

Hotel Booking (Exploratory Data Analysis)

Business Problem:

In recently 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 than ideal hotel room use. Consequently, lowering cancellation rates is both hotels' primary goal in order to increase their efficiency in generating revenue, and for us to offer thorough advice to address this problem.

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

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. The hotels are not currently using any of the suggested solutions.
4. The biggest factor affecting the effectiveness of earning income is booking cancellations.
5. Cancellations result in vacant rooms for the booked length of time.

Research Questions:

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 longer waiting list, customer tends to cancel more frequently.
3. The majority of clients are coming from offline travel agents to make their reservations.

Analysis and Findings:

The accompanying bar graph (*Figure 1*) shows the ratio of reservation that was cancelled and those are not.

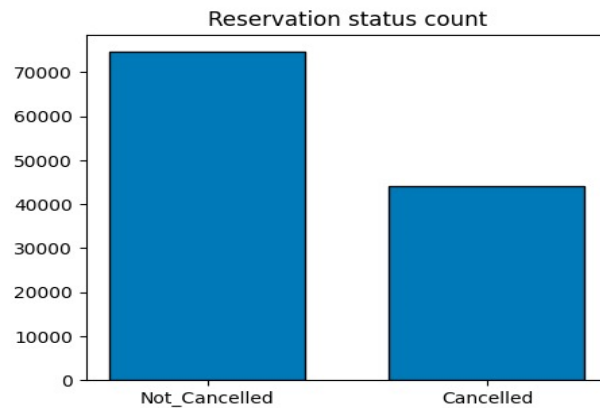


Figure 1

It is obvious that there are still a significant number of reservations that have been cancelled. There are around 37% of clients who cancelled their reservations, which has significant impact on hotels' earnings.

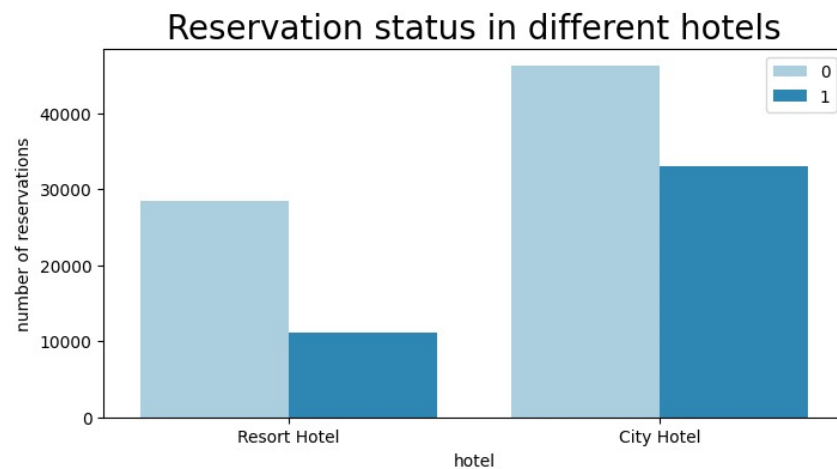


Figure 2

In comparison to the resort hotels, city hotels have more bookings (*Figure 2*). It's possible that resort hotels are more expensive than those in cities. Just like City hotels caters more clients, cancellations are significantly higher in city hotels. 27% of resort reservations were cancelled against around 42% of city hotel reservations.

