

# REPORT

## **Business Problem**

In recent years, both hotel and resort bookings have seen high cancellation rates. Consequently, each hotel is now dealing with a number of issues, including lesser revenue generation and suboptimal utilization of rooms. Therefore, lowering cancellation rates is of utmost importance to hotels in order to improve their efficiency in generating revenue.

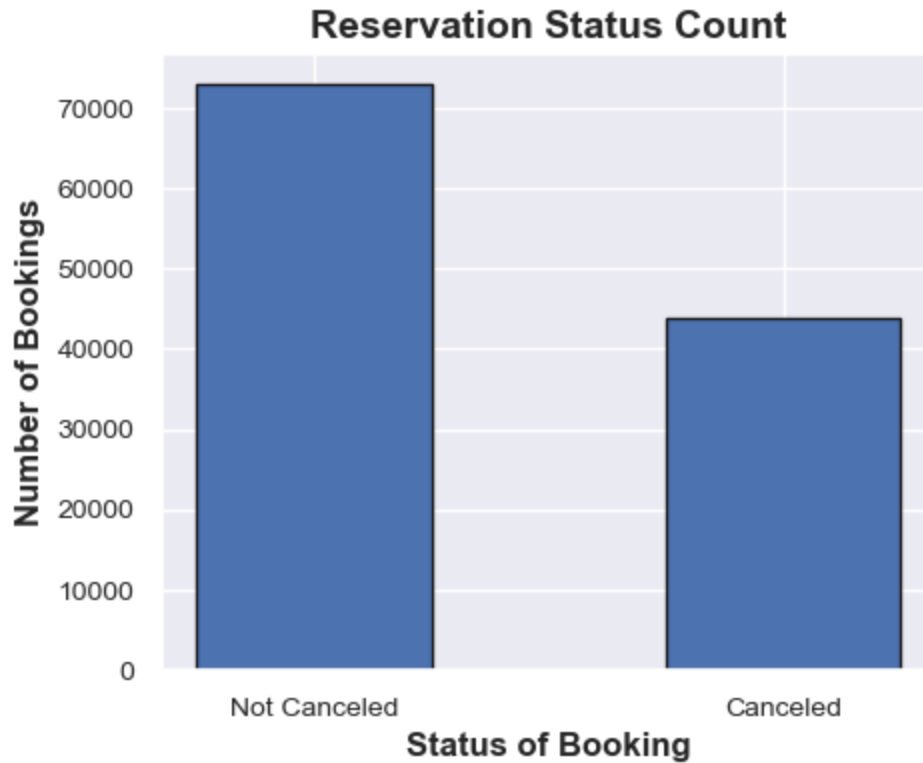
The analysis of hotel booking cancellations as well as other factors that affect their business are the main topics of this project. The dataset was obtained from kaggle, containing 119390 observations for a hotel and a resort. Each observation represents a hotel booking between the 1st of July 2015 and 31st of August 2017, including bookings that effectively arrived and those that were canceled. It is assumed that this data is valid for the current times and can be used to analyze a hotel's plan of action effectively.

## **Research Questions**

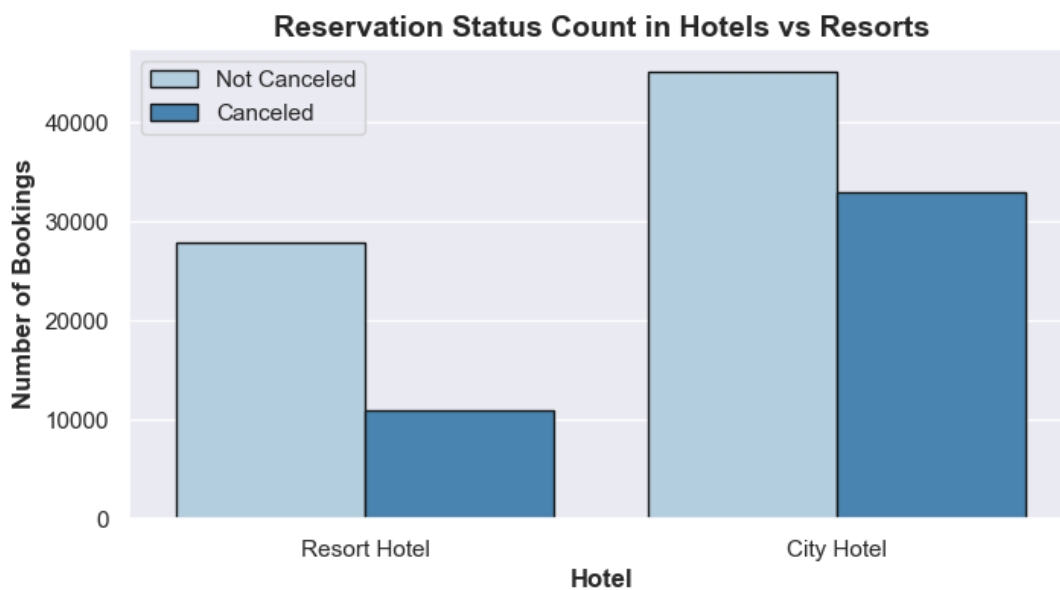
- What are the variables that affect hotel reservation cancellation?
- How can hotels reduce the number of cancellations?
- How can hotels and resorts be assisted in making pricing and promotional decisions?

