

# GRAND PROJECT

## The objective

The objective of this project is to create a basic flight analyses system for an airport to analyze flight and passenger data by using the pandas and the tkinter libraries.

## The overview of the Project

Session (1/4) – Understanding problem, Coding

Session (2/4) – Coding

Session (3/4) – Coding

Session (4/4) – Preparation and submission of the report and the code.

## Preparation

1. Download the given project file.
2. Install the **pandas library** (under python):
  - For Windows user: In the command prompt, enter the command: **pip install pandas**
  - For MacOS / Linux: in the terminal, enter the command: **sudo pip3 install pandas**

## The Project organization and submission

You will work in groups of 4 students during the project. The report will be written in the overleaf platform with a provided link during the project. The maximum mark is 20 points.

Project submission will be at the end of the session (4/4).

Submission file: In a zip file with the group name

- the report groupname.pdf (max 4 pages)
- groupname.py python file
- small video showing your solution steps

to the email address: [aybuke.ozturk@ipsa.fr](mailto:aybuke.ozturk@ipsa.fr)

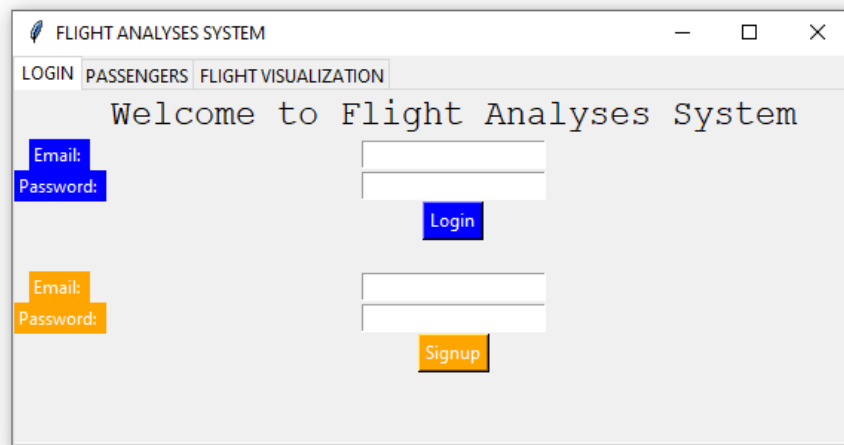
## The Steps of the project

### 1) LOGIN:

**View:** Login Tab is presented as given in Figure 1.

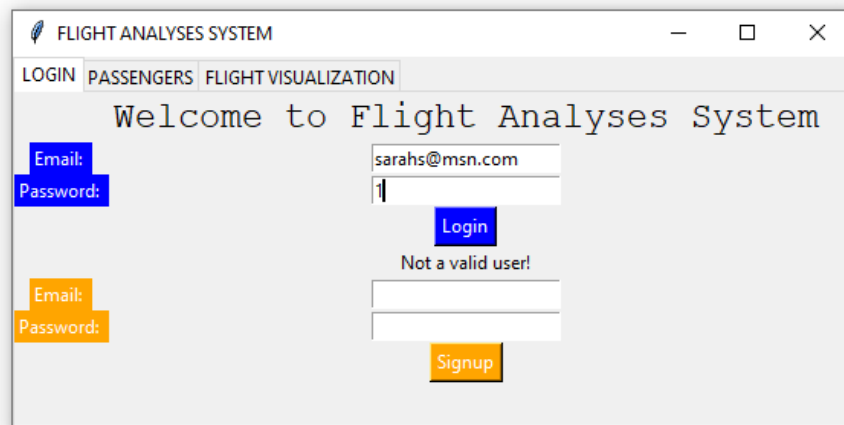
**Actions:**

1. Login the system by entering an email and a password. If the user is not existing, display "Not a valid user!" (see Figure 2). If user is existing, display "Welcome to the analyses system!" and update the user\_login.csv file with the user email, current date, and time information to save login information (see Figure 3).



