HOTEL BOOKING DATA ANALYSIS USING PYTHON

Advanced Python Data Analysis

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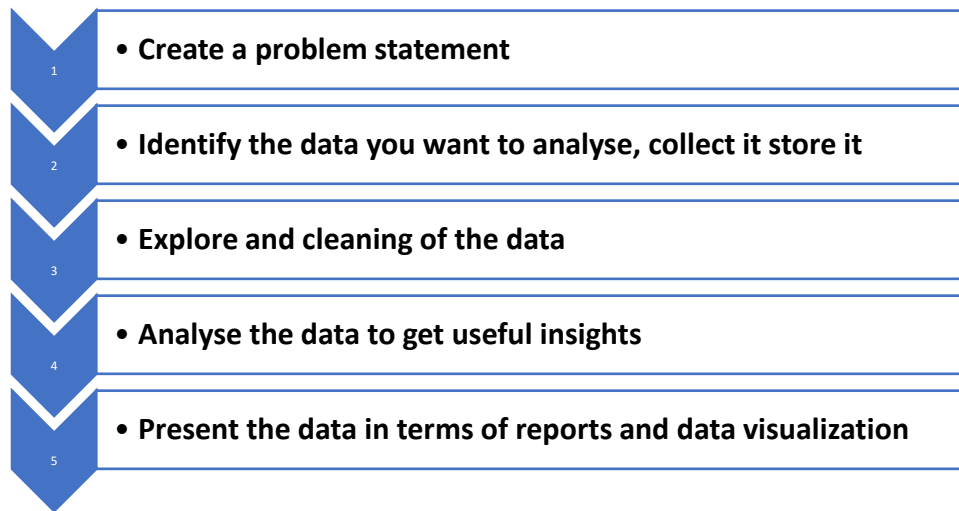
COURSE: DATA SCIENTISTS BOOTCAMP

INTRODUCTION:

In this project, I embarked on a purposeful journey to address a specific challenge by utilising my expertise in data science. Focused on a hotel dataset, I delved into the complexities of collecting, cleaning, and meticulously analysing data using Python. This initiative was driven by the aim to decipher and resolve pertinent issues faced by the hotel through insightful data-driven solutions.

My approach extended beyond the mere application of analytical techniques; I harnessed the power of visualization tools and techniques to illuminate the findings. The culmination of this effort is manifested in a comprehensive set of reports, dynamic dashboards, and compelling data visualizations. Through these mediums, I not only showcase my end-to-end data analysis skills but also provide a lucid and actionable narrative to aid stakeholders in making informed decisions. This project exemplifies my commitment to problem-solving through data and underscores my ability to bridge the gap between raw data and actionable insights in a meaningful and impactful manner.

STEPS TO PERFORM:

1. • **Create a problem statement**
2. • **Identify the data you want to analyse, collect it store it**
3. • **Explore and cleaning of the data**
4. • **Analyse the data to get useful insights**
5. • **Present the data in terms of reports and data visualization**

BUSINESS PROBLEM:

In recent years, City Hotel and Resort Hotel have seen high cancellation rates. Each hotel is now dealing with the number of issues as a result, including fewer revenues and less than ideal hotel room use. Consequently, lowering cancellation rates is both hotel's primary goal 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.

ASSUMPTIONS:

1. No outliers occurrences between 2015 and 2017 that will have a substantial impact on the data used.

2. The information is 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. Cancellation result in vacant rooms for the booked length of time.

6. Clients make hotel reservations same year they make cancellations.

RESEARCH QUESTIONS:

1. What are the variables that affect hotel reservation cancellations?
2. How can we make hotel reservation 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, customer tend to cancel more frequently.
3. Majorly clients are coming from offline travel agents to make their reservation.

