Data Analysis of Cancellation of Hotel Bookings

Business Problem:

Challenge: In recent years, City and Resort hotels are experiencing a rise in cancellations, leading to reduced revenue and underutilized rooms.

Objective: Our main goal is to enhance hotel efficiency in generating revenue and provide actionable solutions to address cancellation issues.

Scope: Analyze hotel booking cancellations while excluding irrelevant factors that don't impact core business and annual revenue.

Assumptions:

I. No unusual occurrence between 2015 and 2017 will have a substantial impact on the data used.
II. The information is still current and can be used to analyze the hotel's possible plans in an efficient manner.
III. There are no unanticipated negatives to the hotel employing any advised technique.
IV. The hotels are currently not using any of the suggested solutions.
V. The biggest factor affecting the effectiveness of the earning income is booking cancellations.
VI. 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 a longer waiting list, customers tend to cancel more frequently.
3. Most of the clients are coming from offline travel agents to make their reservations.

Data Analysis and Findings:


Reservation Status Count
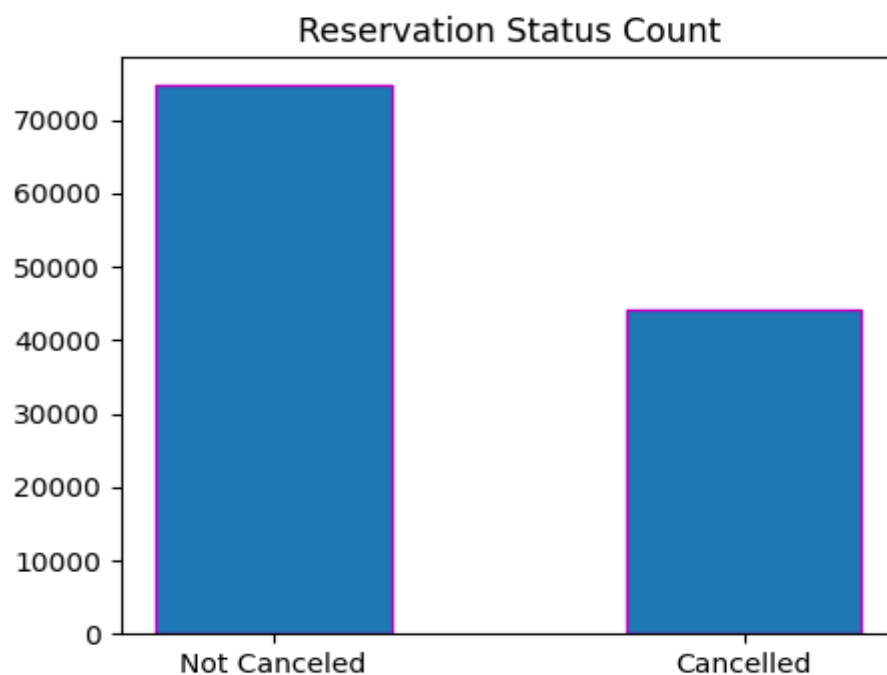
The bar graph above shows that the percentage of reservations that are cancelled and the percentage of reservations that are not cancelled. It is obvious that there are significant number of reservations that have not been cancelled but still 37% of clients cancelled the reservations and it is a huge number and has significant impact on the earnings of hotels.