The screenshot shows a web application window titled "FLIGHT ANALYSES SYSTEM". It has three tabs: "LOGIN", "PASSENGERS", and "FLIGHT VISUALIZATION". The "LOGIN" tab is active. The main heading is "Welcome to Flight Analyses System". There are two sets of input fields. The first set, labeled "Email:" and "Password:" in blue, has a blue "Login" button. The second set, labeled "Email:" and "Password:" in orange, has an orange "Signup" button.

Figure 1 - LOGIN



The screenshot shows the same web application window as Figure 1. The "Email" field in the blue login section now contains "sarahs@msn.com" and the "Password" field contains "1". The blue "Login" button is highlighted. Below the login fields, the text "Not a valid user!" is displayed. The orange "Signup" button remains visible at the bottom.

Figure 2 – LOGIN – Not valid user

The screenshot shows a web application window titled "FLIGHT ANALYSES SYSTEM". It has three tabs: "LOGIN", "PASSENGERS", and "FLIGHT VISUALIZATION". The "LOGIN" tab is active. The page displays "Welcome to Flight Analyses System". On the left, there are labels for "Email:" and "Password:" in blue boxes. The email input field contains "sarahs@msn.com" and the password input field contains "150779". A blue "Login" button is positioned below the password field. Below the login button, the text "Welcome to the analyses system!" is displayed. At the bottom left, there are labels for "Email:" and "Password:" in orange boxes, and an orange "Signup" button is at the bottom right.

Figure 3 – LOGIN – Welcome to the analyses system

2. Signup the system by entering an email and a password. If the user is existing, display "Already signed up email!" (see Figure 4). If user is not existing, update the user\_info.csv file with the user email and password and display "New user is registered!" (see Figure 5).

The screenshot shows the same web application window as Figure 3. The "LOGIN" tab is active. The page displays "Welcome to Flight Analyses System". On the left, there are labels for "Email:" and "Password:" in blue boxes. The email input field is empty, and the password input field is empty. A blue "Login" button is positioned below the password field. Below the login button, the text "Already signed up email!" is displayed. At the bottom left, there are labels for "Email:" and "Password:" in orange boxes. The email input field contains "sarahs@msn.com" and the password input field is empty. An orange "Signup" button is at the bottom right.

Figure 4 – LOGIN – Already signed up email

FLIGHT ANALYSES SYSTEM

LOGIN PASSENGERS FLIGHT VISUALIZATION

Welcome to Flight Analyses System

Email: Password: Login

Email: Password: sar.sar@msn.com 535345 Signup

New user is registered!

Figure 5 – LOGIN – New user is registered

## 2) PASSENGERS:

**View:** Passengers Tab is presented as given in Figure 6.

**Actions:**

1. For a given airline, destination, and price data, list the user information with PassengerID, Lastname, Terminal and Boarding Area (see Figure 7).

FLIGHT ANALYSES SYSTEM

LOGIN PASSENGERS FLIGHT VISUALIZATION

Boeing Company Texas Low Fare

List passengers

Passenger Information

Passengerid	Lastname	Terminal	Boarding Area
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Figure 6 – PASSENGERS

