HOTEL RESERVATION CANCELLATION DATA ANALYSIS

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Project Overview

This Python Data Analysis project investigates hotel booking cancellations, analyzing factors like booking lead time, customer demographics, and seasonal trends to identify key drivers of cancellations.

The goal is to uncover actionable insights and provide solutions to reduce cancellation rates. The project involves tasks such as identifying patterns, developing predictive models, and offering strategies to improve hotel revenue and room utilization.

Problem Statement

In the recent years, City Hotels and Resort Hotels have seen very high cancellation rates.

Each hotel is now dealing with large number of issues such as less revenues, unused hotel rooms due to it's cancellation etc.

So lowering the cancellation rates of the hotel rooms is the primary goal for both the hotels to increase their efficiency in generating revenues and even prevent the hotel rooms from being unutilized.

How does Cancellations, affect Hotels?

- Loss of Income in shape of Unsold Room (Due to Cancellation)
- Lower RevPAR (Revenue Per Available Room) when selling cheaper at the last minute
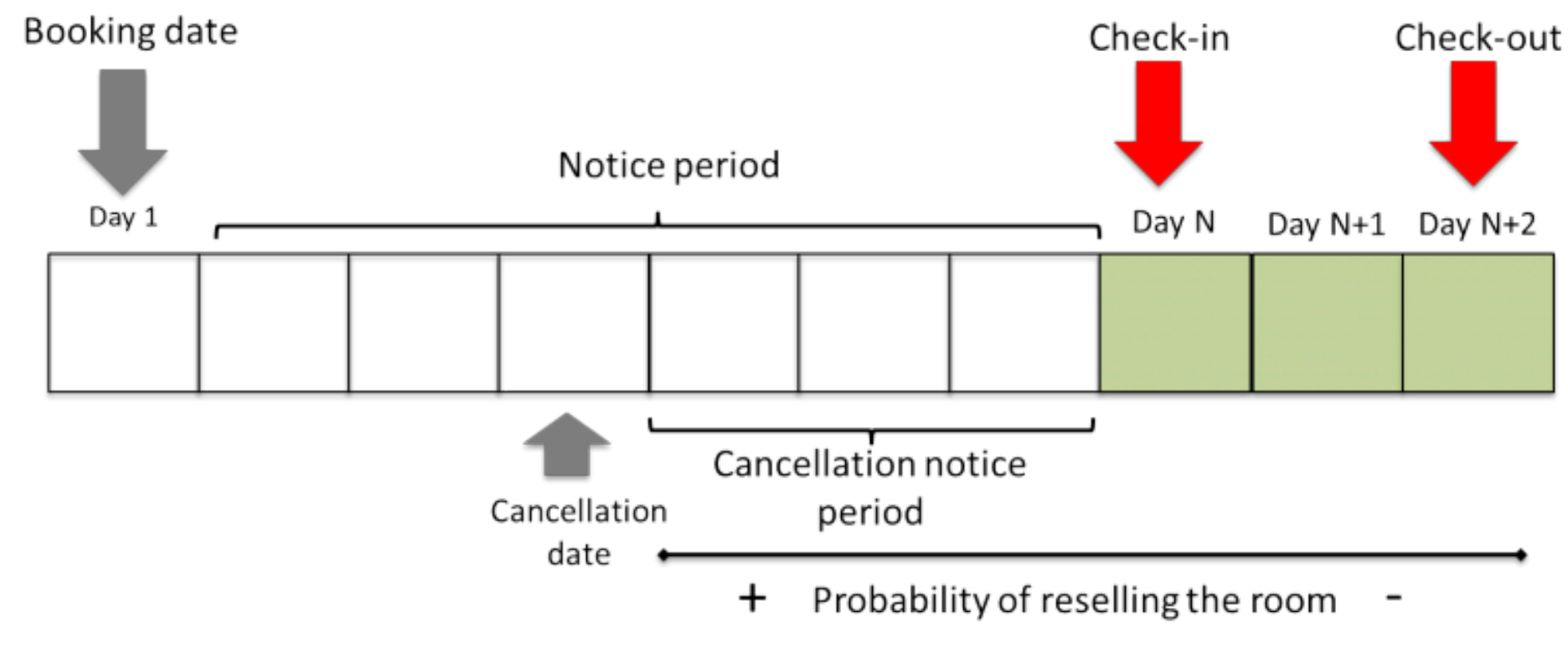
Assumptions

- There are no unusual occurrences that has taken place between 2015 and 2017 and will have any kind of significant impact on the data used.
- The information is still relevant and can be used to analyze the hotel's possible plans in a much effective and efficient manner.
- There are no negative feedbacks for the solutions which we provide to the hotels for improving their revenues.
- The hotels are currently not using any of our suggested solutions.

