

Data Storytelling Report : Hotel Booking Analysis (2015 - 2017)



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Tools Used : Python (Jupyter Notebook)

Introduction :

The hotel industry faces a major challenge with frequent booking cancellations, which directly affect revenue, planning, and room management. This report analyzes hotel booking data collected between 2015 and 2017 to understand the key patterns and reasons behind cancellations. The dataset includes information from both City Hotels and Resort Hotels, covering various customer types, booking channels, and seasonal trends.

The main objective of this analysis is to identify factors such as price, location, season, and customer behavior that influence cancellation rates. By understanding these trends, hotels can develop better pricing strategies, improve service quality, and implement marketing campaigns to minimize cancellations and increase overall efficiency.

Problem Statement :

In recent years, both the City Hotel and Resort Hotel have faced many booking cancellations. Because of this, their earnings have gone down and many hotel rooms remain empty. The main goal of both hotels is to reduce these cancellations so they can increase their revenue and use their rooms better.

This report focuses on understanding the reasons behind hotel booking cancellations and finding useful insights that can help the hotels improve their business and yearly income.

Assumptions :

1. Nothing unusual happened between 2015 and 2017 that could change the data.
2. The data is still useful for understanding hotel bookings and planning better.
3. The ideas or methods we suggest will not cause any problems for the hotels.
4. The hotels are not already using the ideas we are suggesting.
5. Booking cancellations are the main reason for hotels losing money.
6. When a booking is canceled, the room stays empty for that time period.
7. Customers usually book and cancel their rooms in the same year.

Research Question :

1. What factors affect hotel booking cancellations?
2. How can we reduce the number of booking cancellations?
3. How can this analysis help hotels decide better prices and promotions?

Hypothesis :

1. More people cancel their bookings when the hotel prices are high.
2. When customers have to wait longer, they are more likely to cancel their bookings.
3. Most customers book their rooms through offline travel agents.

Analysis and Findings :



Figure 1

The bar graph above shows the percentage of bookings that were canceled and those that were not. It can be seen that many bookings were completed successfully, but about **37% of customers canceled their bookings**. This large number of cancellations affects the hotel's income and overall business performance.



Figure 2

The above graph shows the number of bookings in city hotels and resort hotels. City hotels have more bookings compared to resort hotels. This may be because resort hotels are usually more expensive than city hotels.

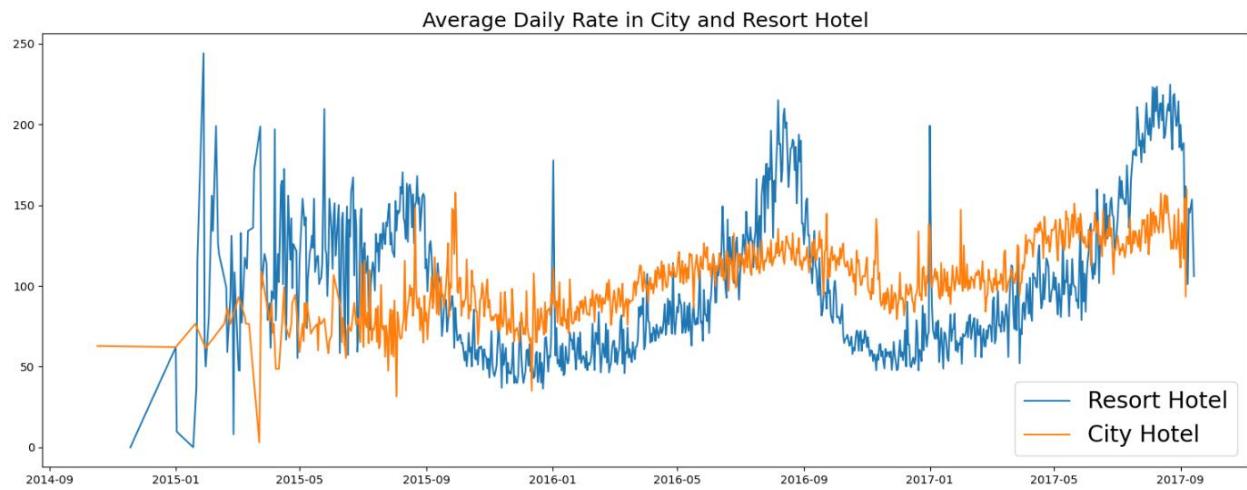


Figure 3

The line graph above shows the average daily rates of city hotels and resort hotels. On some days, city hotels have lower prices than resort hotels, while

on other days the difference is smaller. Resort hotel prices usually increase on weekends and holidays.

