

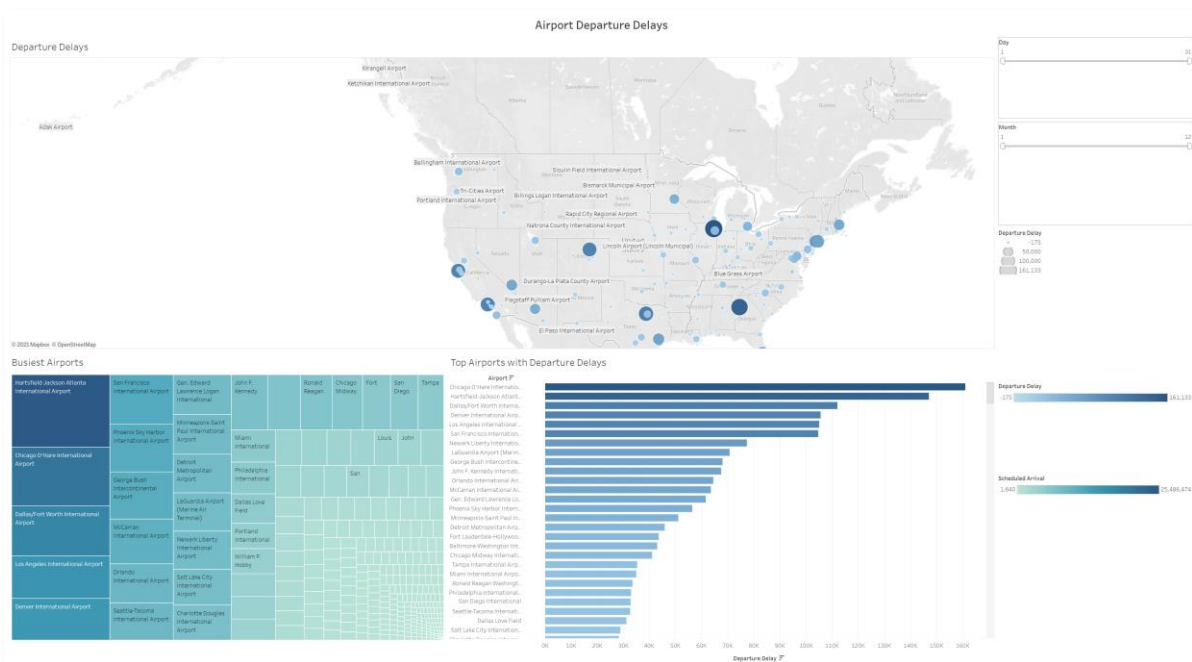
Project 1 - Build Data Dashboards Insights

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The dashboard, Airport Departure Delays, can be accessed [here](https://public.tableau.com/profile/krishna.nadoor#!/vizhome/Udacity-DashboardProject1/AirportDepartureDelays?publish=yes), or follow the link below:
<https://public.tableau.com/profile/krishna.nadoor#!/vizhome/Udacity-DashboardProject1/AirportDepartureDelays?publish=yes>

Summary:

The dashboard widgets depict the departure delays across airports in the United States. A heatmap widget is also available titled 'Busiest Airports' which highlights the airports that has the greatest number of arrivals, one of the reasons that contributes to departure delays. The dashboard can be filtered by the month and day to explore how departure delays change over the course of a year.



Insight 1:

Atlanta International Airport is known as the world's busiest airport¹, with scheduled arrivals totalling more than 25.4 million over the course of the year in the dataset, it is also the second biggest in terms of departure delays, with the first being the Chicago O'Hare International Airport. Using the heatmap was the preferred approach in visualizing the busiest airports as the magnitude of each airport being busy with respect to others is easily highlighted given the size of each partition on the heatmap, the gradient colour scale also gives us a picture of the magnitude difference between airports.