Assumptions

- The biggest factor that is affecting the incomes of the hotels is the cancellation of the hotel rooms which are booked.
- Cancellation result in the vacant rooms for the booked length of time.
- The clients can cancel the hotel rooms in the same year in which they have booked the hotel rooms.

Research Questions

1. What are the factors that affect the hotel reservation cancellations?

2. How can we make the hotel reservation cancellation better?

3. How can the hotels be assisted in making pricing and promotional decisions?

Hypothesis

- Cancellation of the hotel rooms bookings occur more when their prices are high.
- When there is longer waiting list, the customers tend to cancel more frequently.
- The majority of the clients are coming from offline travel agents to make their hotel room reservations.

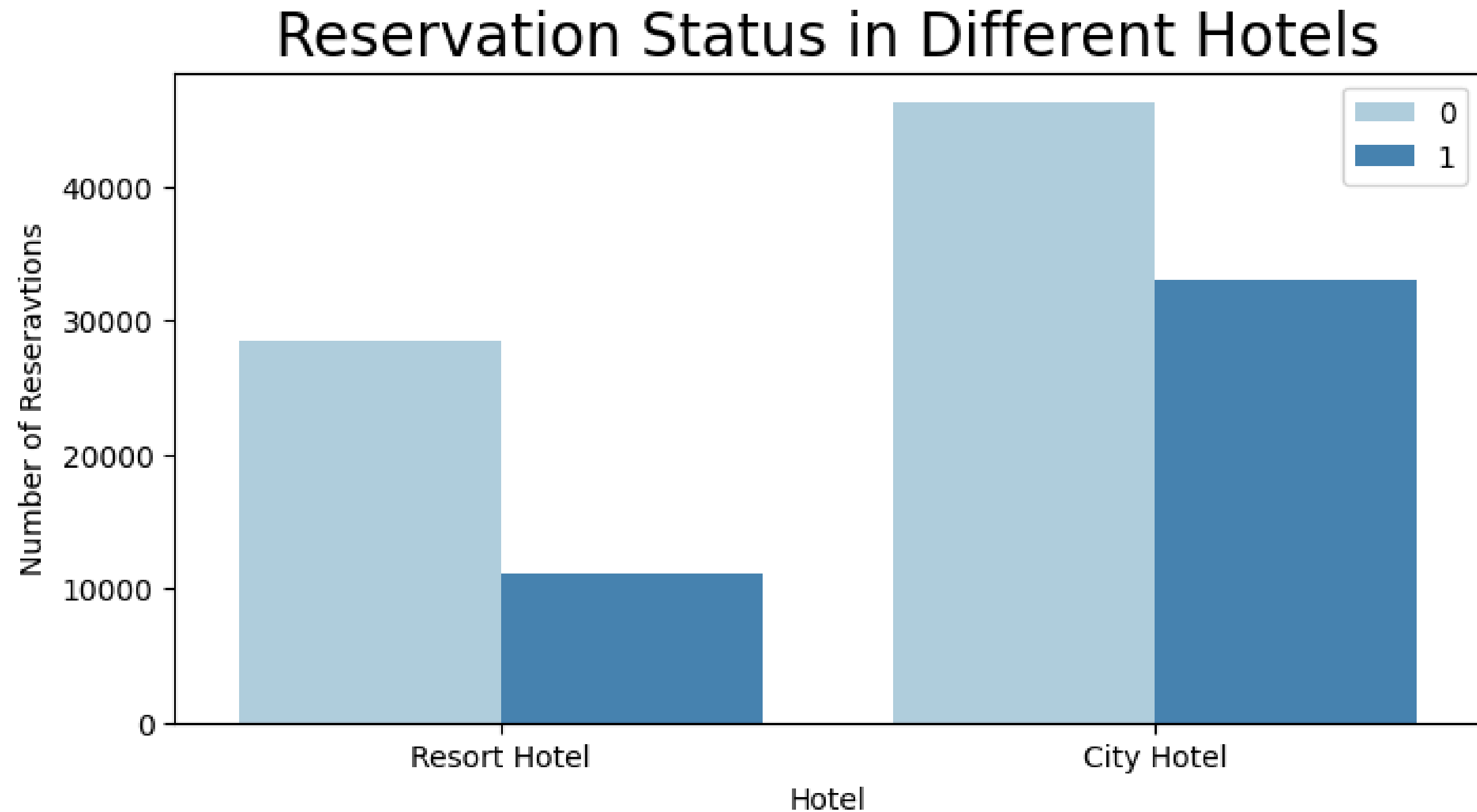# Analysis and Findings

Reservation Status Count
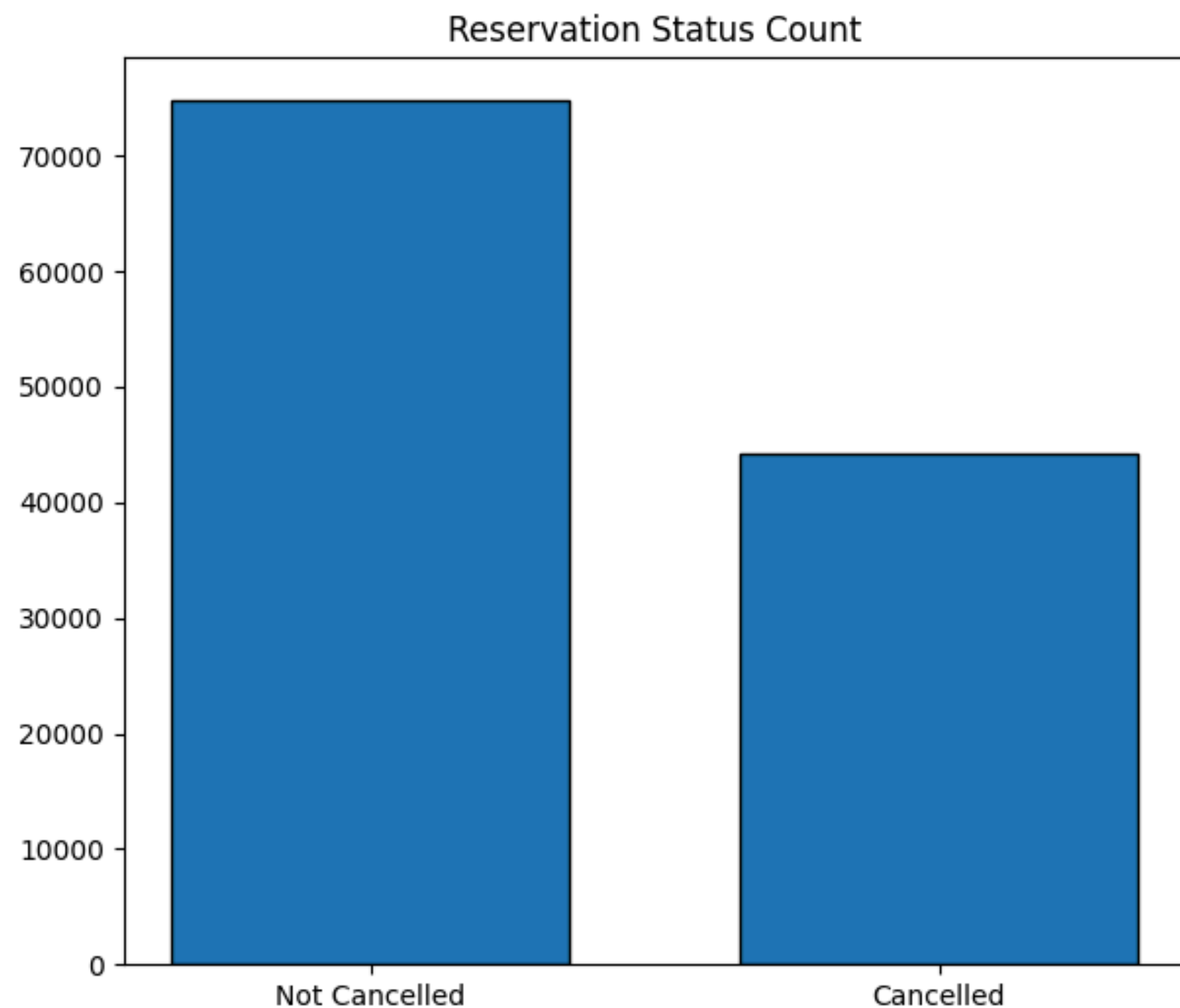
The bar graph shows the percentage of the reservations of the hotel bookings that are cancelled and also of those hotel rooms that are not cancelled.

