



Sunset View

Story Hotel Booking:

explainable predictions of booking cancellation to decrease uncertainty and increase revenue.

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objective?

- Have a deeper insight into data Discover the best model for prediction cancellation
- Find the most significant factors affect cancellation
- Offer business recommendation.

Abstract:

hotels analysis is such a crucial process and it a key to profitability in the hotel industry is a clear understanding of what lead to satisfied loyal customer, to increase revenue and reduce cancellation. In this report, we will determine the characteristics of our customers and the factors which affect their cancellation and our recommendations to reduce cancellation and increase profit.

Background of the industry:

The hotel industry is a part of the larger travel and tourism sector. The global hotel industry was thriving and worth over \$570 billion and made up of 18 million rooms in 2019. The US is the largest market with around 51% of the global revenue. The industry has been growing for the past nine years owing to rising income levels and growing demand for travel. Technological advancements and hence accessibility has also played a key role in the growth of the industry.

business problem:

The demand for hotels is driven by frequent business and leisure travellers. Our objective is to forecast booking cancellation using data from hotel reservations. We are attempting to address the following business questions:

- 1) Would a customer cancel his booking?
- 2) If yes, what are the driving factors of cancellations?



Importance of the Problem:

Allocating workers to handle the front desk, restaurant, and cleaning is made easier by being able to predict hotel demand. Knowing the anticipated demand for hotels also aids in estimating the demand for in-hotel subsidiary businesses like gift shops, gyms, and spas.

The Problem with Cancellations



Customers accustomed to **free cancellation** policies



Operational problems



40% Cancellation rate in 2018



Reviews influenced **\$546 billion** of travel spending in 2017



Non accurate **forecast**



Increase in online **reputation** score linked to increase in **occupancy** and **revenue**

➡ Non-optimized occupancy, poor management, revenue loss

Activate Wi-Fi
Go to Settings

to find solution for this problems that effect by negativre on hotel. The hotel owner must know what kind of booking will likely be cancelled. And this my job as consultion for this bussiness is to adree this problems and to find solutions for them.



Data Analysis:

To better understand the connection between the predictor variables and the label, we further examined the data using Tableau. This assisted us in formulating theories about whether the trait would influence cancellation.

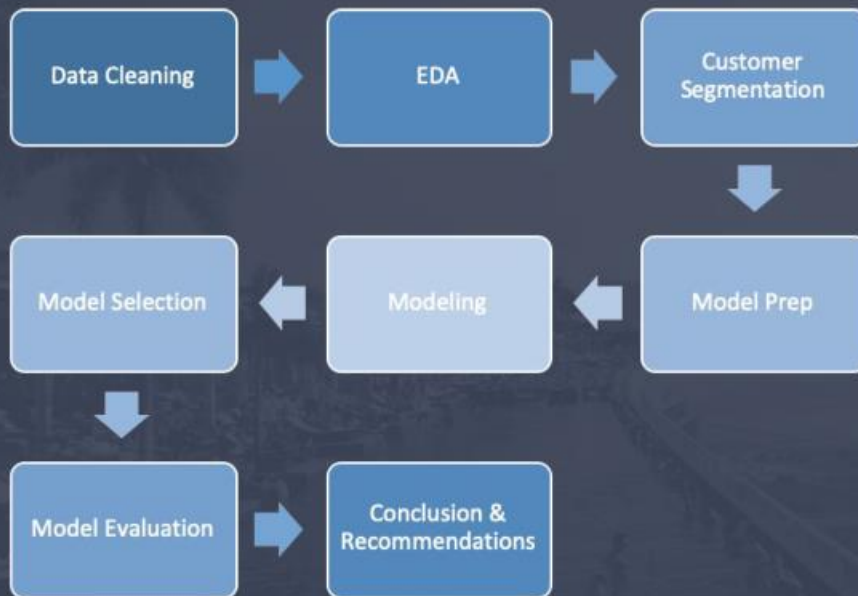


Methodology:

We worked with the hotel demand dataset on GitHub, which includes details on two different types of hotels: resort hotels and city hotels. The collection includes reservations made by clients who would come between 2017 and April 2022, together with details on the status of cancellations. Along with 45 other features, it also includes information about the country, market sector, arrival date of the reservation, length of stay, number of adults, and amenities offered by the hotel like parking.

