
- Most of the top countries have lower cancellation rate except Portugal.



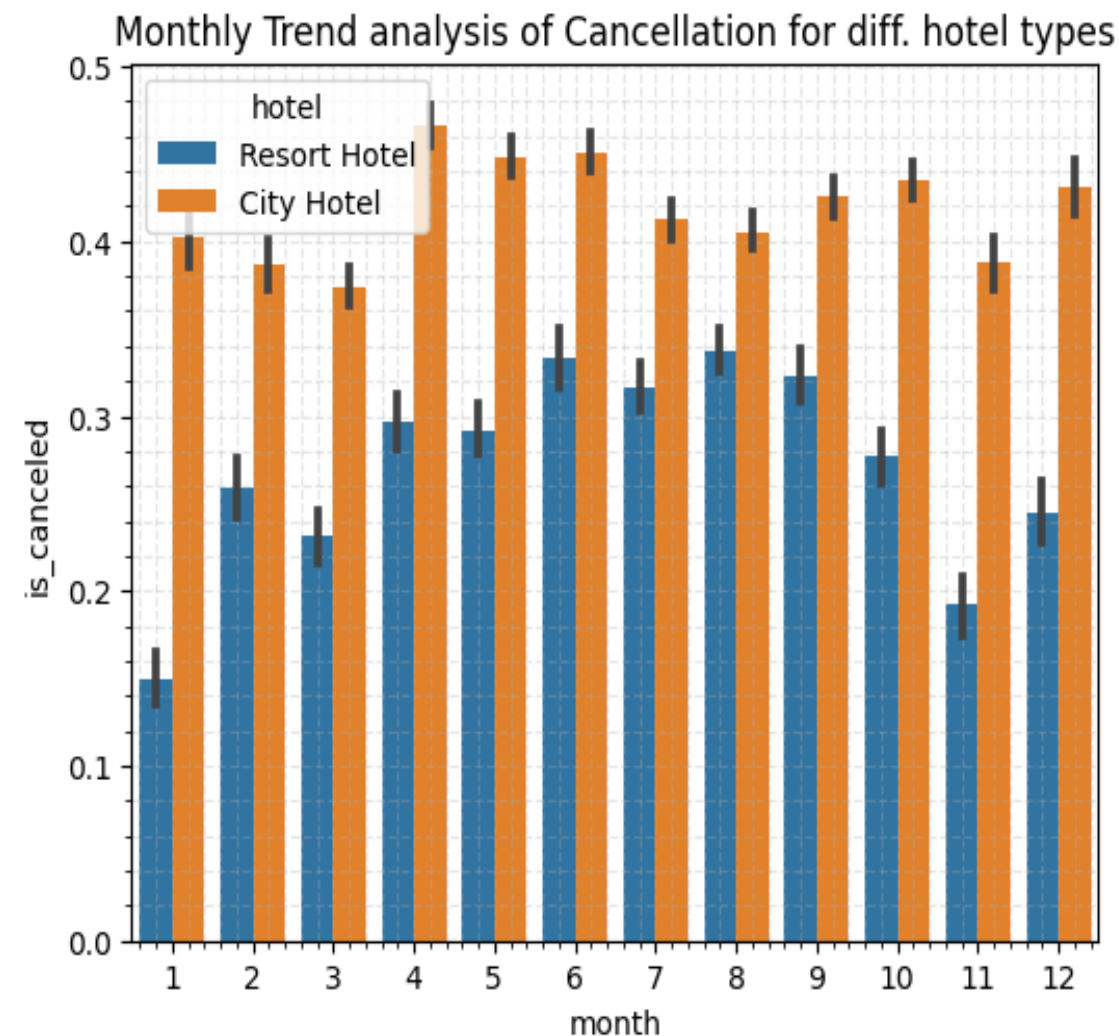
Multi – Variate Analyses

Analyses is done to understand trends like-

- ▶ Monthly trend analyses of bookings and cancellation received by different hotel types
- ▶ Market Segment wise trend analyses of bookings and cancellation received by Portugal vs Other Countries
- ▶ Agent/Operator wise trend analyses of bookings and cancellation received by Portugal vs Other Countries.
- ▶ Average ADR wise trend analyses of bookings by agents and Bookings VS cancellation received by Top Agents

Monthly trend analyses of bookings and cancellation received by different hotel types

