SQL-API PROJECT

by

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HURRICANE HARVEY

- Formed 17 August 2017
- Dissipated 02 September 2017
- Texas and Louisiana
- Highest wind 130 mph (215 km/h)
- Wettest tropical cyclone on record in the United States

Source:
https://upload.wikimedia.org/wikipedia/commons/0/04/Harvey_2017-08-25_2231Z.png

Hypotheses

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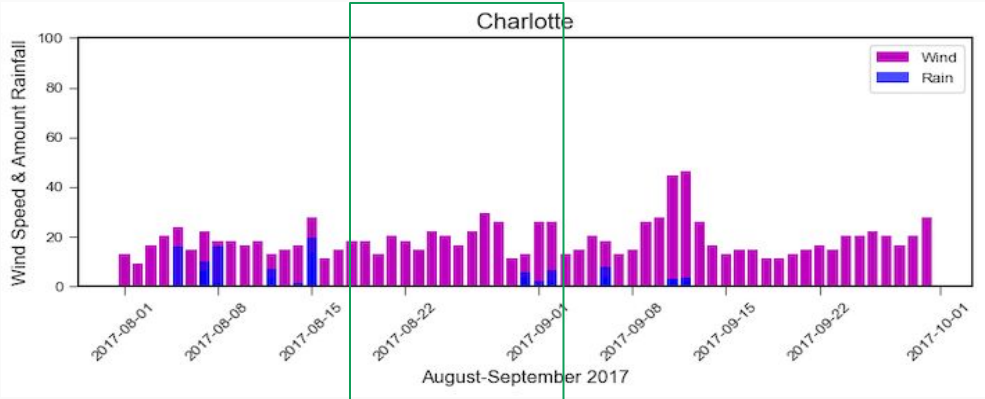
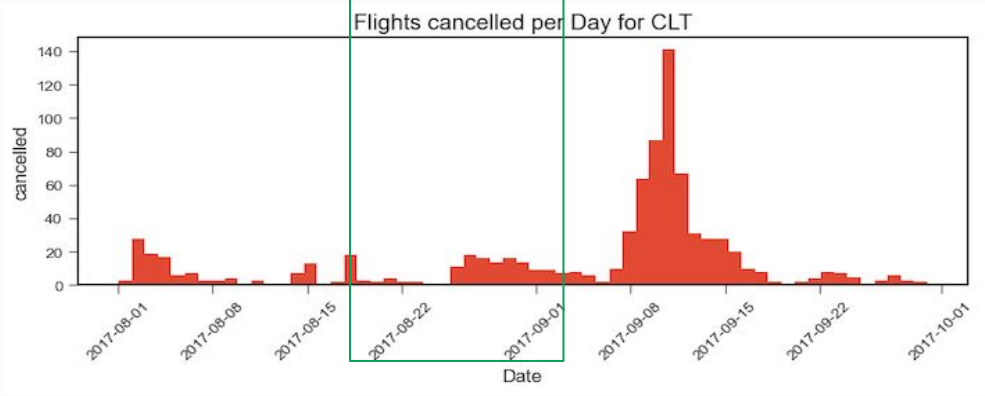
1. Can we see hurricane Harvey in the weather and flights data?
2. Can we see that flights to Houston got cancelled?
3. Can we see cancelled flights on days before and after the hurricane?

Hypothesis 1

Can we see hurricane Harvey in the weather & flights data?

