

## Airline Delay Dashboard

### Overview

This project visualizes flight delays for various airlines. The dashboard is designed using D3.js and incorporates interactive elements to enhance user engagement and data exploration. It includes a bar chart to display the number of delays for each airline, with the ability to filter data based on the selected airport.

### Instructions to Load the Project

#### 1. Download the Project Files

- Download all the project files, including index.html, Airline\_Delay\_Cause.csv, and any other resources provided.

#### 2. Set Up a Local Server

- You can use the Live Server extension in Visual Studio Code (VS Code) to run the project locally.

### Using Live Server Extension

#### 1. Install Visual Studio Code (VS Code)

- If you don't have VS Code installed, download and install it from [here](#).

#### 2. Install Live Server Extension

- Open VS Code.
- Go to the Extensions view by clicking the Extensions icon in the Activity Bar on the side of the window or by pressing Ctrl+Shift+X.
- Search for "Live Server" and click the **Install** button on the "Live Server" extension by Ritwick Dey.

#### 3. Open the Project Folder

- Open VS Code.
- Go to File > Open Folder and select the folder containing your project files.

#### 4. Start Live Server

- In VS Code, right-click on the index.html file in the Explorer view and select Open with Live Server.
- Alternatively, you can click the **Go Live** button in the bottom-right corner of the VS Code window.
- Your default web browser should open and navigate to <http://127.0.0.1:5500/index.html>, displaying the Airline Delay Dashboard.

## Interaction Design

### Interactions Implemented

#### 1. Details on Demand (Tooltip)

- **Interaction:** When users hover over a bar representing an airline, a tooltip appears showing detailed information about the airline, airport, number of flights, delays, and reasons for delays.
- **Support:** This interaction provides users with instant access to detailed data without cluttering the main visualization. It enhances the exploratory experience by allowing users to delve deeper into specific data points.
- **Example:** Hover over a bar for "American" to see details such as "Flights: 200, Delays: 30, Carrier Delay: 10, Weather Delay: 5".

#### 2. Data Filtering (Dropdown)

- **Interaction:** A dropdown menu allows users to filter the data by selecting a specific airport. The bar chart updates to display delays for airlines operating at the selected airport.
- **Support:** This interaction helps users focus on relevant data by filtering out unnecessary information. It aids in comparative analysis across different airports.
- **Example:** Select "Los Angeles International Airport" from the dropdown to see delays for airlines operating at LAX.

#### 3. Visual Encoding (Bar Chart)

- **Interaction:** The bar chart encodes the number of delays for each airline as the height of the bars, making it easy to compare delays across different airlines.
- **Support:** This visual encoding allows users to quickly grasp the distribution of delays and identify airlines with the highest or lowest delays.
- **Example:** The chart shows taller bars for airlines with more delays, such as "Delta" with 50 delays compared to "Southwest" with 20 delays.

### Rationale for Interaction Choices

- **Enhanced User Engagement:** By integrating interactive elements, the dashboard becomes more engaging and encourages users to explore the data.
- **Improved Data Accessibility:** The interactions provide multiple ways to access and interpret the data, making the dashboard more user-friendly.
- **Clear Data Storytelling:** The interactions help to tell a clear and compelling data story by highlighting important aspects of the data, such as high delay rates for certain airlines or airports.