Label	Is_Cancelled
Predictors	Hotel,Lead time,Arrival date year, Adults, Children, Babies, Meal, Country, Stays in weekend night, Stays in weeknights and 39 others.

Workflow



What will be answered:

1. What is the effect of booking changes on Cancellations?
2. Does deposit effect cancellation?
3. Which customer types cancel the most?
4. How do the cancellation distribute across various countries?
5. By which marketing segment countries get effected?
6. Which year has the most cancellation?
7. Which Month has Highest and least count of booking By Hotel Type?
8. which room type generates highest Average daily rate?
9. Is there a relationship between meal and reservation statues?
10. Can the lead time increase the total stay?
11. summery

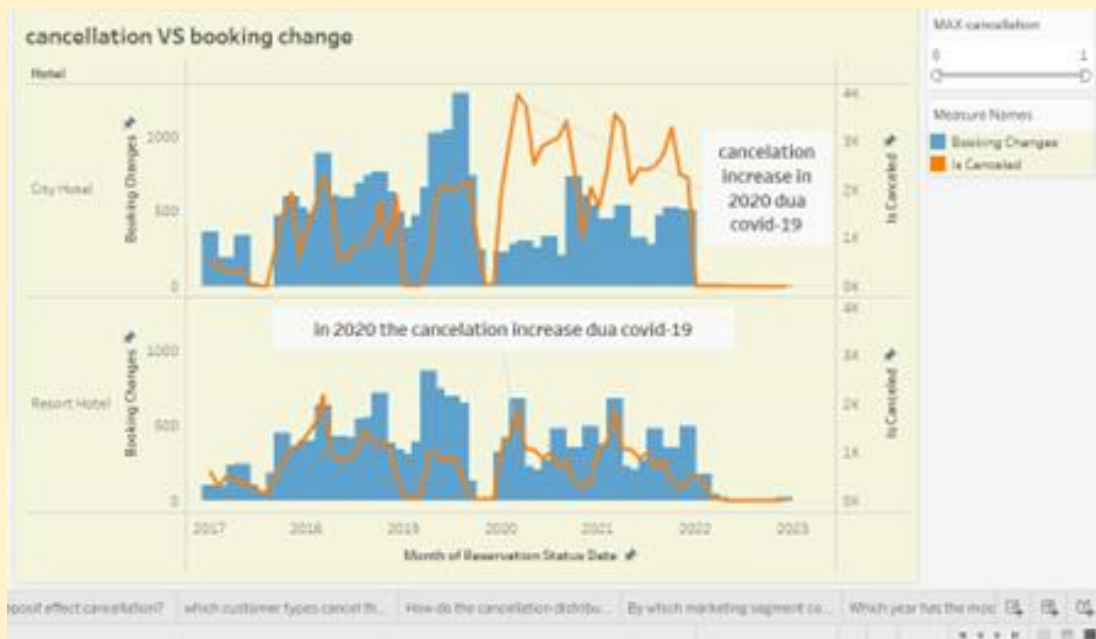
We have data about 232467 guests

Determine the reasons for cancellation is the first steps of improving the hotels service.

There is a lot of problems that makes the customer cancel. so, we must divide them to find solutions for this problem.