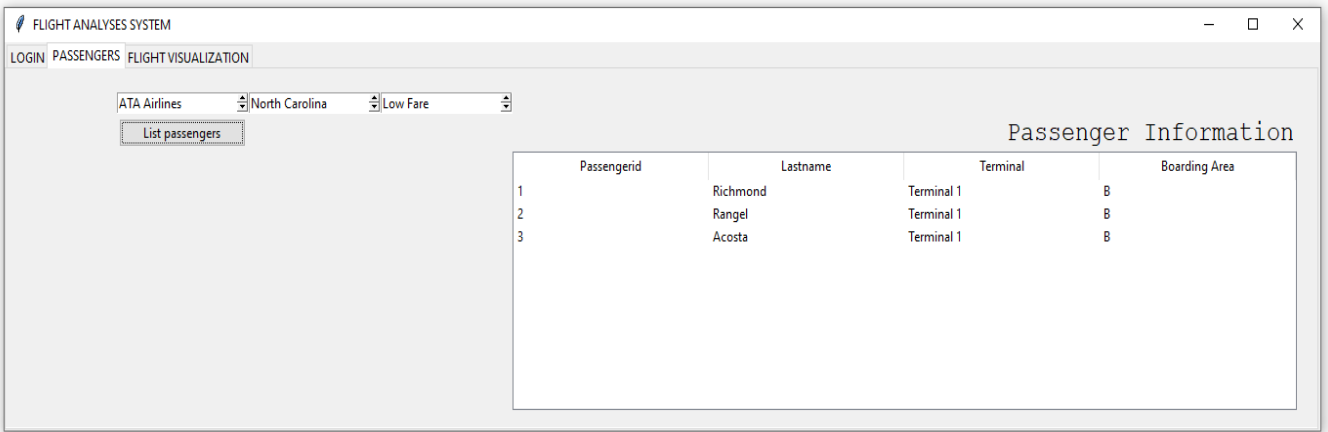


Figure 7 – PASSENGERS – Passengers information

### 3) FLIGHT VISUALIZATION:

**View:** Flight Visualization Tab is presented as given in Figure 8.

**Actions:**

1. The content of flight\_info.csv file is presented by using pandas library (see Figure 9 for zoom version).



Figure 8 – FLIGHT VISUALIZATION

FLIGHT ANALYSES SYSTEM						
LOGIN	PASSENGERS	FLIGHT VISUALIZATION				
	Year	Month	DayofMonth	DayOfWeek	FlightDate	FlightNum
2999	2017	1	23	1	23-01-17	596
2998	2017	1	22	7	22-01-17	596
2997	2017	1	21	6	21-01-17	596
2996	2017	1	20	5	20-01-17	596
2995	2017	1	19	4	19-01-17	596
2994	2017	1	18	3	18-01-17	596
2993	2017	1	16	1	16-01-17	596
2992	2017	1	15	7	15-01-17	596
2991	2017	1	14	6	14-01-17	596
2990	2017	1	13	5	13-01-17	596

Figure 9 – FLIGHT VISUALIZATION – Passenger information zoom

- Under the data presentation by pandas, there are four different plots to show the detail of the flights (see Figure 10 to 13 for zoom versions).

