U.S. Flight Delay Dashboard

FINC 560 Data Visualization

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Outline

1. Introduction

❖ Air travels have a significant role in the economy of agencies and airports.

❖ Flight delay is inevitable and it plays an important role in both profits and loss of the airlines.

1. Introduction (cont.)

Goal:

❖ To design and implement a web-based interactive visualization using d3.js

❖ To take a look inside into the U.S flight delay data by using many various visualizations such as chart, donut, force, choropleth map.

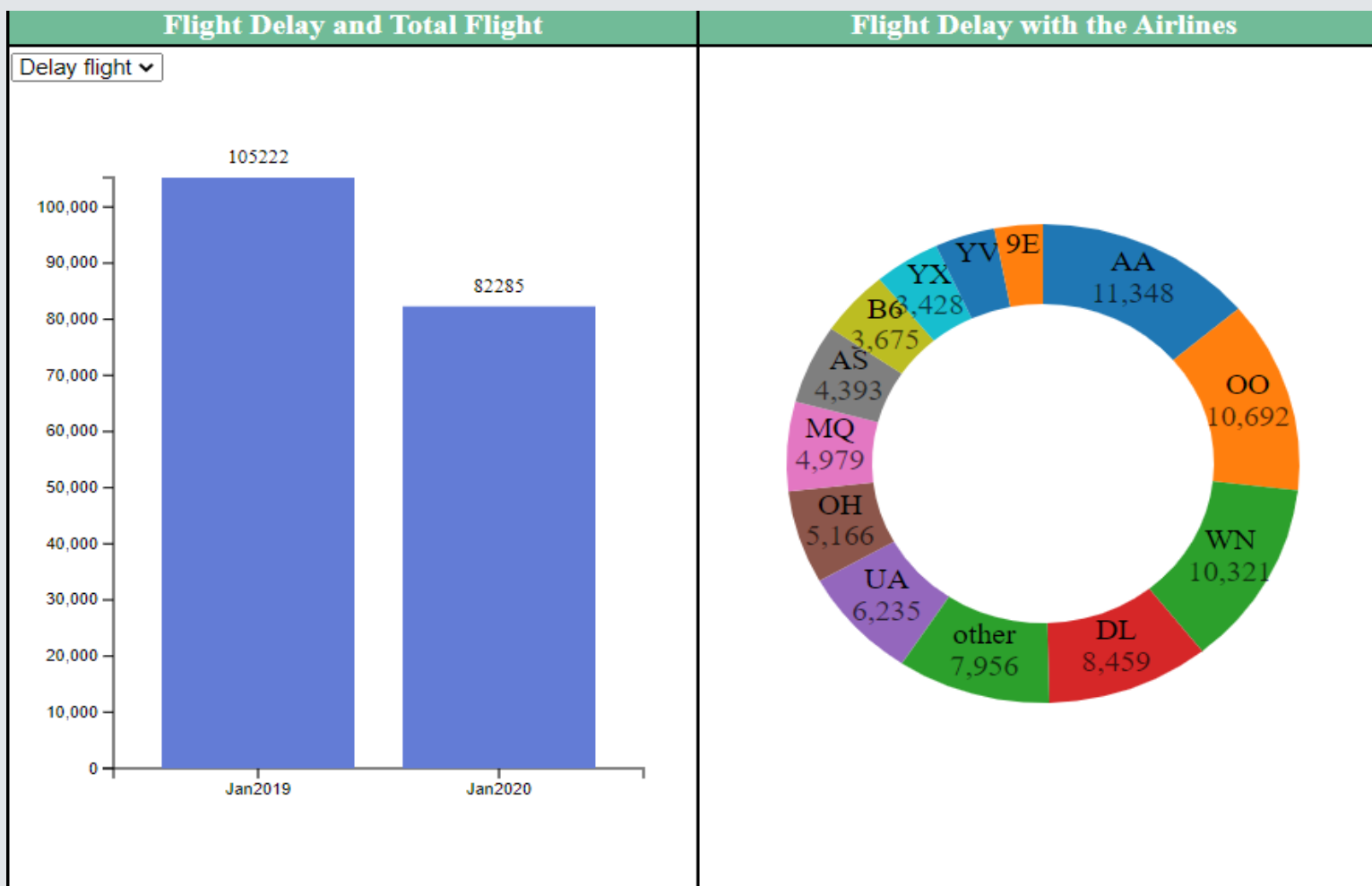❖ Technology: Using HTML5, CSS6, Javascript, and D3.

