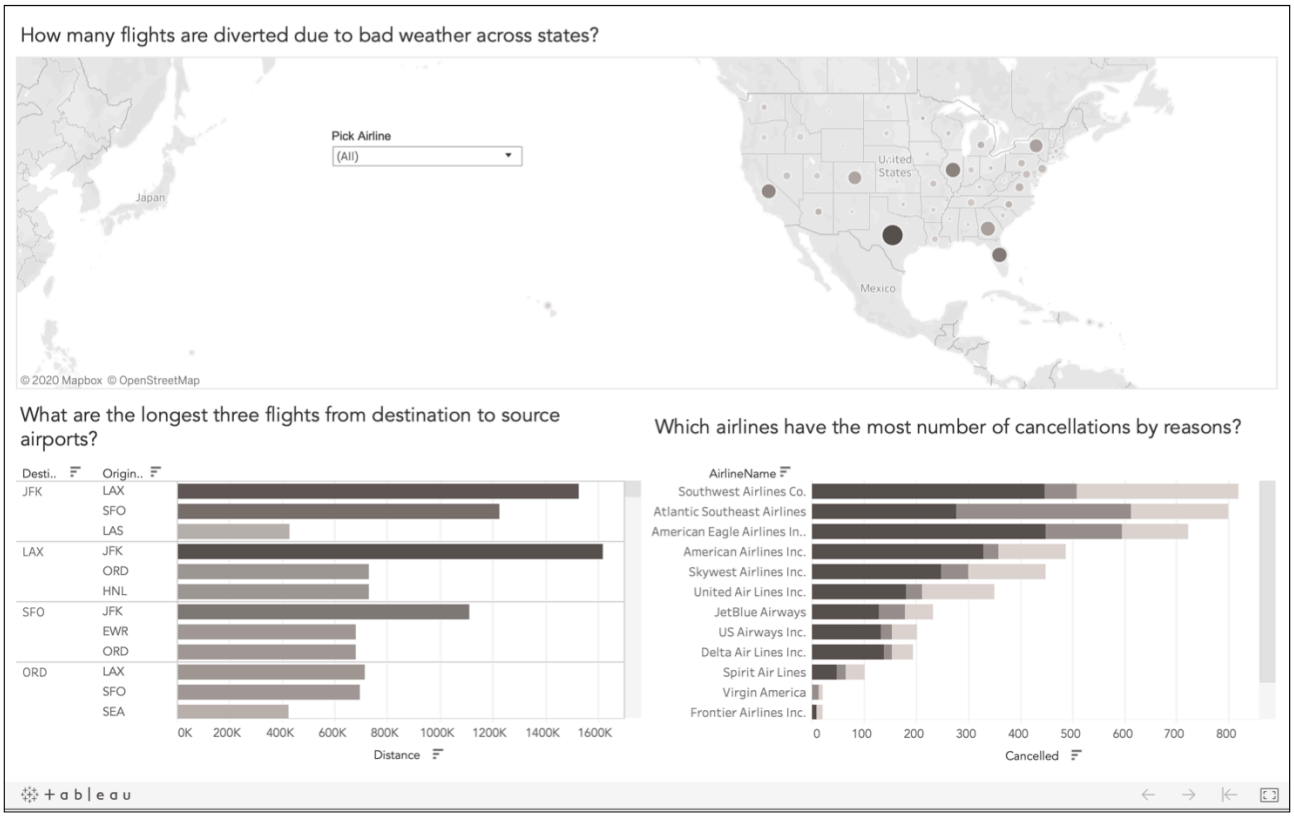
Business Analytics Nanodegree Program

Udacity Nanodegree (In Collaboration with Tableau and Mode)
Course-4: Data Visualisation
Project: Build Data Dashboards

Flight Delay & Cancellation Dashboard



URL: https://public.tableau.com/profile/bhavin5551#!/vizhome FlightDelayandCancellationDashboard/ FlightDelayandCancellation