We can see that,

- 62% of the hotel rooms that have been booked are not cancelled.
- 37% of the hotel rooms that have been booked are now cancelled, which has a significant impact on the hotel's revenue generation.

Analysis and Findings


Reservation Status in Different Hotels

Analysis and Findings

- The ratio of the Non Cancellation vs Cancellation of the hotel rooms of the Resort Hotel is much higher than the City Hotel.
- The Cancellation Rate of the City Hotel is much higher than the Resort Hotel as the Resort Hotel is much expensive than the City Hotel.
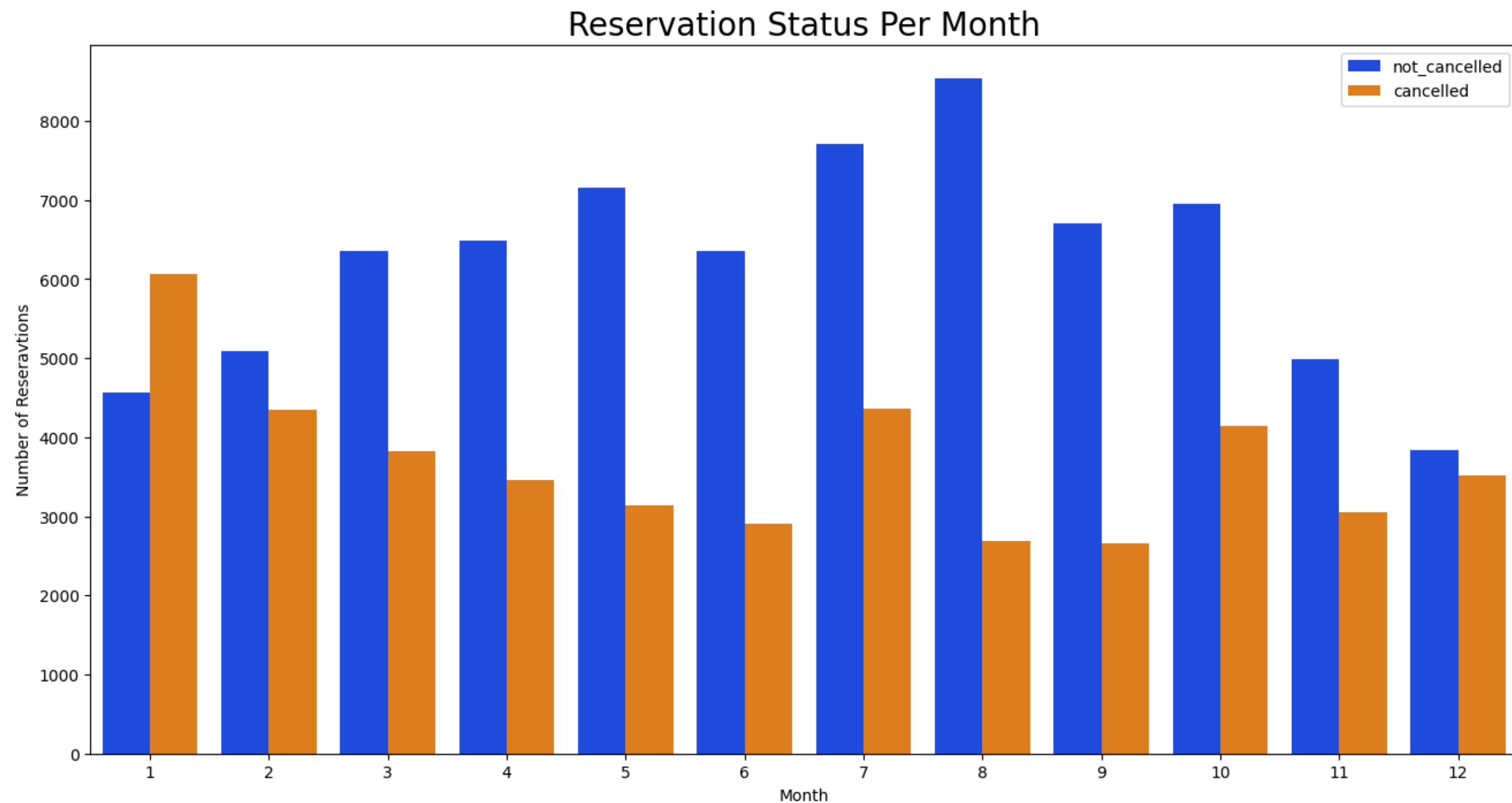
Analysis and Findings

