

# *Hotel Booking*



## **Hotel Booking Analysis**

In recent years, City Hotel and Resort Hotel have seen high cancellation rates. Each hotel is now dealing with a number of issues as a result, including fewer revenues and less ideal hotel room use. Consequently, lowering cancellation rates in both hotel's primary goal in order to increase their efficiency in generating revenue, and for us to offer thorough business advice to address this problem.

The analysis of hotel booking cancellations as well as other factors that have no bearing on their business and yearly revenue generation are the main topics of this report.



# Approach

Steps taken to clean data:

- First importing the datasets and merging them.
- Understanding the data before starting the analysis.
- Handling missing values and Duplicates by removing them.
- Deleting unwanted columns.
- Outliers' detection and removing them.

## Tech-Stack Used

Software and the version used while making the project:

1. Jupyter Notebook (For working, analysing and visualizing data)
2. Microsoft Word (For presenting the detailed analysis)



# Assumptions

1. No unusual occurrences between 2015 and 2017 will have a substantial impact on the data used.
2. The information is still current and can be used to analyse a hotel's possible plans in an efficient manner.
3. There are no unanticipated negatives to hotel employing any advised technique.
4. The hotels are not currently using any of the suggested solutions.
5. The biggest factor affecting the effectiveness of earning income is booking cancellations.
6. Cancellations result in vacant rooms for the booked length of time.
7. Clients make hotel reservations the same year they make cancellations.



# Research question

1. What are the variables that affect hotel reservation cancellations?
2. How can we make hotel reservations cancellations better?
3. How will hotels be assisted in making pricing and promotional decisions?

## Hypothesis

1. More cancellations occur when prices are higher.
2. When there is a longer waiting list, customers tend to cancel more frequently.
3. The majority of clients are coming from offline travel agents to make their reservations.