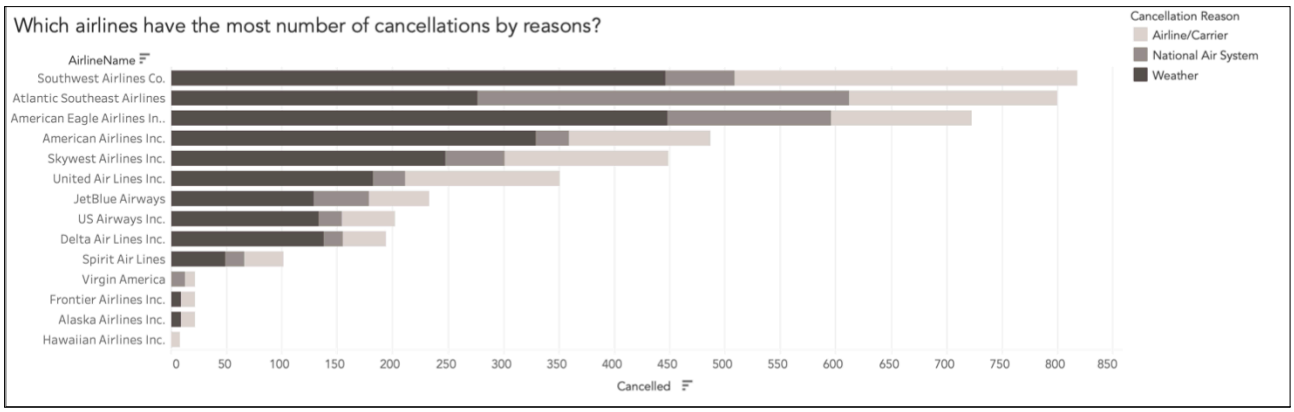
1. Summary & Design:

In order to create 'Flight Delay and Cancellation Dashboard/Visualisations', I made use of the following three datasets including:

i) Flights - Updated Cancellation Request Values from Kaggle URL
ii) Airlines - Joined to Flights (On Airline Using IATA Code)
iii) Airports - Joined to Flights (On Destination Airport using Iata Code)

Additionally, performed data-cleaning in Excel prior to creating visualisations. Few changes made include getting rid of unnecessary columns.

Viz#1 - ‘Which airlines have the most number of cancellations by reason’?

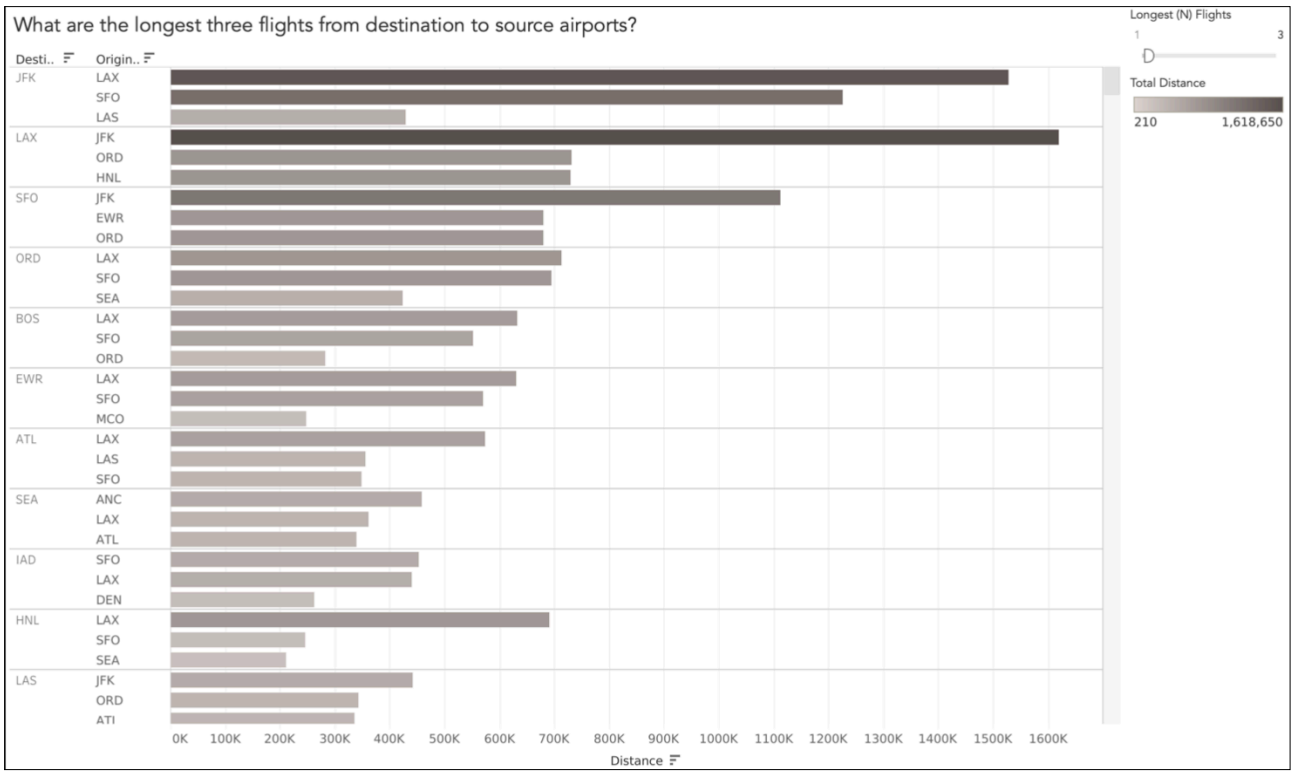


Description:

From the above visualisation, we can determine the most number of cancellations made by any airline based on any given reason. We can conclude that Southwest Airlines (#818) had most number of cancellations, followed by Atlantic Southeast Airlines (#800). Using the colour encoding, in the above Horizontal-Stacked-Bar-Chart we can check reason for cancellation made by the airline in a detailed fashion. Sorting records in descending order allows us to see most to least number of cancellations. Using filter, we are able to interact with the visualisation. Few design-choices taken into consideration including appropriate selection of colour-palette to allow readability for colour-blinded people. Moreover, axis are properly labeled and font-size adjusted to increase the visual appearance.

URL: https://public.tableau.com/profile/bhavin5551#!/vizhome/Viz1CanellationbyReason/CancellationbyReason

Viz#2 - ‘What are longest three flights from destination to source airports’?

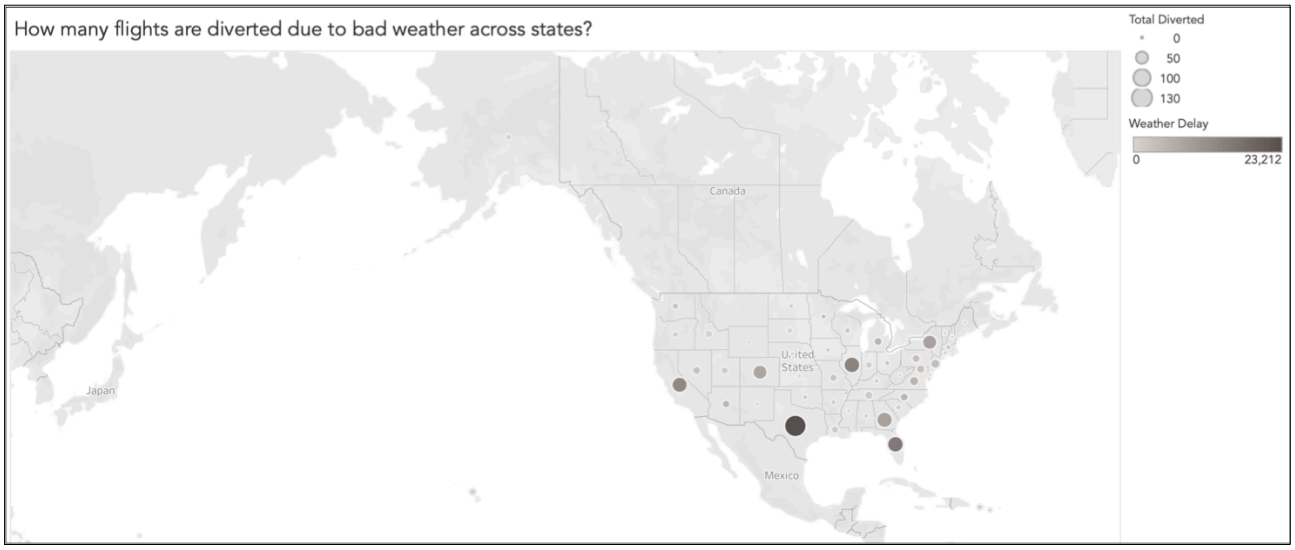


Description:

Using the above visualisation, we can check the longest three flights from any destination airport to origin. For instance, John F Kennedy Aiport (New York City) to Los Angeles Airport (Los Angeles) has a cumulative distance of 1,527,075 miles followed by San Francisco Airport (California). In order to determine Top-3 (N) flights in Horizontal Bar-Chart, a Calculated-Field named ‘Index’ was created and using INDEX() Formula by performing custom-sort on the Destination Airport (restricting the range of values to 3) we are able to check for longest three flights. Filter Slider is available on side-pane to check longest three flights from destination to source airport. Additionally, colour-bar indicating total-distance across airports is present for additional functionality.

URL: https://public.tableau.com/profile/bhavin5551#!/vizhome/Viz2LongestThreeFlights/LongestThreeFlights

Viz#3 - ‘How many flights are diverted due to bad weather across states’?