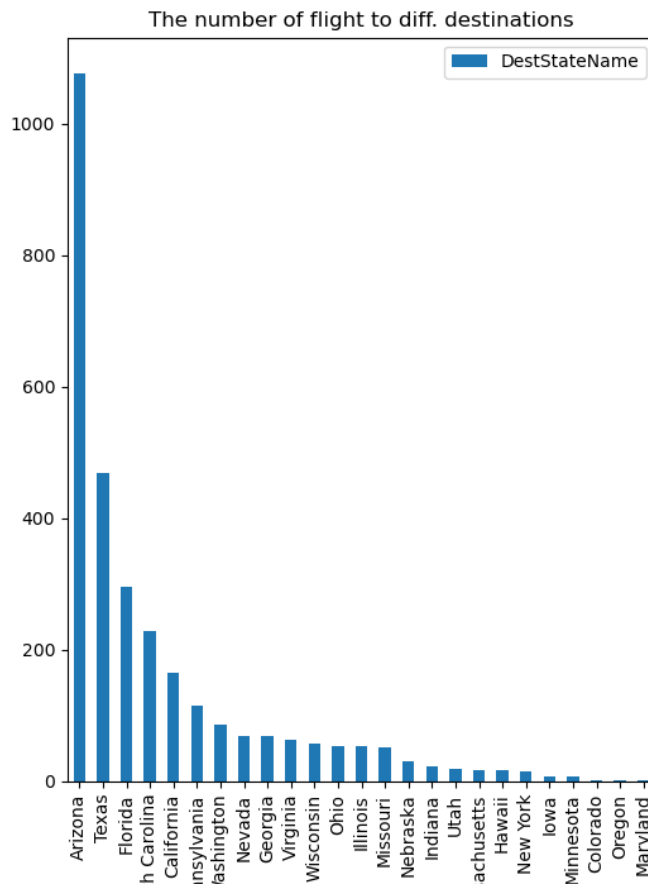


Figure 10 – FLIGHT VISUALIZATION – The number of Flights to diff. Destinations

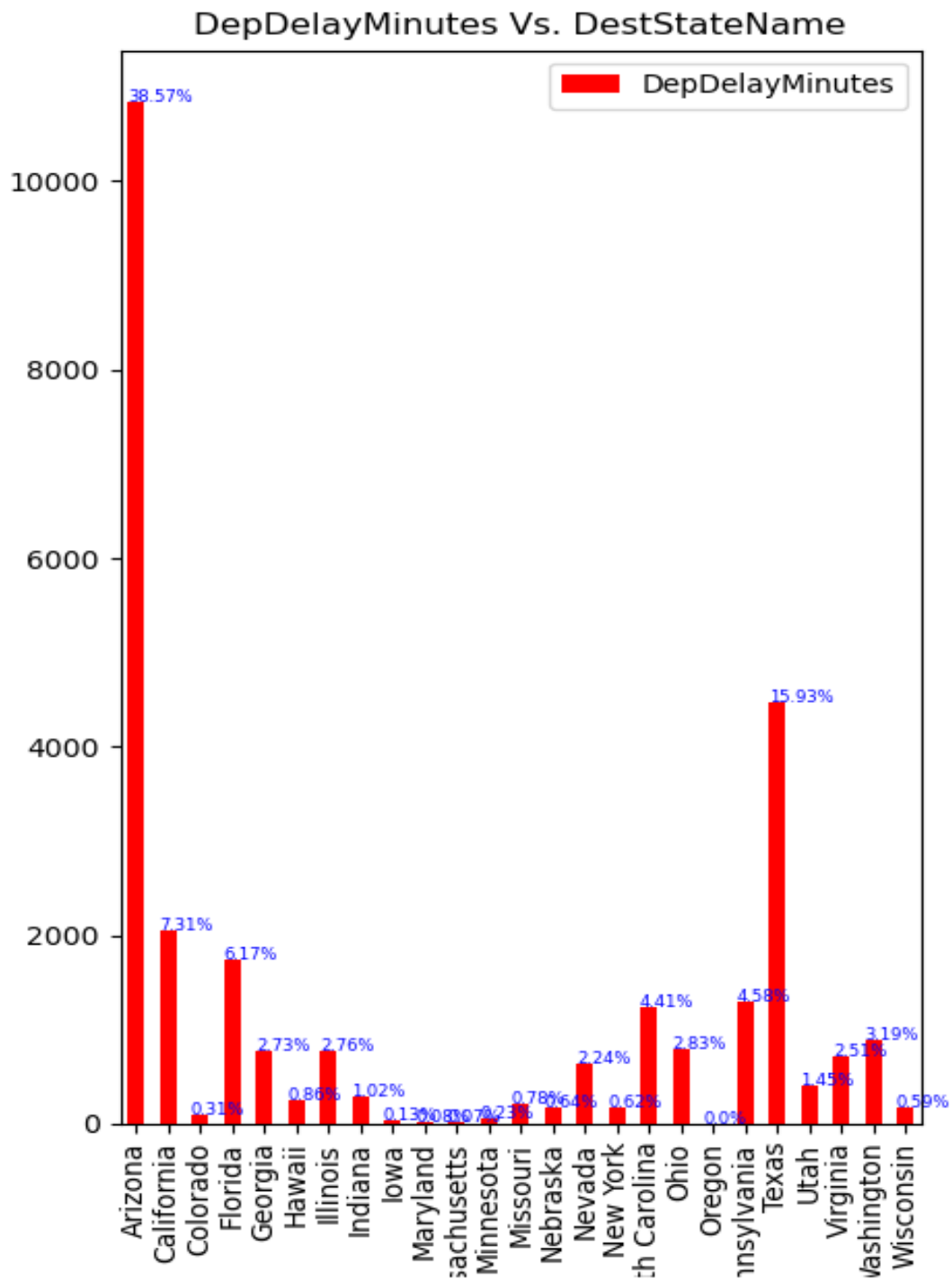


