



FINTECH HOTELS

2023

Group 3
Rice Fintech Bootcamp Aug-2023

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MOTIVATIONS & GOALS

Neil is active in the hospitality industry and found a great dataset around two hotels (one inside the city and another which is a resort).

This dataset has a lot of data on both stays and the guests' characteristics. It also has significant economic data to correlate hotel activity with overall economic health. We assume the location is Miami, and the hotels are named "Miami - Resort Sea Sand" and "Miami - Citylife Hotel".

Goal 1 - Past Revenue and Forecasting for the Hotels

Goal 2 - Reducing Cancellations

DATA CLEANUP

Data Characteristics

119,390 hotel stays

July 2015 - August 2017

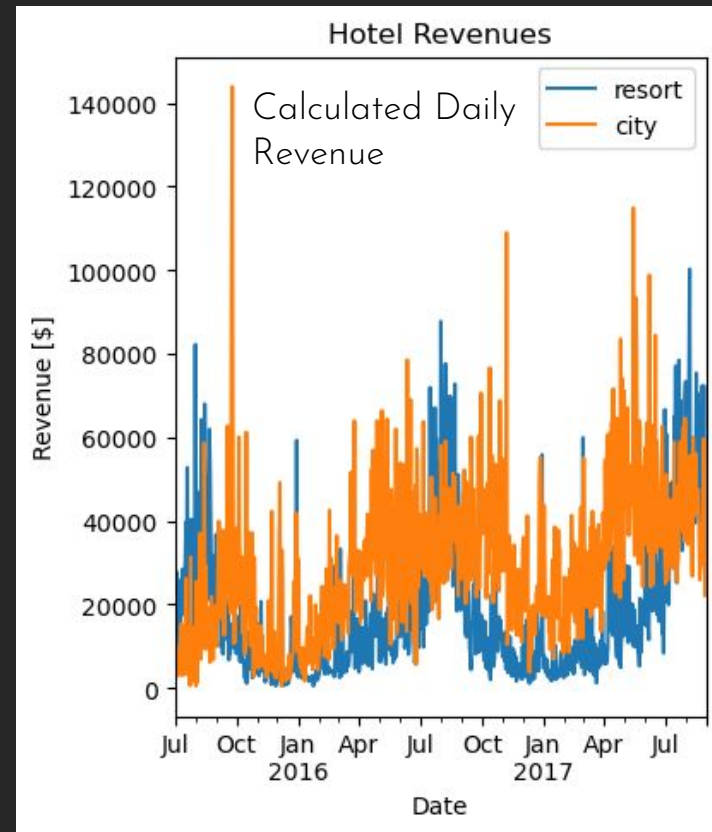
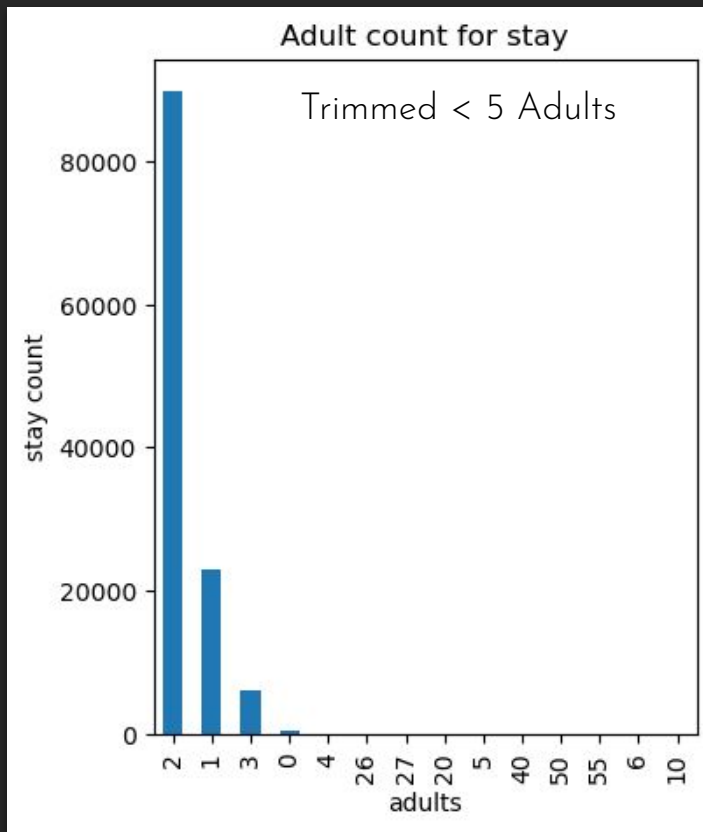
19 stay data columns

