

Investigate Business Hotel using Data Visualization



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Data Science enthusiast with a bachelor's degree in information systems at STMIK Pontianak. Passionate in data science, data analysis, machine learning and loves learning new things related to technology. Have experience in warehousing field for 4 years. Currently looking for an opportunity to work in the data field.

“It is very important for a company to always analyze its business performance. On this occasion, we will explore the business in the hospitality sector. The focus we are aiming for is to find out our customers' behavior in making hotel reservations, and its relationship to the hotel booking cancellation rate. The results of the insights we find will be presented in the form of data visualization to make it easier to understand and more persuasive. ”

Handle Missing Values

There are several columns that have null values, namely `company`, `agent`, `city` and `children`. For the `company`, `agent` and `children` columns, the null value will be filled with 0 because some rows have NaN values that indicate unknown values, and for the `city` column, the null value will be filled with 'unknown'.

Replace inappropriate values

- Replace the 'Undefined' value in `meal` column to 'No Meal'
- Replace `'children'`, `'agent'`, `'company'`, `'days_in_waiting_list'`, `'required_car_parking_spaces'`, `'total_of_special_requests'` columns data type from float64 to int64

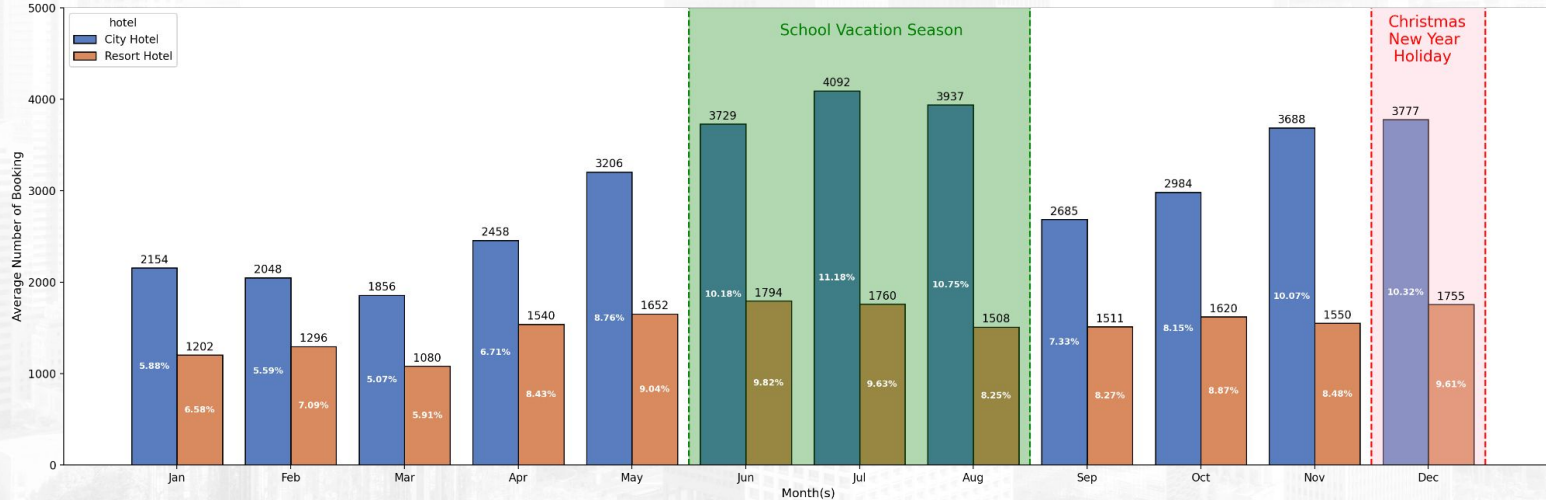
Drop unnecessary data

- Drop data rows that have 0 `total_guest` and `total_stay_duration` values because it means the booking is invalid.

Monthly Hotel Booking Analysis Based on Hotel Type

Average Number of Hotel Bookings per Month Over Year
Based on Hotel Types

June, July, and August were the months with the most hotel bookings. City hotels reached the highest average number of hotel bookings of 11.18% in July and resort hotels reached 9.82% in June. This can happen because that month is the school vacation season. An increase in the number of bookings also occurred in December with city hotels by 10.32% and resort hotels by 9.61%. This can occur due to the Christmas and New Year holidays.