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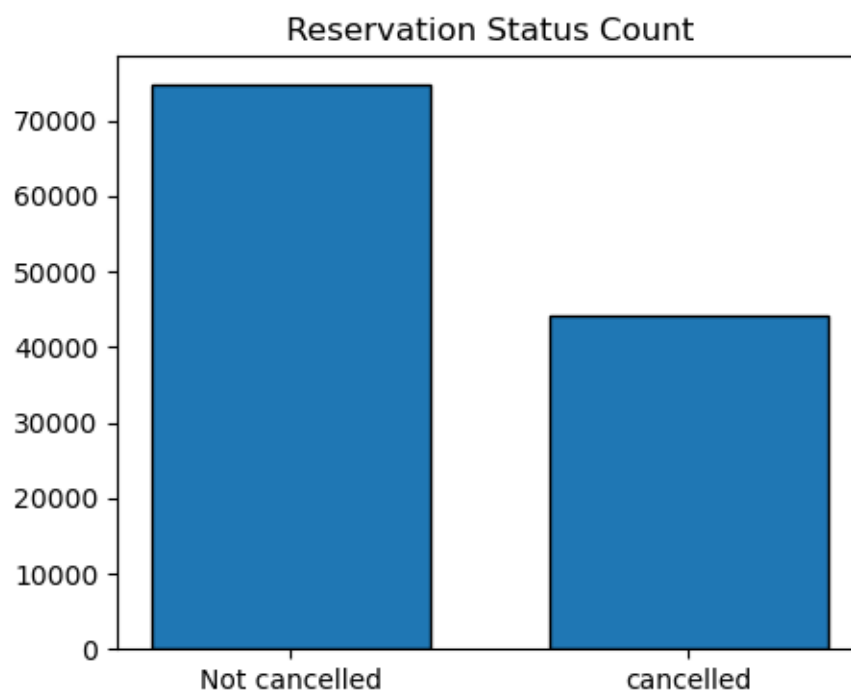
The accompanying bar graph shows the percentage of reservations that are cancelled and those that are not. It is obvious that there are still a significant number of reservations that have not been cancelled. There are still 37% of clients who cancelled their reservations, which has a significant impact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

Reservation status in different hotels
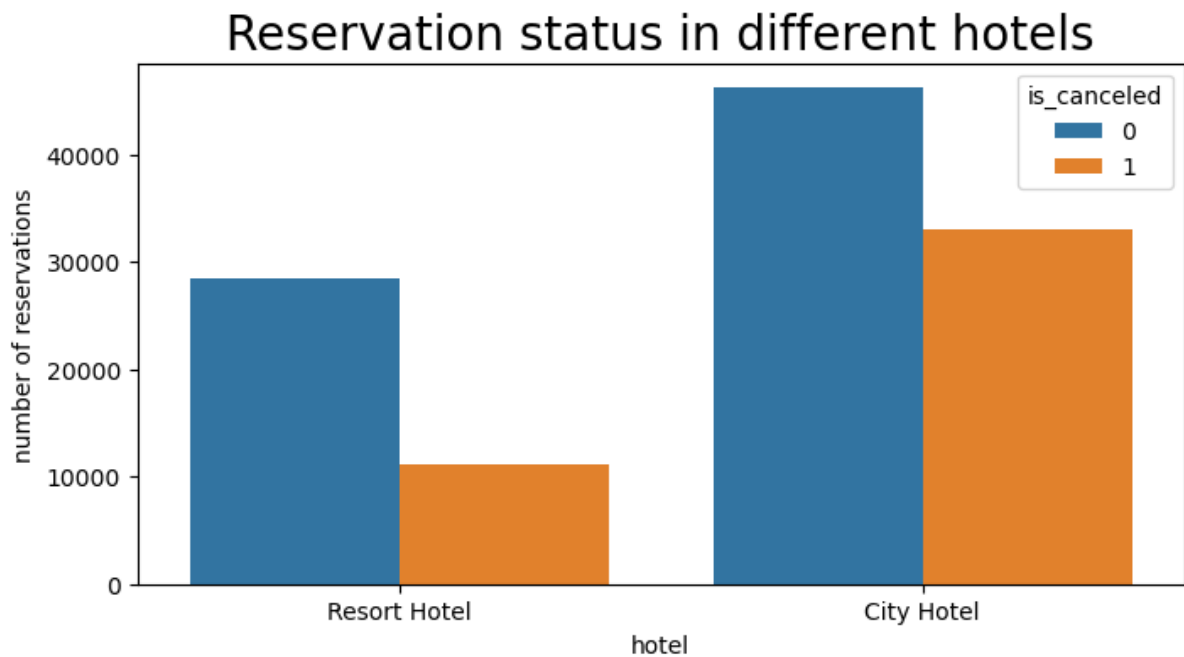
In comparison to resort hotels, city hotels have more bookings. It is possible that resory hotels are more expensive than those in cities.