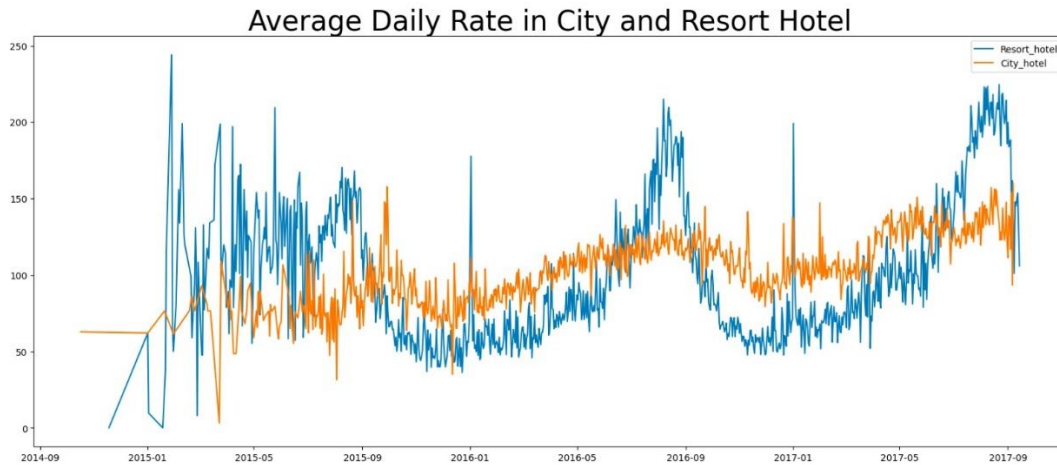


Figure 3

The line graph above (Figure 3) shows that, average daily rates for resort hotels is generally lower as compared to average daily rates of city hotels except certain time of the year.

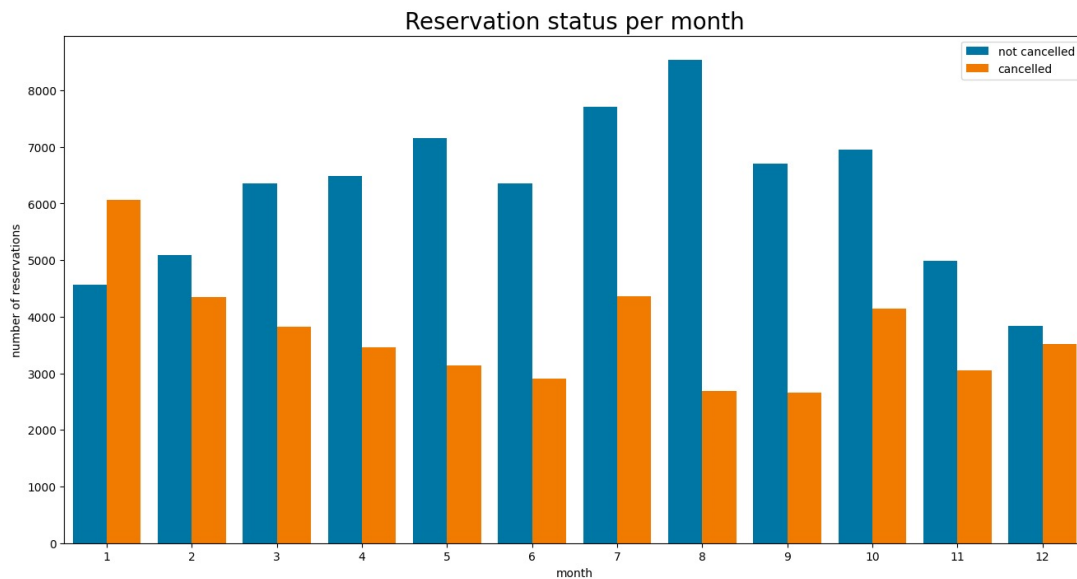


Figure 4

I 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 (Figure 4), the number of confirmed reservations is largest in the month of August along with the significant number of cancelled reservations, whereas January is the month with most cancelled reservation.

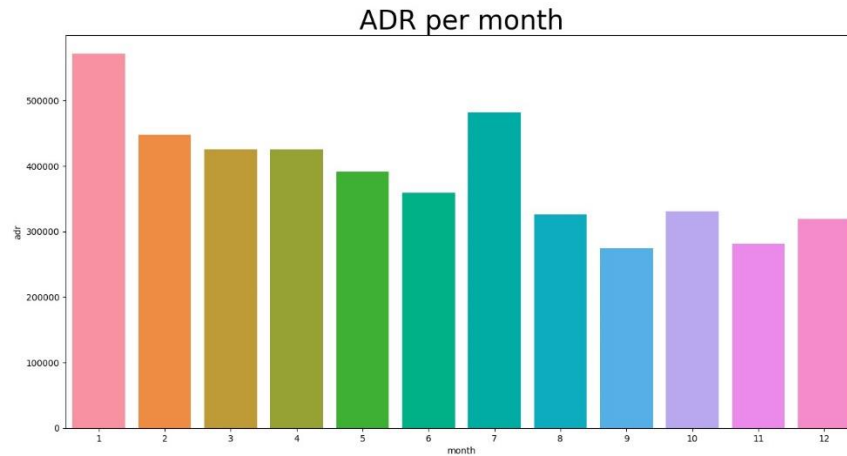


Figure 5

The bar graph demonstrates that cancellations are most common when prices are greatest and are least common when they are lowest.