Hypothesis 1





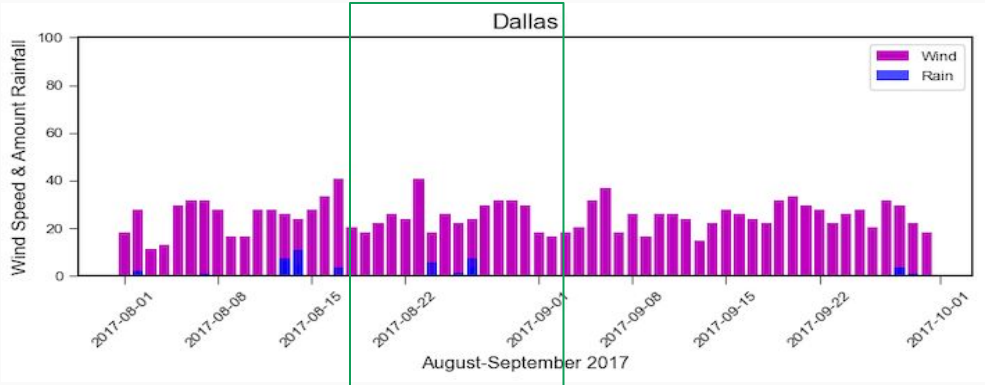
<u>CHARLOTTE - North Carolina</u>

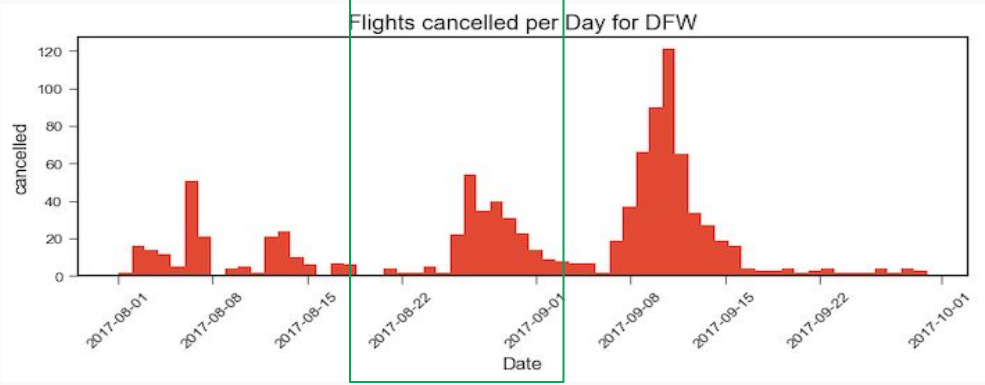
Wind: ~ 20-30 mph

Rain: no rain

Flights: less cancelled flights

Hypothesis 1





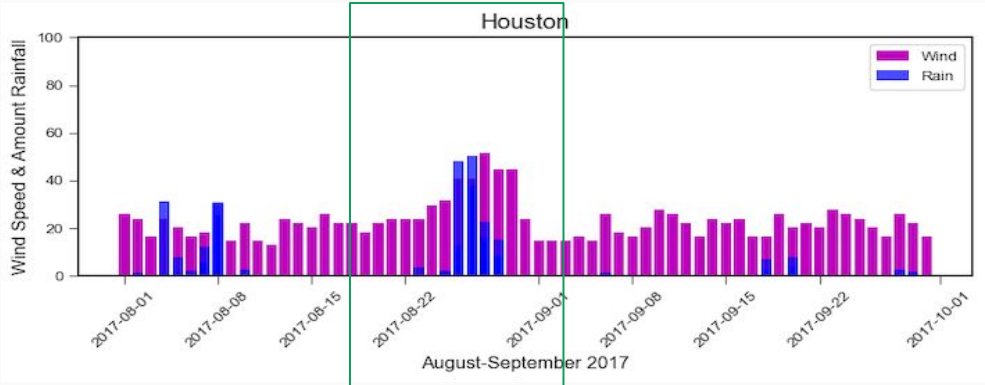
