

Business Problem

In recent years, both the City Hotel and Resort Hotel have experienced high cancellation rates. These cancellations have led to several challenges, including reduced revenue and suboptimal use of hotel rooms. Consequently, the primary goal for both hotels is to reduce cancellation rates in order to enhance their efficiency in generating revenue. This report focuses on analyzing the factors contributing to hotel booking cancellations and providing comprehensive business advice to address this issue.



Assumptions

1. No unusual occurrences between 2015 and 2017 have had a substantial impact on the data used.
2. The data is current and relevant for analyzing and formulating potential plans for the hotels.
3. There are no unforeseen negative consequences for the hotels in implementing any recommended strategies.
4. The hotels are not currently using any of the suggested solutions.
5. Booking cancellations are the most significant factor affecting revenue generation.
6. Cancellations result in rooms remaining vacant for the duration they were originally booked.
7. Clients cancel their reservations within the same year they made the bookings.

Research Questions

1. What are the variables that affect hotel reservation cancellations?
2. How can hotel reservation cancellations be reduced?
3. How can the analysis assist hotels in making informed pricing and promotional decisions?

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Hypotheses

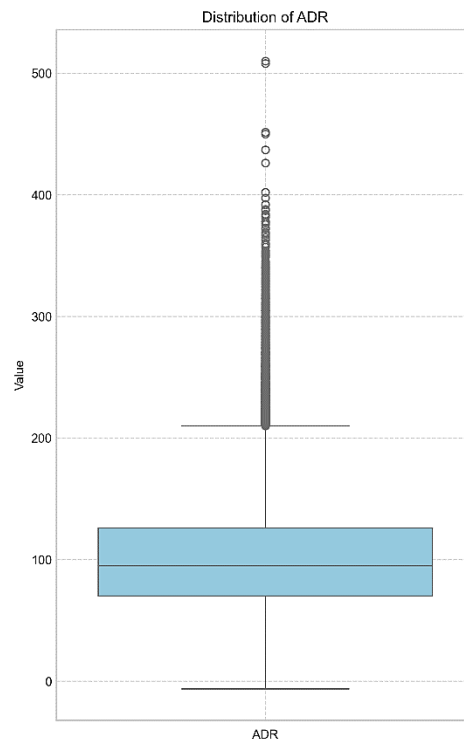
1. Higher prices lead to more cancellations.
2. Longer waiting lists result in a higher frequency of cancellations.
3. The majority of clients make their reservations through offline travel agents.

Findings

ADR Distribution Analysis

The box plot analysis of the Average Daily Rate (ADR) reveals that most bookings are clustered around a median value of just over \$100, indicating stable and consistent pricing for the majority of guests. The presence of several outliers above the \$400 mark suggests opportunities to capitalize on high-value bookings, such as premium rooms or exclusive packages.

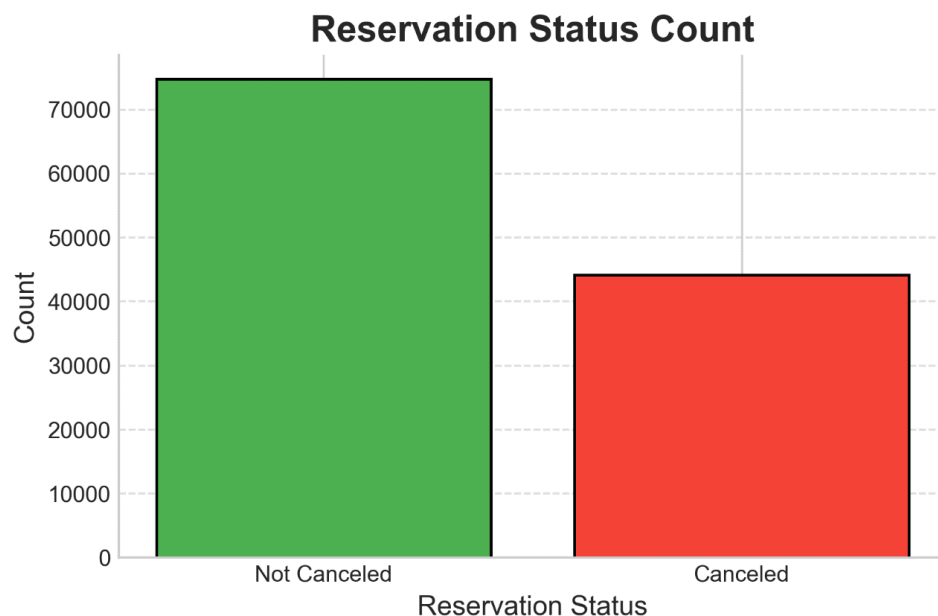
This insight highlights the effectiveness of the current pricing strategy while also pointing to potential areas for revenue growth through targeted marketing and strategic pricing of premium offerings. Overall, the analysis supports the optimization of revenue management practices to enhance profitability.