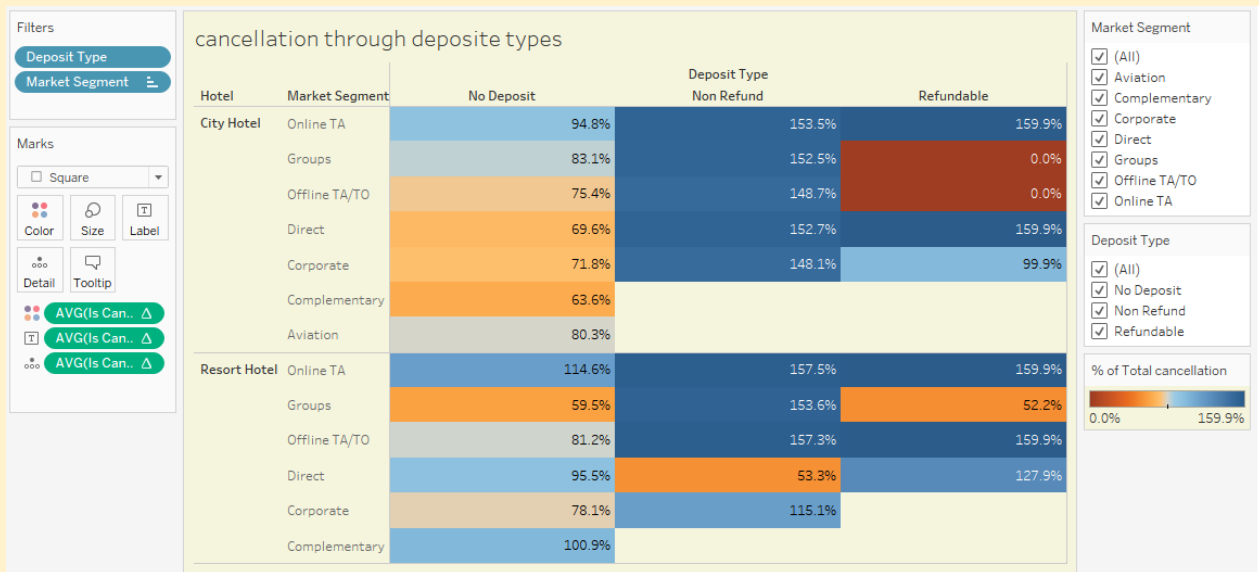


What is the effect of booking changes on Cancellations?



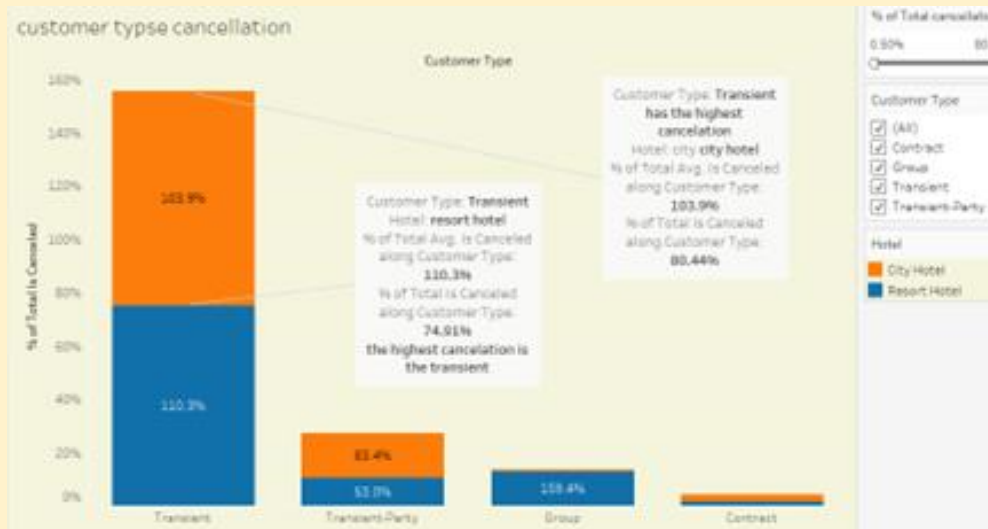
To find the relationship between cancellation and booking change, we built the dual combination for both city and resort hotel. Through this correlation we found the relationship between the cancellation and booking change negative. because the cancellation rate was reducing, and the booking change was increasing. It is important to note that 2020 is the only exceptional year because of covid-19.

