

HOTEL

BOOKING

CANCELLATION

REPORT

Data Analysis Project



BACKGROUND

The hospitality industry faces numerous challenges, and one of the most persistent is the unpredictability of booking cancellations. A leading international hotel chain, operating both city and resort hotels, observed a growing trend of cancellations that significantly impacted revenue, resource planning, and customer satisfaction. These cancellations occurred due to various reasons such as last-minute plan changes, long lead times, non-refundable booking terms, booking through third-party websites, and even multiple bookings made by customers to keep their options open. In an effort to understand and address this issue, the hotel's data team initiated a detailed analysis of historical booking data. The objective was to uncover patterns and factors contributing to cancellations, enabling the company to predict and reduce such occurrences. Key variables such as booking lead time, market segment, customer type, deposit type, special requests, and seasonality were analyzed. This analysis aimed to support smarter decision-making related to pricing strategies, overbooking policies, and customer engagement practices. By gaining insights into why and when cancellations are likely to happen, the hotel could optimize operations, improve forecasting, and enhance guest experience. This project plays a crucial role in building a more data-driven approach to hospitality management and reducing the financial impact of cancellations.

RESEARCH QUESTIONS

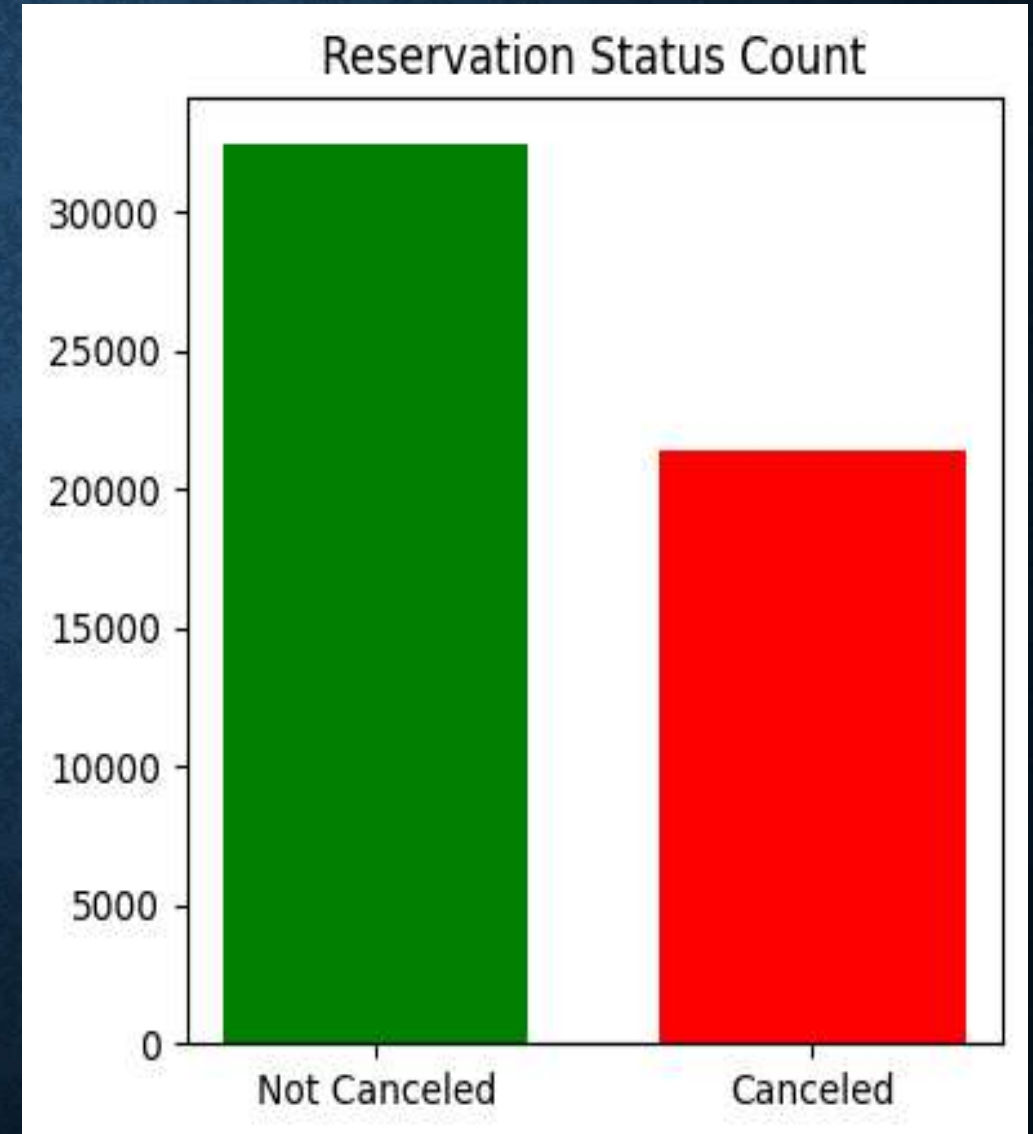
1. What are the variables that affect hotel reservation cancellations?
2. How can we make hotel reservation cancellations better?
3. How will hotels be assisted in making money pricing and promotional decisions?