# Analysis and Findings

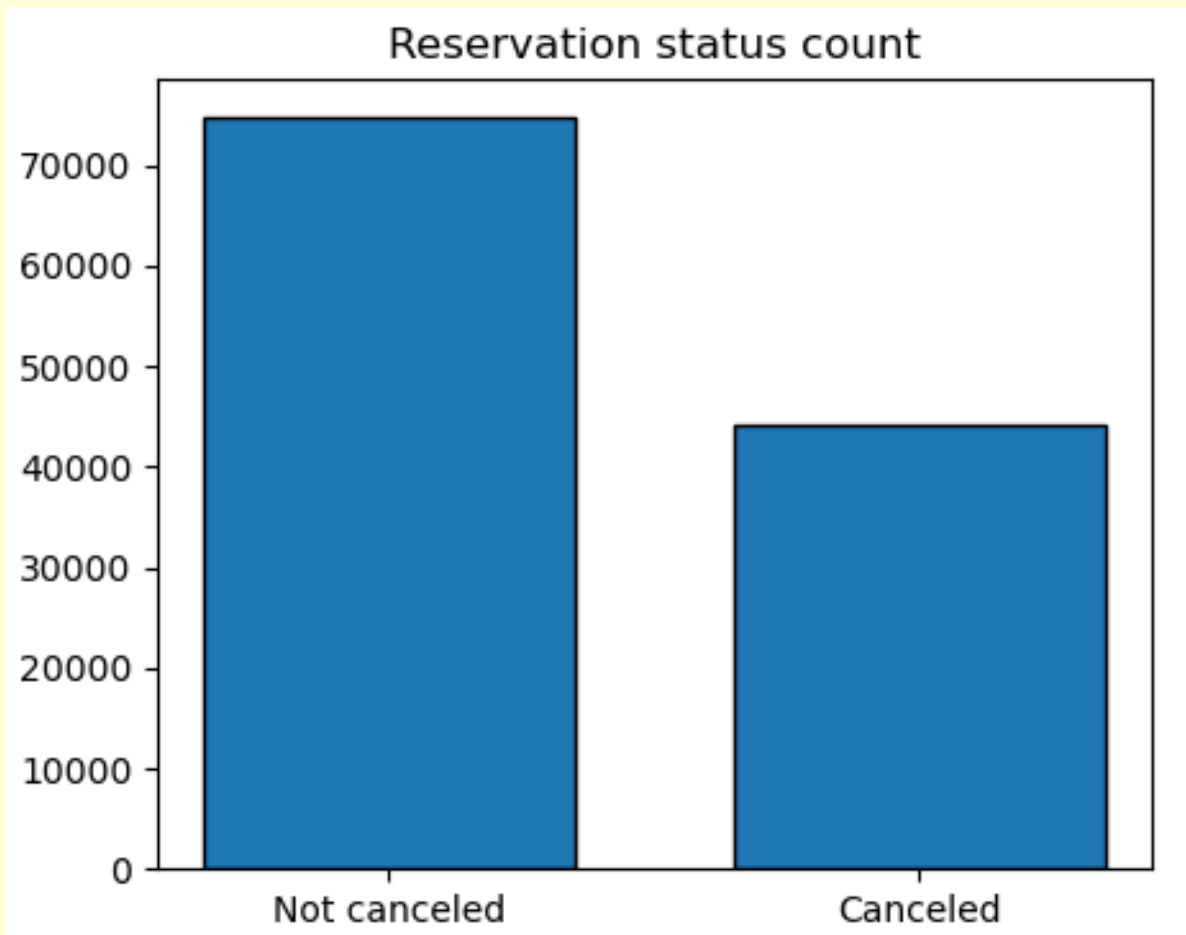


Fig. 1: Reservation status

The accompanying bar graph shows the percentage of reservations that are cancelled and those that are not. It is obvious that there are still a significant number of reservations that have not been cancelled. There are still 37% of clients who cancelled their reservation, which has a significant impact on the hotel's earnings.