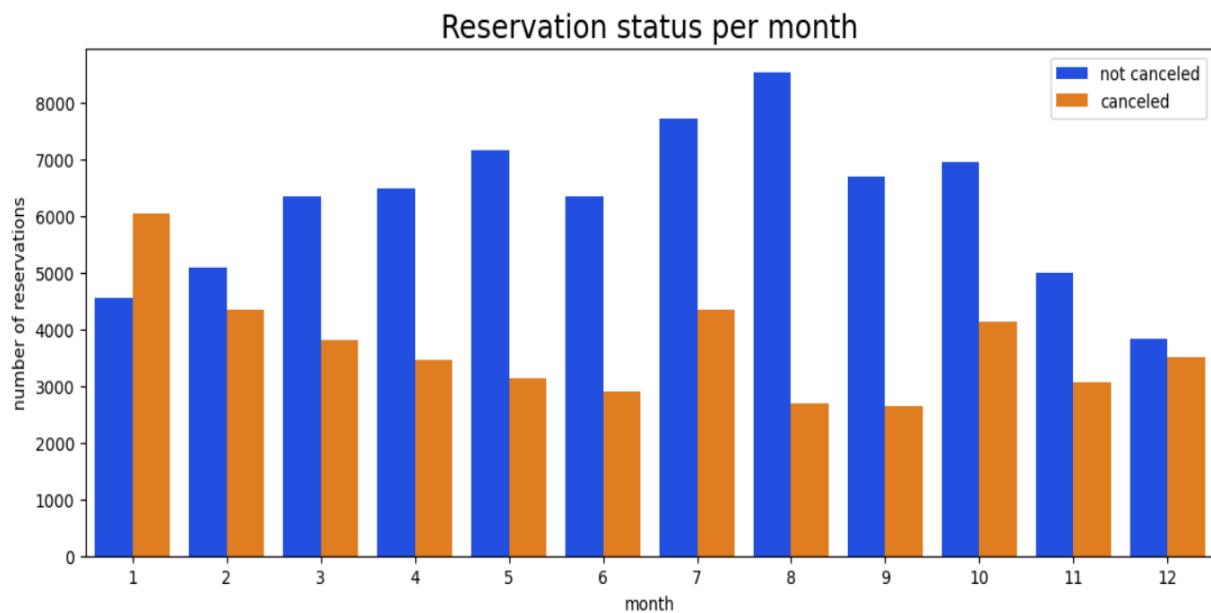


Figure 4

The grouped bar graph above shows the number of bookings in each month for both confirmed and canceled reservations. It is clear that **August** has the highest number of both confirmed and canceled bookings. This may be because it is a popular travel month. **January** also shows a high number of cancellations, possibly due to fewer travel plans after the holiday season.

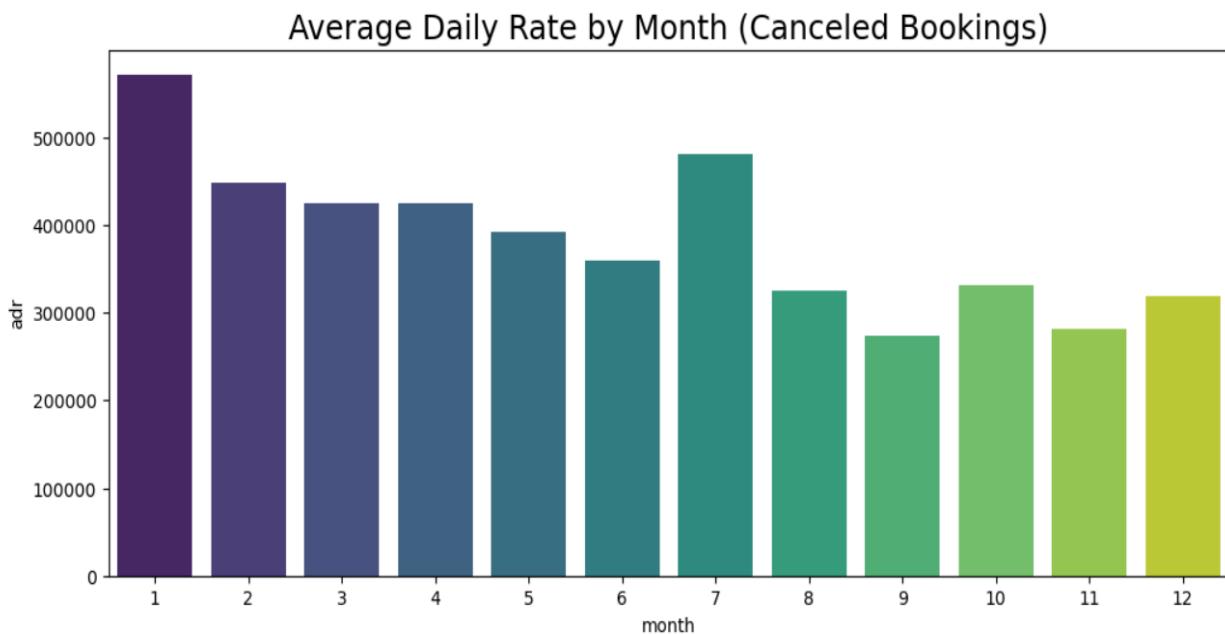


Figure 5

The bar graph above shows that hotel booking cancellations increase when the room prices are high and decrease when the prices are low. This means that the **price of the room has a strong effect on whether customers cancel their bookings or not**. Higher prices may make customers change their plans or look for cheaper options.