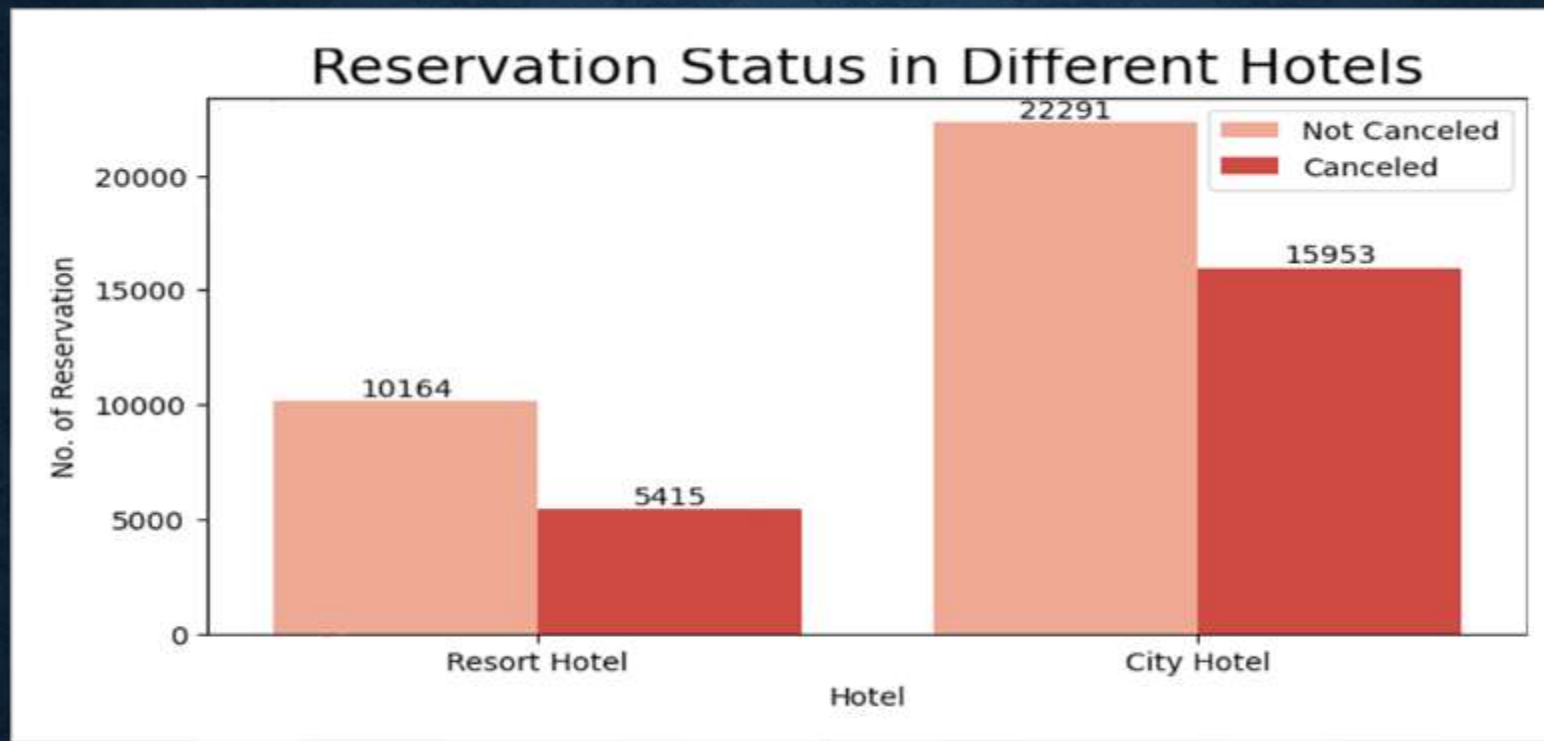
Hypothesis

1. More cancellation occurs when prices are higher?
2. When there is a longer waiting list, customers tend to cancel more frequently?
3. The majority of client coming from offline travel agents to make their reservations?

ANALYSIS & FINDINGS

1. The bar graph shows “**The Numbers of Reservations**” that had been cancelled by customers and not cancelled.
2. The **green color bar** indicated the reservations that are not cancelled.
More than 30,000 + reservations are not cancelled.