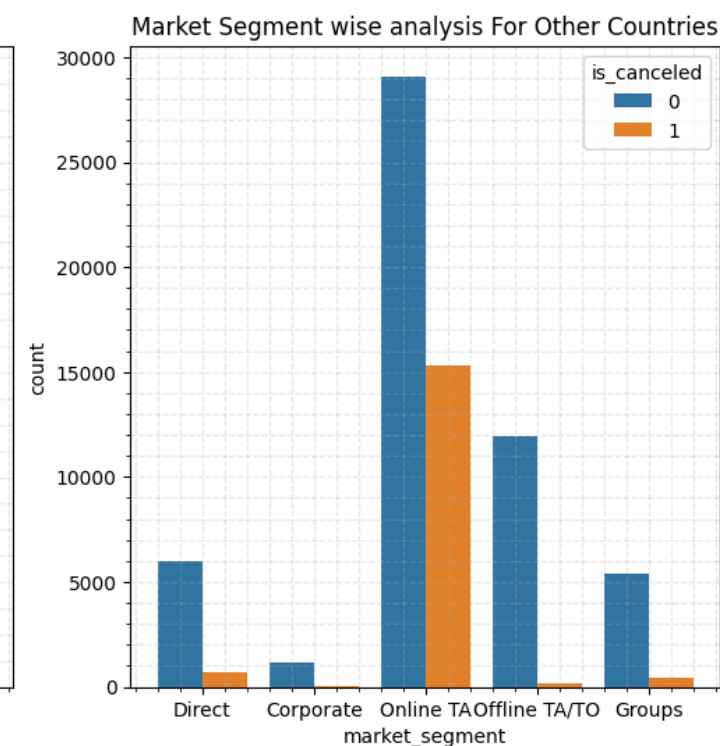
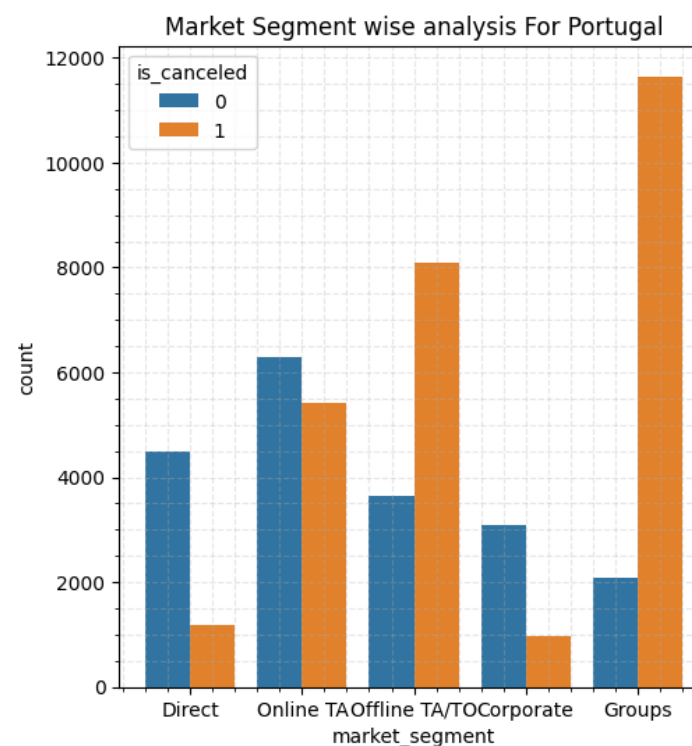
- As the months proceed and the Cancellation rate increases for Resorts.
- City hotel have the Uniform cancellation percentage compared to resort hotels. And the difference again Increases at the end of the year.
- As High Cancellation can lead Higher losses. This Trend can help resorts owner to understand how many extra bookings should be done so that hotel neither Hotel occurs loss nor customer has to face inconvenience



Market Segment wise trend analyses of bookings and cancellation received by Portugal vs Other Countries