2. Data Definition

❖ The data is collected from the Bureau of Transportation Statistics, Govt. of the USA.

❖ Contains all the flights in the month of January 2019 and January 2020.

❖Source: https://www.kaggle.com/divyansh22/flight-delay-prediction

2. Data Definition (cont.)

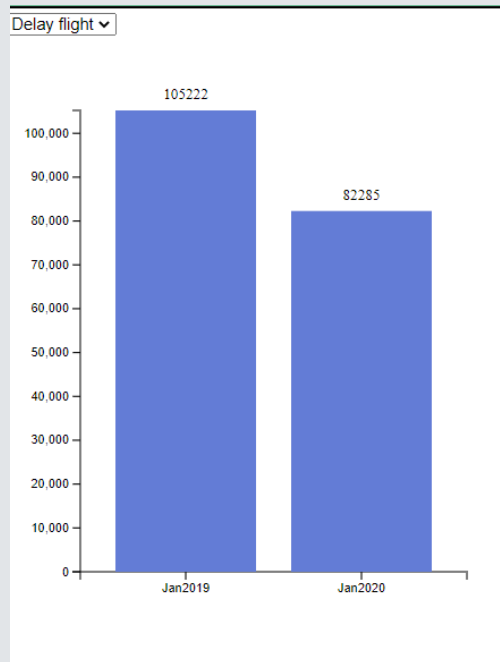| Column name	Description
OP_CARRIER	Code assigned by IATA and commonly used to identify a carrier
ORIGIN	Origin Airport
DEST	Destination Airport
DEP_DEL15	Departure Delay Indicator, 15 Minutes or More (1=Yes, 0=No)

3. Flight Delay Visualization

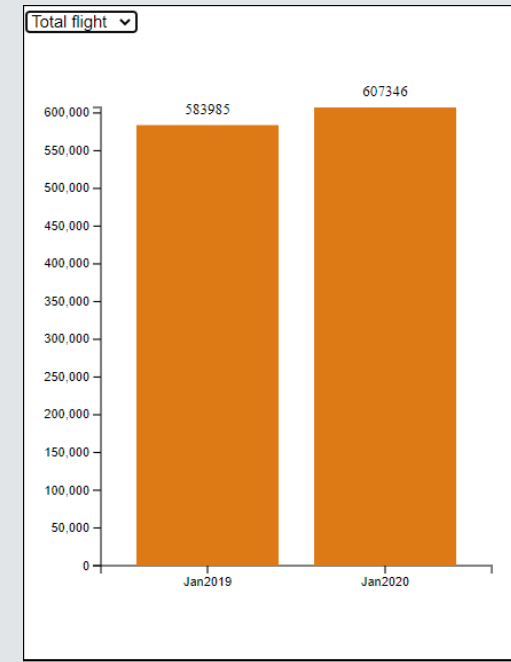*Figure 1: Bar chart and Donut chart showing Flight Delay, Total Flight, and Flight Delay within the Airlines*