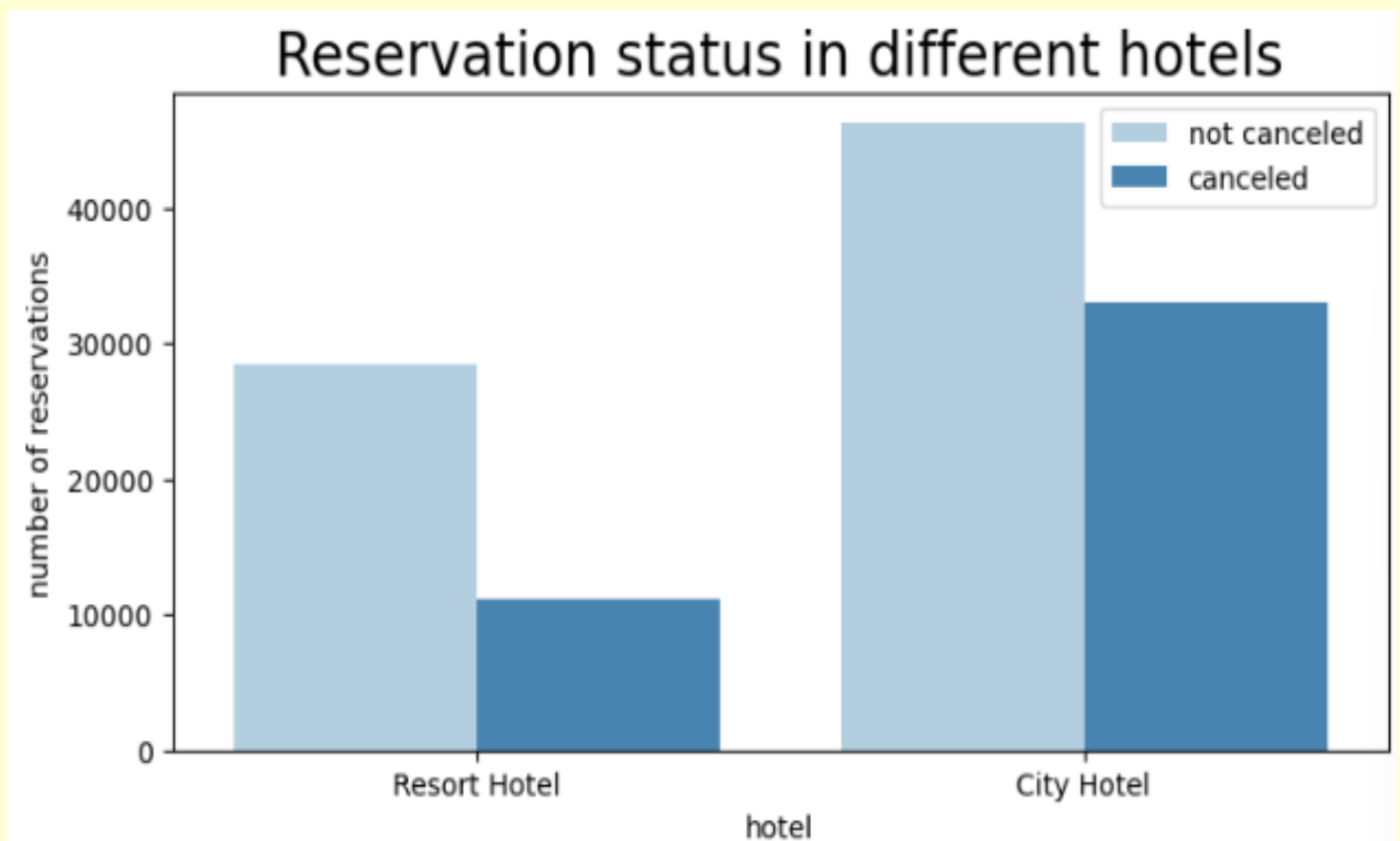


Fig. 2: Reservation status in different hotels

In comparison to resort hotels, city hotels have more bookings. It's possible that resort hotels are more expensive than those in cities.



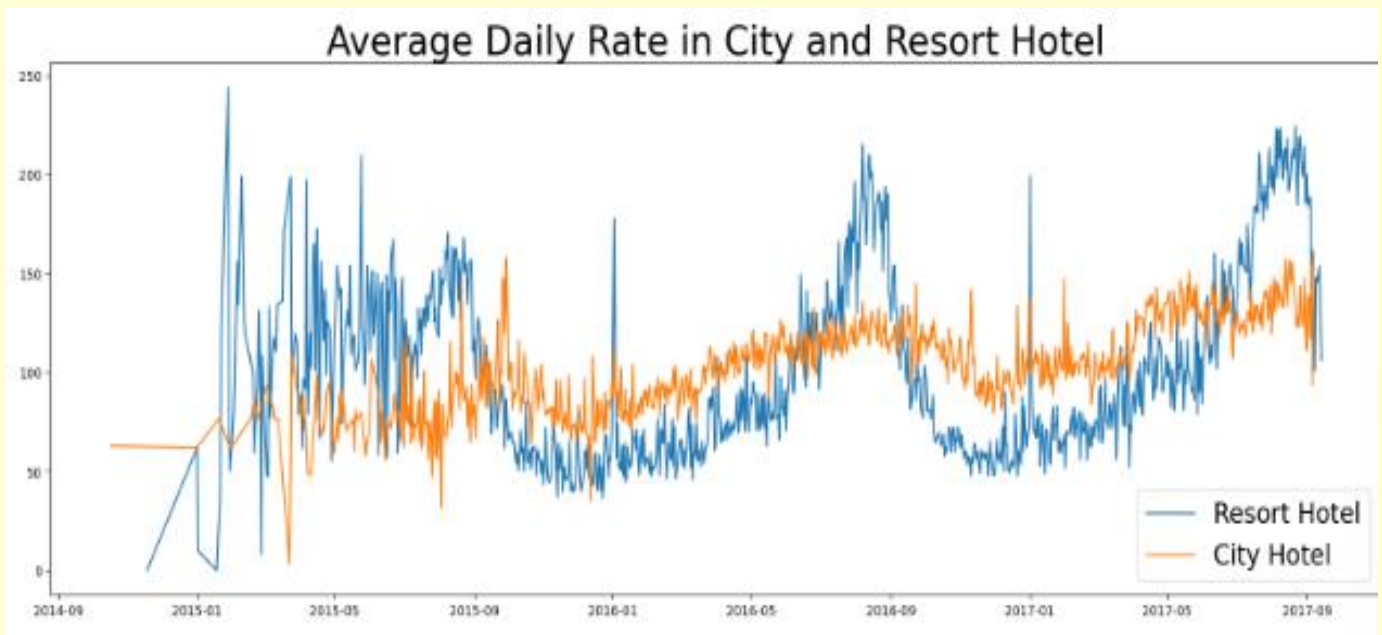


Fig. 3: Average daily rate in City and Resort Hotel

The line graph above (Fig. 3) shows that, on certain days, the average daily rate for a city hotel is less than that of a resort hotel, and on other days, it is even less. It goes without saying that weekends and holidays may see a rise in resort hotel rates.