Does deposit effect Cancellations?



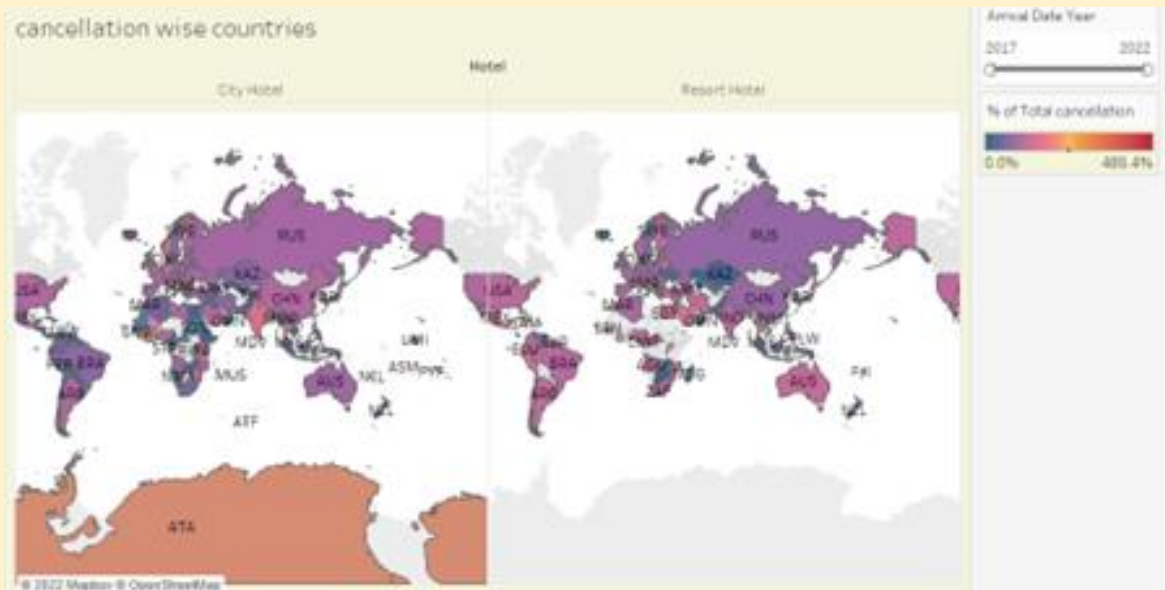
The table above gives the percentage of cancellations and the number of bookings across market segments. For the market segments observed above, we further explored the percentage of cancellations by the type of hotel and deposit types for which the booking was made. The dataset primarily consists of two types of hotels, city, and resort. The percentage of cancellations is higher for city hotels when compared to resort hotels. Intuitively, this makes sense as resort hotels are usually booked by leisure travellers who have planned a good vacation. The likelihood of them cancelling the trip is much lesser when compared to city hotels that are booked by business travellers. Across all market segments except complementary, we see that city hotels have a higher cancellation percentage when compared to resort hotels. The OTA segment is the only segment that has almost equal proportion of cancellation across both hotel types. The highest cancellation in deposit types is refundable because guest after cancellation can have refund of their deposit. So, it's obvious that guests who pay any deposit while booking but they are sure that if any change happen are likely to cancel the booking, they will have their money back. After this it was no deposit So it's obvious that guests who do not pay any deposit while booking are likely to cancel more reservations.

Which guests types Cancellations the most?