DALLAS - Texas

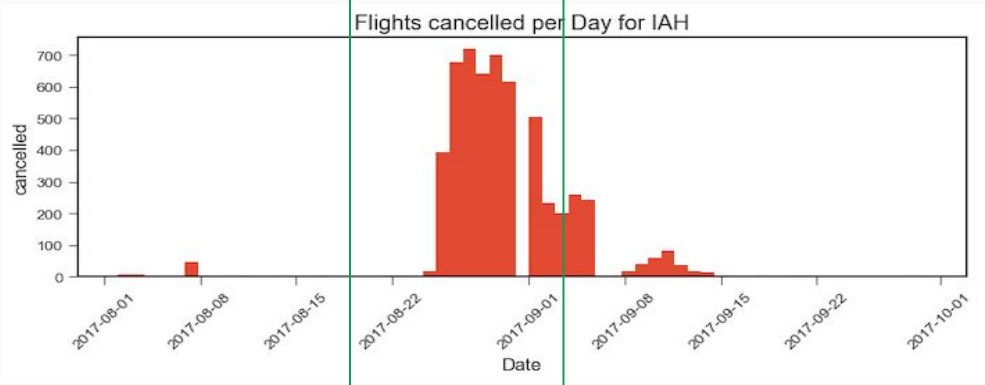
Wind: ~ 30-40 mph

Rain: less rain

Flights: 40-60 cancelled flights

Hypothesis 1





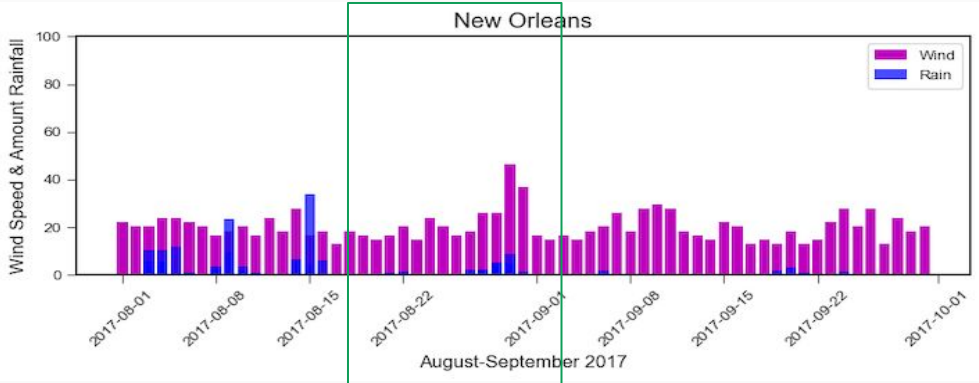
HOUSTON - Texas

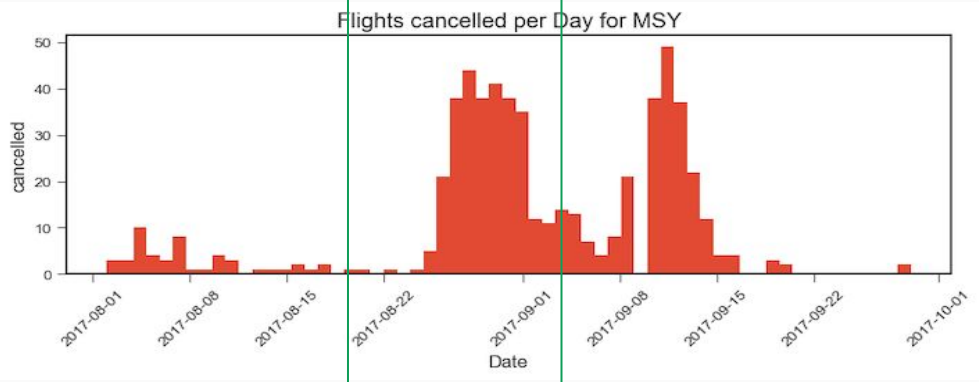
Wind: ~ 50-60 mph