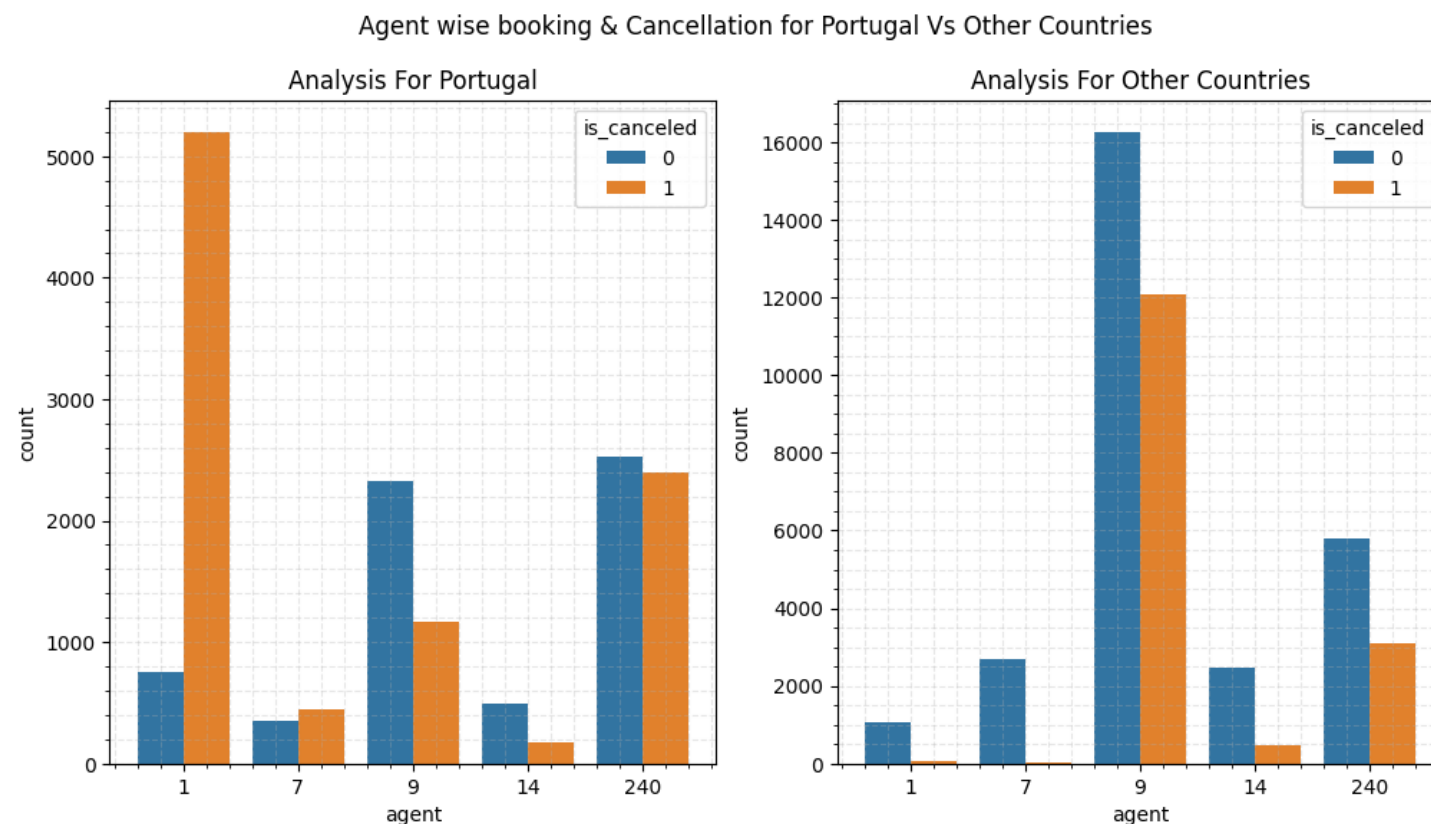
- Same Market Segments have significantly higher cancellation rate for Portugal compared to Other countries.
- 80% Group bookings from Portugal are getting cancelled.
- Also group bookings have higher negative impact because of more number of rooms booked.
- For Other market segments Offline Tour Agents and Operators are having High cancellation rate.