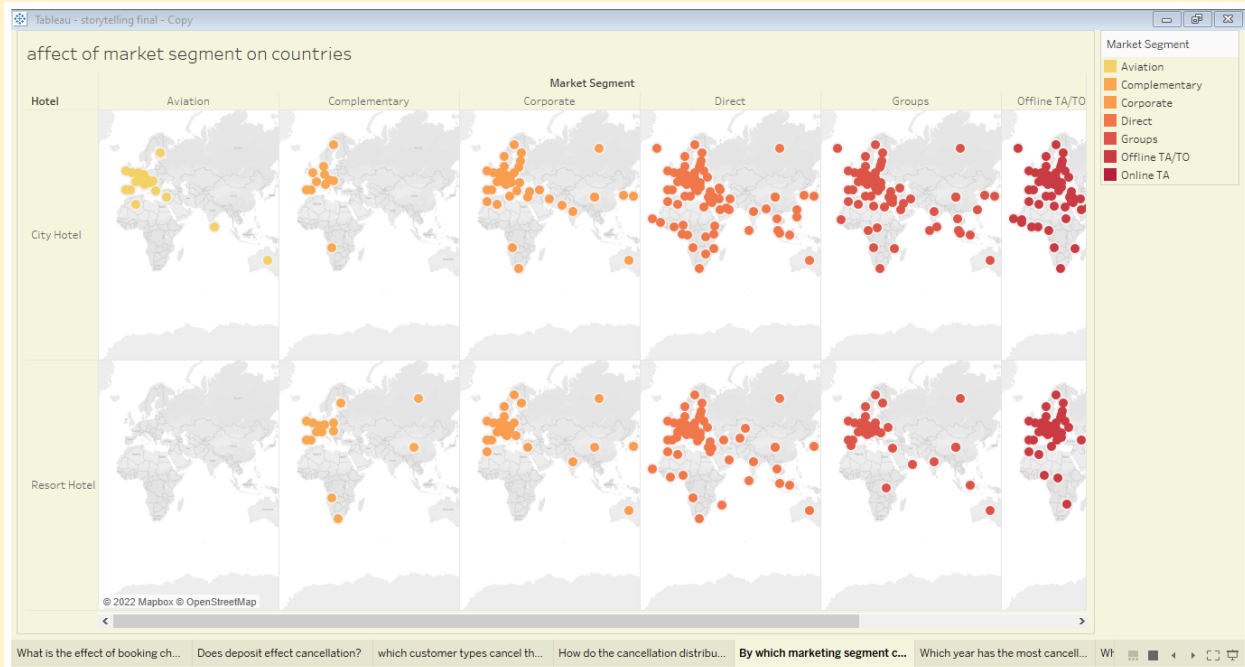
In the above bars, we have visualized the percentage of bookings across the various customer segments in the dataset. It was observed that transient customers account for the highest percentage of cancellations (103.9%) for city hotel and (110.3%) for resort hotel. The transient segment are the customers who are walk-ins/last minute bookings by both individuals and corporates for short stay. The nature of their booking shows that it's not a pre-planned event and the risk of getting cancelled is high. And the least risk for cancellation is contract for both hotels.

How do the cancellation distribute across various countries?