## **Analysis and Findings**

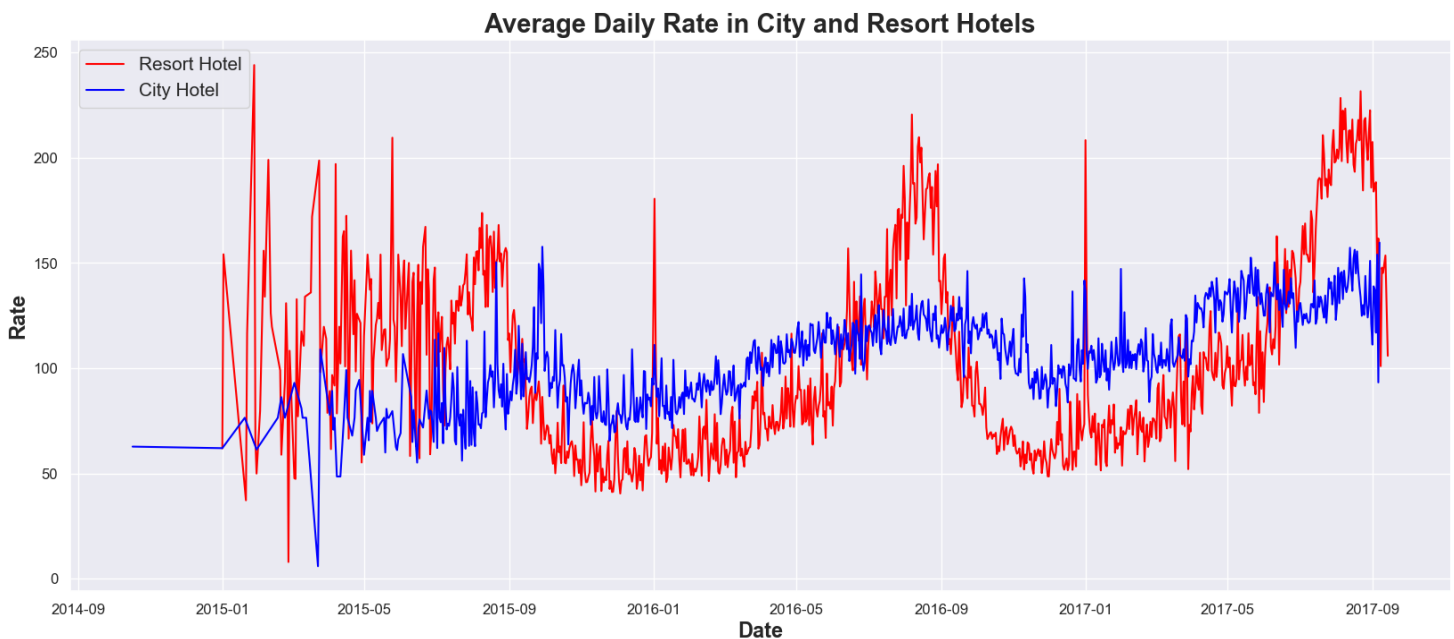
- The accompanying bar graph shows the number of reservations that are canceled and those that are not. It is obvious that the majority of reservations have not been canceled. However, there are still about 37% reservations that were canceled, which is a substantial number. This has a significant impact on hotel and resort earnings.