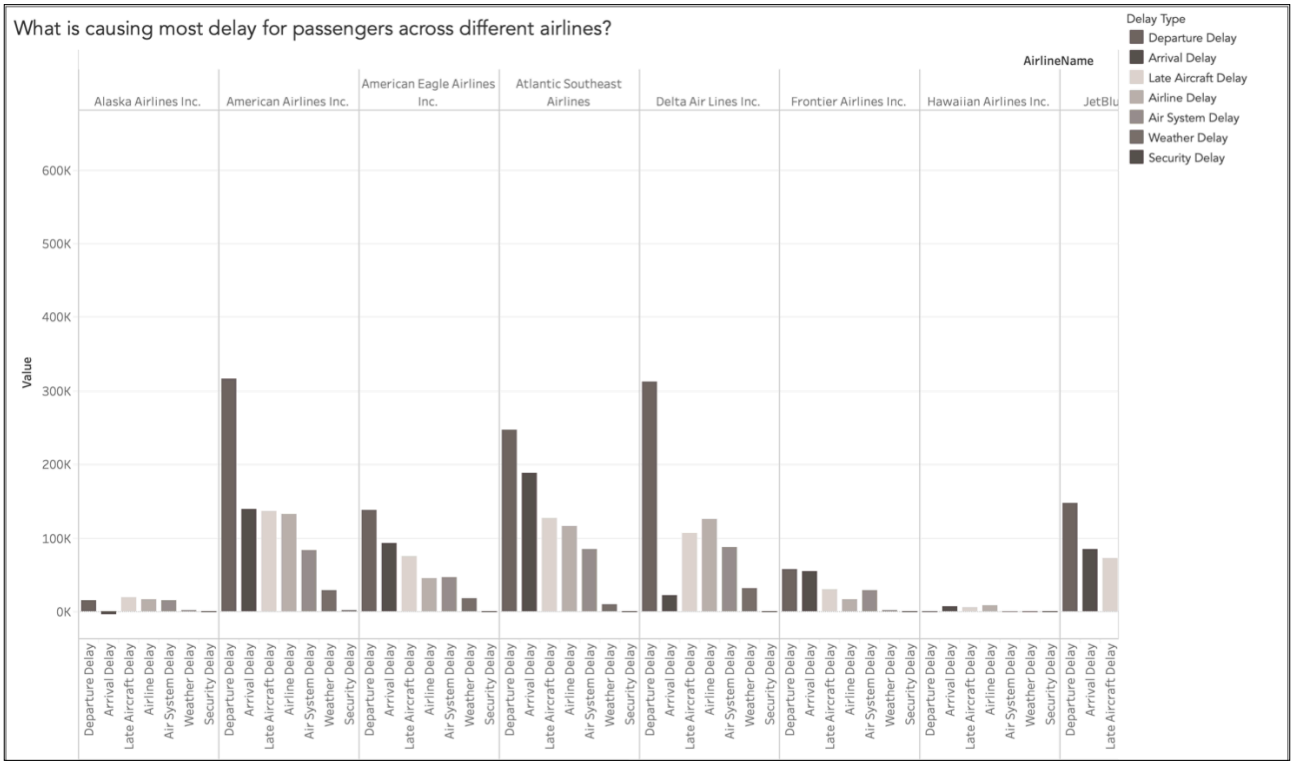


Description:

Looking at the above visualisation we can see total number of flights diverted per state due to bad weather conditions. Along with the creation of a Global Map with Longitude and Latitude coordinates we can check total no of diverted flights. For instance, the state of Texas (#50) had most number of flights diverted in the year 2015. In addition to that, using the Weather Delay measure we can account for delay in flight times due to bad weather. Total Diverted Filter placed on side-pane provides range of flights averted. Design considerations include appropriate use of Marks Card such as Size and Colour to depict the magnitude of damage. Additionally, Chart-Title and Tooltips are updated for improved understanding to the reader.

URL: https://public.tableau.com/profile/bhavin5551#!/vizhome/Viz4FlightsdivertedbyWeather/DivertedFlights

Viz#4 - ‘What is causing most delay for passenger across different airlines’?