Insight 2:

The county and regional airports have the least amount of departure delays, when considered with the fact that they primarily sit in the bottom right corner of the heat map for the least busy airports. Ithaca Tompkins Regional Airport is the least busy with only 1640 scheduled annual arrivals. However, it was not the airport with the least amount of departure delays, which was Range Regional Airport in Minnesota. A horizontal bar chart was used for one of the widgets as it lists out the full airport and provides a quick way to compare the delays between airports. This type of bar chart is better than a heatmap or a map in representing delays because some departure delays for airports have negative values, this is being considered as the aircraft that have left earlier than the expected take-off time. The blue colour on the bars adds a different dimension to the size of each bar chart, with a darker blue indicating greater departure delay than when compared to a lighter blue.

Insight 3:

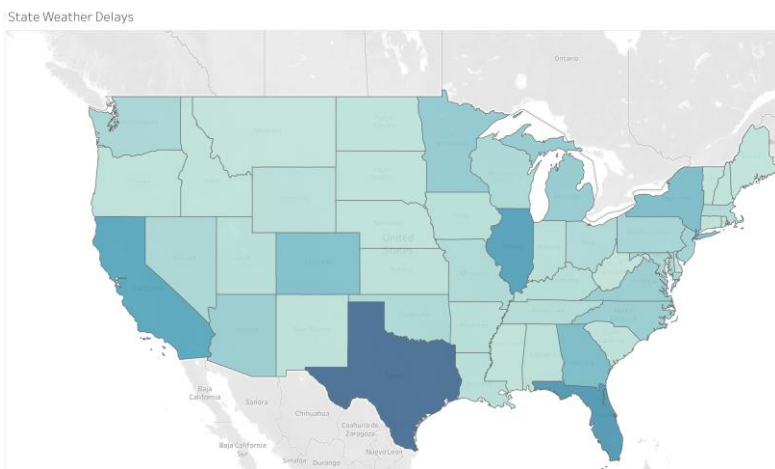
Thanksgiving is celebrated on 25th November, it is interesting to note that a few days before this date (such as on the 19th), looking at the map visually we can see departure delays primarily in the larger airports of Atlanta, Denver etc. However, as the 25th approaches a lot of the regional/county airports experience increased departure delays with the highest being on the 23rd. There is a large drop in departure delays on the 24th indicating a lot of people would have completed their travels, with an uptick of departure delays on the 25th for last minute travellers. A map was used for highlighting the departure delays as it allows for quick viewing of the delays of all the airports in one visualization (as opposed to a bar chart where the user needs to scroll down and potentially lose track of the magnitude of the airports not shown on the scroll view). It's also geographical so we can see where one airport is in the country as opposed to another (bar charts and heat maps do not offer this dimension of geographical location). The bubbles and the colour contrasts quickly show the viewers the airports with the most delays.

Insight 4:

The [following is a scatter plot](#) and it is showing for the different airlines, the amount of flights with arrival delays and on-time arrivals. We can see that across the year on average, Delta Airlines (DL) scores the best on being on-time and with minimal arrival delays. In contrast, Hawaiian Airlines (HA) and Virgin America (VX) rate worse for on-time arrivals and delays. A scatter plot was chosen here because I wanted the viewer to easily see the Arrival Delay/Arrival Time of one aircraft carrier with respect to another on one chart. It is not possible to do this on a heatmap or a bar chart as otherwise we would need to have 2 sets of each, one to represent the Arrival Delay and the other being Arrival Time. With a scatter plot, it also becomes easy to determine the best airlines that are most punctual – all the ones on the lower left of the diagram. The colours chosen here are colour-blind friendly and each is intended to represent a different airline.

Insight 5:

The [following geographic plot shows](#), over the course of a year, Texas is the state that has experienced the most weather delays at 23,212 hours across flights, in contrast, Maine (ME) has experienced the least weather delays over the course of the year at 156 hours across flights. I have chosen a map for this visualization because I wanted the viewer to quickly see which states have experienced more weather delays than others on one plot, this adds a geographical dimension as we can see where the states are (perfect for viewers who don't live in USA, such as myself!) with respect to others. The colour coding used is colour-blind friendly and the colour gradient scale allows the viewer to see the magnitude of the delays quickly.



References:

[1] <https://www.usatoday.com/story/travel/news/2021/04/22/atlanta-airport-atl-no-longer-busiest-airport-world/7334103002/>