3. Flight Delay Visualization

Total Flight Delay

Total Flight
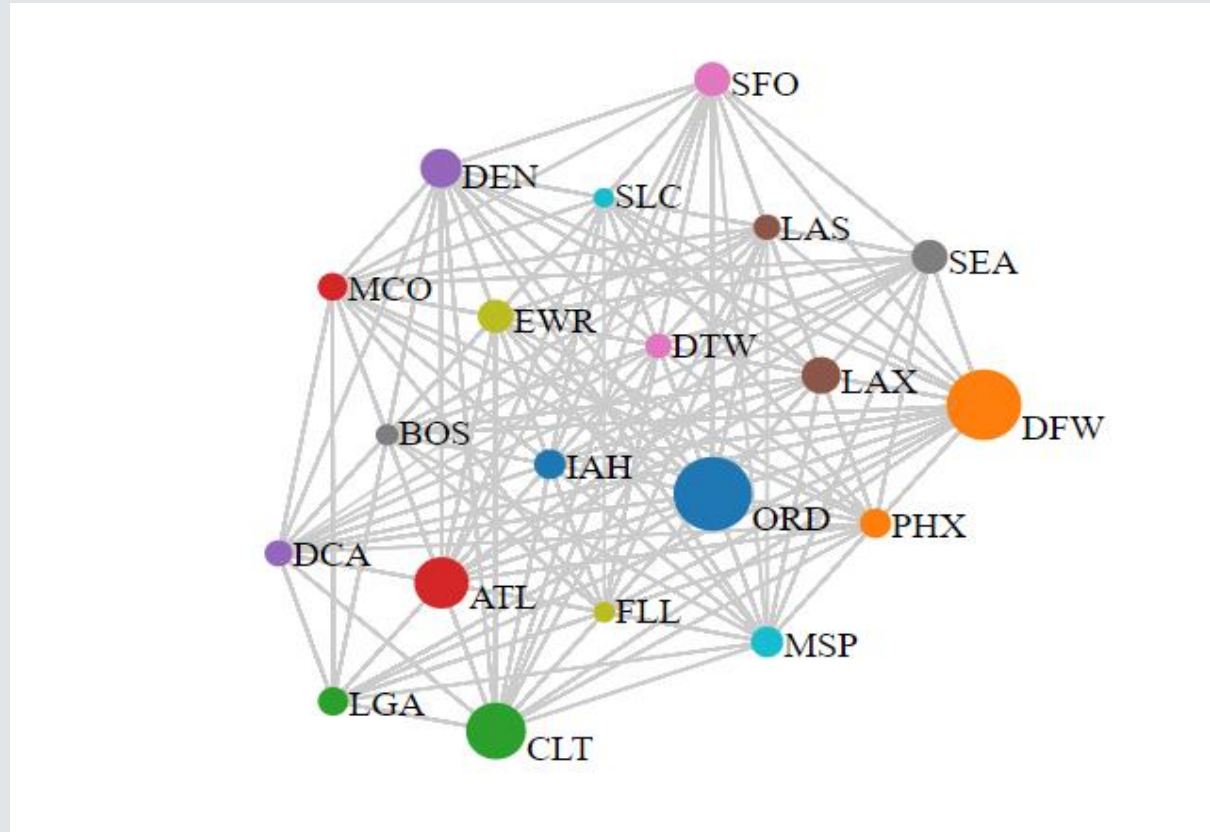
3. Flight Delay Visualization

