

# Investigate Business Hotel using Data Visualization



Created by:

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A bachelor with abilities in analyzing and solving problems through fact-based and data-driven decision making which make him proficiency in python, SQL, statistics, machine learning and also had experiences in data analytics and project management.

It is very important for a company to always analyze its business performance. On this occasion, I will explore more business in the hospitality sector. The focus for this project is to find out how hotel's customers behave in making hotel reservations, and how they relate to the cancellation rate of hotel bookings. The results of the insights will be presented in the form of visualization data to make it easier to understand and more persuasive.

## HANDLE MISSING VALUE



## CORRECTING UNSUITABLE VALUE



## CORRECTING DTYPES



## DROP UNNECESSARY DATA

There are 4 features that has missing value; **company** (94.30%), **agent** (13.68%), **city** (0.40%) and **children** (0.003%).

- Fill **company** with 0, because NaN indicates bookings didn't come from corporate
- Fill **agent** with 0, because Nan indicates bookings didn't use any agent channel
- Fill **city** with 'unknown', because the city origin is unknown
- Fill **children** with 0, because it's median is 0 or indicates that the customer didn't have any children with them

Change 'undefined' to be 'No Meal' in **meal** feature

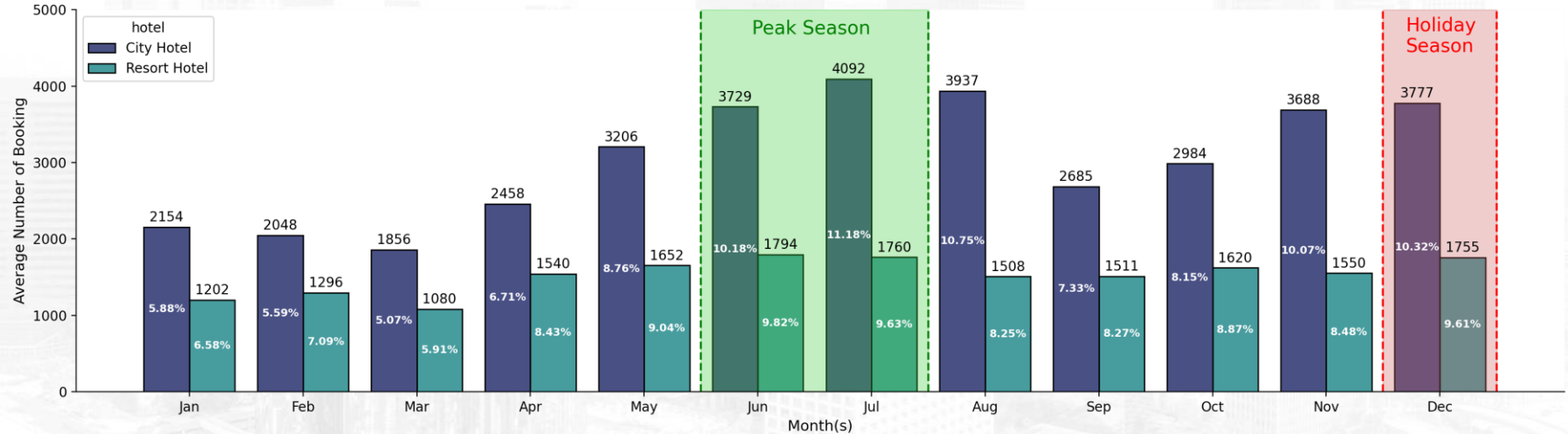
Change **children**, **agent** and **company** dtype from float to be integer