Average Daily Rate in City and Resort Hotel
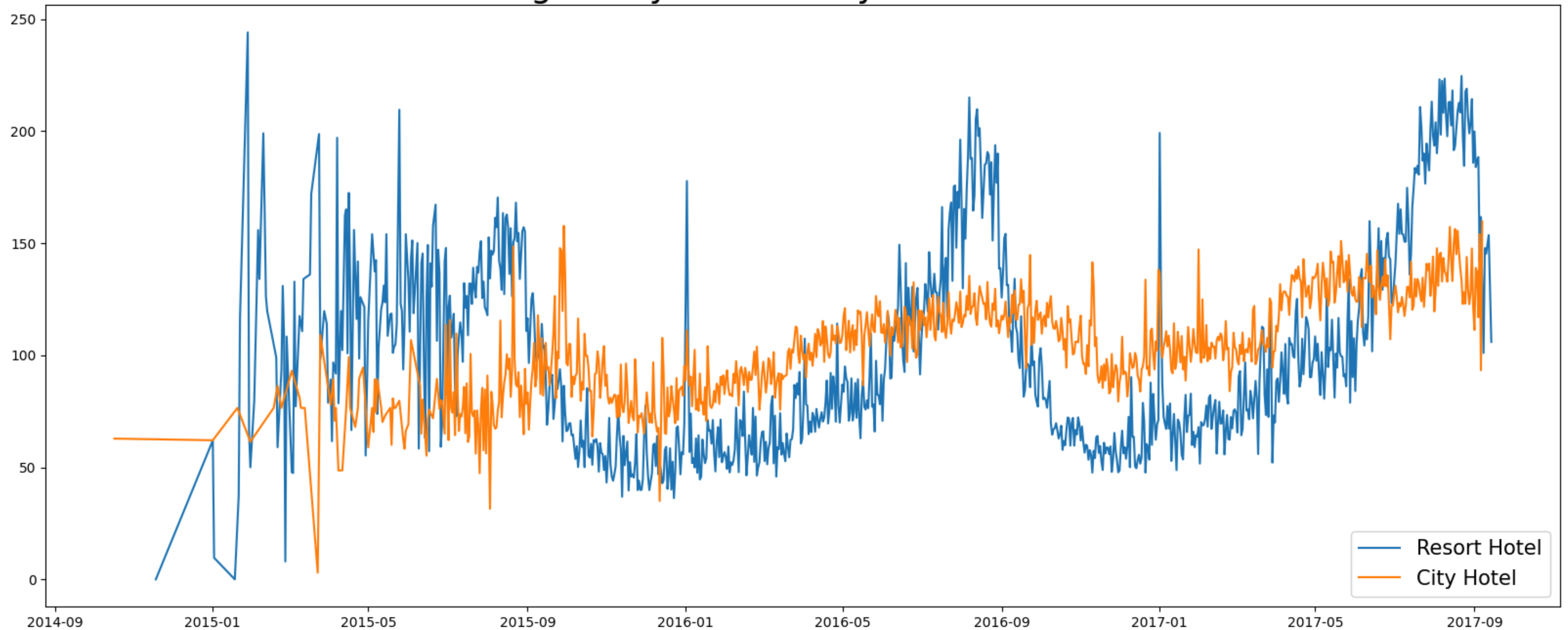
Analysis and Findings