Figure 2: Force Layout Graph showing the flight delay from the origin and the destination between the top 20 airports
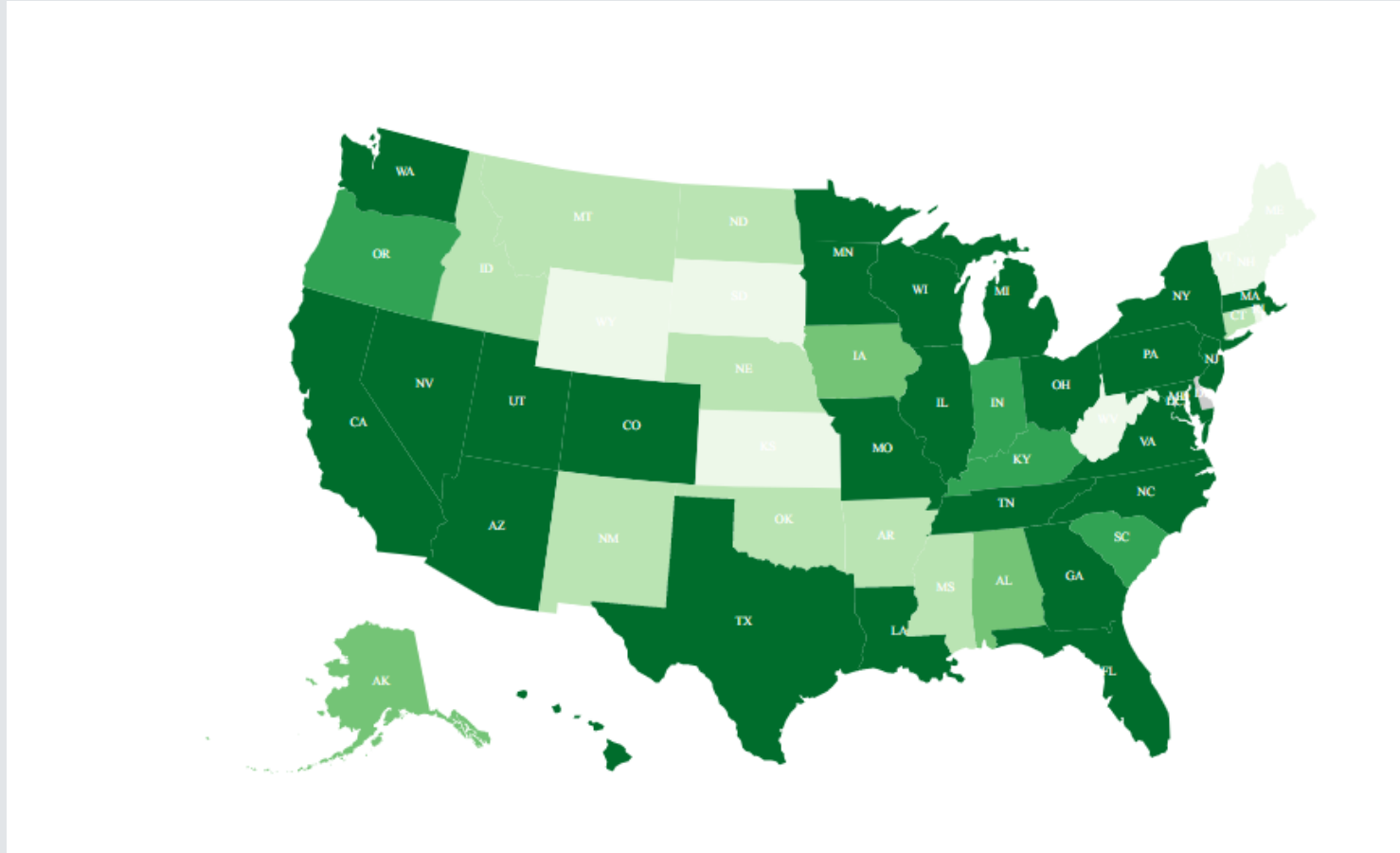
3. Flight Delay Visualization

Figure 3: Choropleth map showing the flight delay in the U.S. States

4. Outcome

Visualization outcome:

1. The bar chart illustrates the total flight delay and the total flight. Overall, it is clear that the figures for total flights had an increase. However, the number of flight delay fell over during the period.

2. The donut chart compares the flight delay within the airlines. In January 2020, top three Airlines have more flight delay are American Airlines (AA), Skywest Airlines (OO), and Southwest Airlines (WN).

3. The force layout graph shows the network visualization between the top 20 airports. We can see that all airports had a connection with the others.

4. The choropleth map represents statistical flight delay data through various shading patterns on each state in the US. In this case, Texas, California, Arizona, Florida,... show the flight delay higher than other states.

4. Outcome (cont.)

Web-based interactive outcome:

❖Using HTML5, CSS6, Javascript, and d3.js technique, I designed the U.S. Flight Delay Dashboard that was run successfully on localhost.

❖Github Page: https://thinguyen3.github.io/d3/

❖Github Repo: https://github.com/thinguyen3/d3_proj

5. Question and Answer