Market Segment wise Cancellation for Portugal Vs Other Countries



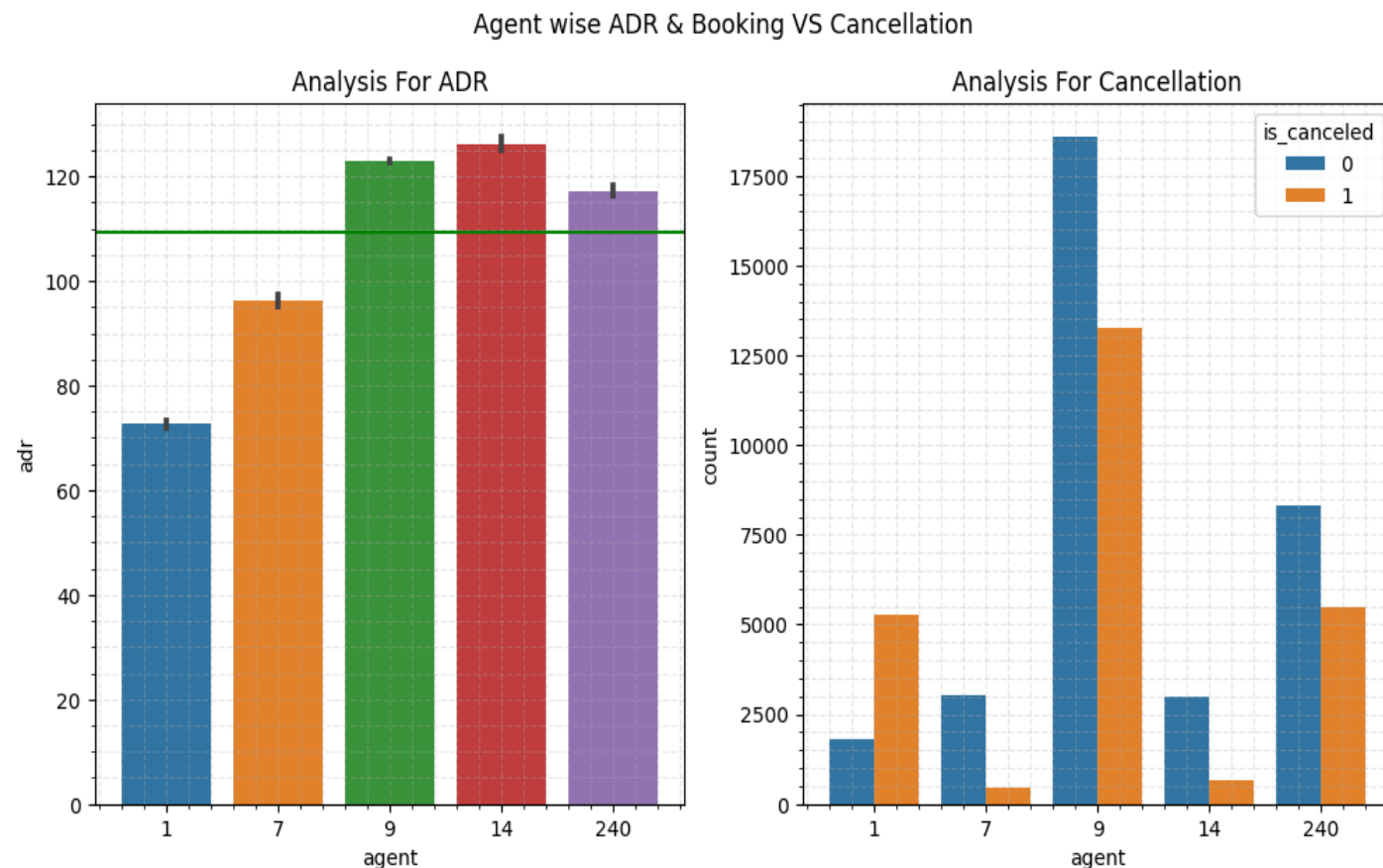
Agent/Operator wise trend analyses of bookings and cancellation received by Portugal vs Other Countries

- Agent 1 has the highest cancellation Rate amongst the agents, which is as high as 80% for Portugal Bookings.
- Only agent to have overall cancellation rate higher than 50%.
- Agent 9 contributes for highest number of bookings over all and also for the highest number of cancellations.
- Agent 9 and 240 have same cancellation rate which is very high.



Average ADR wise trend analyses of bookings by agents and Bookings VS cancellation received by Top Agents

- Agent 1 => Having Highest cancellation rate, has lowest average ADR. Low ADR can be the reason for High cancellation rate.
- Agent 9 and 240 => Highest contributors of bookings and cancellation number wise have higher AVG ADR compared to others. Which might be the reason for cancellations.
- Agent 7 Having AVg ADR closer to overall avg adr has the best confirmation rates. So, agents should be advised to keep ADR close to Avg ADR which can help in reducing the number of cancellation.



Conclusions and Solutions to Business Solution

- Con: As the month pass by bookings Increase and they are highest in 8th month and after that we can see a significant drop.
- Soln: If a new venture is planned or promotions are being held than 4th or 5th month will be the best. On the Other hand if done after 8th months can have negative effect the business.
- Con: Majority of the customers prefer BB Bread and Breakfast, with there stay.
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- Con: Room A is the most Preferred Room type
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- Soln: the pricing should be decided keepin in mind the total stay of the customer as the customers with longer stay are expecting lower adr as seen in the graph. if pricing not set properly can lead to huge losses as we will be losing a high paying customer having longer stay.
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