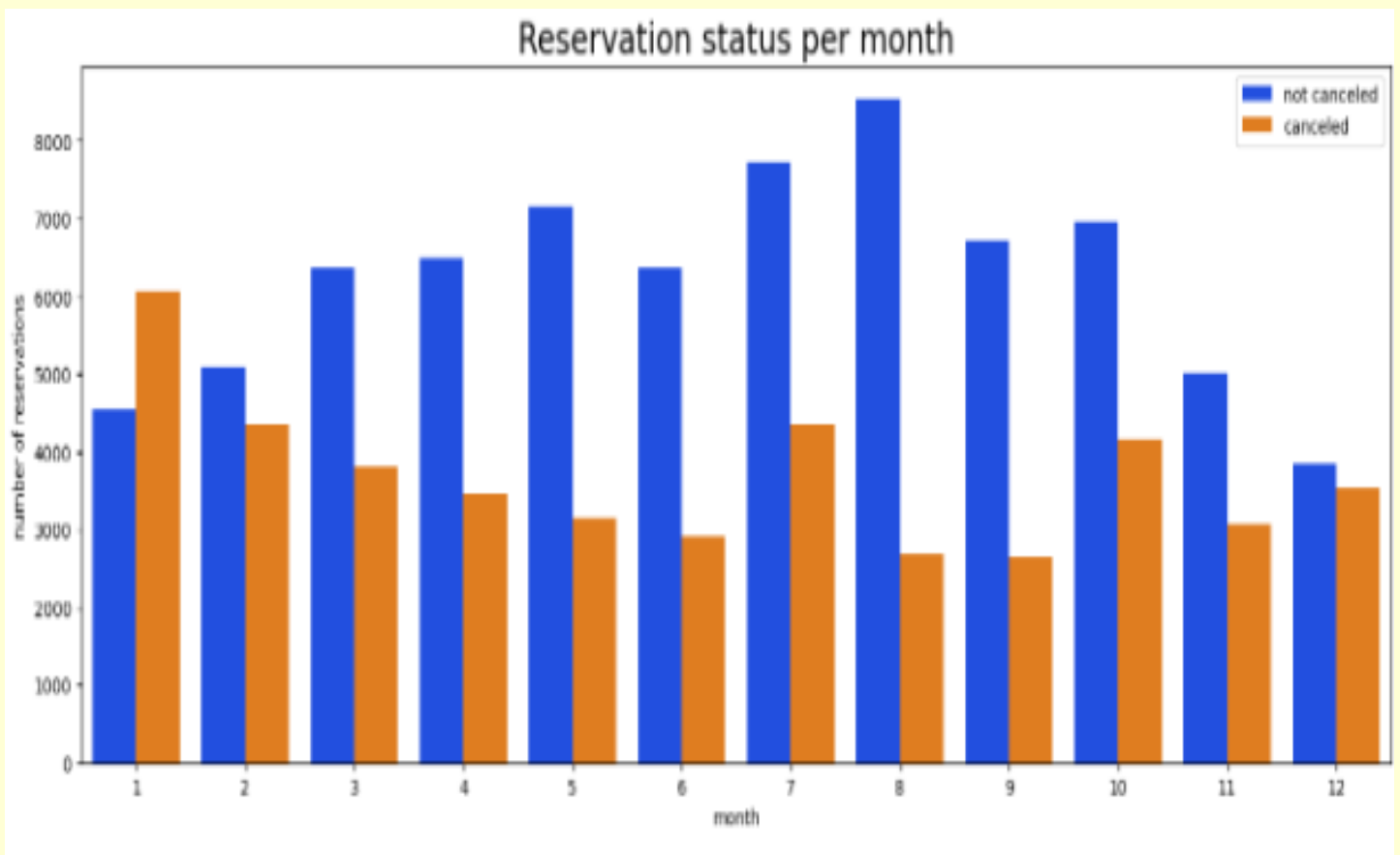


Fig. 4: Reservation status per month

We have developed the grouped bar graph to analyse the months with the highest and lowest reservation levels according to reservation status. As can be seen, both the number of confirmed reservations and the number of cancelled reservations are largest in the month of August. Whereas January is the month with the most cancelled reservations.