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

Top 10 countries with reservation canceled

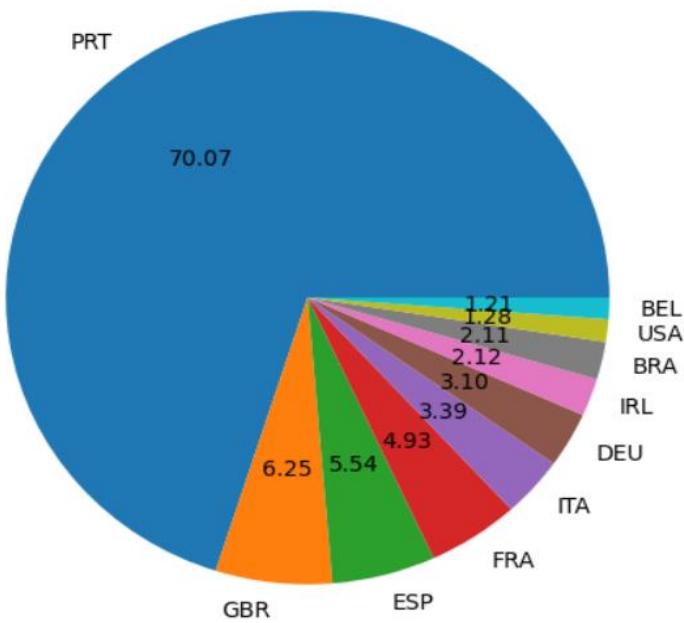


Figure 6

Let's see from where the guests are booking their hotels — whether it is **Direct, Groups, Online, or Offline Travel Agents.**

So, the **most guests (about 46%) book through online travel agencies** because it is easy and convenient. Around **27% of the bookings come from groups**, and only a **few guests (around 4%) book directly** by visiting the hotel. This shows that most people prefer using online booking platforms instead of going to the hotel in person.

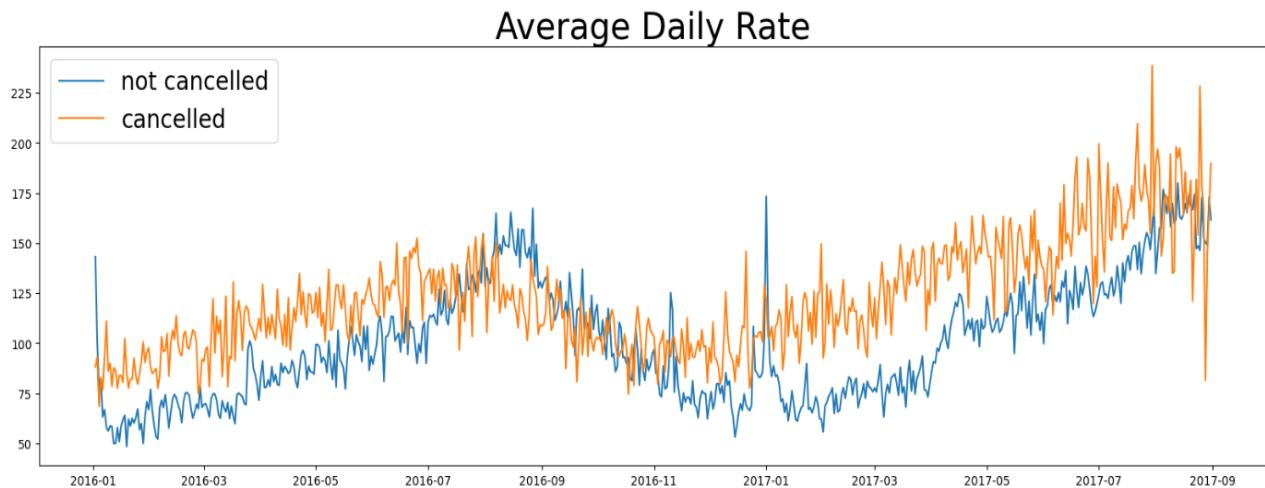


Figure 7

As we can see in the graph, cancellations mostly happen when the **average daily rate (price)** is **high**. When the prices are **low**, fewer people cancel their bookings. This clearly shows that **higher prices lead to more cancellations**.

Suggestions :

1. When prices are high, more people cancel their bookings. So, hotels should review their pricing plans and try to offer lower rates for some hotels depending on the location. Giving small discounts or special offers can also help reduce cancellations.
2. Resort hotels have more cancellations compared to city hotels. To fix this, resort hotels can offer discounts during weekends or holidays so that more people book and fewer cancel.

3. Since January has the highest number of cancellations, hotels can run marketing campaigns or offer reasonable prices during this month to attract more customers and increase their earnings.
4. Many cancellations come from Portugal, so hotels should focus on improving their service quality and facilities there to make guests more satisfied and reduce cancellations.

Conclusion :

This report helped to understand the main reasons behind hotel booking cancellations. It showed that higher prices, specific months, and booking types affect the cancellation rate. By improving pricing strategies, providing discounts, and offering better services, hotels can reduce cancellations, increase customer satisfaction, and improve their overall revenue.