

My contribution to this project dealt with looking at how carrier delay, cancelled flights, diverted flights impacted all the different carriers which operated in 2016. A majority of the flights were highly impacted by the carriers' themselves and other flights were directly impacted by the weather itself.

I carried out exploratory analysis, for example determining how Arrival Delay has a relationship with departure delay for all the carriers and indeed through the use of a scatter plot, there was a positive relationship between the two delays, which meant that as departure delay increases, arrival delay also increases in the same direction. I derived a univariate scatterplot showing Carrier Delay vs the different carriers and it was discovered that American Airlines had the most amount of delays and Virgin America had the least amount of carrier delay.

To discover any patterns in the distribution of Arrival, Carrier, Weather, NAS and late aircraft delays against their values, I built a box plot which demonstrated the distributions of all these delays against their values and it was discovered that they existed potential outliers, which need to be investigated and removed amongst all the different delays.

To derive more insights from the flight data set, I derived a bar chart showing the daily number of flights per Carrier filtered by carrier and month and found some interesting patterns for example for most of the flights from the different carriers, the busiest days were Thursdays, Sundays and Fridays and this explains a lot because a good number of Americans travel on those days especially when they are coming back from work on either on Thursdays or Fridays and heading back to work on Sundays in the different remote Cities before the week starts. Amongst the number of flights from the different carriers, a majority of flights were cancelled, diverted or slightly delayed on those days and those delays or cancellations always resulted in customers' unexpected costs thus loss of dollars in hotel bookings etc. After discovering the pattern in cancellations for the different flights, I also derived a bar chart showing the daily cancelled flights per cancellation reason and compared with weather, carrier reason dominated all other reasons explaining why a high number of flights were cancelled on any day of the week.

For the infographic, I put together an animated scatter plot which on a daily or month basis defined a strong relationship between arrival delay and departure delay. To sum it up, I went a head and implemented a flex dash board with shiny to include user interactivity so that any stake holder using the dash board, they are able to select a given carrier and month from a drop down menu and the given data points would change on the different charts and also be able to view data points information on mouse hover events when the user hovers over the chart.

Overall, I learned a great deal of presenting information to the users without including distortion and clutter within the charts I implemented. Furthermore, looking at the number of flights for a given carrier which were cancelled or diverted because of the weather or carrier, a number of customers lost a lot of money in unexpected costs as result of flight cancellations or diversions. I believe this is something the Federal Aviation administration under the U.S Department of Transportation can look into in order to avoid unnecessary costs on the customers. The different carriers need to invest a lot of money in maintaining their fleet of planes because when a carrier cancels a flight, it is always the customer that suffers.