3. And, the **red colour bar** indicates the reservation that are not cancelled.
More than 20,000 + reservations the cancelled.





This chart shows the “Reservation status of the different hotels.” There are ‘Resort Hotel’ & ‘City Hotel’.

Two bars :-

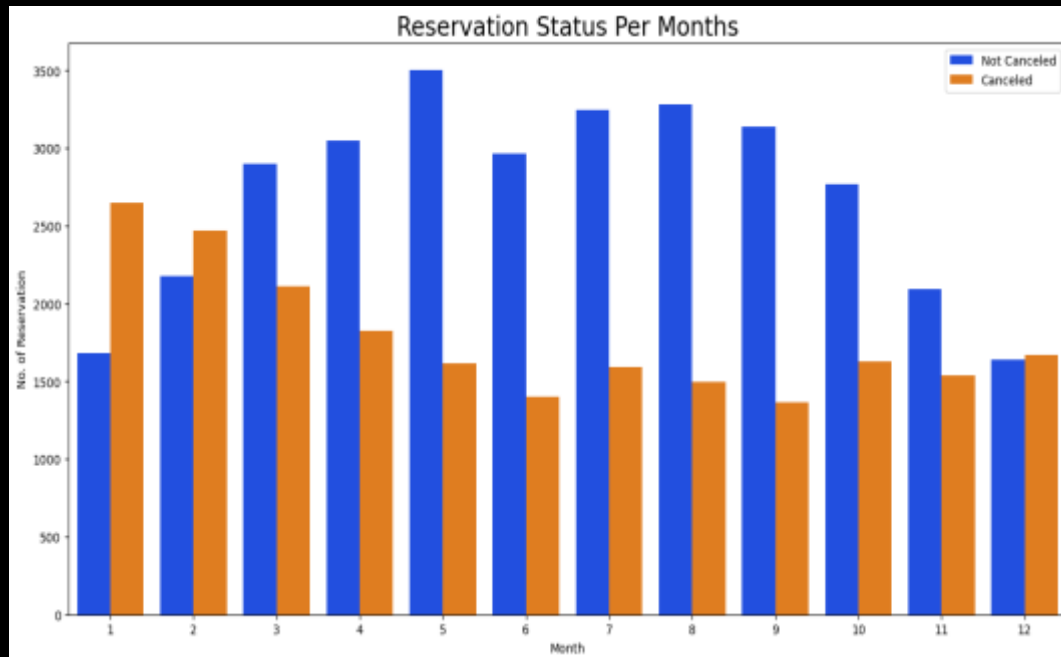
- The *brick-colored* bar shows the ‘Cancelled Reservation’ and
- The *dark pink* colored bar shows ‘Not Cancelled Reservation’.

1. The Resort Hotel has total **15,579** reservations, out of which **10,164** are not cancelled and **5,415** are cancelled reservation.