Drop data rows that has 0 **total\_guests** and 0 **stay\_duration**

# Monthly Hotel Booking Analysis Based on Hotel Type

## Average Number of Hotel Bookings per Month Based on Hotel Types

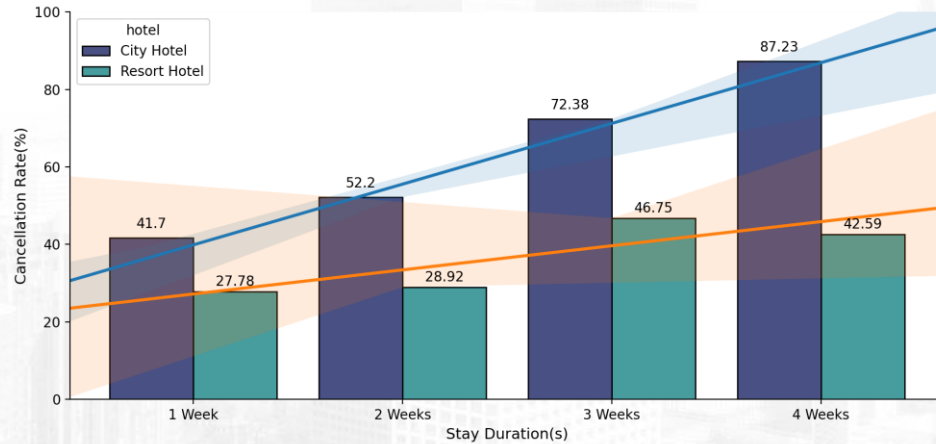
June and July are peak season for hotel bookings. City hotel reached highest average number of hotel bookings at 11.18% on July and resort hotel reached 9.82% on June. There're another growth on average number of hotel bookings in December for city hotel (10.32%) and resort hotel (9.61%). It could be caused by Christmas and New Year's Eve holiday.



- Based on data visualization above, June and July are peak month of hotel bookings.
- Both hotel types reaches highest average number of booking numbers; city hotel (4.092 or 11.18%) and resort hotel (1.794 or 9.82%). It could be happen because June and July are holiday month for students in Indonesia.
- There are another growth of average number bookings for both hotel types in December; city hotel (3.777 or 10.32%) and resort hotel (1.755 or 9.61%). It could be happen because December is end year's holiday month.

## Positive Trend on Cancellation Rate of Hotel Bookings per Stay Duration Based on Hotel Types

The longer customer stayed, the higher the percentage of booking being canceled.  
The most canceled hotel bookings on city hotel was on four weeks stay duration (87.23%).  
The most canceled hotel bookings on resort hotel was on three weeks stay duration (46.75%).



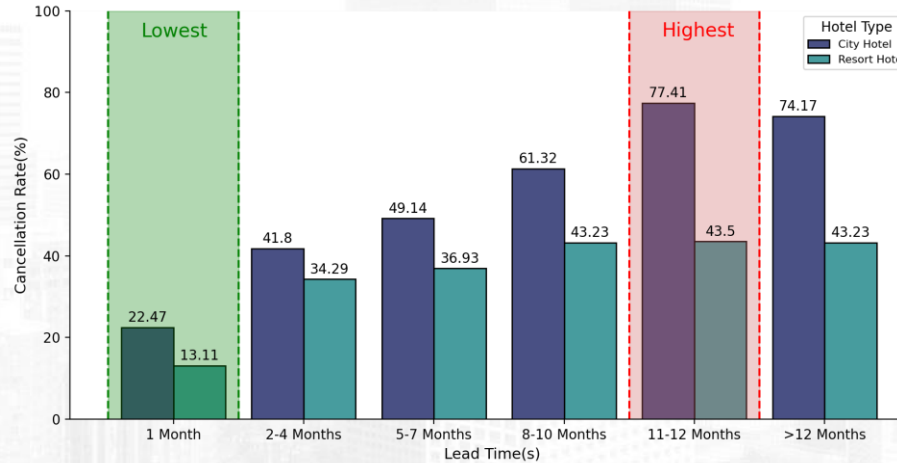
- There are positive trend of cancellation rate of hotel bookings per stay duration based on hotel types.
- The longer customer stayed, the higher cancellation rate for both hotels; city hotel on 4 weeks stay duration (87.23%) and resort hotel on 3 weeks stay duration (46.75%).
- There are a lot possibilities how this thing could be happen, it could be human error when customer did hotel reservation or their long vacation plan canceled because any urgent reasons that they couldn't turn down.



# Impact Analysis of Lead Time on Hotel Bookings Cancellation Rate

**Cancellation Rate of Hotel Bookings per Lead Time  
Based on Hotel Types**

Both hotel types has lowest cancellation rate on 1 month lead time (city = 22.47%; resort = 13.11%)  
and highest cancellation rate on 11-12 months lead time (city = 77.41%; resort = 43.5%).



- Both hotel types has lowest cancellation rate of bookings on 1 month lead time; city hotel (22.47%) and resort hotel (13.11%).
- Both hotel types has highest cancellation rate of bookings on 11-12 months lead time; city hotel (77.41%) and resort hotel (43.5%).
- Significant growth of cancellation rate for city hotels each month from around 20% to around 70%, also it happens for resort hotels each month from around 10% to around 40%.
- This growth of cancellation rate could be happen because customer vacation plan canceled.