Rain: heavy rain

Flights: over 600 cancelled flights

Hypothesis 1





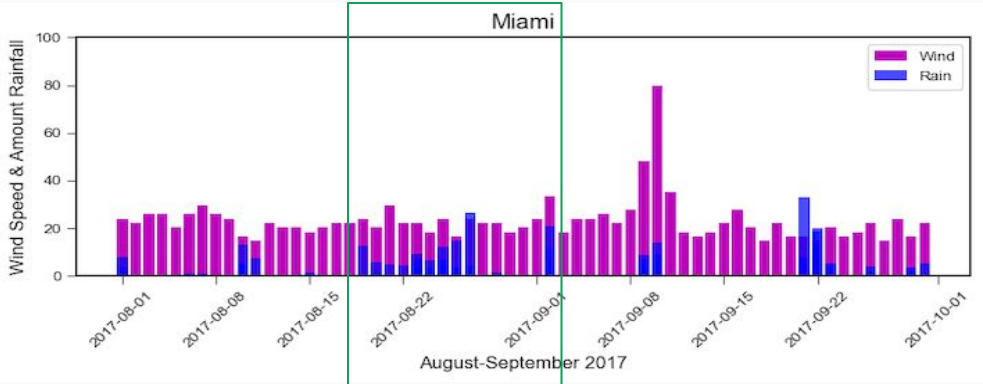
New Orleans - Louisiana

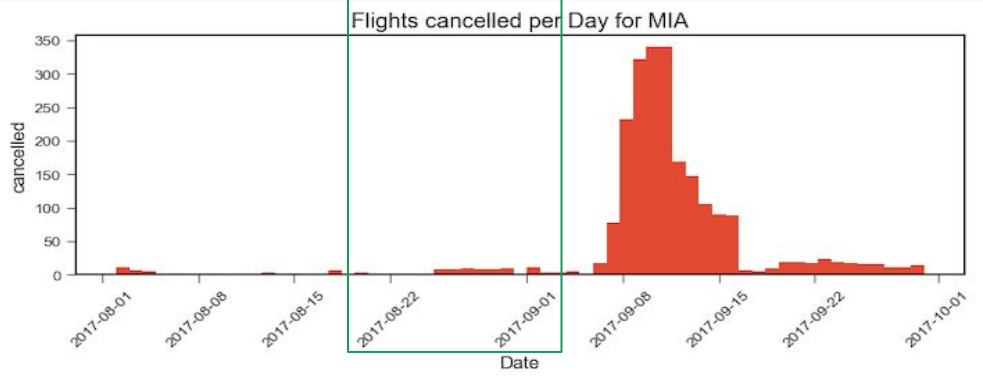
Wind: ~ 20-40 mph

Rain: less rain

Flights: 40-50 cancelled flights