Reservation Status Count

The bar chart illustrates the count of hotel reservations categorized into two groups: "Not Canceled" and "Canceled." The chart shows that a significant proportion of reservations are successfully completed, with over 70,000 bookings in the "Not Canceled" category. However, cancellations are also substantial, with nearly 45,000 bookings being canceled.

This visualization highlights the challenge of high cancellation rates, which is a critical issue for the hotel. Addressing the factors contributing to these cancellations could lead to improved room occupancy and revenue stability.



Reservation Status in Different Hotels

The bar chart compares the number of reservations and cancellations between two types of hotels: Resort Hotel and City Hotel.

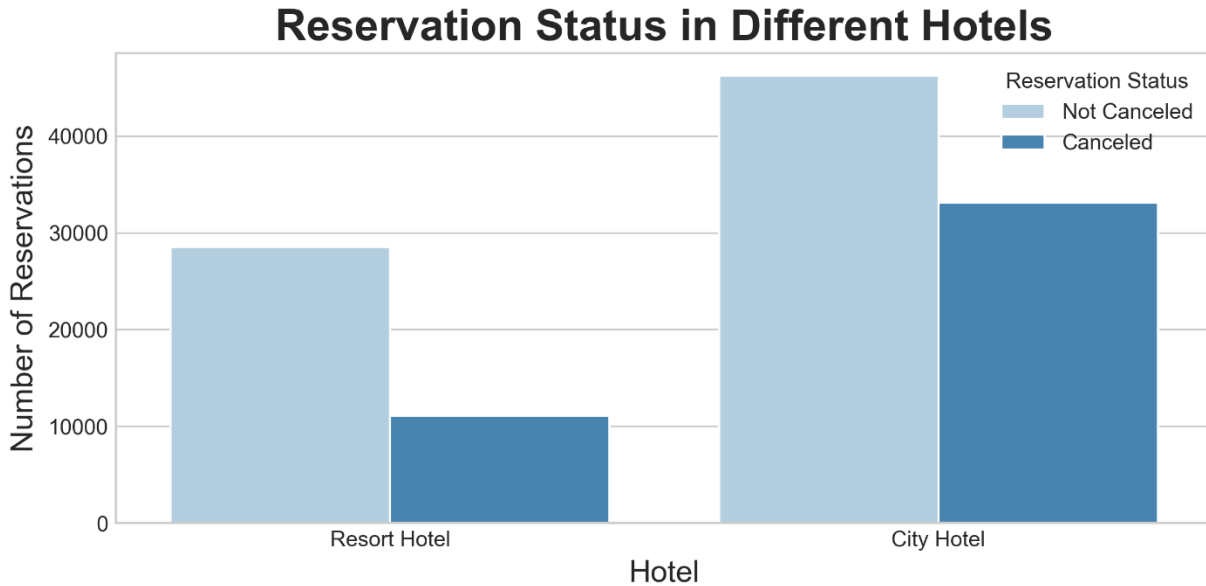
1. City Hotel:

- The City Hotel has a higher overall number of reservations, with more than 40,000 bookings that were not canceled.
- However, it also experiences a significant number of cancellations, with nearly 30,000 bookings being canceled.