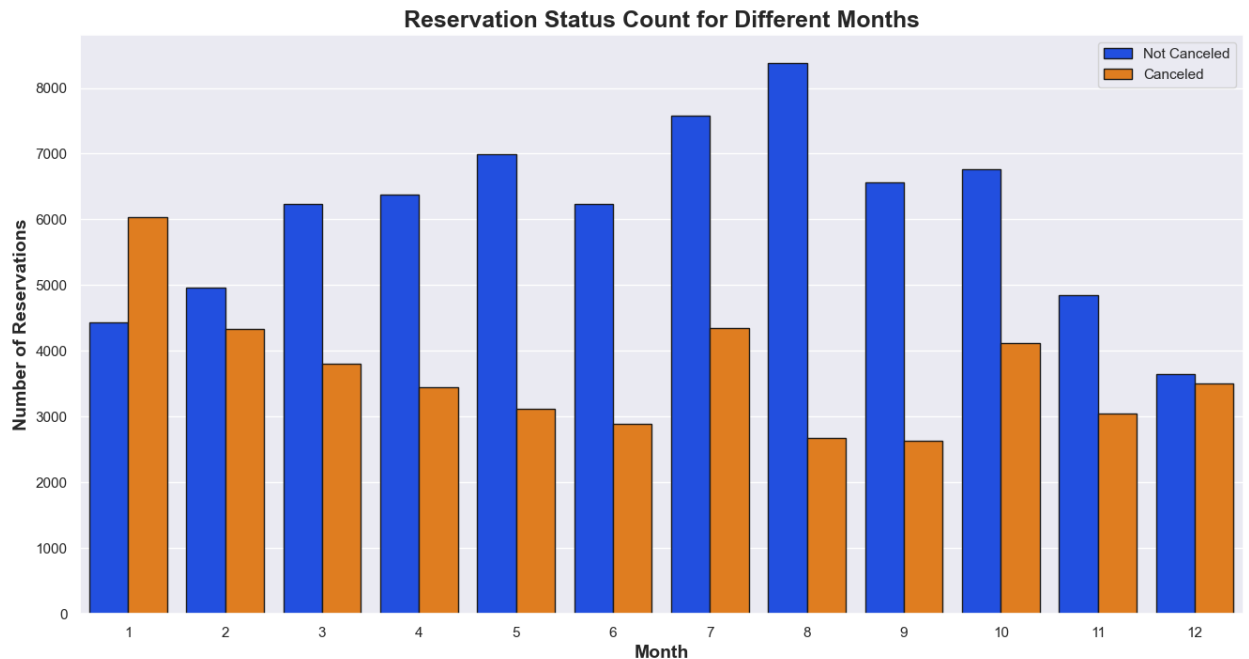
- Analyzing the distribution of canceled and non-canceled bookings in hotels as compared to those in resorts. City hotels have more bookings as compared to resort hotels. Subsequently, cancellations are also higher in city hotels. 42% of hotel bookings were canceled, while 28% of resort bookings were canceled.



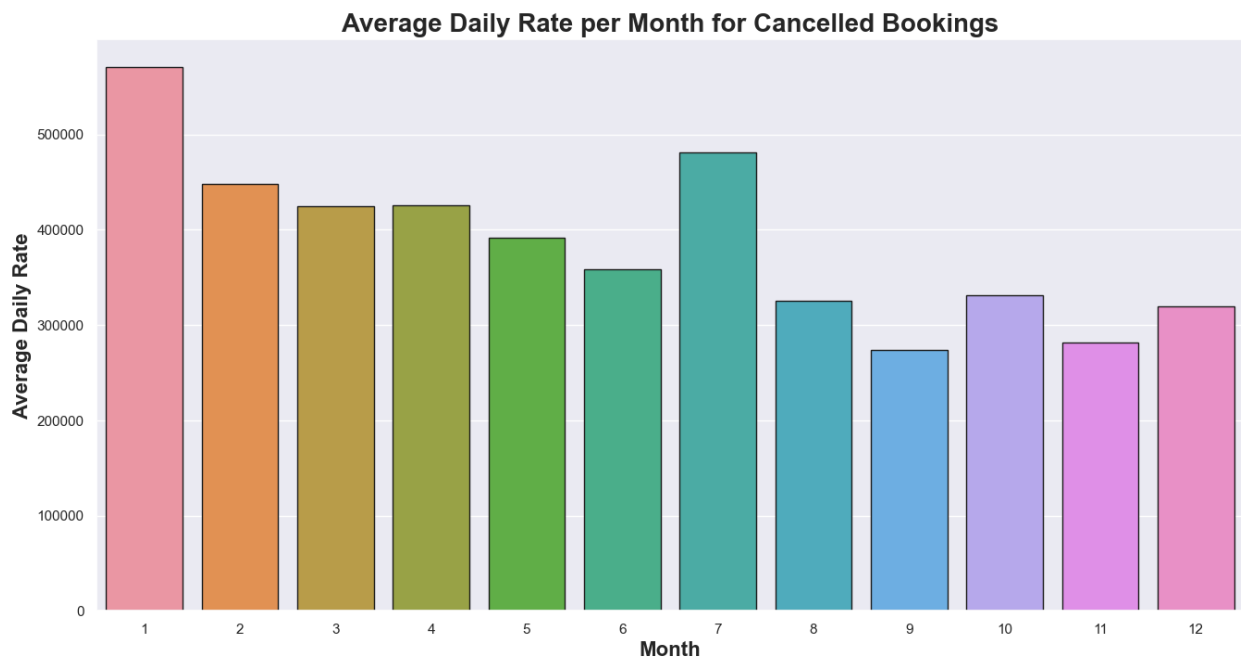
- On comparing prices of city and resort hotels, it can be seen that the average daily rate for resort hotels undergoes a greater fluctuation as compared to city hotels. Hypothesis is that the spikes in the rate in both resort and city hotels are on weekends or other public holidays. Typically in the months from July to September, prices of resort hotels stay higher than city hotels, they are generally lower in other months.