- Cleanup for large blocks (adults > 5)
- Calculating Revenue per stay

11 economics data columns

Year, month, day in separate columns

- Consolidated to DateTime Column



GOAL I

Forecasting Past and Future

Revenues based on the given markets throughout years 2015- 2017

GDP

In the given years and its impact in the Hospitality of Resorts and Business Hotels

Correlation between the Inflation and GDP

In years through Resorts and Business Hotels

CPI Index

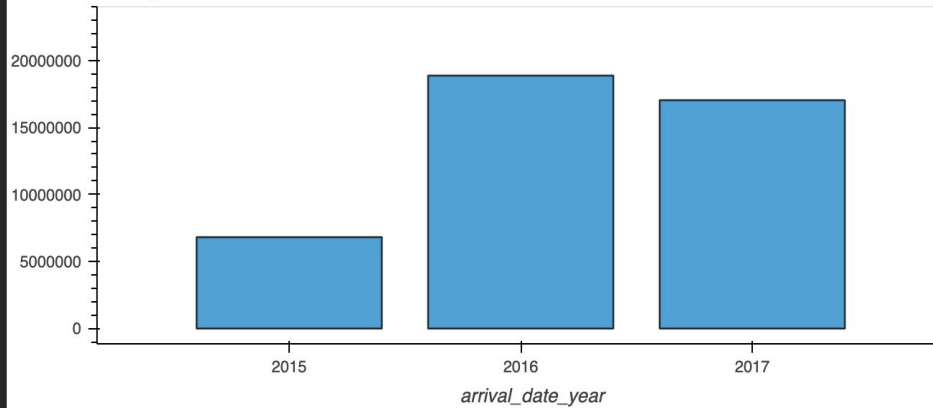
Percentage change over time

Inflation changes

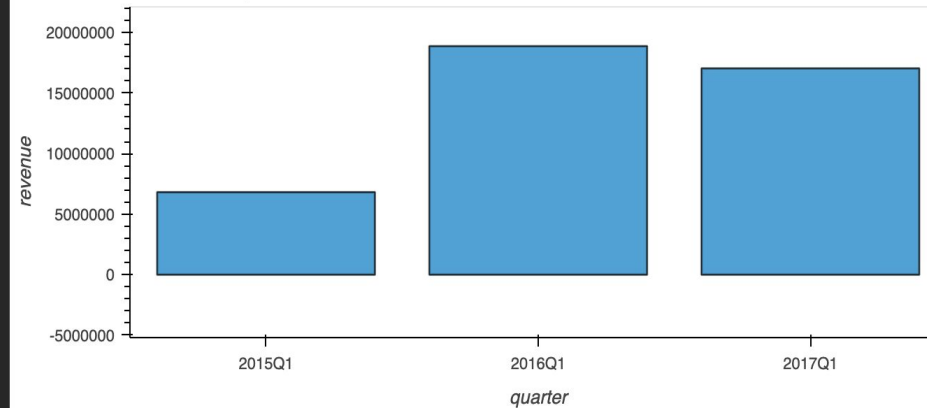
In given year

GOAL I - FORECASTING PAST AND FUTURE

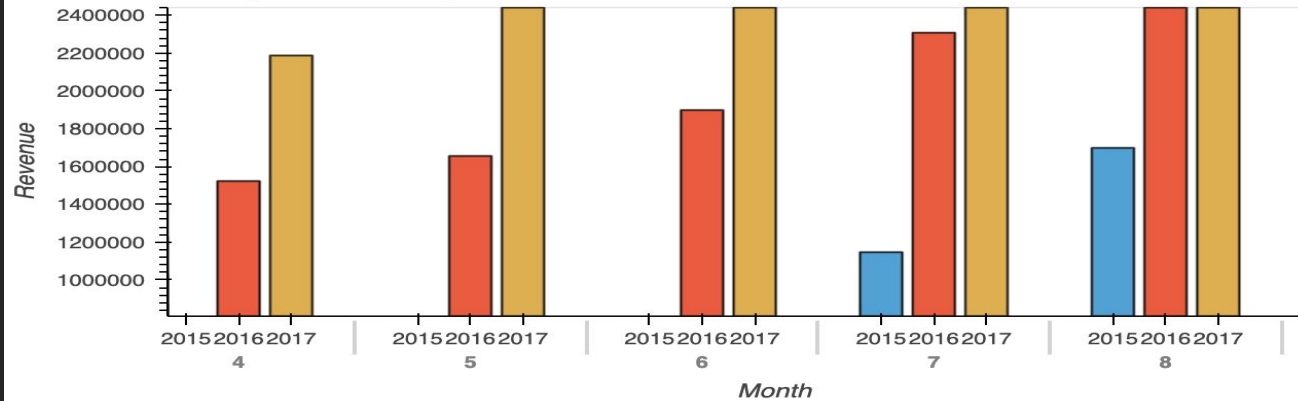
Yearly Revenue



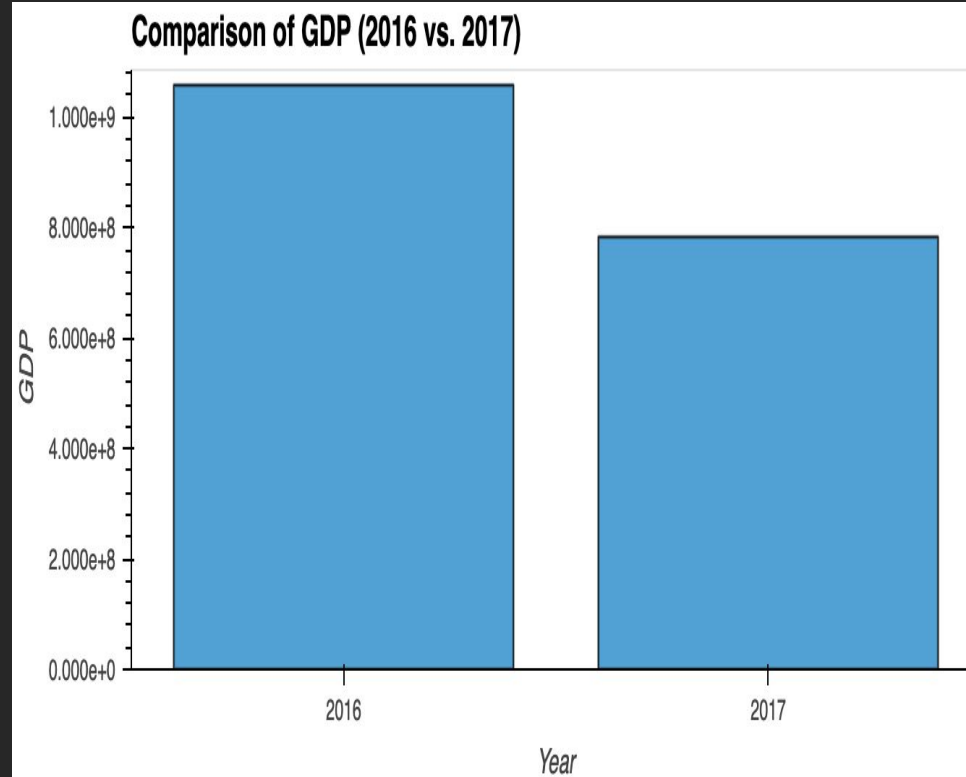
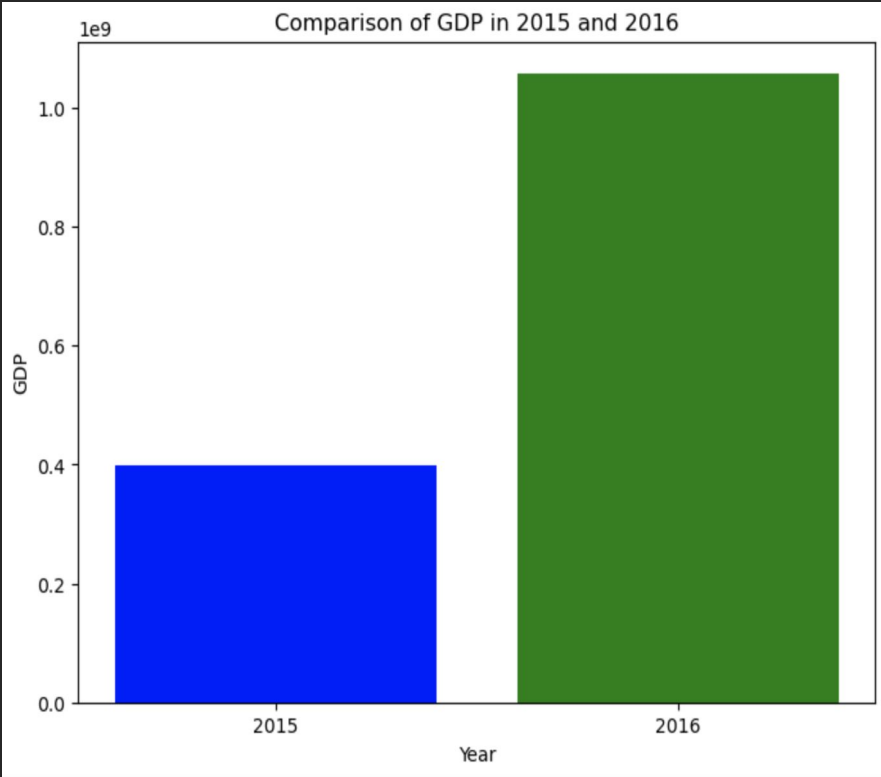
Revenue by Quarter