Below is the Average daily rate of city and resort hotels (Figure 6). It can be clearly observed that the as the ADR increases, the cancellation of the reservation is also increased. Therefore, the cost of the accommodation is solely responsible for cancellation.

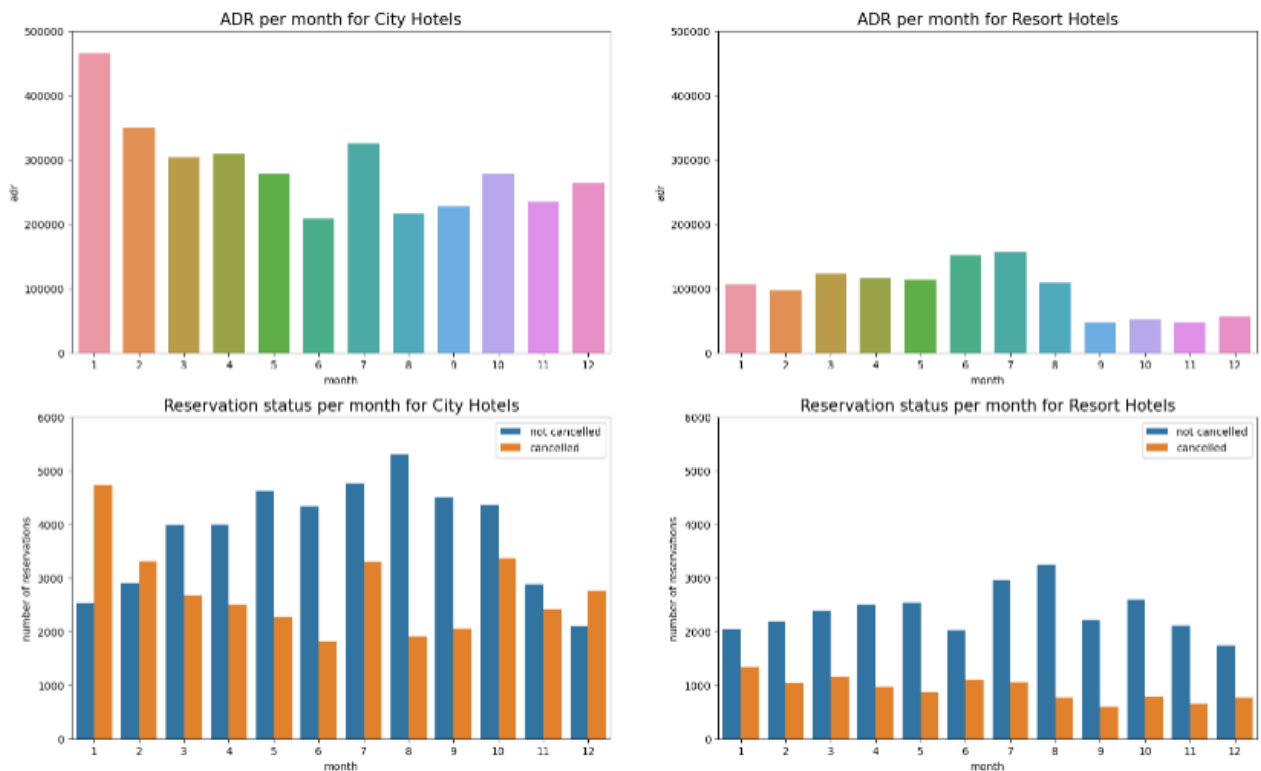


Figure 6

Now, let's analyse if cancellation of reservation is impacted by the day of the week, say, weekday or the weekend.