- We have developed a group bar graph to analyze the months with the highest and lowest reservation numbers according to reservation status. It can be seen that the greatest number of cancellations have been made in January, reservations in August. Also, the lowest number of cancellations have been made in September, reservations in December. Peculiar that Jan and Dec have very low reservations as well as high number of cancellations. Also, Aug and Sept have very high reservations as well as low number of cancellations.

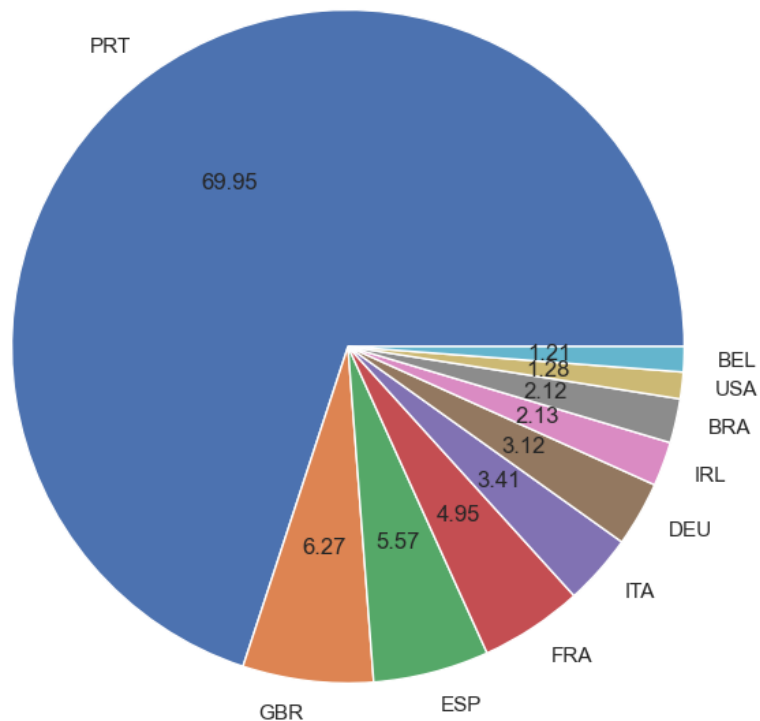


- The reason for the above mentioned peculiarity could be low prices in months of Aug and Sept, high prices in Jan and Dec. Low prices motivate the customers to go ahead with the reservation and not cancel, vice versa is valid too. Therefore, plotting average daily rate for each month, for canceled bookings. Hence it can be seen that Aug and Sept have comparatively lower adr on canceled bookings, therefore the overall cancellations in these months is lower. Also adr is highest in Jan for canceled bookings, therefore the highest cancellations are in Jan. This bar graph demonstrates that cancellations and average daily rate are directly proportional. Cost of accommodation hence plays a major role in cancellations.