Reservation Status in different Hotels
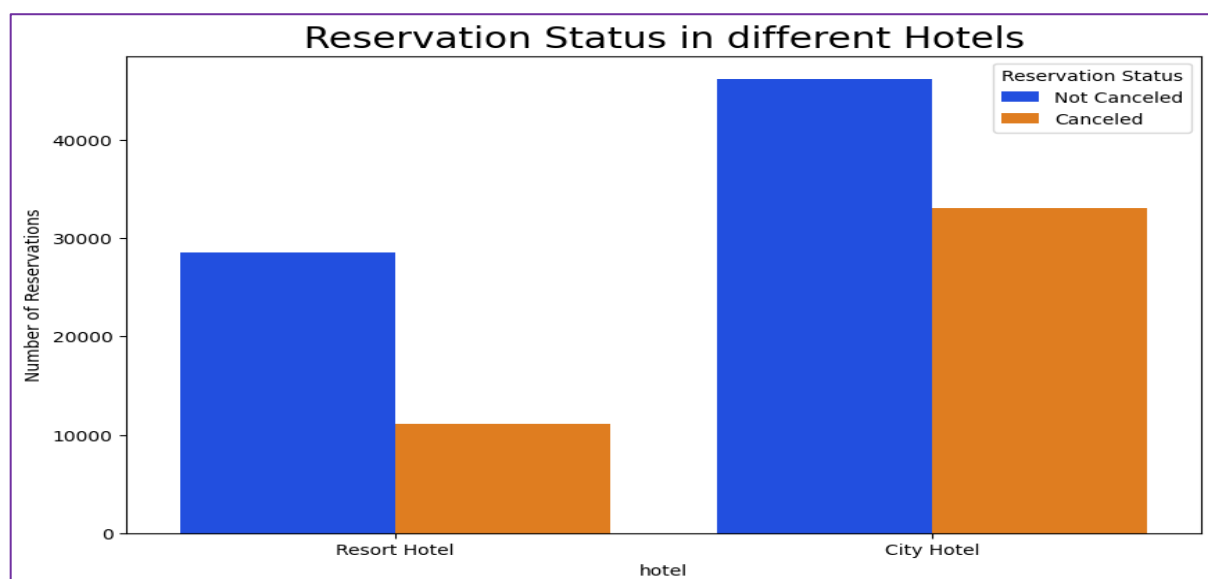
As we can see in above plot that in comparison to resort hotels, city hotels have more bookings. I t can be the result of high pricing in resort hotels that those in cities.

Average Daily rate in city and Resort Hotel
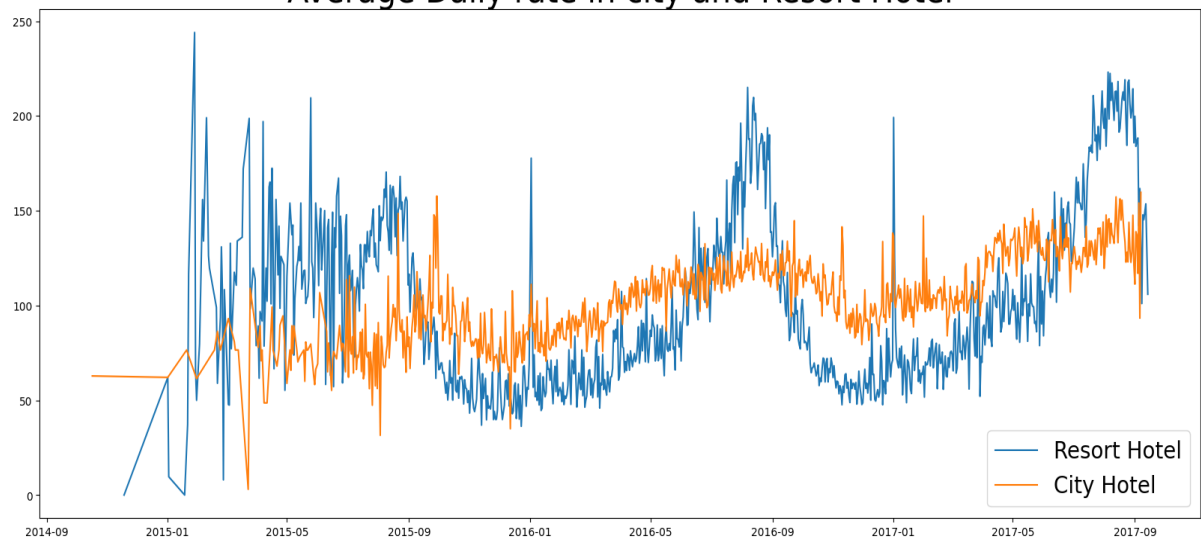
The line graph above shows that, on certain days, the average daily rate for a city hotel is less than that of a resort hotel, and on other days, it is even more less. We can easily understand by this that resort rates are higher than city hotels and in weekends and holidays, we even see more rise in resort hotel rates.