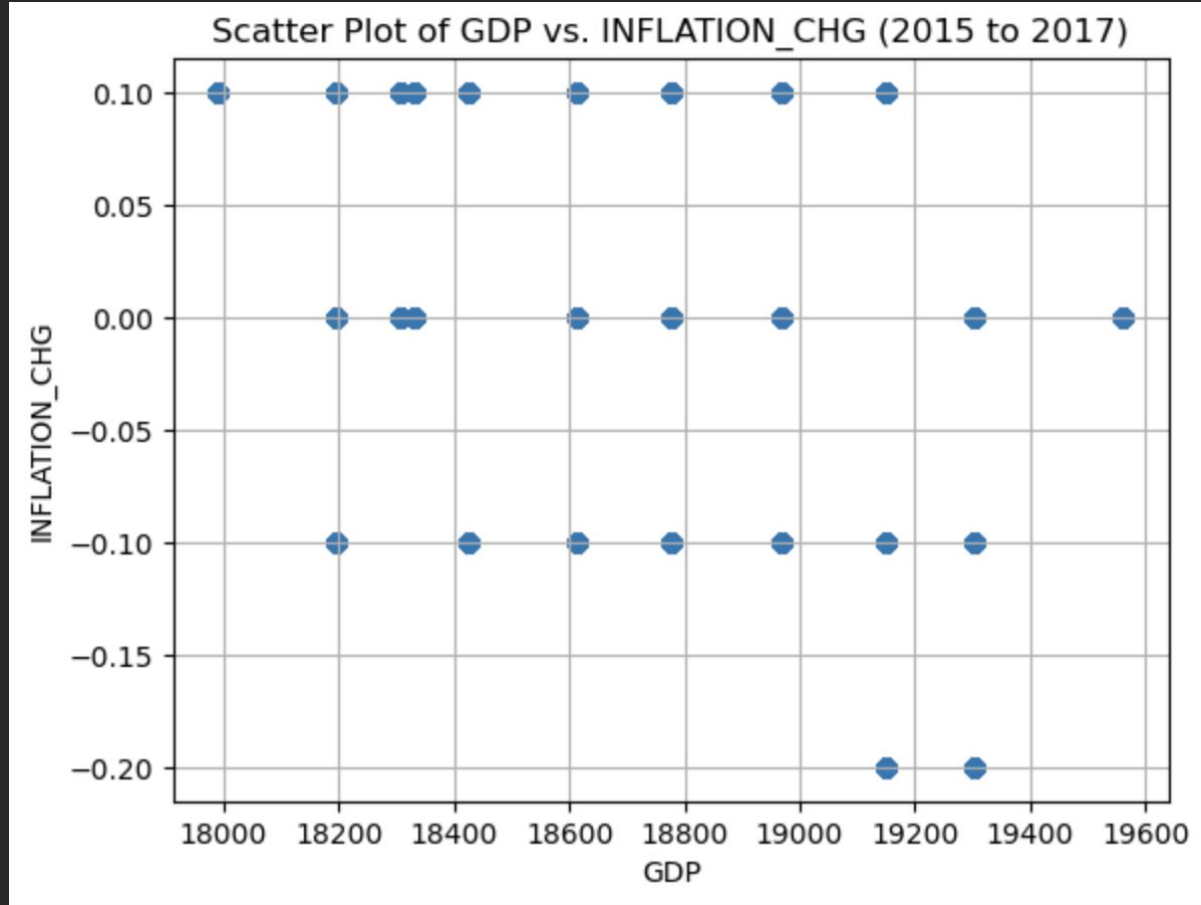
Yearly Revenue by Month



GOAL I - GDP



GOAL I - CORRELATION BETWEEN THE INFLATION AND GDP



GOAL I - CPI INDEX & INFLATION CHANGES

Total GDP for 2015: \$18297.961967888434

~ \$18297.96 (Rounded Value)

Total GDP for 2016: \$18661.603646798456

~ \$18661.60 (Rounded Value)

Average INFLATION_CHG in 2016: \$0.004898866101186803

~ \$0.004 (Rounded Value)

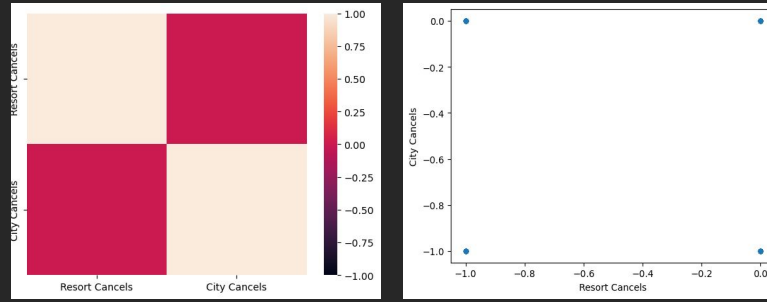
Average CPI_HOTELS in 2017: 15.41%

GOAL 2: CANCELLATIONS

- **Resort vs. City Hotel average cancels.**
Which hotel has the higher average of cancels?
- **Resort vs. City Hotel Money Cancels and Behavioral Cancels**
Which hotel has more average cancels by type of cancel?
- **Correlation of cancels between the Resort and City Hotel.**
Is there any correlation to the two hotels average cancels?
- **Correlation of fuel prices and cancels in the Resort and City hotel.**
Is there a strong correlation between fuel and the hotel cancels?
- **Correlation of inflation and cancels in the Resort and City hotel.**
Is there a strong correlation between inflation and the hotel cancels?

Resort Hotel vs City Hotel average cancel data

- This heat map graph shows us by color shade the correlation between the two average cancels.



- The average cancellation rate of the Resort Hotel is 0.277.
- The average number of booking changes of the Resort Hotel is 0.288.



Resort Cancels	City Cancels
1.0	-0.0015132009179093615
-0.0015132009179093615	1.0

The correlation between the two hotel cancels are -0.001. This tells us that there is no relation between the two hotels cancels.

- This scatter graph shows that there is no correlation between the two hotels cancels.
- The average cancellation rate of the City Hotel is 0.417.
- The average number of booking changes of the City Hotel is 0.187.

