

Data Analysis Report: Hotel Reservations

Business Problem Statement

The hotel industry faces significant challenges in managing reservations, particularly in understanding cancellation patterns and the factors that influence customer behaviour. Analysing reservation data can help identify trends, customer preferences, and potential areas for improvement. This analysis focuses on:

1. Understanding the cancellation rates for different types of hotels.
2. Investigating the average daily rates (ADR) over time and their relationship with cancellations.
3. Identifying the geographical distribution of cancellations.
4. Analysing the influence of market segments on booking and cancellation rates.

Data Overview

The dataset contains information about hotel reservations, including:

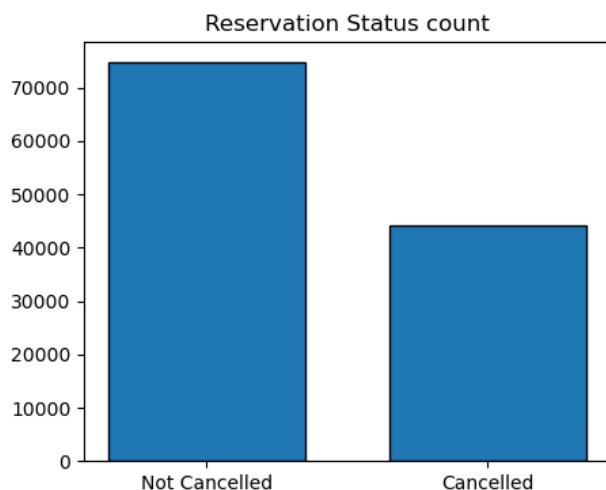
- Hotel types (City Hotel and Resort Hotel)
- Cancellation status
- Average Daily Rate (ADR)
- Reservation status date
- Market segment (e.g., Online TA, Offline TA, Groups)

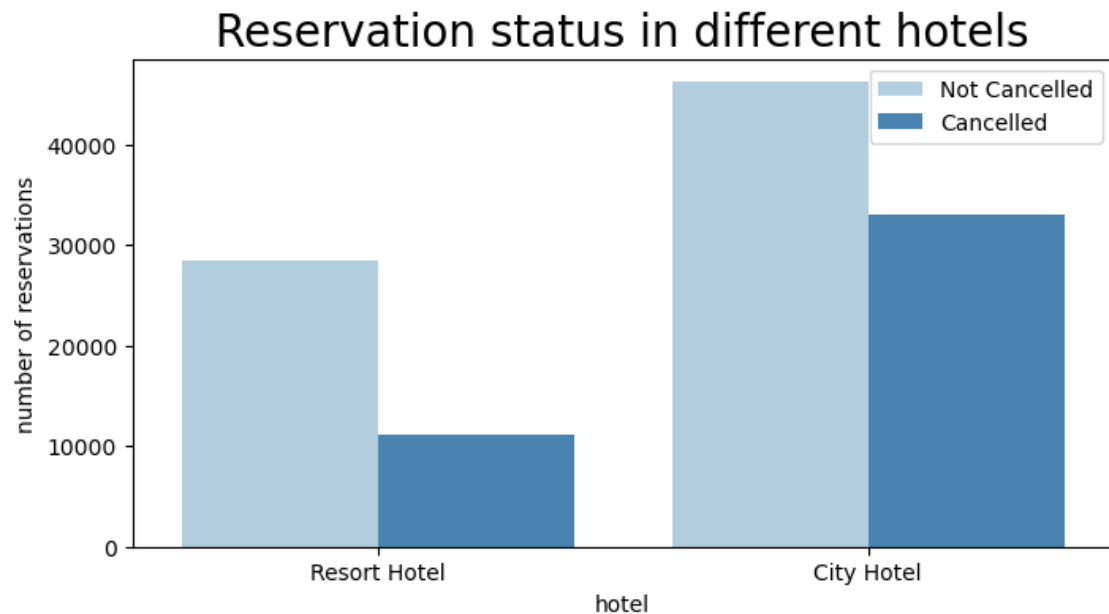
Findings

1. Cancellation Rates by Hotel Type

Visualization: Bar plots showing the proportion of cancellations for Resort and City Hotels.