Figure 11 – FLIGHT VISUALIZATION – D. Delay comparison based on Destination

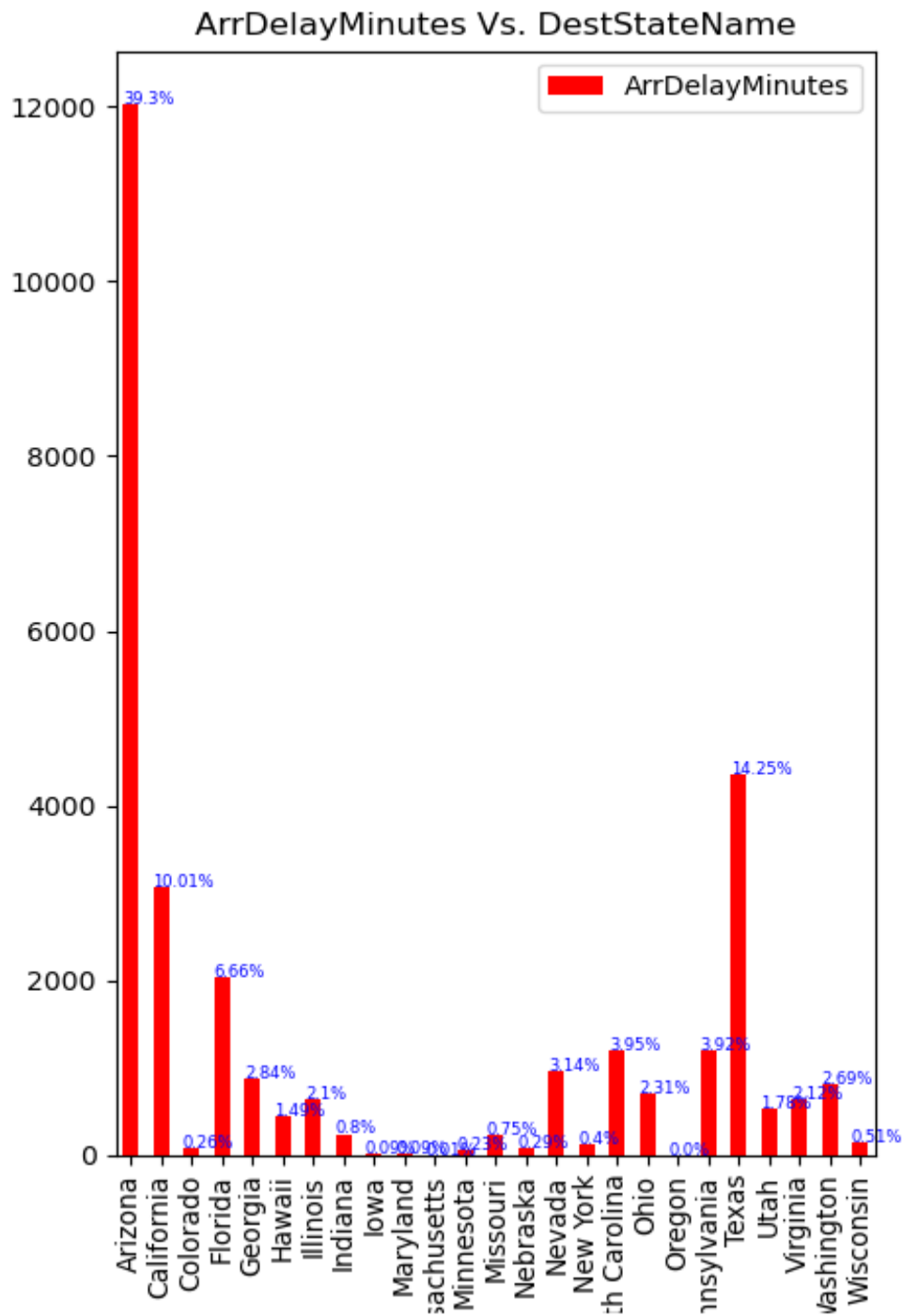