Average Daily Rate in City and Resort Hotel
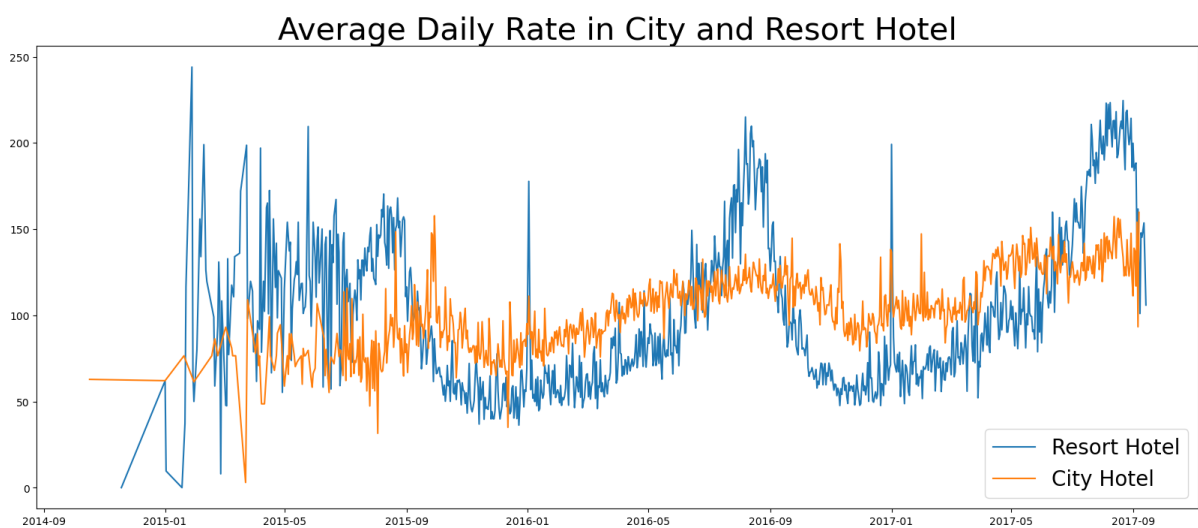
The line graph above shows that on certain days, the average daily rate for a city hotel is less than that of a resort hotel, and on other days , it is even less. It goes without saying that weekends and holidays may rise in resort hotel rates.
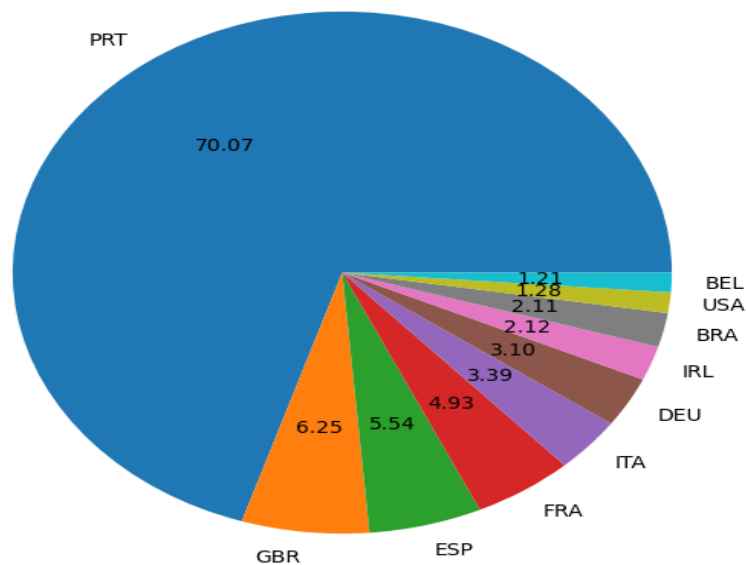
Reservation status per month
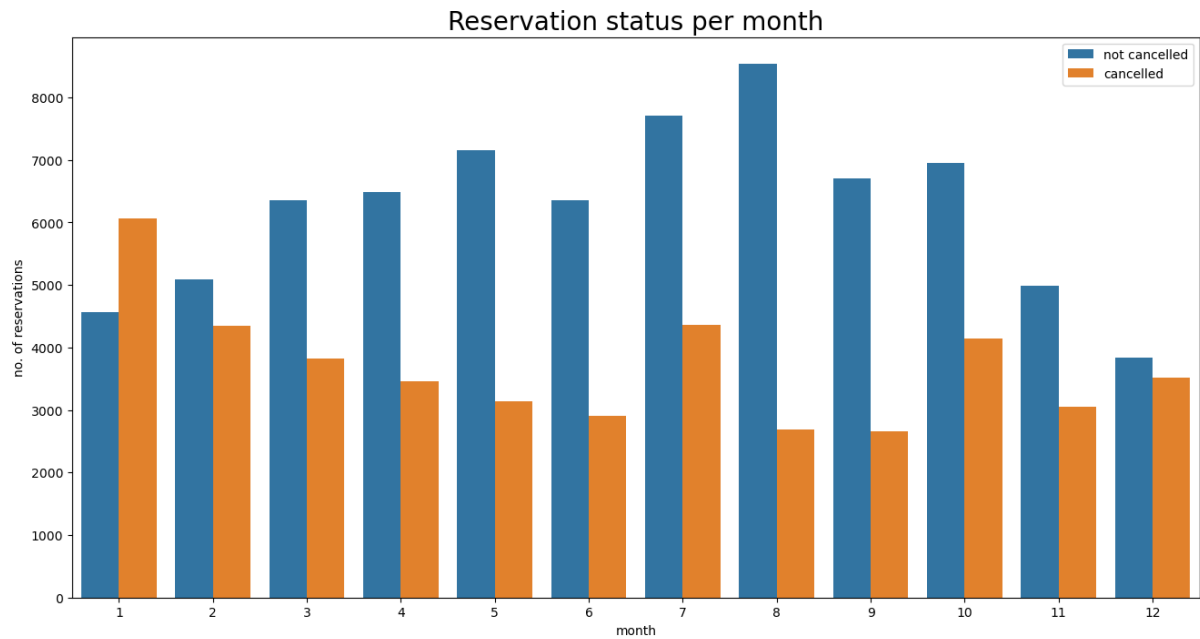
I have developed the grouped bar graph to analyze the months with highest and lowest reservation levels according to reservation status. As can be seen, both the number of confirmed reservations and the number of cancelled reservations are largest in the month of August whereas January is the month with the most cancelled reservations.

