U.S. Flight Performance and Delays In 2016

Summary:
In this data visualisation I used U.S Bureau of Transportation Statistics Flights data in the year of 2016. This dataset consists of of United States domestic flights data the country's airlines and airports, cancellation, delays and causes.

This visualisation will give an overall performance overview by each month, day of the month, and weekdays. In addition to exploring departure delay and cancellation rates, and investigating their causes overtime.

Final Version link:
https://public.tableau.com/profile/rawan.almohimeed#!/vizhome/U_SFlightDelays2016_v2/Story1?publish=yes

Design:
The initial design choices include different types of charts:

- Line charts, are good to represent trends overtime which would be suitable to show the flights performance.
- Bar charts, are used to compare and summarize distribution of data overtime in single visualization.
- Color Encoding, is used to visualize different categories of data in one graph, and draw comparisons.
- Color Encoding, is also used to show the average distribution and give the reader quick grasp of data meaning.

To follow good design practices this visualization aims to be informative with the least distractions. The design choices I made after thoroughly exploring the data:

1. The performance overview: rather than just including the distribution of flights performance by each month, I also included Weekday and Day of Month distribution, because it gives an interesting patterns.
2. Visualized the data of each airport in an interactive map, to help the reader understand the data more clearly.
3. Provided the visualization with multiple filtering options, to help the reader focus on perspectives of interest.
4. Used colors where appropriate to draw comparison.

5. In the comparison between delay causes I initially focused on how it changes overtime in each month, but I was surprised to discover interesting insights when looking at the data according to airlines.
6. In the map I initially encoded the average delay in color in reverse order (darkest means less delay), this was misleading and hid some information of airports with higher average delay.

However I changed some of the visualization based on the feedback I have received, which I will explain in the next section.

Feedback:

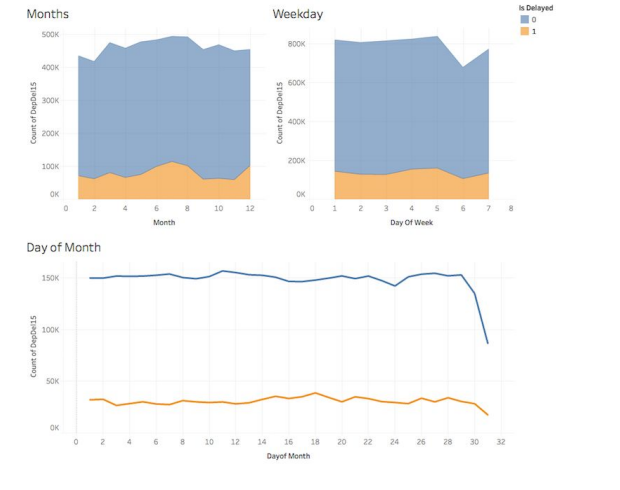
I have shared my initial visualization with many people with different backgrounds, this was very helpful because it helped me understand how readers can view the same data in different perspectives.

Initial visualization link:

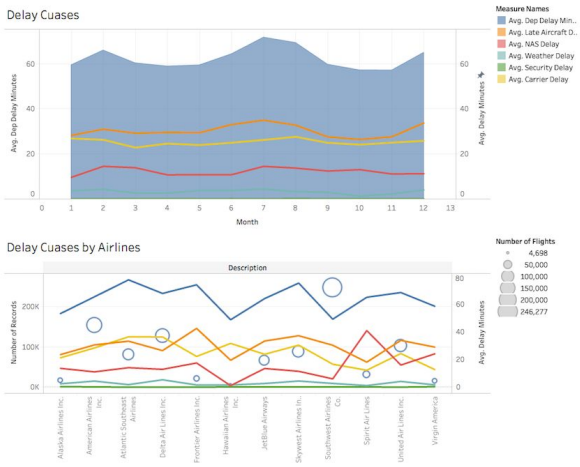
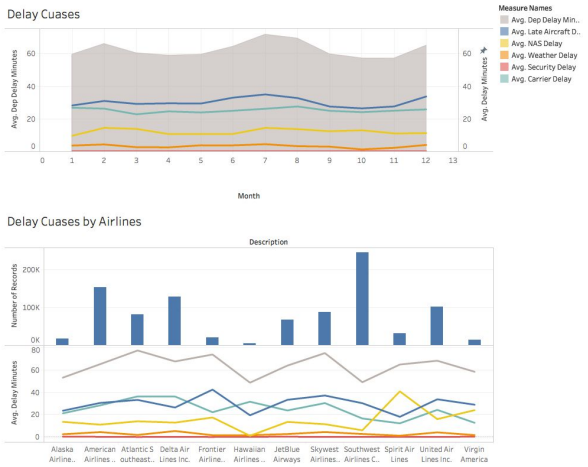
https://public.tableau.com/profile/rawan.almohimeed#!/vizhome/FlightDelays_2016/Story1?publish=yes

Feedback details and changes:

1. In the flight distribution overtime I initially visualized the data as bar chart encoded with colors to show delayed and on-time flights, this was changed to line chart with area with same color encoding.

	
Before	After

2. This visualization was not very clear in regard to the number of flights for each airport, so I decided to separate them:

Before	After
	

Resources:

1. U.S Bureau of Transportation Statistics: https://www.transtats.bts.gov/DL_SelectFields.asp?Table_ID=236&DB_Short_Name=On-Time