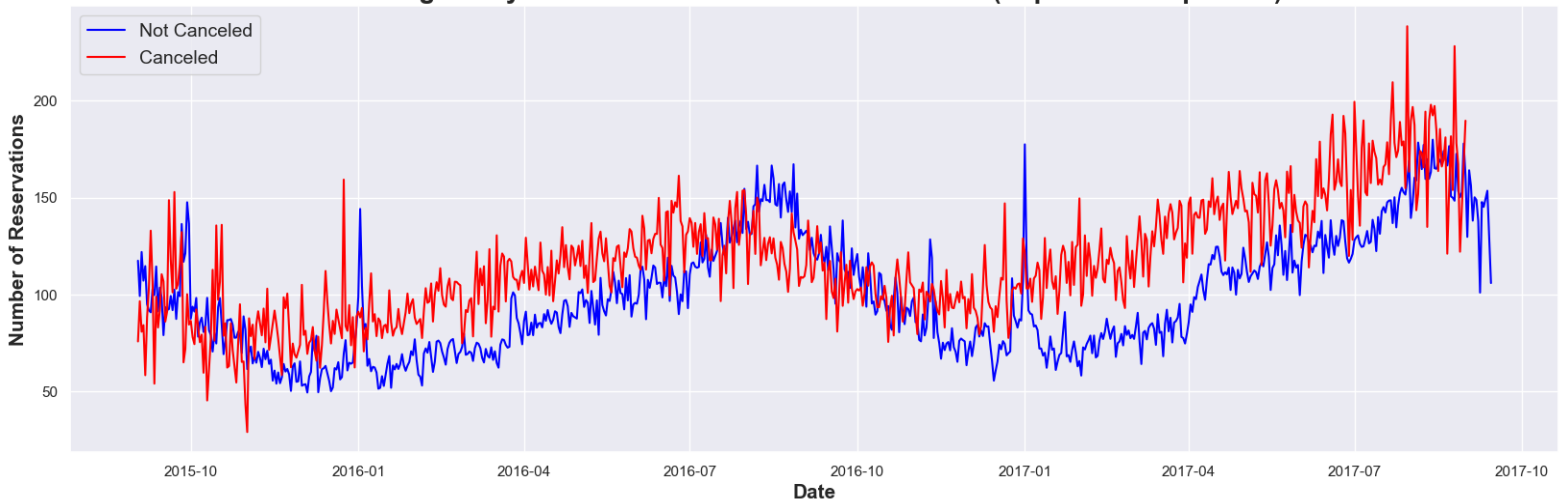
- Now, on analyzing which countries have the highest number of cancellations, it is observed that Portugal accounts for a staggering 70% of total bookings canceled worldwide, as seen in the pie chart below.

**Top 10 Countries with Most Cancelled Reservations**



- Now, we check the mode through which most of the reservations come i.e. direct or group, online or offline travel agent, etc. About 48% of bookings are made through the Online Mode, it is the most preferred. Whereas, 20% of bookings were made through offline travel agents. This could be due to convenience, promotional offers and better prices offered for online bookings
- However, 47% of the canceled bookings were also made online. It is possible that online websites portray an unfair and deceptive image of hotels, upon actually visiting the hotel customers feel disappointed due to lack of facilities, poor ambience, etc.
- Now, as seen in the graph below, reservations are canceled when the average daily rate is higher than when it is not canceled. This clearly proves that higher price leads to higher cancellations.

**Average Daily Rate for Cancelled vs Not Cancelled (Sept 2015 - Sept 2017)**



- Number of days in the waiting list is also a major factor in booking cancellations, as can be seen in the plot below. Longer waiting times compel customers to cancel their bookings and look for other accommodations. Canceled bookings had a mean waiting time of 3.5 days while the non canceled ones had a corresponding figure of 1.6 days, which is less than half.

**Average No. of Days in Waiting List for Canceled vs Non Canceled**



## **Suggestions**

- Cancellation 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 and promotional offers for regular customers and launch membership programmes.
- As the ratio of cancellations to non cancellations is higher in city hotels, these hotels should try to provide better amenities at a similar price point, since typically resort hotels have better facilities.
- Similarly, resort hotels are typically the go to choices of customers during holiday seasons, which is why their prices increase dramatically then. Resorts should try to manage their prices during peak season.
- In the month of January, hotels can start marketing campaigns to increase their revenue and offer discounts since cancellations are highest in this month. Further, increasing non refundable deposits can fix this issue.
- Hotels in Portugal need to step up their game and improve their facilities and services, since cancellations are highest here.