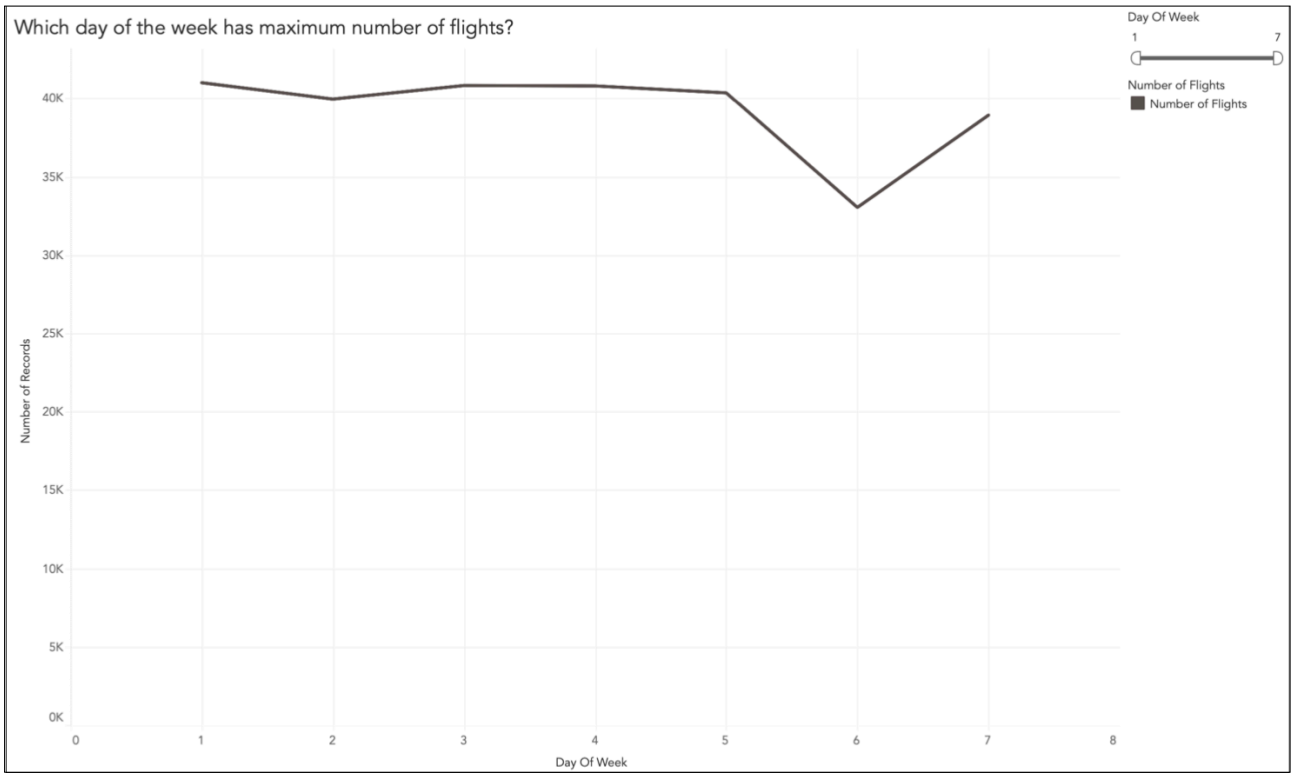


Description:

In the above chart we can predict reasons for delay among passengers across different airlines. For example, American Airlines had 315,771 flights delayed due to delay in departure time and 138,580 due to delay in arrival time for the year 2015. Additionally from the, Side-by-Side Chart we can check cause of delay using x-axis and effect on y-axis. Filter is provided on side-pane for animation purpose. To enhance, readability design choices such as appropriate use of colour was taken into account. Font-Sizes were also adjusted for better legibility.

URL: https://public.tableau.com/profile/bhavin5551#!/vizhome/Viz3MostDelaybyReason/DelaysbyReason

Viz#5 - ‘Which day of week accounted for maximum number of flights’?



Description:

The Line-Chart above, tells us the total number of flights by any airline according to the day of week. We can conclude Saturday (33,039) had least number of flights among remaining days. Here, we can check day-of-week on x-axis and number of flights on y-axis. Using, Range Slider we can modify days of week. A line-graph is shown above to plot series of data. For design improvements and readability appropriate labelling of axis, addition of title and choice of colour has been made.

URL: https://public.tableau.com/profile/bhavin5551#!/vizhome/Viz5NumberofFlightsbyDay/MostFlightsbyDay

Publishing to Tableau Public:

Upon completion of above visualisations, dashboard was created by adjusting ‘Screen-Size’ to automatic. Filters were linked to all the worksheets and dashboard was published to Tableau Public.

References/Resources:

1. https://help.tableau.com/current/pro/desktop/en-us/dashboards_best_practices.htm
2. https://help.tableau.com/current/pro/desktop/en-us/stories.htm