Reservation Status per Month
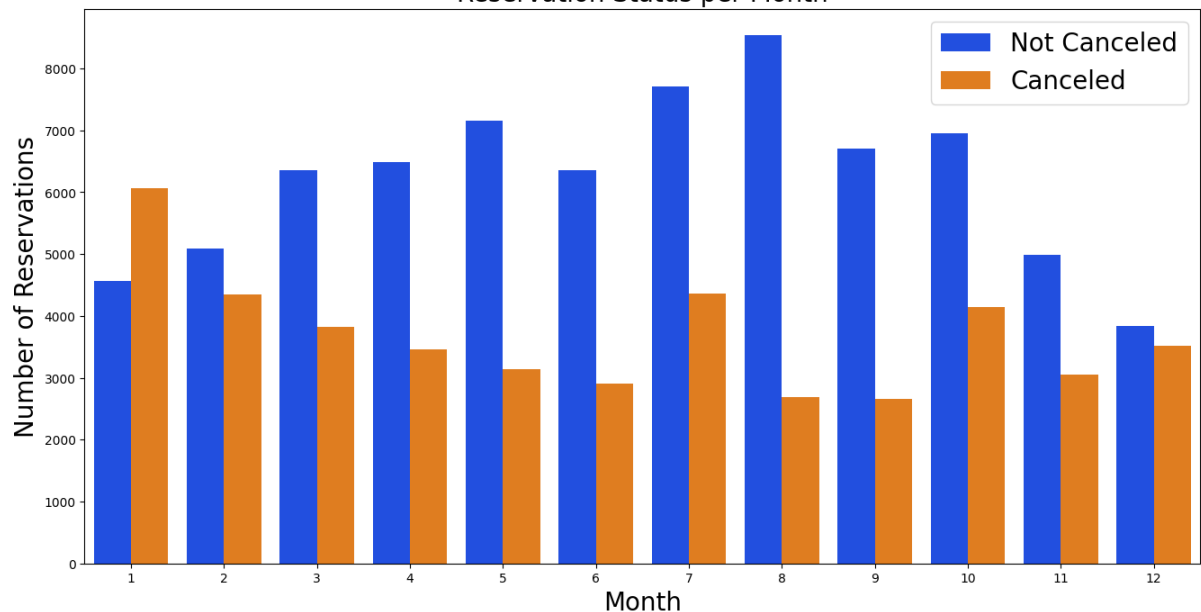
From the above grouped bar graph, we can analyze the months with highest and lowest reservation levels according to reservation status. It can easily be seen that both number of confirmed reservations and number of cancelled reservations are largest in the month of August whereas the most cancelled reservations are in the month of January.
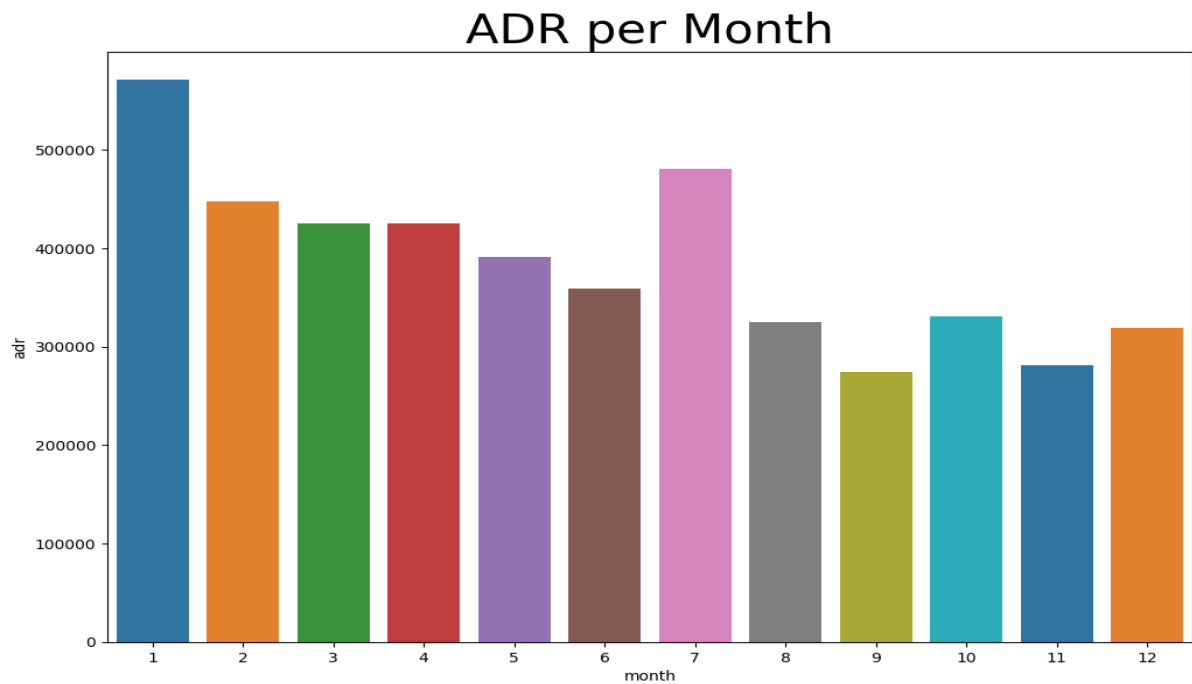
ADR per Month