Hypothesis 1





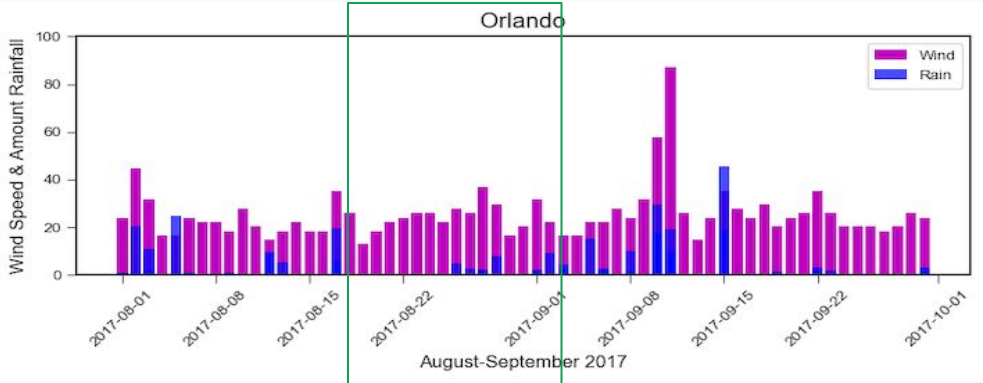
MIAMI - Florida

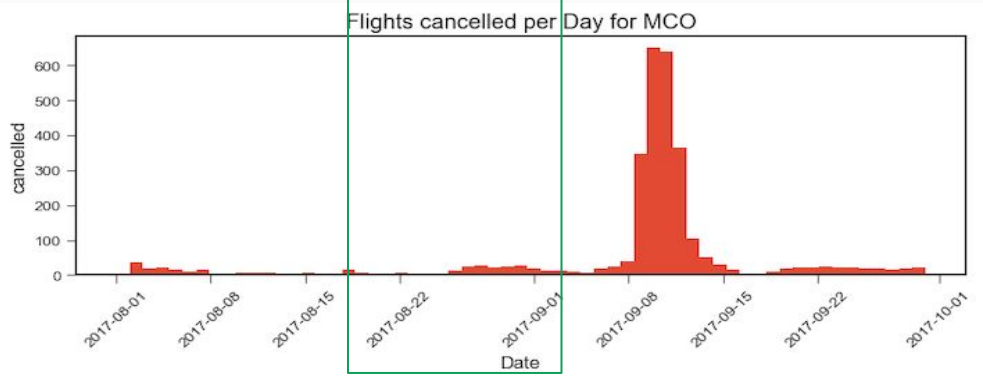
Wind: ~ 30-40 mph

Rain: rain

Flights: less cancelled flights

Hypothesis 1



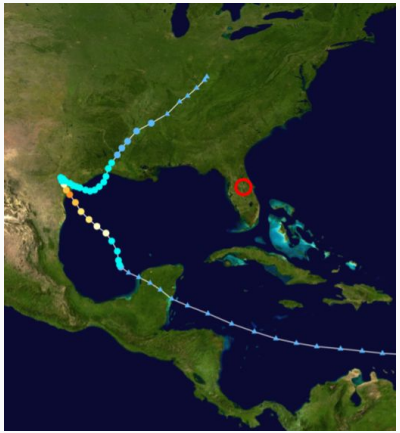


Orlando - Florida