- **Resort Hotel:**
 - Cancellation Rate: 27.98%
 - Non-Cancellation Rate: 72.02%
- **City Hotel:**
 - Cancellation Rate: 41.71%
 - Non-Cancellation Rate: 58.29%



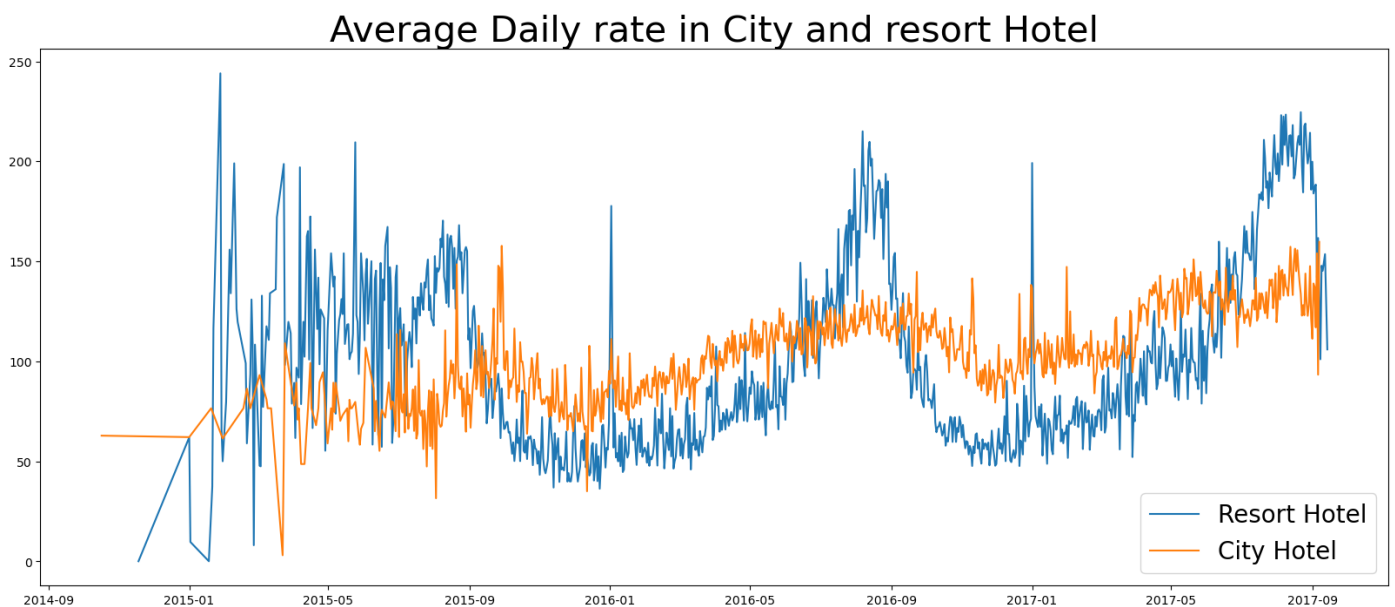


Finding: The City Hotel has a higher cancellation rate compared to the Resort Hotel, indicating potential dissatisfaction among City Hotel customers.

2. Average Daily Rate (ADR) Over Time

Visualization: Line plot comparing ADR over time for both hotel types.

- **Resort Hotel:** ADR shows fluctuations but maintains a relatively stable trend.
- **City Hotel:** ADR experiences more significant variations.



Finding: The ADR of the City Hotel may be affected by market conditions, leading to more cancellations during periods of high pricing.

3. Monthly Reservation and Cancellation Trends

Visualization: Count plot showing the number of reservations and cancellations by month.

- **Peak Cancellations:** August shows the highest number of cancellations.

