**Flight Data Analysis Project Documentation**

**Overview**

* This project analyzes flight data to provide insights into airline performance, including flight statuses, delays, and operational metrics.
* The data is visualized and summarized to help understand trends and patterns in airline operations.

**Data Sources**

* The data includes information on flight statuses, delays, and airline performance metrics.
* It is categorized by airlines, airports, and regions, providing a comprehensive view of the aviation industry.

**Key Metrics**

**Flight Status**

* **Before-Time Arrival**: Number of flights arriving before the scheduled time.
* **Delayed Arrival**: Number of flights arriving after the scheduled time.
* **On-Time Arrival**: Number of flights arriving exactly on time.

**Delays**

* **Average Security Delay**: Average delay caused by security checks.
* **Average Late Aircraft Delay**: Average delay caused by late aircraft.
* **Average Arrival Delay**: Average delay in flight arrivals.
* **Total Departure Delay**: Total delay in flight departures.
* **Total Arrival Delay**: Total delay in flight arrivals.

**Airlines**

* **Number of Aircraft**: Total number of aircraft operated by each airline.
* **Number of Flights**: Total number of flights operated by each airline.
* **Average Arrival Delay**: Average delay for flights that arrived late.

**Visualizations**

* **Flight Status by Airline**: Bar charts showing the number of flights by status (before-time, delayed, on-time) for each airline.
* **Total Arrival and Departure Delays by Month**: Line graphs depicting the total delays over the months.
* **Number of Flights by Destination and Origin**: Maps or bar charts showing the number of flights by destination and origin regions.
* **Average Delay by Airline**: Bar charts showing the average delay for each airline.