Wind: ~ 30-40 mph

Rain: less rain

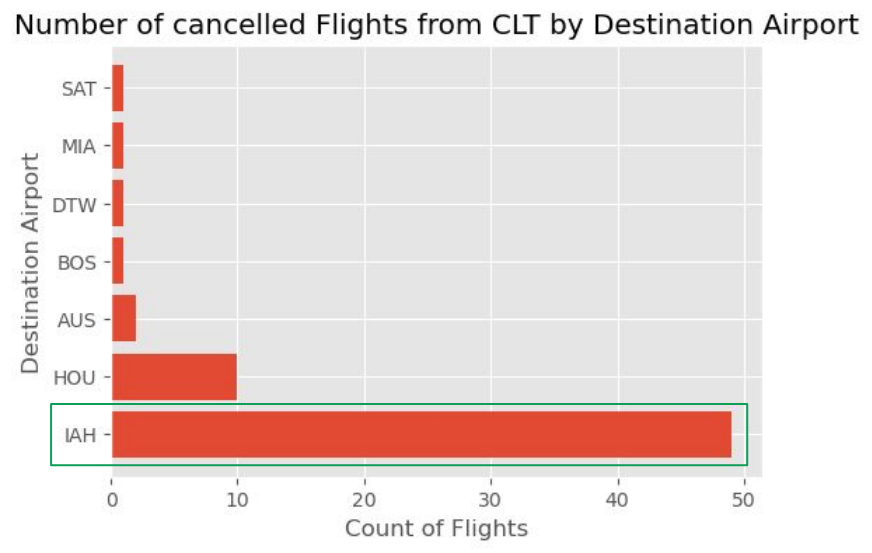
Flights: 40-60 cancelled flights

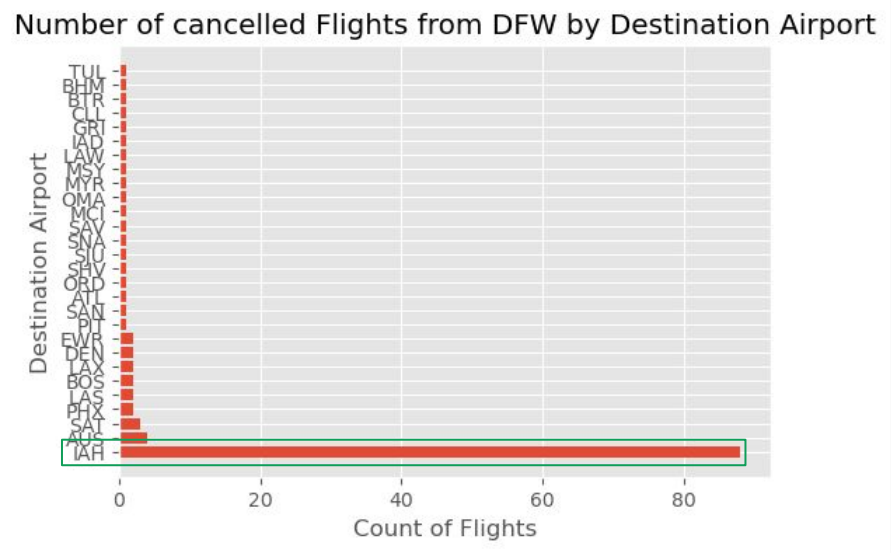


Hypothesis 2

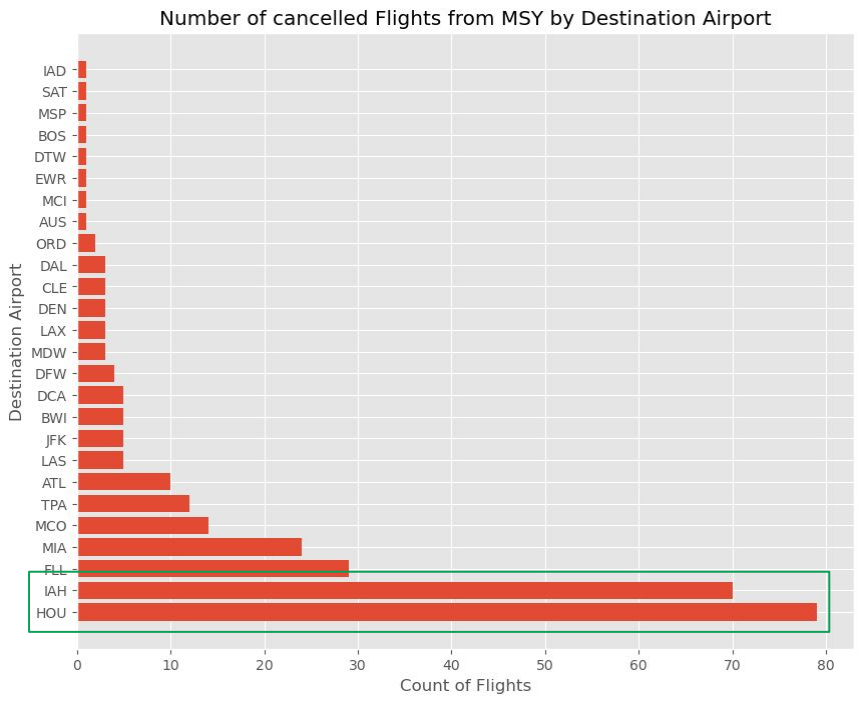
Can we see that flights to Houston got cancelled?