Resort Hotel vs. City Hotel average cancels by Type

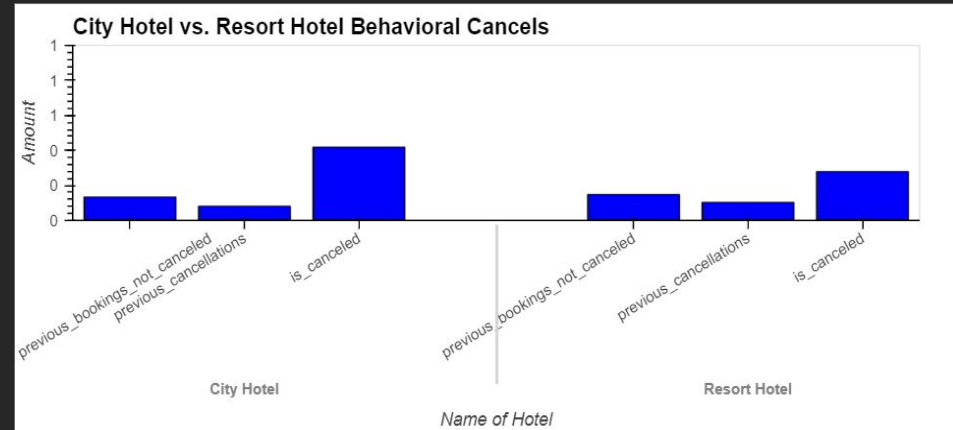
Money Cancels are all variables that have to do with money.

- Inflation, Inflation Change, and Fuel Prices.



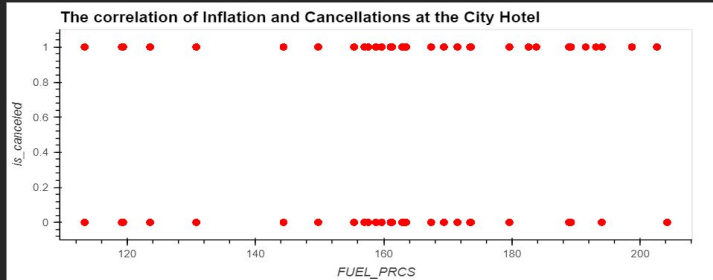
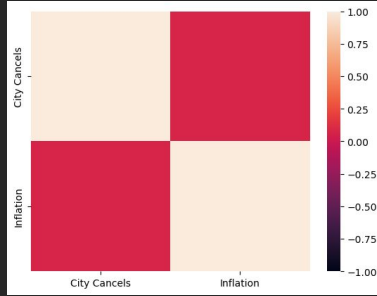
Behavior Cancels are all variables that have to do with customer behavior.

- Are they cancelled now, Previous Cancels, and Previous bookings not canceled.



Hotel cancellation compared to inflation

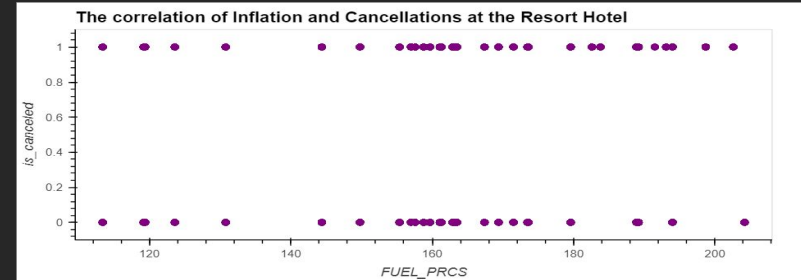
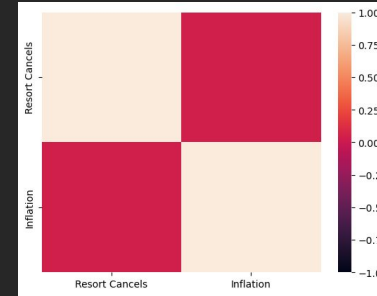
- This heat map shows us the correlation between the City Hotel Cancels and Inflation.



City Cancels	Inflation
1.0	0.07234647663809551
0.07234647663809551	1.0

- The correlation between the City Hotel cancels and Inflation are 0.072.
- The correlation between the Resort Hotel cancels and Inflation are 0.037.

- This heat map shows us the correlation between the Resort Hotel Cancels and Inflation.

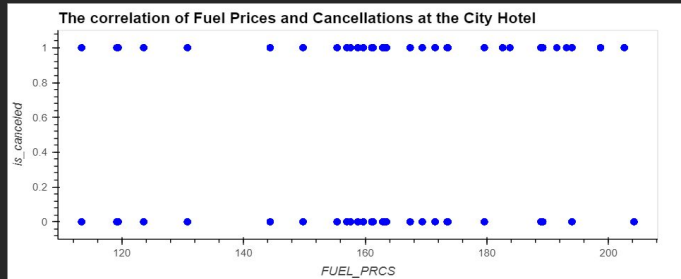


Resort Cancels	Inflation
1.0	0.037544259615937825
0.037544259615937825	1.0

- There is a higher correlation seen in the City Hotel when we bring in the variable of Inflation.