2. Resort Hotel:

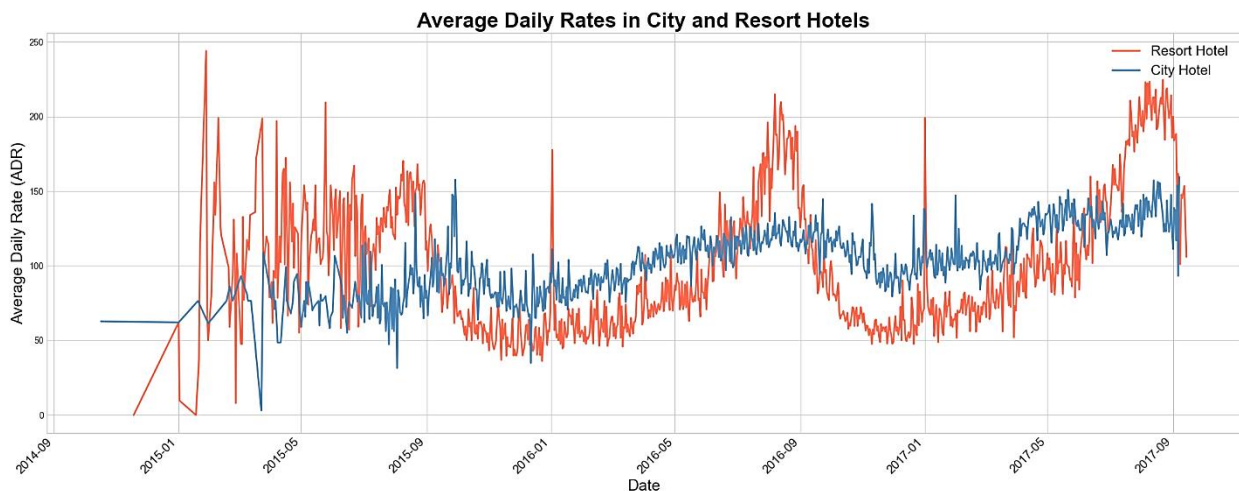
- The Resort Hotel has fewer reservations overall, with approximately 30,000 bookings that were not canceled.
- The number of cancellations is also lower, with around 15,000 bookings being canceled.

This comparison indicates that while the City Hotel attracts more bookings, it also faces a higher cancellation rate compared to the Resort Hotel. Understanding the reasons behind these cancellations could be crucial for both hotels in improving their booking retention and overall revenue.



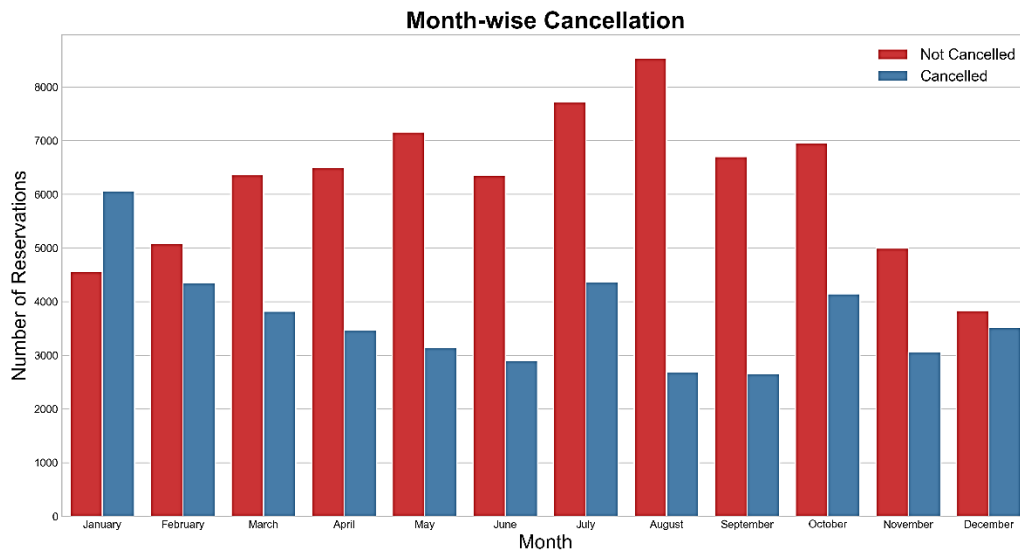
Average Daily Rates (ADR) in City and Resort Hotels

The provided chart shows the Average Daily Rates (ADR) for City Hotel and Resort Hotel from 2014 to 2017. The Resort Hotel generally maintains a higher ADR compared to the City Hotel. Both hotels experience fluctuations in ADR throughout the period, with some seasonal patterns evident. The Resort Hotel's pricing strategy appears to be effective in targeting a premium market. Further analysis could explore correlations between ADR and other factors, as well as segment-specific trends.