The bar graph above and reservation status per month graph before that shows that the cancellations are most common when prices are higher and least common when the prices are lower. Therefore, we can conclude that the cost of accommodation is solely for the cancellation in reservations.

## Top 10 Countries with reservation canceled
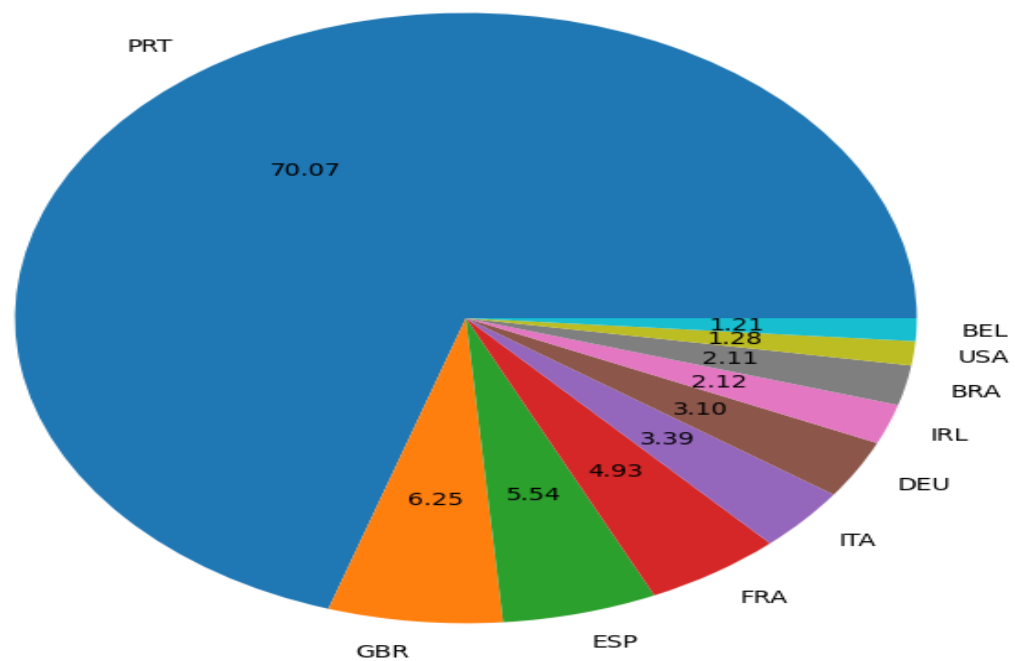
The pie chart shows that the Portugal is the country with highest number of cancellations. In this chart, we just check the cancellation in top 10 countries and 70% of cancellation are happening in Portugal.