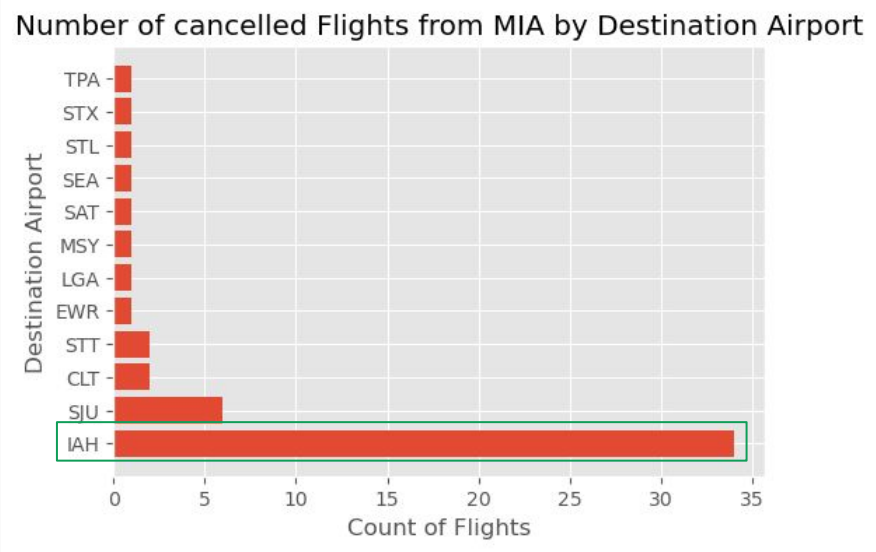
Hypothesis 2





Hypothesis 2

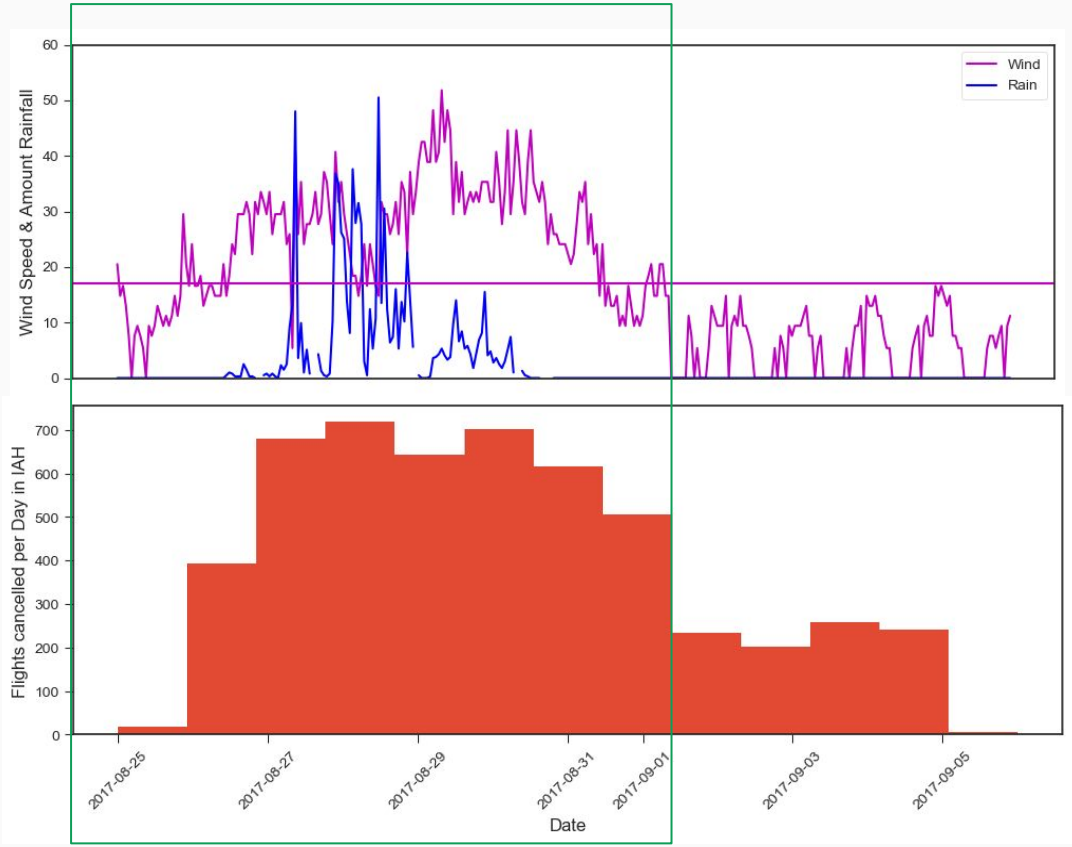




Hypothesis 3

Can we see cancelled flights on days before and after the hurricane?