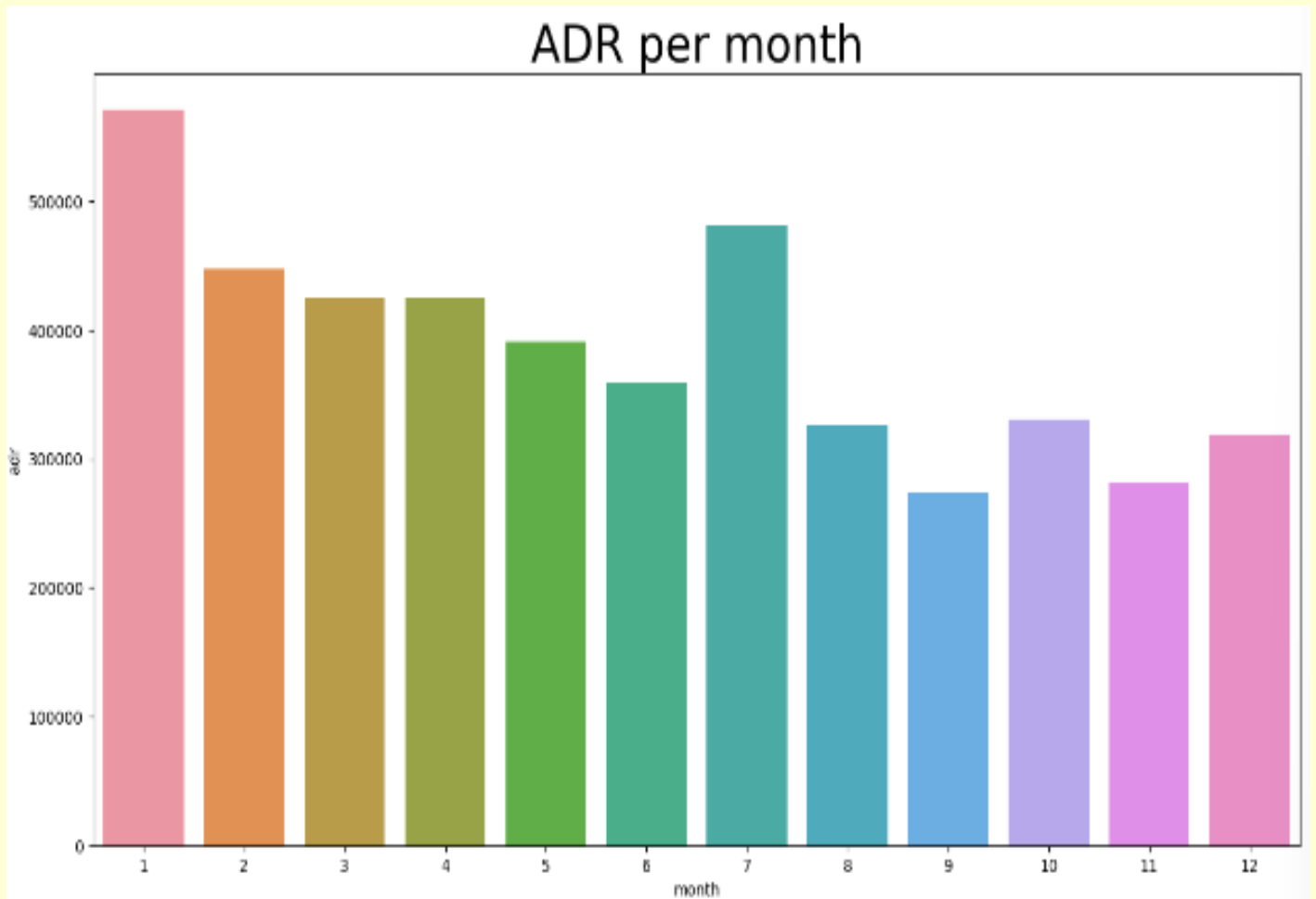


Fig. 5: ADR per month

This bar graph demonstrates that cancellations are most common when prices are greatest and are least common when they are lowest. Therefore, the cost of the accommodation is solely responsible for cancellation.