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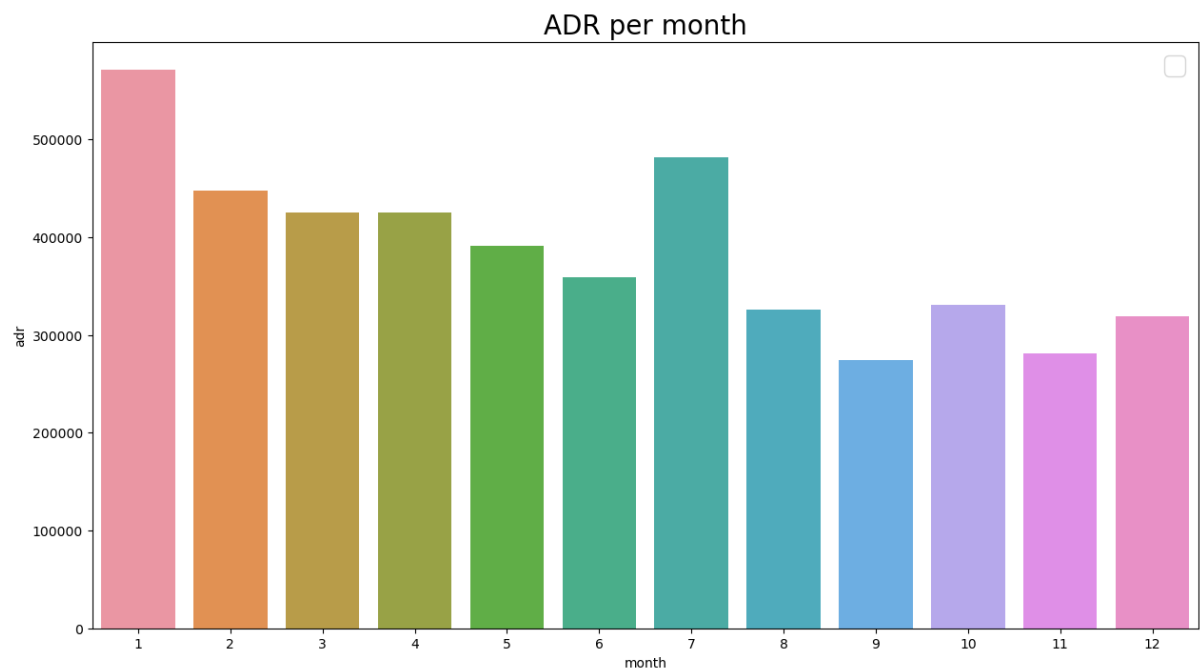
This bar graph demonstrates that cancellations are most common when prices are greatest and are least common when they are lowest. Therefore, the cost of the accommodation is solely responsible for the cancellation.