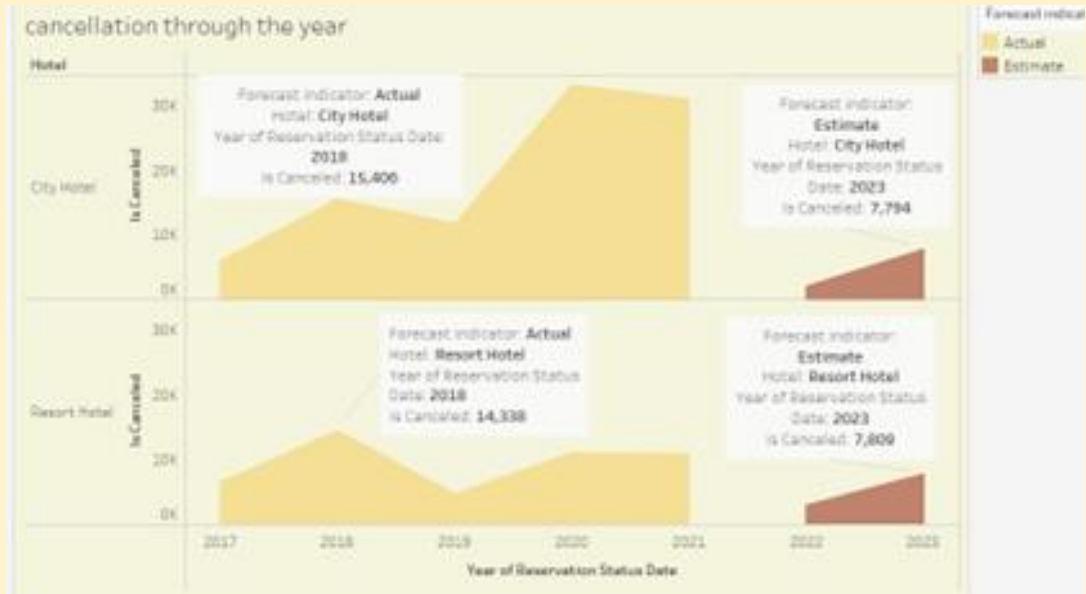
To find the countries with high cancellations, we built the above map. It was observed that a most of countries in Southeast Asia and Middle East had high percentages of cancellations for both hotels. For city hotel the highest cancellation is from EGY, SAU and resort hotel the highest cancellation is THA.

By which marketing segment countries get effected??



In the above map we made visualization to see what kind marketing segment can attract people from specific countries. For examples aviation attract guests from NLD, DUA and AUS.

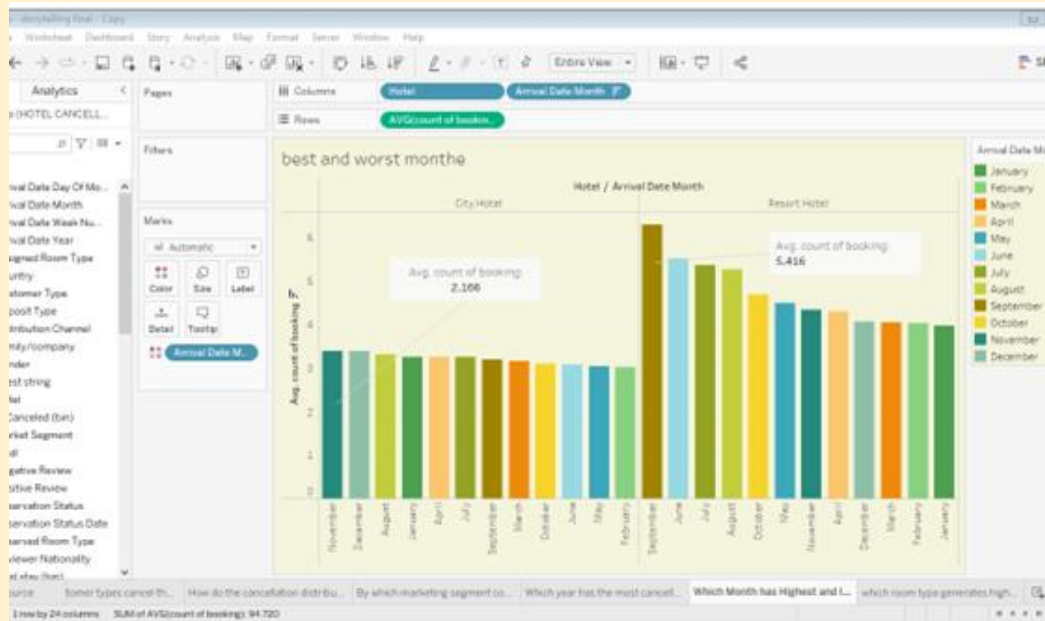
Which year has the most cancellation?



in
the

above graph it shows the cancellation through the year for both city and resort hotel. The cancellation for resort hotel from 2017 to 2022 is less than city hotel. But for both hotels it increases in 2020 due to covid-19. The estimation cancellation for 2023 for hotel it shows it will be less than the previous year.