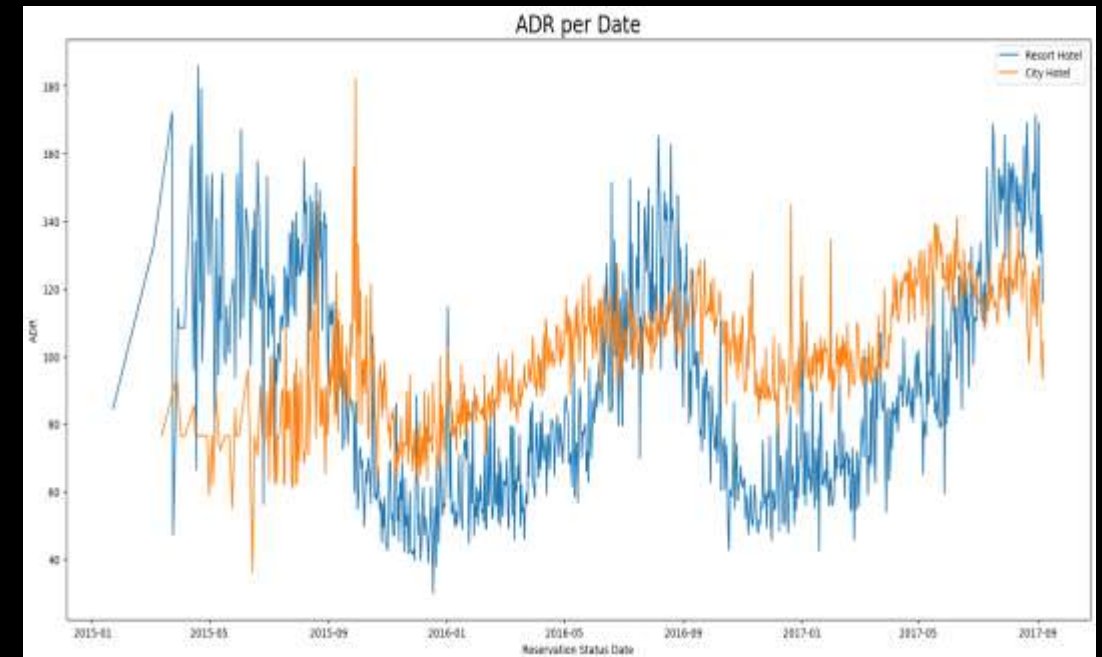
2. The City Hotel has total **38,244** reservations, out of which **22,291** are not cancelled and **15,953** are cancelled reservation.

BOOKING AFFECTS BY ADR & MONTHLY RESERVATION

Reservation Status per Month



ADR Per Date



BOOKINGS TRENDS

1. Seasonal Trends

- Both hotels show cyclical (seasonal) patterns in ADR.
- **Peaks occur around mid-year (summer months)** in each year (e.g., mid-2015, mid-2016, mid-2017).
- **Troughs occur around the end/beginning of each year**, likely due to lower tourist activity in winter.

2. Volatility

- Resort Hotel ADRs (blue) are **more volatile**, with sharper spikes and drops.
- This could indicate higher sensitivity to peak-season demand and possibly fewer pricing regulations.
- **City Hotel ADRs (orange) are more stable and smoother**, suggesting more consistent pricing strategies.

3. Comparative ADR Levels

- From 2016 onward, **City Hotel ADRs are generally higher and more stable** than Resort Hotel ADRs.
- **Before 2016**, Resort Hotel ADRs are often higher, especially during peaks.
- This **shift suggests a possible change in pricing strategy or demand dynamics**.