Top 10 countries with reservation canceled

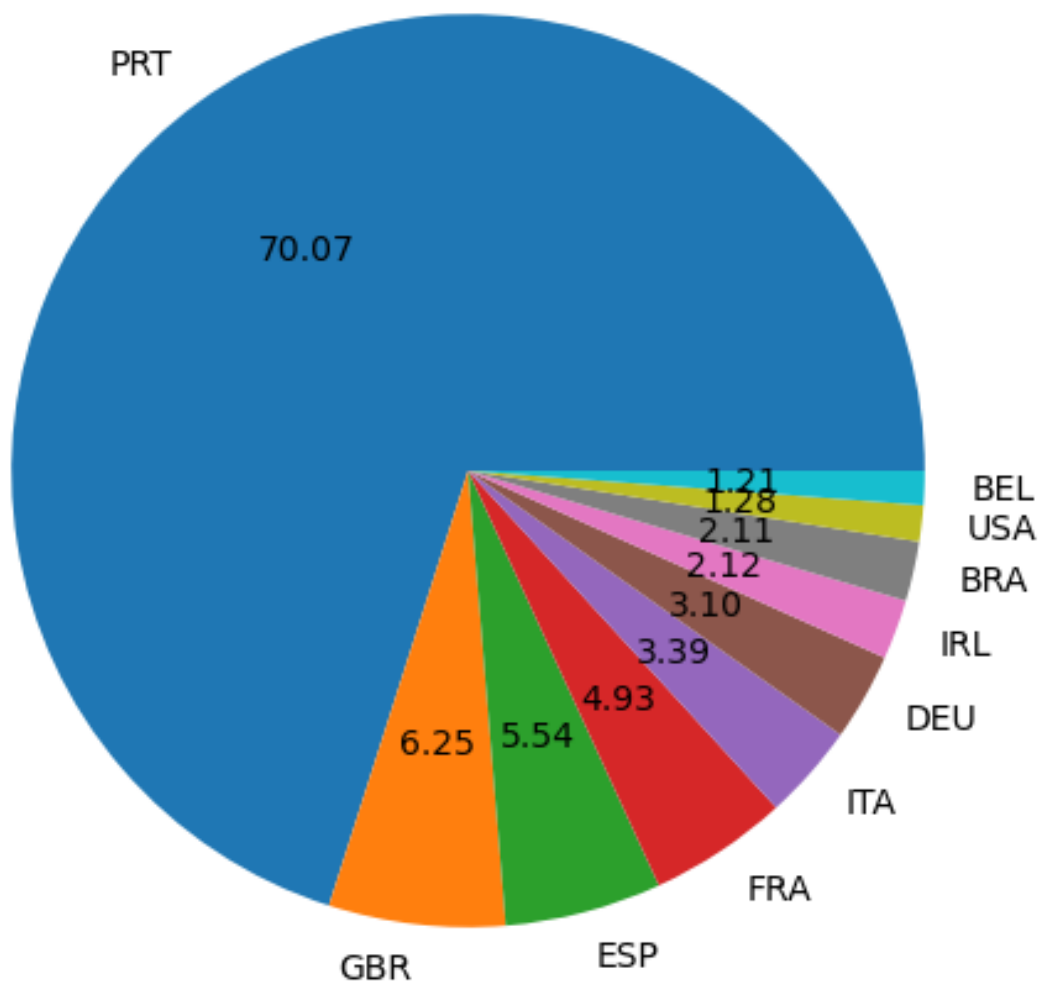


Fig. 6: Top 10 countries with reservation cancelled

Now, let's see which country has the highest reservation cancelled. The top country is Portugal with the highest number of cancellations.



Let's check the area where guests are visiting the hotels and making reservations. Is it coming from Direct or Groups, Online or Offline Travel Agents?

```
market_segment
Online TA      0.469696
Groups         0.273985
Offline TA/TO  0.187466
Direct         0.043486
Corporate      0.022151
Complementary  0.002038
Aviation       0.001178
Name: proportion, dtype: float64
```

Fig. 7: Reservation cancelled by booking market segment

Around 46% clients come from Online travel agencies, whereas 27% come from groups. Only 4% clients book hotels directly by visiting them and making reservations.