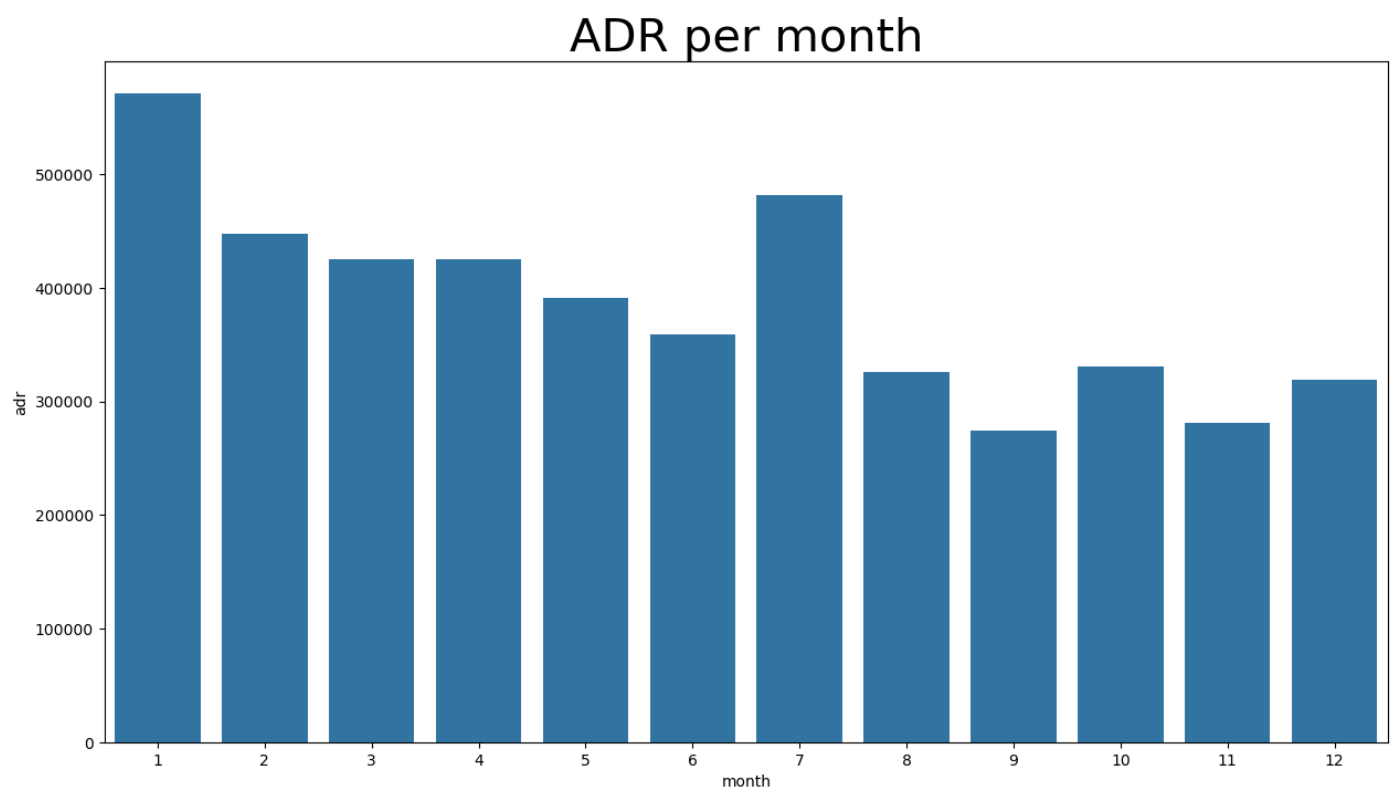
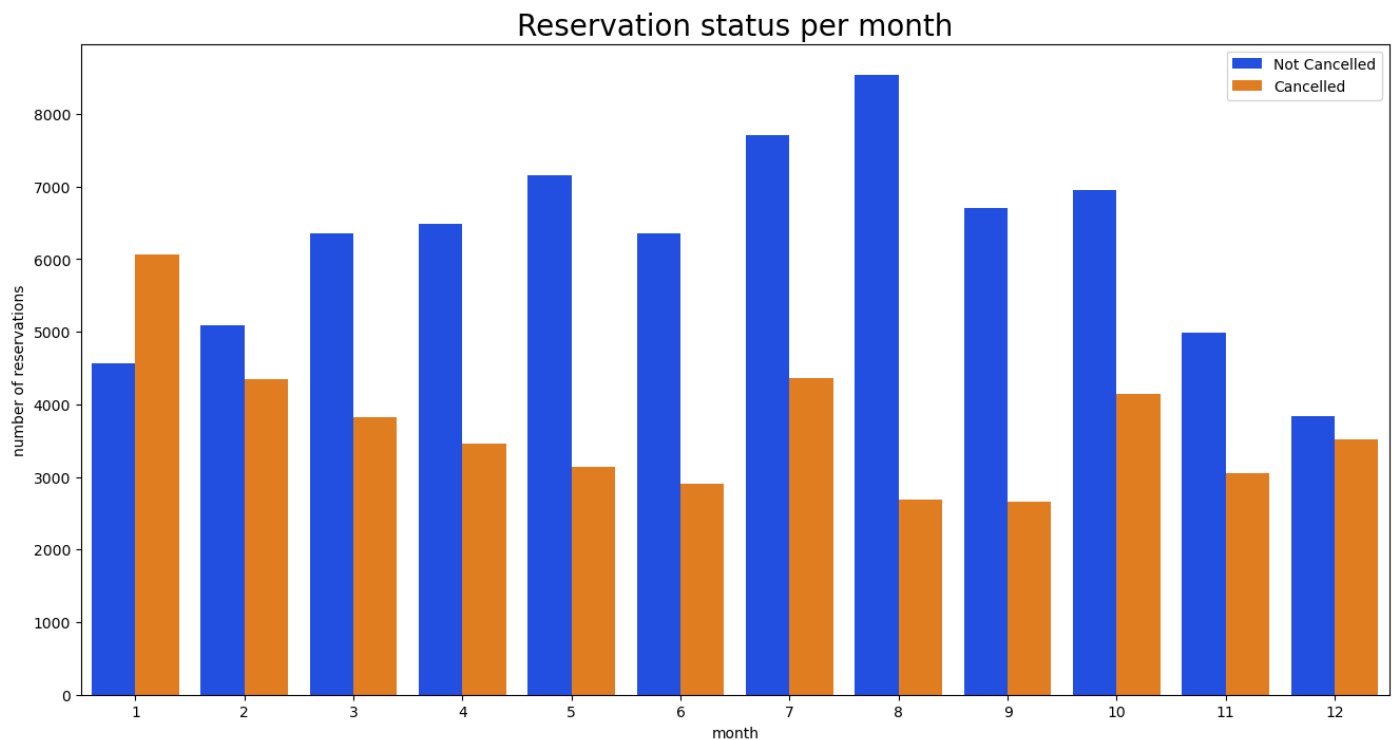
- **Peak Reservations:** January has the most bookings.