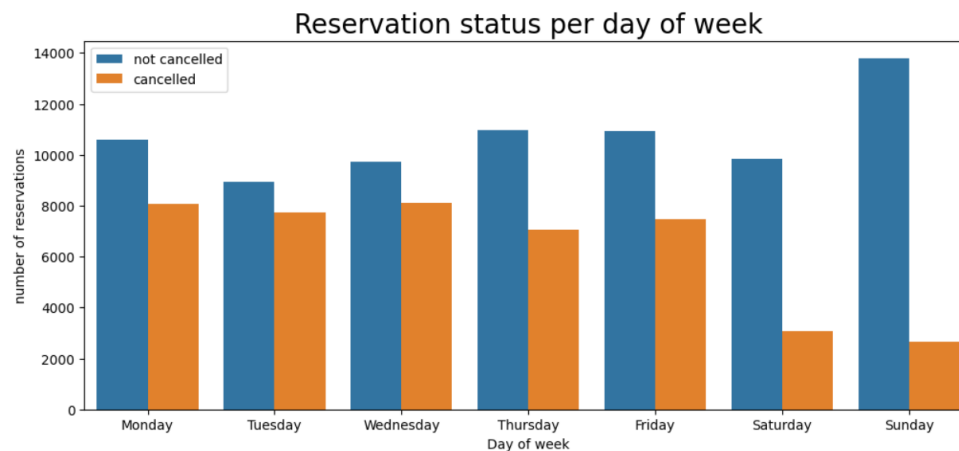


Figure 7

It is clear from the graph above (Figure 7) that the cancellation is significantly lower on weekends as compared to any week days. The observation remains true for both city hotel and resort hotels (Figure 8).

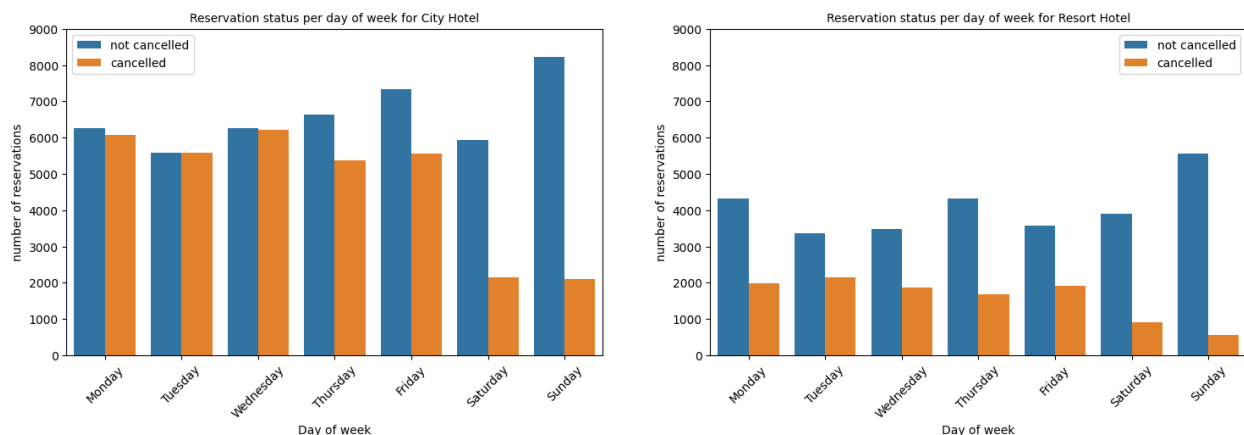


Figure 8

On an average, Resort hotels reservations are less likely to get cancelled as compared to City hotels reservation irrespective of day of the week.

Now let's see which country has the highest reservation cancelled.