Which Month has Highest and least count of booking By Hotel Type?



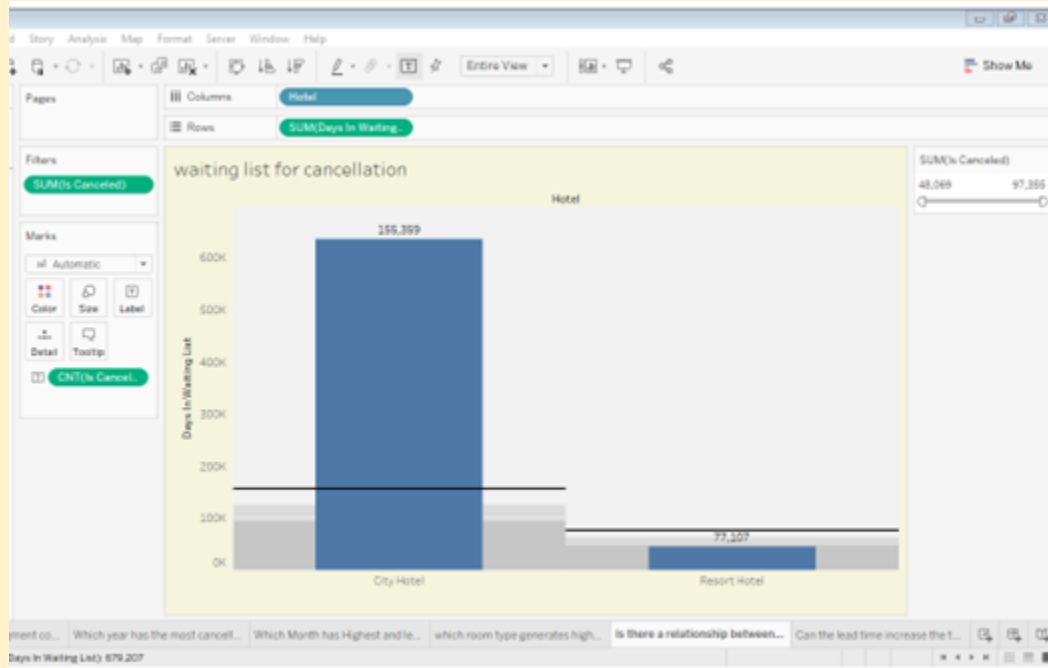
This above bar shows the average booking for both city and resort hotel. Resort hotel has the best month from September to August because it is summer and vacation and people want to enjoy their time. City hotel best months from November to January because it works months and people go for business meeting. Resort hotel worst month February and January because it is work month. The city hotel may and February because the change in season.

which room type generates highest Average daily rate?