Finding: The higher cancellation rates in August could be attributed to lower prices attracting bookings that are later cancelled, while high prices in January may lead to second thoughts and cancellations.

4. ADR per Month for Cancellations

Visualization: Bar plot of ADR for cancelled reservations by month.

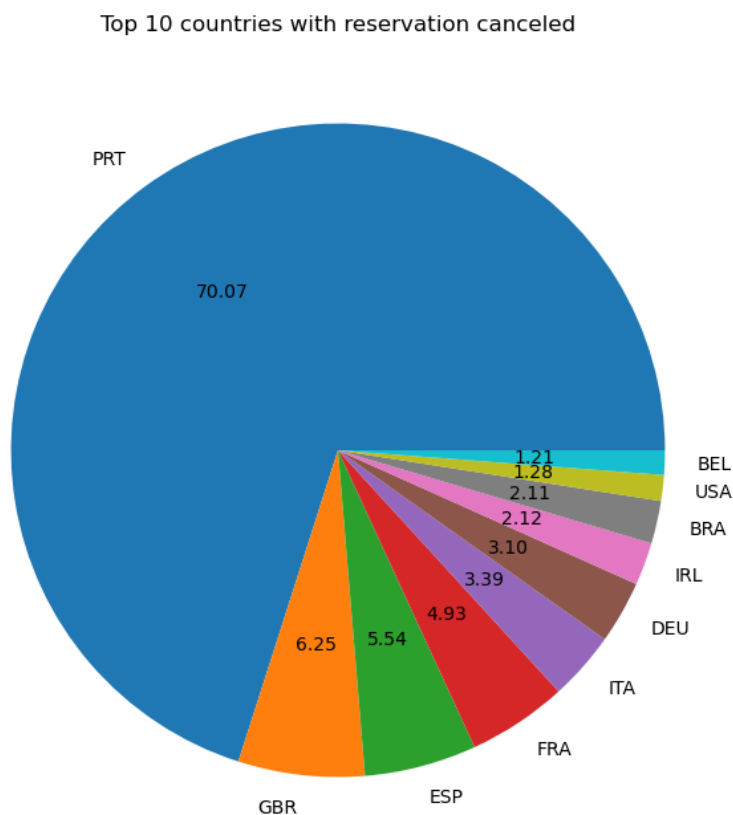
- **Finding:** The data confirms that higher ADR on January 1st correlates with increased cancellations, while lower ADR in August correlates with fewer cancellations.