Now, let's see which country has the highest reservation cancellation. The top country is Portugal with the highest number of cancellations of about 70%.

Top 10 Countires woth reservation Cancelled

PRT
70.07

BEL
1.21
USA
1.28
BRA
2.11
IRL
2.12
DEU
3.10
ITA
3.39
FRA
4.93
ESP
5.54
GBR
6.25

Let's check the area from where guests are visiting the hotels and making reservations. Is it coming from Direct or Groups, Online or Offline Travel Agents? Around 46% of the clients come from online travel agencies whereas 27% come from groups. Only 4% of clients book hotels directly by visiting them and making reservations.

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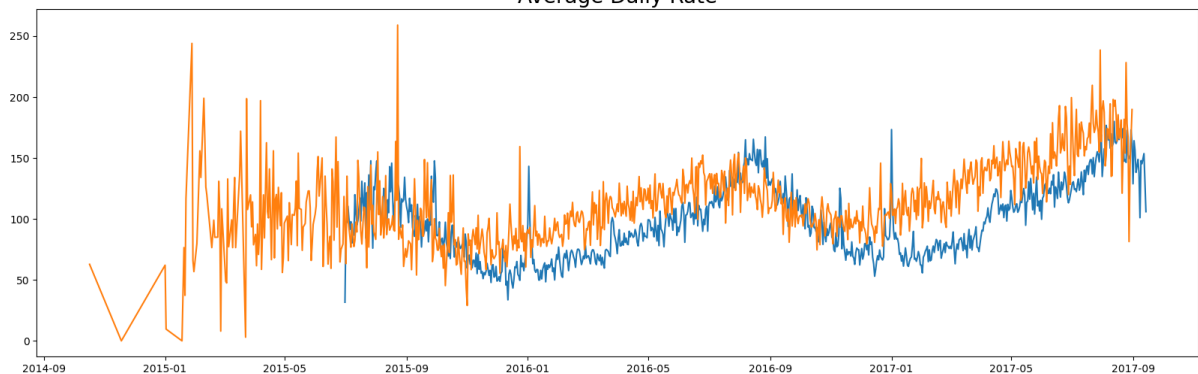
As seen in the graph, reservations are cancelled when the average daily rate is higher than when it is not cancelled. It clearly proves all the above analysis, that higher price leads to higher cancellation.

SUGGESTIONS:

1. Cancellation rates rise as the price does. 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 cancellation and not cancellation of the hotel is higher in 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 December and January, hotels can start campaigns or marketing with a reasonable amount to increase their revenue as the cancellation is the highest in January.
4. They can also increase the quality of their hotels and their services mainly in Portugal to reduce the cancellation rate.