Hypothesis 3



Hypotheses

1. Can we see hurricane Harvey in the weather and flights data? **CONFIRM**
2. Can we see that flights to Houston got cancelled? **CONFIRM**
3. Can we see cancelled flights on days before and after the hurricane? **CONFIRM**

Technical Overview

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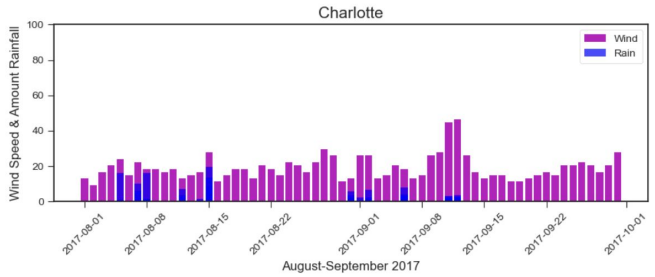
Create plots for weather: city wind & rain for August and September. Can we see the peaks or/and anomalies? Save the plots as png.

```python
# Bar plot date and wind speed for Houston

# Use predefined style
plt.style.use('seaborn-v0_8-ticks')

# Set figure size
plt.figure(figsize=(10, 3))

#Set city and df
city = 'Charlotte'
df = df_charlotte

# Create bar plot
plt.bar(df['date'], df['wspd'],
color = 'm',
label='Wind');
plt.bar(df['date'], df['prcp'],
color = 'b',
label='Rain',
alpha = 0.7);

# Label axes
plt.xlabel("August-September 2017", fontsize = 12)
plt.ylabel("Wind Speed & Amount Rainfall", fontsize = 12)
plt.ylim([0, 100])
plt.xticks(rotation=45)

# Set title
plt.title(city, fontsize = 15)

# Show graphic

plt.legend(loc='upper right', fontsize='medium', frameon=True)
```

[57] Python

```
<matplotlib.legend.Legend at 0x2881f5640>
```



EDA on flights

```python
import pandas as pd
from sql_functions import get_dataframe
import matplotlib.pyplot as plt
import numpy as np
```

[11] Python

```python
schema = 'cgn_analytics_23_2'
airports_df = get_dataframe(f'SELECT * FROM {schema}.flights_g1_clean')
```

[2] Python

```python
airports_df.head()
```

[3] Python

	flight_date	airline	tail_number	flight_number	origin	dest	distance	cancelled	diverted	dep_time_t	sched_dep_time_t	dep_delay_t	arr_time_t	sched_arr_time_t	arr
0	2017-09-10	AA	N813AA	1942	JAX	CLT	328.0	1	0	None	06:50:00	None	None	08:21:00	
1	2017-09-10	AA	N819AA	1958	JAX	CLT	328.0	1	0	None	13:50:00	None	None	15:16:00	
2	2017-09-10	AA	None	2012	CLT	MCO	468.0	1	0	None	22:20:00	None	None	23:57:00	
3	2017-09-09	AA	None	2015	CLT	PBI	590.0	1	0	None	20:11:00	None	None	22:00:00	
4	2017-09-11	AA	N704AA	2031	JAX	CLT	328.0	1	0	None	09:00:00	None	None	10:26:00	

```python
# create df with only cancelled flights in aug & sep of all airports
airports_can_df = airports_df.query('cancelled == 1')
airports_can_df.head()
```

[4] Python

	flight_date	airline	tail_number	flight_number	origin	dest	distance	cancelled	diverted	dep_time_t	sched_dep_time_t	dep_delay_t	arr_time_t	sched_arr_time_t	arr
0	2017-09-10	AA	N813AA	1942	JAX	CLT	328.0	1	0	None	06:50:00	None	None	08:21:00	
1	2017-09-10	AA	N819AA	1958	JAX	CLT	328.0	1	0	None	13:50:00	None	None	15:16:00	
2	2017-09-10	AA	None	2012	CLT	MCO	468.0	1	0	None	22:20:00	None	None	23:57:00	

Thank you for your attention!

Any questions?