5. Cancellations by Country

Visualization: Pie chart depicting the top 10 countries with the highest cancellation rates.

- **Top Country:** Portugal shows the highest cancellation rate.



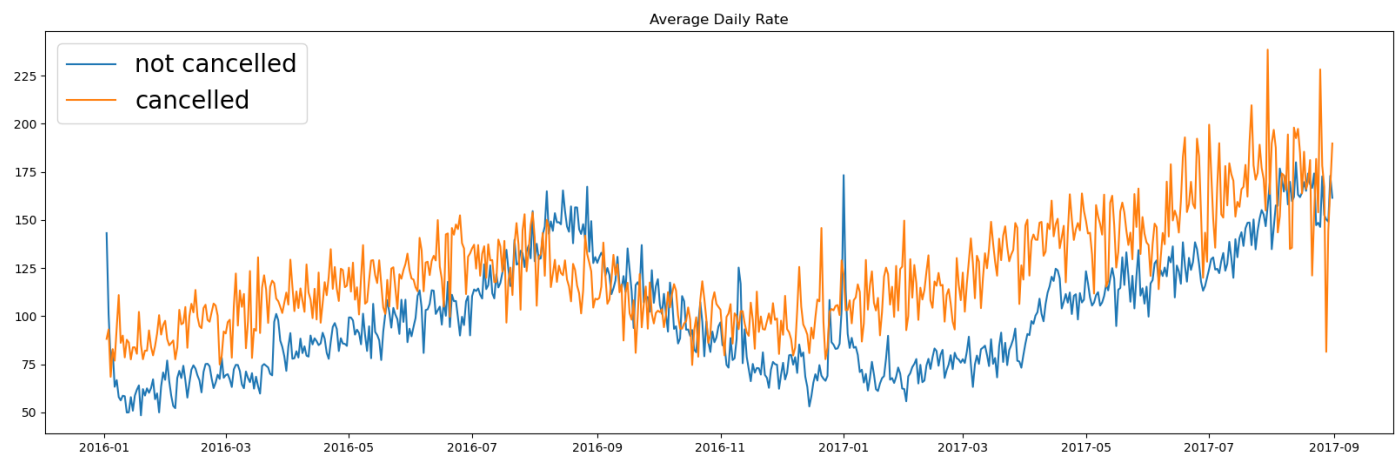
Finding: A significant number of cancellations originate from Portugal, suggesting that targeted marketing or improved services in this region could reduce cancellation rates.

6. Market Segment Analysis

Visualizations: Count and percentage plots of market segments for bookings and cancellations.

- **Market Segment Distribution:**
 - Online TA: 47.44% bookings
 - Offline TA/TO: 20.32% bookings
- **Cancellation Analysis:**
 - Online TA: 46.97% cancellations
 - Groups: 27.40% cancellations

Finding: Despite being the primary source of bookings, Online Travel Agents also account for a substantial share of cancellations, possibly due to misleading reviews or expectations.



7. ADR Comparison for Cancellations and Confirmed Reservations

Visualization: Line plot comparing the average daily rates for cancelled and non-cancelled reservations over time.

- **Finding:** The ADR for cancelled reservations tends to be higher than for confirmed reservations, reaffirming the correlation between pricing and cancellation behaviour.

Conclusions and Suggestions

1. **Targeted Strategies:** Given the higher cancellation rates for City Hotels, strategies such as targeted promotions or enhanced customer engagement could improve satisfaction and reduce cancellations.
2. **Pricing Strategy:** Monitoring ADR closely, especially in peak seasons like January, can help manage customer expectations and potentially reduce cancellations.
3. **Geographic Focus:** Since Portugal shows the highest cancellation rates, implementing localized marketing campaigns and improving service offerings could be beneficial.
4. **Market Segment Optimization:** Investigating feedback from Online Travel Agents and addressing customer concerns could help decrease cancellations from this segment, ensuring a more stable revenue stream.
5. **Monitoring Trends:** Continuously analysing monthly reservation and cancellation data will help in adapting strategies in real-time, allowing for proactive measures to enhance overall customer experience.