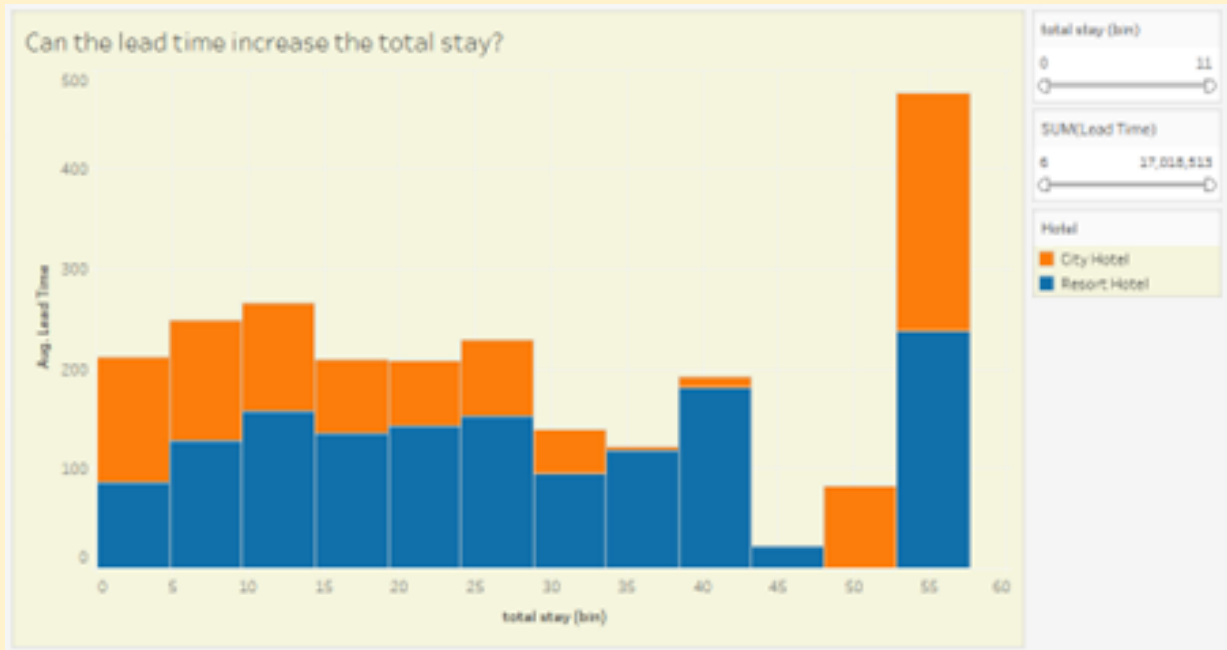
this packet profit show that the room that generate the most profit and preferred by guests is. L for resort hotel because he have 10 different room types unlike city hotel have 9 different room types and the one that generate profit is k

Is there a relationship between waiting list and cancelation?



To find the relationship between cancellation and waiting time, we built the bar for both city and resort hotel. Through this correlation we found the relationship between the cancelation and waiting time positive. because the cancelation rate was increasing, and the waiting tie increasing. It is important to note that the more the waiting time for guest the more it gets beard and cancel

Can the lead time increase the total stay?



To find the relationship between lead time and total stay, we built the bar for both city and resort hotel. Through this correlation we found the relationship between the lead time and total stay positive. because the lead time rate was increasing, and the total stay increasing. It is important to note that the more the lead time for guest the more it stay

Summary of the data

summery							City Hotel Resort Hotel
Average Daily Rate	Booking Changes	Count of total guest	total stay	Days in Waiting List	% of Total is Canceled along T...	Lead Time	
13,870,598	26,180	155,359	464,448	634,760	66.95%	13,435,536	
7,520,407	21,258	77,107	338,329	44,447	33.05%	8,036,905	

this graph explains statistically the most importance features in the csv file.

The AVG profit for both city and resort from 2017 until April 2022. Found out that the city hotel has the highest profit. because it has a lot of booking change .so, the number of guests increasing in city hotels. there is total stay increase. the waiting lists is high and this dangerous this mean the customer will e more likely will cancel and this is obvious in the percentage cancellation the cancellation of city hotel is very high unlike resort hotel . and lead time high for city hotel.

Recommendation?

- Total number of booking change reduce the chances of cancellation.
- Made the no refundable policy on all of booking types in hotels.
- Increase the number of rooms to reduce time in waiting list.
- Make loyal program for repeated guests
- Offer discount for guests that pay at time of booking.
- do not allow one-night bookings on busy days, or when an event is happening nearby.
- Make more marketing campaign

conclusion?

- The most demanded hotel s the resort hotel. Need to spend the most targeting fund on those hotels.
- high rate of cancellations can be due high no deposit policies.
- We should also target months between sep to Aug for resort because its summer vacation. Nov to Aug city because it works season
- Majority of the guests are from Africa, east Asia. We should spend a significant amount of our budget on those area.
- Given that we do not have repeated guests we should target our advertisement on guests to increase returning guests.
- Lead time, deposited time, special request, parking and room types are importance features
- Focus on reducing the time in waiting list.