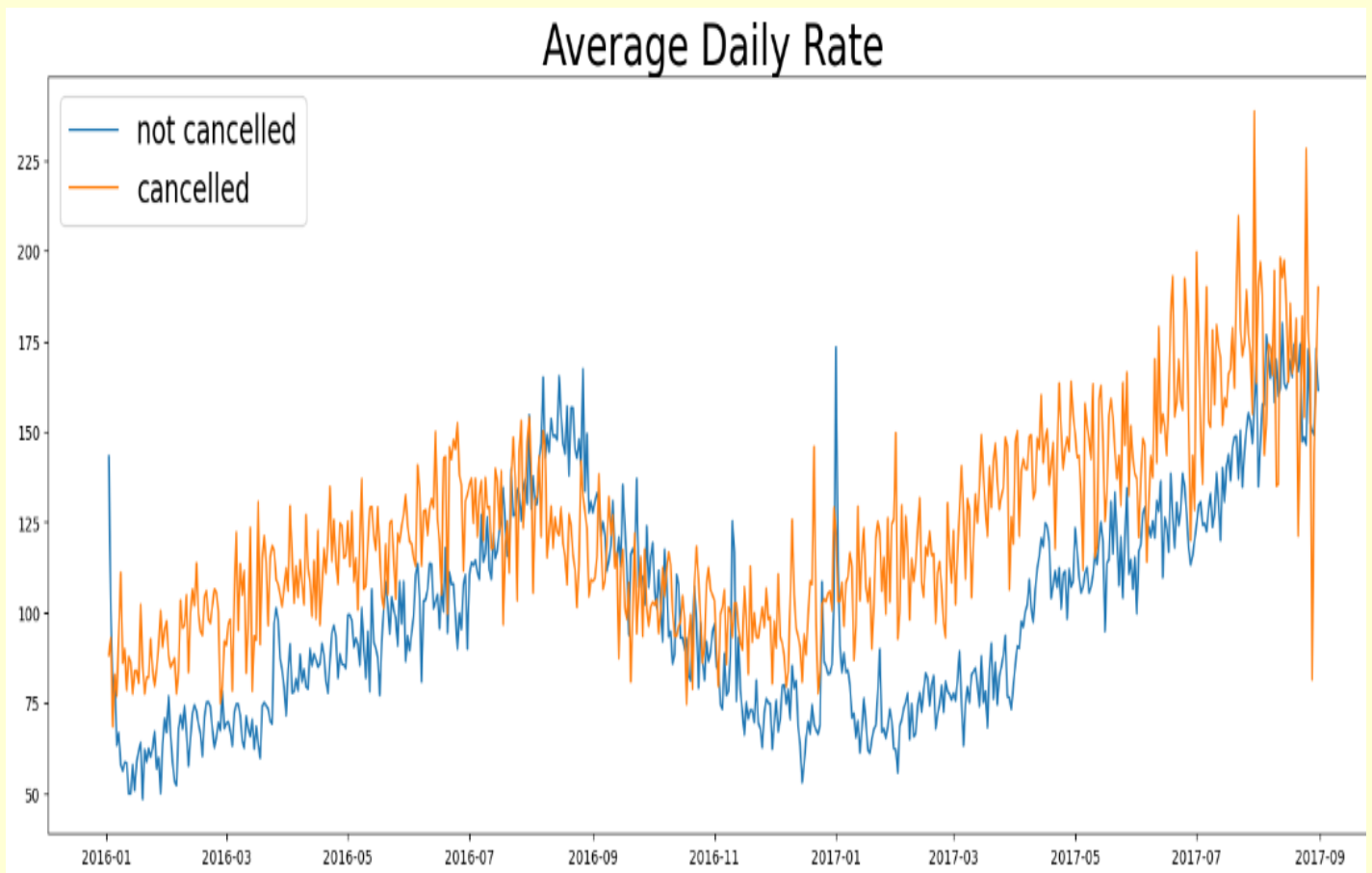


Fig. 8: Average Daily Rate by cancelled and not cancelled

As seen in the graph, reservations are cancelled when the average daily rate is higher than when it is not cancelled. It clearly proves all the above analysis, that the higher price leads to higher cancellation.



# Suggestions

1. Cancellation rates rise as the price rise does. In order to prevent cancellations of reservations, hotels could work on their pricing strategies and try to lower the rates for specific hotels based on locations. They can also provide some discounts to the consumers.
2. As the ratio of the cancellation and not cancellation of the resort hotel is higher in the resort hotel than the city hotels. So the hotels should provide a reasonable discount on the room prices on weekends or on holidays.
3. In the month of January, hotels can start campaigns or marketing with a reasonable amount to increase their revenue as the cancellation is the highest in this month.
4. They can also increase the quality of their hotels and their services mainly in Portugal to reduce the cancellation rate.

## Drive Link for the project

<https://drive.google.com/drive/folders/1SVo7C2Klxa37reqWCCa29pU4FCWZb4HF?usp=sharing>