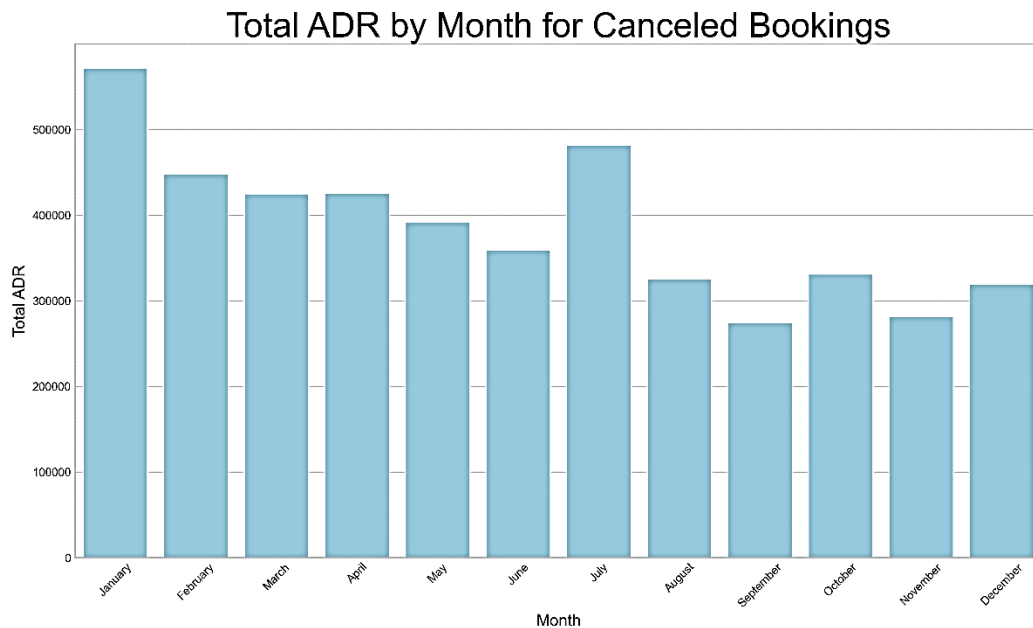
Analysis of Month-wise Cancellation Trends

- **Seasonal Patterns:** Cancellation rates exhibit a clear seasonal pattern, with higher rates observed in the earlier months (January to April) and lower rates in the later months (May to December).
- **Overall Trend:** The number of reservations tends to increase from January to April and then decrease from May to August, with another increase from September to December.
- **Cancellation Rate Comparison:** "Not Cancelled" reservations consistently have higher cancellation rates than "Cancelled" reservations.



Total ADR by Month for Canceled Bookings

- **Highest ADR Month:** The month with the highest Total ADR for canceled bookings appears to be **April**.
- **Lowest ADR Month:** The month with the lowest Total ADR for canceled bookings appears to be **October**.
- **Seasonal Patterns:** There seems to be a general trend of higher ADRs in the earlier months (January to April) and lower ADRs in the later months (May to December). However, there are exceptions to this pattern, such as the relatively high ADR in August.
- **Month-to-Month Fluctuations:** The ADR for canceled bookings varies significantly from month to month. There are periods of rapid increases and decreases, indicating that factors beyond the overall seasonal trend influence the ADR.



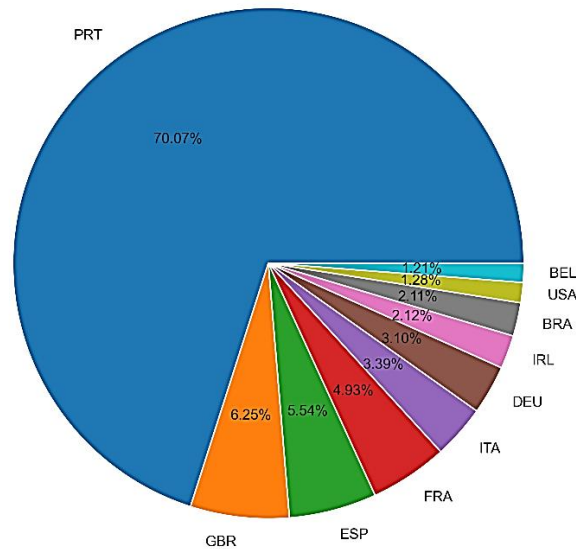
Top 10 Countries by Cancellation Rate

The image depicts a pie chart showcasing the "Top 10 Countries by Cancellation." It appears cancellations might be related to hotel bookings, flights, or some other service, but the specific context isn't provided in the chart itself.