- The above graph indicates that the data is consistent from January 2016 till September 2017.
- In Weekends, the spikes become very high which indicates that the Average Daily Rate(Price) becomes very high in Saturdays and Sundays.
- The Average Daily Rate(ADR) for Resort Hotel is very high as compared to that of the City Hotel which means that the Resort Hotel is much expensive than the City Hotel.
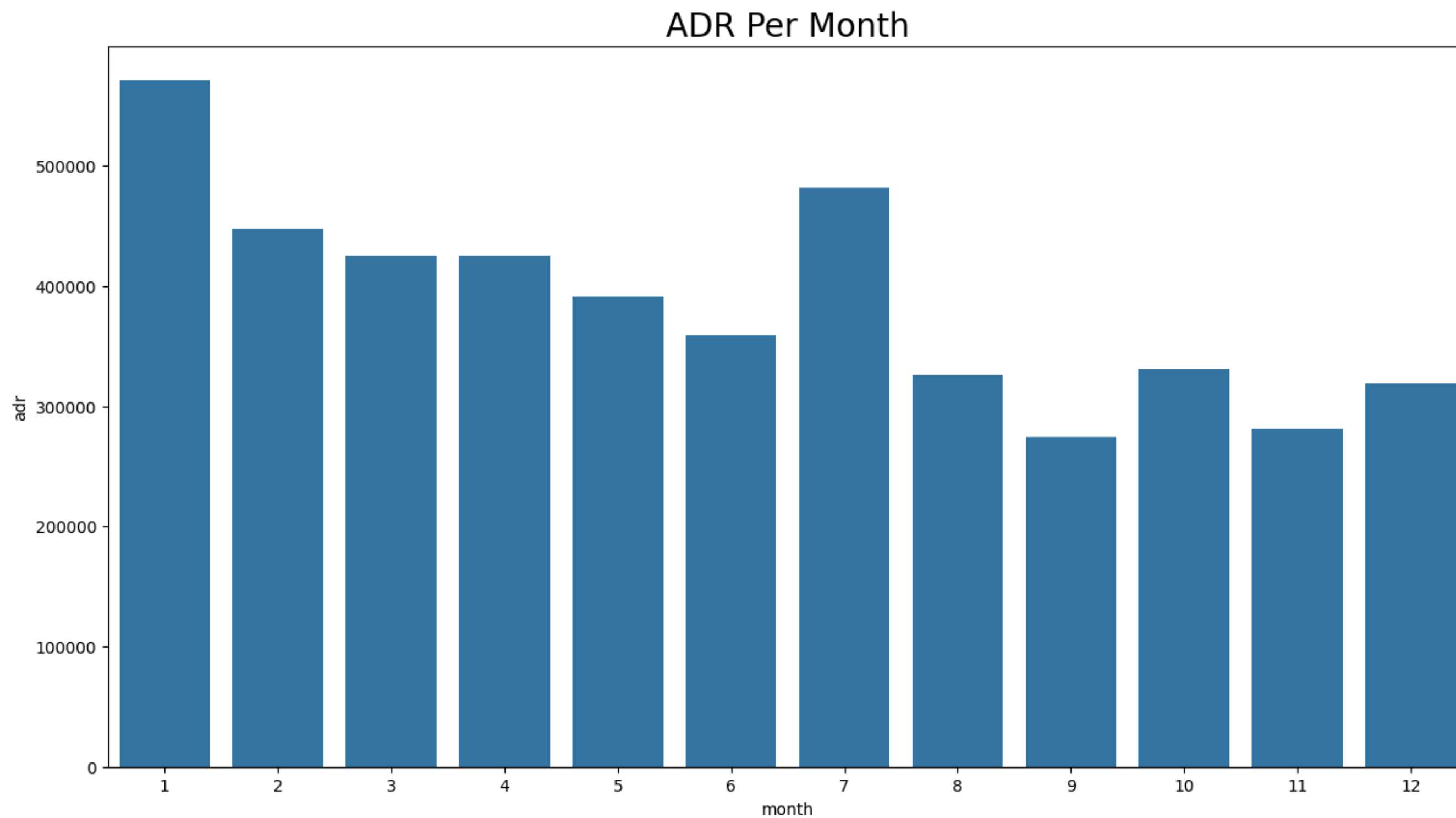
Analysis and Findings

Reservation Status Per Month

Analysis and Findings

- In the month of January, maximum hotel cancellations and minimum hotel reservations has taken place.
- In the month of August, minimum hotel cancellations and maximum hotel reservations has taken place.