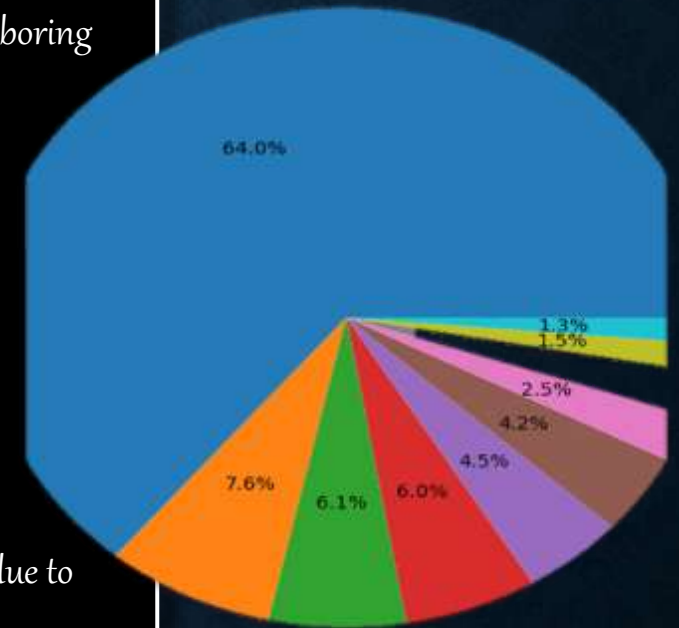
4. Outliers and Spikes

- There are several **spikes in both lines**, especially:
 - Mid-2015 and mid-2016 for Resort Hotel.
 - Some occasional sharp increases in City Hotel ADR as well, but fewer and less extreme.

Most Cancellation Bookings With Top 10 Countries

The pie chart titled "**Top 10 Countries with Most Canceled Reservations**" highlights the distribution of canceled hotel reservations among the top ten contributing countries.

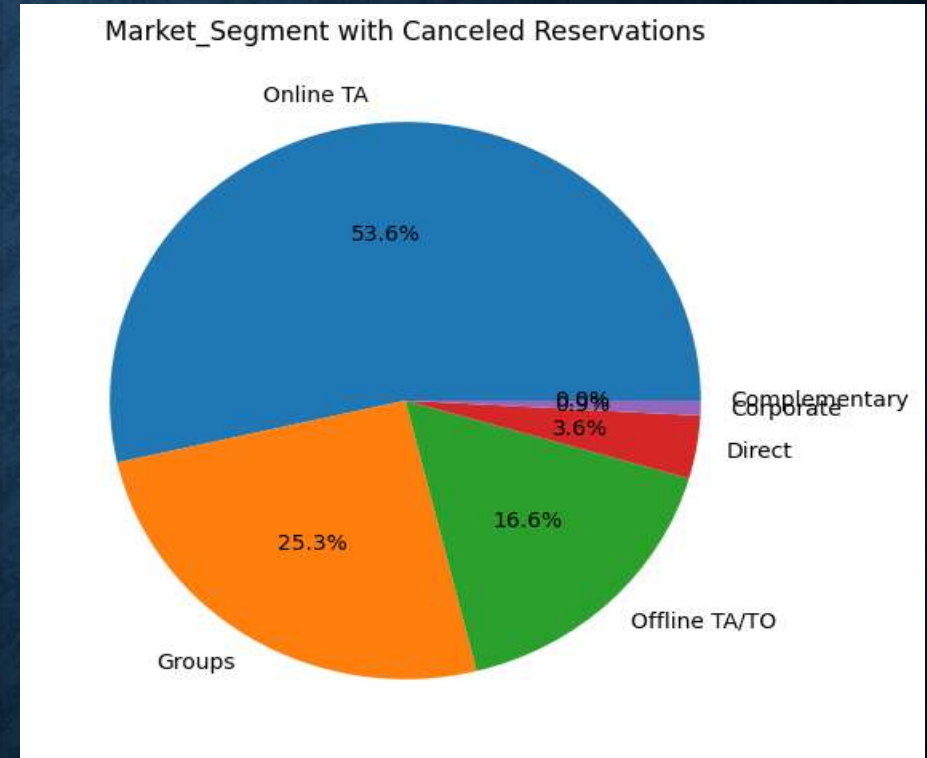
- **Portugal (PRT)** accounts for the highest share of cancellations at **64%**, indicating a significant number of domestic travelers cancel their bookings.
- **United Kingdom (GBR)** follows with **7.6%** of the cancellations, the highest among international travelers.
- **France (FRA)** and **Spain (ESP)** contribute **6.1%** and **6.0%** respectively, showing notable cancellation behavior from neighboring countries.
- Other countries in the top 10 include:
 - **Italy (ITA)** – 4.5%
 - **Germany (DEU)** – 4.2%
 - **Ireland (IRL)** – 2.5%
 - **Brazil (BRA)** – 2.3%
 - **Belgium (BEL)** – 1.5%
 - **China (CHN)** – 1.3%
- The majority of cancellations come from **European countries**, suggesting easier travel flexibility and shorter planning timeframes.
- The low percentages from **Brazil and China** may reflect fewer bookings from those regions or more committed travelers due to long-distance travel.
- The extremely high domestic cancellation rate (Portugal) may warrant **investigation into local booking behavior**, possibly linked to:
 - Overbooking habits
 - Flexible travel schedules
 - Inconvenient cancellation policies