Top 10 contries with reservation cancelled

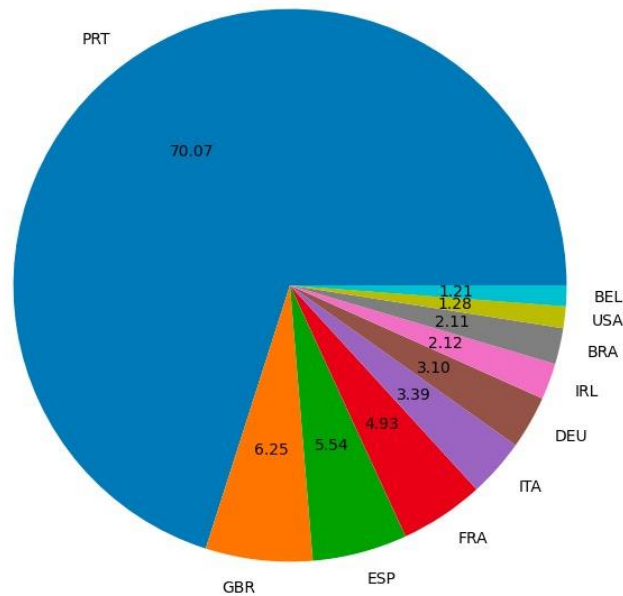


Figure 9

The top country is Portugal with the highest number of cancellations followed by Great Britain (Figure 9).

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

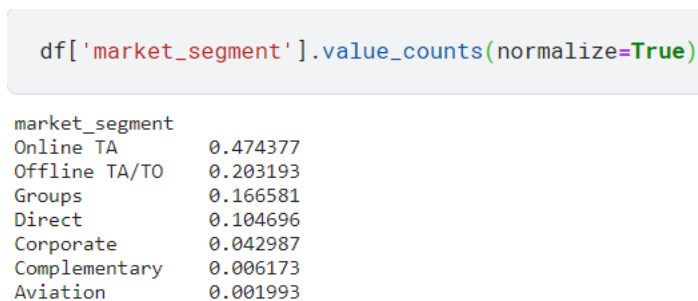


Figure 10

Around 47% of the clients comes from Online Travel Agencies, whereas 16% comes from groups. Only 10% clients book hotels directly.

```
df[df['is_canceled']==1]['market_segment'].value_counts(normalize=True)
```

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

Figure 11

Not only this, among all cancelled reservations, 47% of the clients came through Online Travel Agencies. 27% cancellations from groups and over 4% came directly.

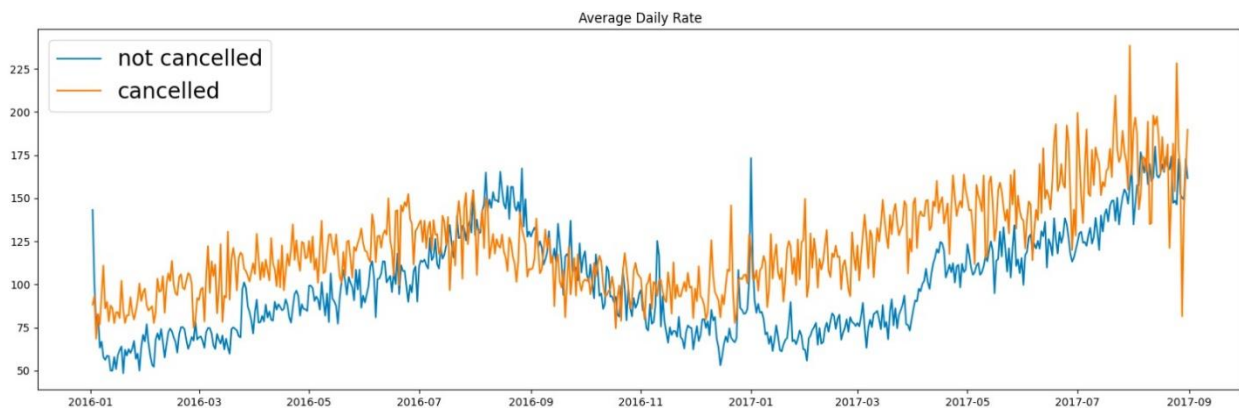


Figure 12

As seen in the graph (Figure 12), reservations are cancelled when daily average rate is higher. It clearly proves all the above analysis, that the higher price leads to higher cancellation.

Suggestions:

1. Cancellations rates rise as the price 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 customers.
2. As the ratio of the cancellations 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 month of January, hotels can start campaigns or marketing with a reasonable amount to increase their revenue as the cancellations is the highest in the month.
4. They can also increase their quality of their hotels and their services mainly in Portugal to reduce the cancellation rate.