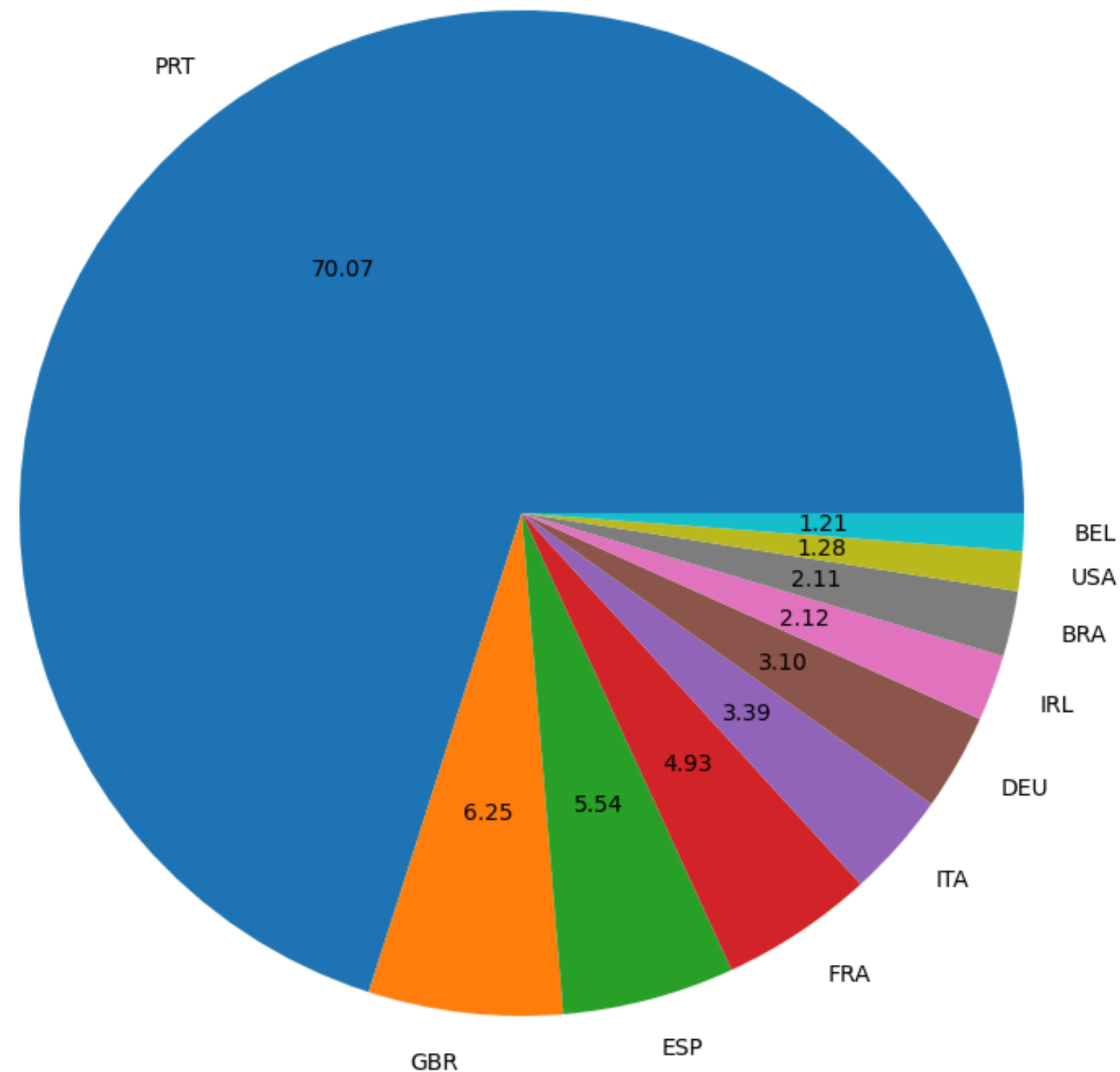# Analysis and Findings

ADR Per Month

Analysis and Findings

- In the month of January, the Average Daily Rate(ADR) Value is the maximum(cost is maximum), so maximum hotel cancellations has taken place in that month.
- In the month of August, the Average Daily Rate(ADR) Value is the minimum(cost is minimum), so minimum hotel cancellations has taken place in that month.

Analysis and Findings

Top 10 Countries with Cancelled Reservation

Portugal is the country with maximum number of hotel cancellations, i.e 70% of the reservations are cancelled.

Analysis and Findings

Booking Type	Percentage
Online TA	47.44
Offline TA/TO	20.32
Groups	16.66
Direct	10.47
Corporate	4.30
Complementary	0.62
Aviation	0.20