- **Dominant Country:** Portugal (PRT) has an overwhelming share of cancellations, accounting for 70.07% of the total.
- **Remaining Countries:** The other nine countries have considerably smaller shares.
- **Order of Magnitude:** After PRT, the next highest shares belong to Belgium (BEL) at 6.25%, followed by the United Kingdom (GBR) at 5.54%, and Spain (ESP) at 4.93%. The remaining countries have shares below 4%.

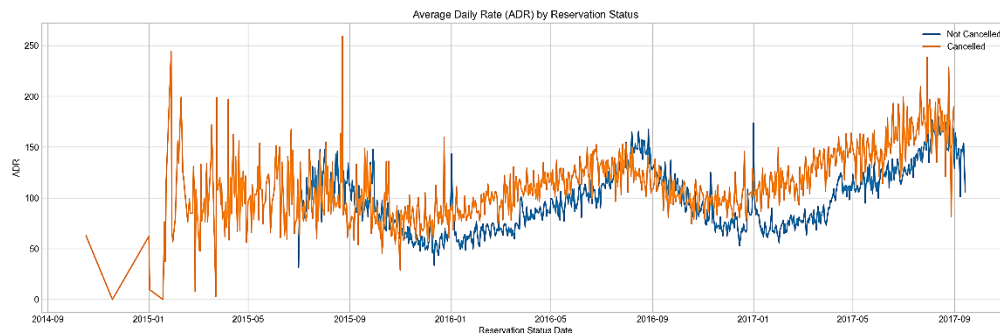
Overall, the chart highlights a significant skew towards cancellations from Portugal, with the remaining countries representing a much smaller portion of the total cancellations.

Top 10 Countries by Cancellation



Average Daily Rate (ADR) of hotel reservations over time

The line chart reveals trends in Average Daily Rate (ADR) for hotel reservations from September 2014 to September 2017, differentiating between canceled and not canceled bookings. Both categories show a general upward trend in ADR over this period. However, canceled bookings exhibit significantly higher volatility, with the orange line representing these bookings displaying dramatic spikes and dips compared to the steadier blue line of not canceled bookings. Interestingly, the relationship between ADRs for canceled and not canceled bookings isn't consistent, sometimes moving in tandem and other times diverging, suggesting a complex interplay of factors influencing pricing and cancellation behavior.



Suggestions for Hotel Cancellation Rate Reduction

1. Pricing Strategies:

- **Dynamic Pricing:** Implement dynamic pricing models to adjust room rates based on demand and other factors.
- **Location-Based Discounts:** Offer discounts for hotels in less popular locations or during off-peak seasons.
- **Personalized Pricing:** Use data analytics to offer personalized discounts to repeat customers or guests with specific preferences.

2. Resort Hotel Strategies:

- **Weekend and Holiday Discounts:** Provide attractive discounts on weekends or holidays to incentivize bookings.
- **Value-Added Services:** Offer additional amenities or services to justify higher rates during peak seasons.
- **Flexible Cancellation Policies:** Consider offering flexible cancellation policies with minimal penalties to encourage bookings.

3. Marketing and Promotions:

- **Targeted Campaigns:** Launch targeted marketing campaigns in January to attract more guests.
- **Special Offers:** Create enticing offers like early-bird discounts or package deals.
- **Social Media Engagement:** Utilize social media platforms to promote the hotel and engage with potential guests.

4. Quality Improvement:

- **Customer Feedback:** Actively solicit and address customer feedback to identify areas for improvement.
- **Staff Training:** Provide ongoing training to staff to enhance their skills and customer service.
- **Amenities and Facilities:** Ensure that the hotel's amenities and facilities meet or exceed guest expectations.

By implementing these strategies, hotels can effectively reduce cancellation rates, increase revenue, and improve overall guest satisfaction.

Dataset Link: <https://www.kaggle.com/datasets/mojtaba142/hotel-booking>