Now, we can see that from which source, guests are visiting and booking the reservations. Is it coming from Direct, Groups, online, and offline travel agents.

market_segment

Online TA	0.469694
Groups	0.273998
Offline TA/TO	0.187475
Direct	0.043465
Corporate	0.022152
Complementary	0.002039
Aviation	0.001178

We can see that around 46% of the clients come from online travel agencies, whereas 27% of clients come from groups. There are only 4% of clients who book hotels directly by visiting them and making reservations.
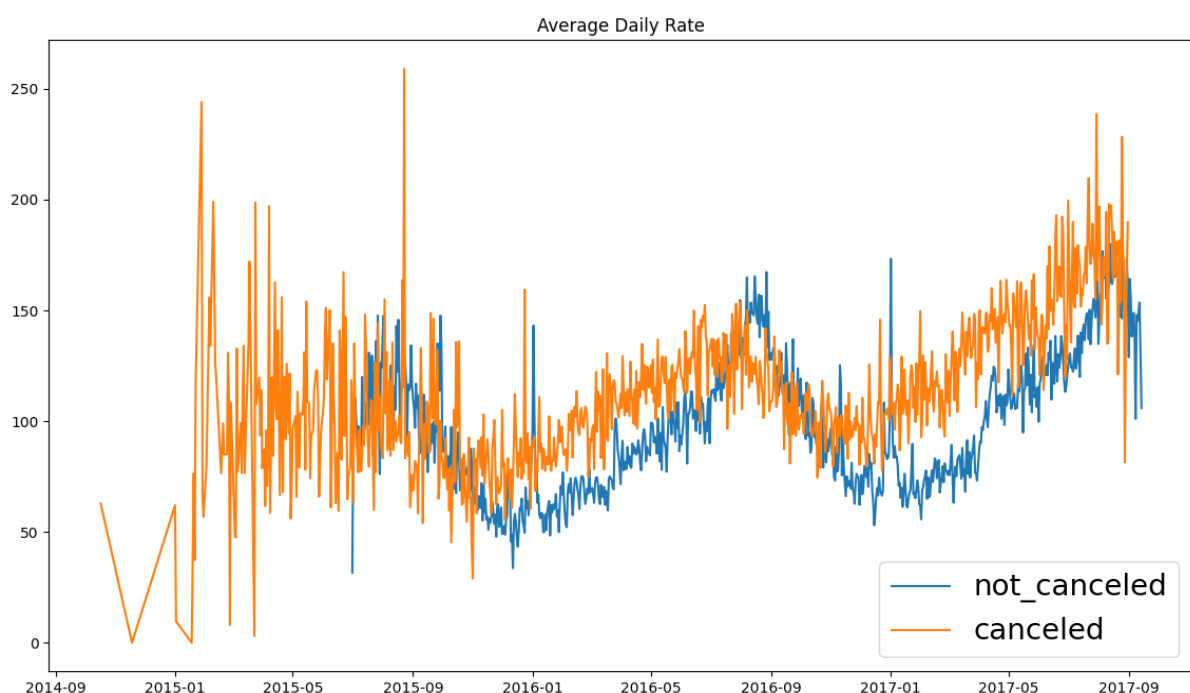
From above graph, we can see that the cancellation happens when average daily rate is higher than normal, and reservations do not cancel when the average daily rate is not that high. Orange line graph is showing daily rate when booking getting cancelled whereas blue one is showing the reservations that are not cancelled with respect to daily rate.

Suggestions:

1. Cancellation rate rise as the price rise. In order to protect the cancellation of reservations, hotels could work on their pricing strategies and try to lower the rates of specific hotels based on locations. They can also provide some discounts to the customers.

2. As the ratio of cancellation in resort hotels is higher than the city hotels and it became even more higher ion weekends, so one thing that resort hotels can do is that they can provide reasonable discounts on the room prices on weekends and holidays.

3. Cancellations are higher in the month of January so the hotels can start a campaign or marketing with a reasonable amount to increase their revenue in the month of January.

4. Portugal is facing this issue at extreme level, so they need to increase the quality of their hotels and services to reduce this rate of cancellation.