Figure 12 – FLIGHT VISUALIZATION – A. Delay comparison based on Destination



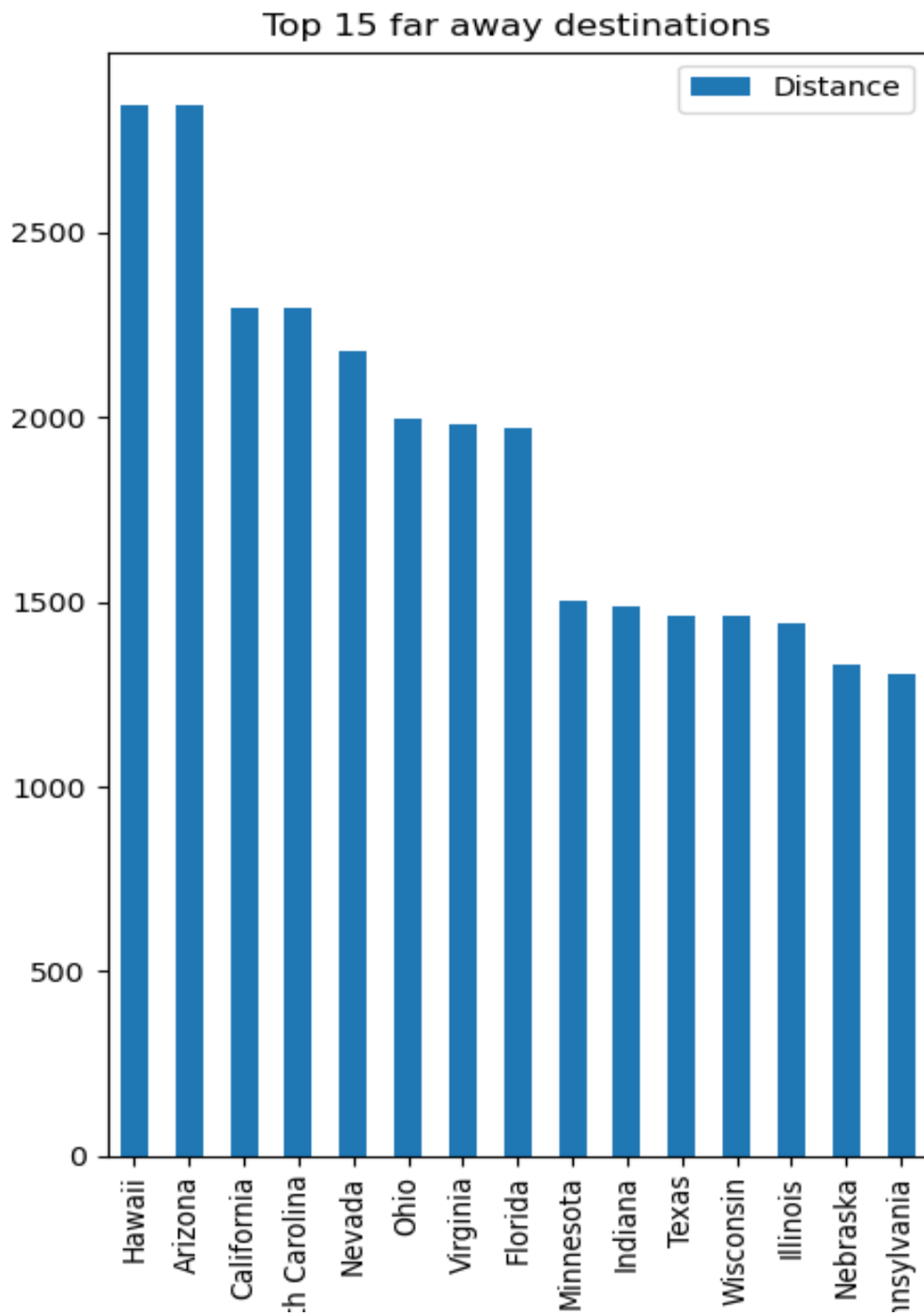


Figure 13 – FLIGHT VISUALIZATION – Top Flights