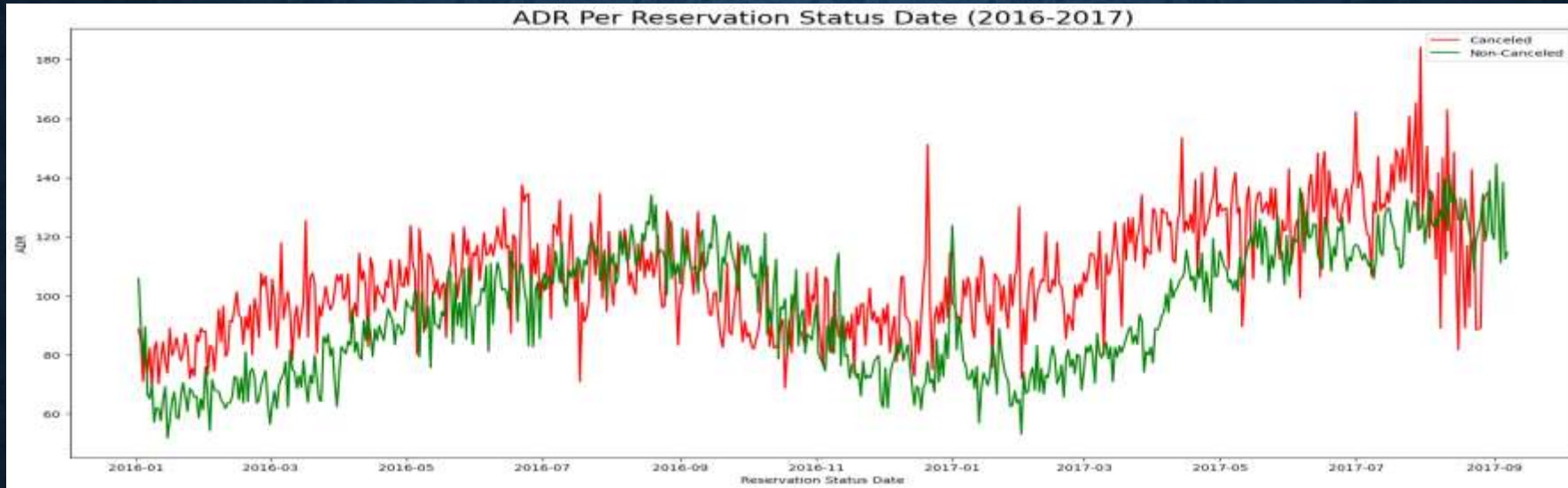
BOOKINGS CANCELLATION AS PER MARKET SEGMENTS

The pie chart titled "**Market-Segment with Canceled Reservations**":

1. **Online Travel Agencies (Online TA)** account for the highest share of canceled reservations at **53.6%**, indicating that bookings made online are significantly more prone to cancellations.
2. **Group bookings** contribute to **25.3%** of the cancellations, showing that large-scale or event-based reservations may have high uncertainty or dependencies, leading to changes in plans.
3. **Offline Travel Agencies/Tour Operators (Offline TA/TO)** hold **16.6%** of the cancellations, suggesting moderate reliability compared to online channels.
4. **Direct bookings** constitute only **3.6%**, implying that guests who book directly with the hotel are more likely to follow through with their reservations.
5. **Corporate bookings** and **Complementary bookings** have **negligible cancellation rates (0.9% and 0.0%)**, reflecting their stability, likely due to business commitments or guaranteed stays.