Hotel cancellation + fuel prices

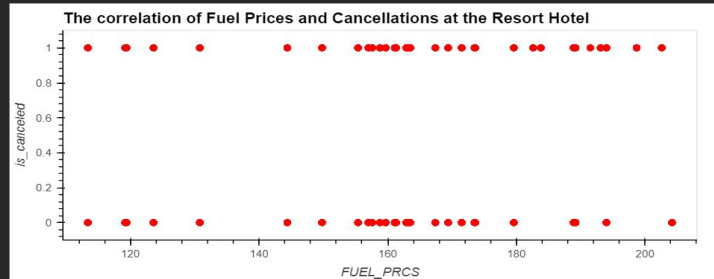
- This heat map shows us the correlation between the City Hotel Cancels and fuel prices.



City Cancels	City Fuel Prices
1.0	-0.05301691522158592
-0.05301691522158592	1.0

- The correlation between the City Hotel cancels and fuel prices are -0.05
- The correlation between the Resort Hotel cancels and fuel prices are -0.01

- This heat map shows us the correlation between the City Hotel Cancels and fuel prices.



Resort Cancels	Resort Fuel Prices
1.0	-0.015780394342011072
-0.015780394342011072	1.0

- There is a higher correlation seen in the City Hotel when we bring in the variable of fuel prices.

SUGGESTIONS BASED ON DATA

The City Hotel leads in everything but correlation to inflation, which means the City Hotel will have a hard time cutting down their cancellation. Some suggestions for both of these hotels to start them down this path would be.

1. Control what you can control - Send out more update email/text to keep the customer in the loop and more attached to the activity.
2. Do not worry about outside variables first but more so on your service and building connections with our customer base. A customer who loves staying at a hotel will be more apt to show up and not cancel.
3. Raise the cancel fee or charge extra for the ability to cancel anytime, this would make up for some of the money lost with cancels.
4. Since they cannot be avoided be sure to set up accounts on sites that help to fill empty hotel rooms as such as OTA sites. (booking.com, expedia, hotels.com)

After analyzing the data we came to a conclusion that investing in both hospitality is worth the money. Moreover the City Hotel is better investment opportunity as it has more variables that we can control rather than a Resort. The data presented shows that customer loyalty and promotions helps in generating more revenue in the city due to the economical factors in consideration.

DISCUSSION

Goal 1 - Past Revenue and Forecasting for the Hotels

Both Hotel properties located in Miami are generating revenues on a daily base. The Resort being a seasonal property has a lower growth in revenue. This is due to longer stay nights over a period of time at fixed ADR. When comparing to the City Hotel the Business Hotel has lot more generation in day to days stay creating a larger revenue segment. This is due to having trasinet guest for a limited amount of time leading to a higher turnover rate .

Goal 2 - Reducing Cancellations

The Resort Hotel will see lower cancellations over time due to extend stay nights. The City Hotel has many more cancellations on daily base as it targets long term customers. To minimize the cancellation we would like to implement customer loyalty programs. Through the hotel or by means of OTA platforms to be able to sell cancelled rooms for the same day to avoid loss of revenue.



TEAM POST MORTEM

Pros & Cons:

What worked well:

- Team was responsive on Slack outside meeting times
- Team took constructive feedback well
- Team members were helpful to one another
- Team was cooperative
- Neil's expertise in the subject matter made it easier to understand relationships in the data

What didn't work as well:

- Understanding the relationships in the data segments breakdown made it bit challenging to demonstrate what we were trying to present. Overall we did work together to solve and interpret the data to be presented in well structured manner.
- Multiple group by functions made it harder to complete certain graphs
- Time constraint when practicing the presentation made it bit harder as we all went over the time limit due to detailed explanation rather than coming straight to the point.

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THANKS

Do you have any questions?

CREDITS: This presentation template was created by **Slidesgo**, and includes icons by **Flaticon**, and infographics & images by **Freepik**

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