Data Visualization of Flight Delays and Cancellations dataset in USA at 2015 with Tableau

Flight Delay is when an airline flight takes off and/or lands later than the scheduled time.

The problem of delay or Cancellations of flights is considered a performance indicator of any transport system because it has a negative impact (economic especially) for each airline companies, airports, and passengers themselves. Therefore, we will answer with data on some questions like

- Which states have the most flight cancellation?

- What caused the most flight delays?

- Which Airlines Had the Most Delays?

- Which month had the Most flight Delays?

The dataset will I use that comes from Kaggle dataset. It tracks USA domestic flights operated by a large airline company in 2015.

Insight #1

The visualization answer- **Which state in USA has the most flight cancellation in 2015?**

Link:

https://public.tableau.com/profile/manal4105#!/vizhome/USstatehasthemostflightcancellation/Dashboard1?publish=yes

Summary:

From this map, we can see that the **Texas** state and **Illinois** state have the most flight canceled than other states in USA reaching to 668 flights canceled (15.07% of total flights canceled in USA) and 563 flights canceled in Texas (12.70% of total flights canceled in US). It might not be advisable to travel from these states, maybe because of so many trips to these.

Virgin Islands, Guam, Delaware, and AS states has no flight canceled (that represent 0% of total flight canceled in US)

Design:

With map, we can see the distribution of states with highest and lowest number of flight canceled using blue palette. In addition, the length of bins in the bar chart appear number of flight cancels in all states in USA. We can filter the results by days of week.

Resources: N/A

Insight #2

The visualization answer- **What caused the most flight delays in 2015?**

Link:

Summary:

The delay of flights can occur for many reasons. Analyze what are the reasons of delay flight for all airline or specific airline company is an important point in increasing the satisfaction of customers and productivity and decrease losses.

The measures I use to see the most reason of flight delay and which are available in the data set are late aircraft delay, security delay, airline delay, air system delay, and weather delay.

Through this bar chart, we notice that most of the delay occurred in flights due to "late aircraft delay" in each month except September month and the "security delay" cased least delay with average does not exceed one minute in all months.

Airports and airlines should focus on finding solutions to this delay to increase profits.

Design:

- Can filter the results by airline Company, airport, and month to see the most reason caused highest delay.

- I did not use many colors so as not to distract the reader's mind.

- The length of bins in the bar chart is the best to represent average of departure delays.

Resources: N/A

Insight #3

The visualization answer- **Which USA Airlines Had the Most Delays in 2015?**

Link:

Summary:

From the bar chart, we can see where the most airline company has the most delay (minute) is **"Spirit Airlines"** with 33.06 minute. The delay is sums up average departure delay and average arrival delay. In addition, we can see **"Southwest Airlines"** is the best airline in terms of flights delay as shown in the scatter plot. Although the number of flights flight with this company is high, the delay time is low in each months. This airline looks reliable when we want to go the trip and arrive without any delay.

Design:

- We can filter the results by month of year.

- When we hover over this, we can see the details like Airline company name, average of arrival delay (min), average departure delay (min), total delay (min), and how many flight fly on this airline on specific period.

Resources: N/A

Insight #4

The visualization answer- **Which month has the most flight delays?**

Link:

https://public.tableau.com/profile/manal4105#!/vizhome/Book22_241/Dashboard?publish=yes

Summary:

We notice from the dashboard that the **"June"** month is the most months that has a delay at the take-off time of the flight where the average delay of the flight reach to 23.88 minutes. The delay is sums up average departure delay and average arrival delay. It was most delay in this month due **"late aircraft**". While the **"September"** month is the best month for travel, where the average of departure delay reach to 4.5 minutes.

Design:

- Line plots for change departure delay over the months of the year 2015.

- Stacked bar charts to represent types of delay for each month.

- I am using for coloring the plots "color blind palette" to be appropriate for color-blind people.

- We can filter by airline and airport.

Resources: N/A

I concluded from visualization these data

- The Texas and California states have the most flight canceled in US.

- The top two reasons for flight departure delays in USA Airline companies in 2015 are late aircraft and air system delay.

- The Southwest airlines company is the best to travel with it.

- June moth has the highest average delay reach to 23.88 minutes.