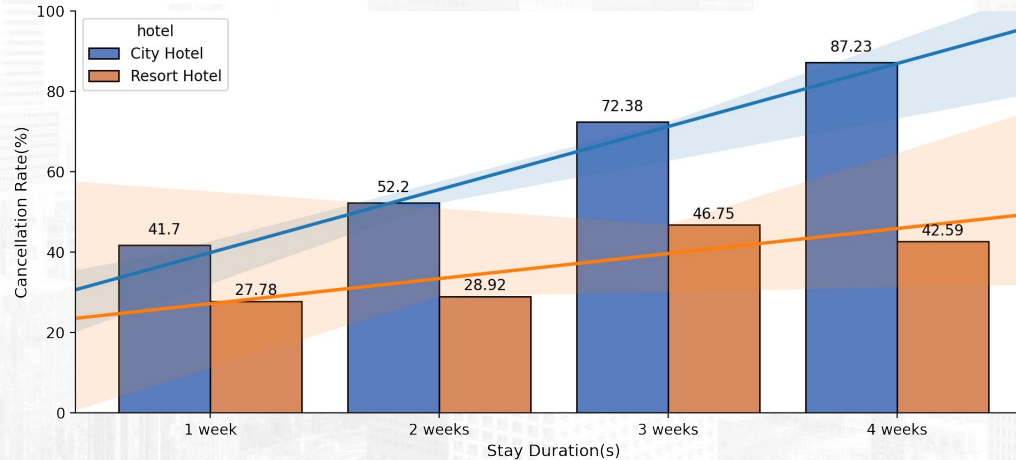
- June, July, and August are the peak months for hotel bookings.
- These two types of hotels reached the highest bookings in July for city hotels at 11.18% (4092 bookings) and in June for resort hotels at 9.63% (1760 bookings). This can occur due to the holiday season for schools.
- An increase in hotel booking trend also occurred in December, which amounted to 10.32% (3777 bookings) for city hotels and 9.61% for hotel resorts (1755 bookings). This can occur due to the Christmas and New Year holidays.

There is a positive correlation between the duration of stay and the cancellation rate of hotel reservations

The longer the customer's stay, the higher the booking cancellation rate.

The most canceled duration of stay for city hotels occurs at the duration of 4 weeks.

While the most canceled duration of stay for resort hotels occurs in the duration of 3 weeks.

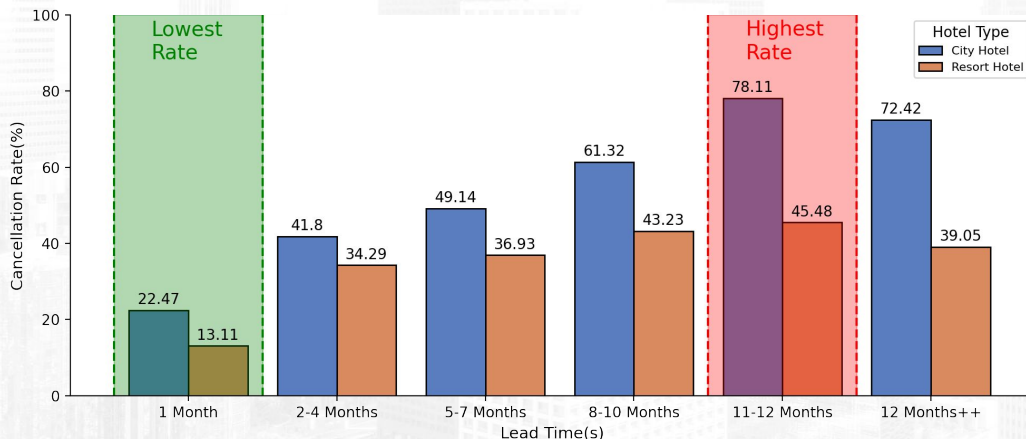


- There is a positive correlation between the booking cancellation ratio and the duration of stay for each hotel type. The longer the duration of stay, the higher the booking cancellation ratio.
- The most canceled duration of stay for city hotels occurs at the duration of 4 weeks (87.23%). While the most canceled duration of stay for resort hotels occurs in the duration of 3 weeks (46.75%).
- There are several possibilities as to why this might happen. Some examples include sudden emergencies that have to be canceled, vacation plans that have changed, or purely human errors.

Impact Analysis of Lead Time on Hotel Bookings Cancellation Rate

**Hotel booking cancellation rate
per lead time by hotel type**

Both types of hotels have the lowest cancellation rate at a lead time of 1 month (city hotel = 22.47%, resort hotel = 13.11%), while at a lead time of 11-12 months there is the highest cancellation rate (city hotel = 78.11%, resort hotel = 45.48%).



- Both types of hotels have the lowest cancellation rate at a lead time of 1 month (city hotel = 22.47%, resort hotel = 13.11%)
- Both types of hotel also have the highest cancellation rate at a lead time of 11-12 months (city hotel = 78.11%, resort hotel = 45.48%).
- Significant growth in cancellation rate occurs when the lead time passes 1 month.
- This growth can happen because there are initially many vacation plans that have not been thought of, but with the length of the lead time, there are more possible vacation plans that could cause the original plan to shift and have an impact on hotel bookings.