This table depicts that around 47% of the hotel bookings has been done in Online mode and around 20% of the bookings has been done in Offline mode.
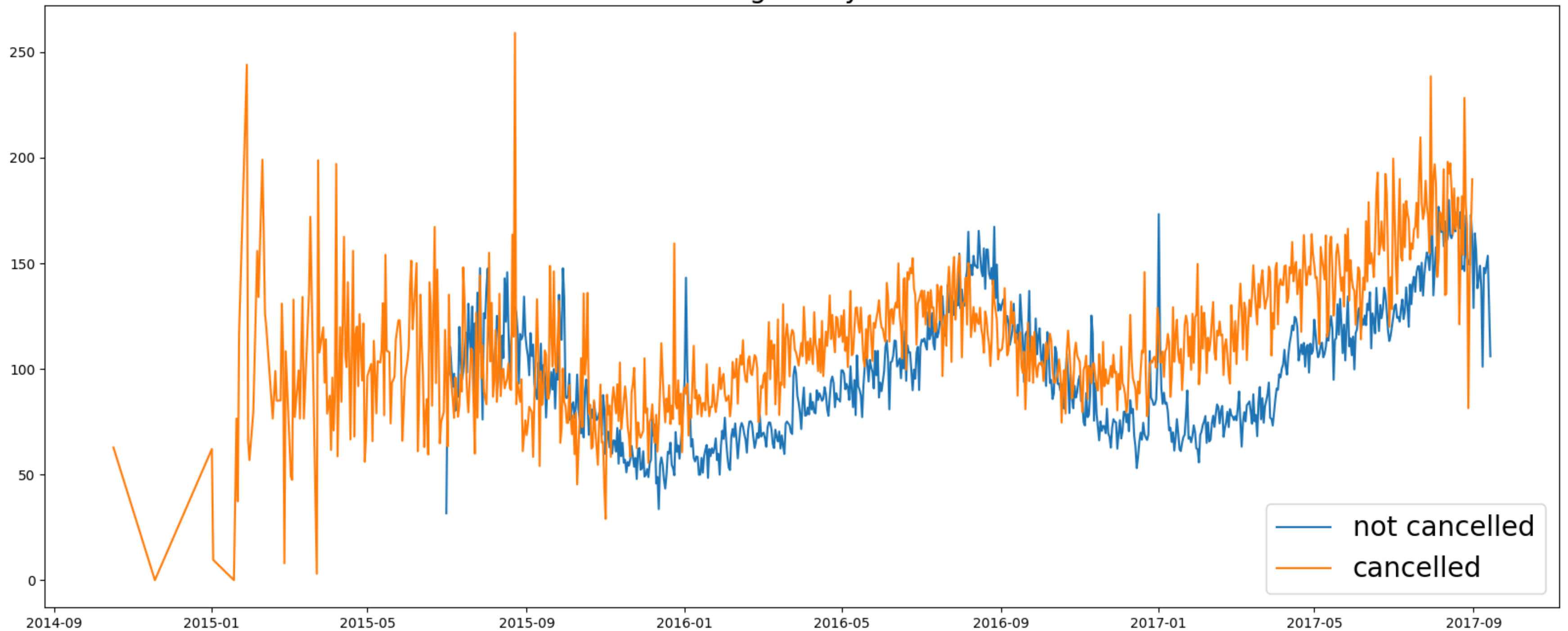
Analysis and Findings

Booking Type	Percentage
Online TA	46.97
Groups	27.40
Offline TA/TO	18.75
Direct	4.35
Corporate	2.22
Complementary	0.20
Aviation	0.12

- This table depicts that around 47% of the hotel bookings cancellations gas been done in Online mode and around 27% of the hotel bookings cancellations has been done in Offline mode.
- It is clear that maximum hotel reservations and cancellations have been done in Online mode.

Analysis and Findings

Average Daily Rate

Analysis and Findings

- As seen in the graph, whenever the Average Daily Rate(ADR) is very high, reservations are cancelled than when it is not canceled.
- So from the above analysis, it clearly proves that the higher price leads to the higher cancellation of the hotel rooms.

Limitations

- Whenever the Average Daily Rate(ADR) or the Price is very high, hotel booking cancellation takes place.
- The hotel management staff might have displayed extravagant content about their hotels, which might not be true. This can lead to bad customer experience, negative reviews & ratings, which as well might have significantly affected cancellation rates.

Reccomendations

- As the price increases, more number of hotel cancellations takes place. In order to prevent the cancellation of hotel rooms, hotels should work on the pricing strategies and try to lower the rates for specific hotels based on the locations. They can also various provide discount to the customers.

- As the ratio of Cancellation vs Non Cancellations of the hotel rooms is higher in the Resort Hotels than in the City Hotels, so the hotels should provide a reasonable discount on those hotel rooms on weekends or on holidays.

Reccomendations

- In the month of January where maximum number of hotel cancellations has taken place, the hotels can start campaigning by offering a reasonable discount in that month to increase their revenue.
- Advertisements and Promotions for the hotels in Portugal should be done at a large level and maximum facilities should be provided to these hotels.

Reccomendations

- The hotel management staff shall be careful with the customer experience to increase positive reviews.
- There should be authenticate content that is being displayed for the hotels in different marketing channels.