IS HIGHER ADR LEADS TO HIGH CANCELLATION?



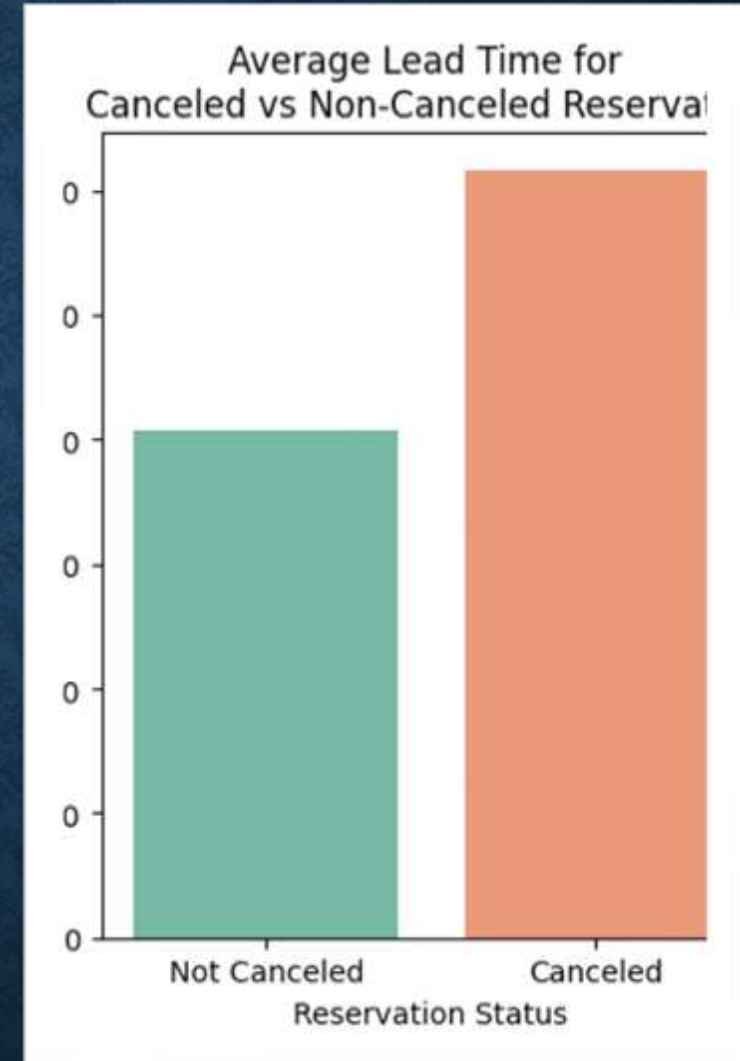
The line graph “ADR Per Reservation Status Date (2016—2017)”, we can hypothetically suggest that **higher ADR (Average Daily Rate) may be associated with a higher cancellation rate**. Here's the reasoning:

1. The **red line (Canceled bookings)** consistently trends **above the green line (Non-Canceled bookings)** throughout the time period, indicating that reservations with higher ADRs are more likely to be canceled.
2. There are **spikes in ADR for canceled bookings**, often reaching well above 150, while the non-canceled bookings generally remain below 140, suggesting that customers may back out more frequently when prices are higher.
3. The gap between the ADR of canceled and non-canceled bookings is **particularly wide during peak seasons** (e.g., summer and holidays), reinforcing the idea that expensive reservations may be more vulnerable to cancellations.
4. This pattern may reflect **price sensitivity among customers**, where higher room rates lead to re-evaluation and potential cancellation of plans.

- Canceled reservations have a significantly higher average lead time (around 125 days) compared to non-canceled reservations (about 83 days).

- Longer lead times may increase the likelihood of cancellations, possibly due to changes in travel plans over time.

- Guests booking closer to their stay date are more likely to follow through, indicating higher commitment in short lead time bookings.





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