Documentation shiny app

Description

This shiny application aims to present and show the datas about 2 distinct topics :

1. US intern flights.
2. French SNCF traffic train.

We used public datasets organized as follow :

- french-sncf-train-regularities :
  - full_train.csv
  - regularite-mensuelle-tgv-aqst.csv
- usa-flight-delays :
  - airlines.csv
  - airports.csv
  - flights.csv

The time range for both datasets was between 2014 and 2018.

Initialisation

Datasets are too large to be loaded directly in the shiny app. It would cause high memory usage and latency otherwise.

We choose to prepare smaller datasets with aggregated values,and then we load these smaller datasets into the shiny app.

To initialize these aggregated datasets on your own, call once init_trains and init_flights functions from server.R without any arguments before running the shiny app.

Dashboard presentation

A sidebar on the right of the shiny app enable to navigate between each dashboard.

SNCF

Two top boxes enable to select a specific year and/or a specific departure train station. It is possible not to select a specific value for these inputs by choosing "ALL YEARS" for Year input or "ALL TRAIN STATIONS" for Train Stations input. In that case, all possible values are selected for the given input.

These two inputs infer on the aggreagated values computed and showed in the different sections.

Values

Pannel of different values displayed in seperate boxes :

- number of trains carried out
- percentage of trains cancelled
- number of trains cancelled
- number of trains delayed at departure
- number of trains delayed at arrival
- average departure delay time for all trains
- average arrival delay time for all trains
- average departure delay time for delayed trains
- average arrival delay time for delayed trains
- average number of trains delayed at departure
- average number of trains delayed at arrival

If a specific combinaison of inputs gives a 0 result for one of these values, an "Unknown" text will be provided for this value with a question mark as icon.

All values are rounded to the nearest hundredth.

Distribution Delay Causes

Pie chart showing proportion for delay causes. The percentage is printed on the graph for each cause.

Evolution of cancelled Trains

Line graph showing the evolution of cancelled trains over the time range and gives the associated percentage. The graphic can be filter by train station, but selecting a specific year as input has no effect on the graph.

Evolution of delayed Trains

Line graph showing the evolution of delayed trains on both departure and arrival over the time range. The graphic can be filter by train station, but selecting a specific year as input has no effect on the graph.

Overview of trains

Histo graph showing the proportion of carried out, delayed or canceled trains over time.

The graphic can be filter by train station, but selecting a specific year as input has no effect on the graph.

Flights

Two top boxes enable to select a specific airline and/or a specific departure airport. It is possible not to select a specific value for these inputs by choosing "ALL AIRLINES" for Airline input or "ALL AIRPORTS" for Airport input. In that case, all possible values are selected for the given input.

These two inputs infer on the aggreagated values computed and showed in the different sections.

Values

Pannel of different values displayed in seperate boxes :

- total number of flights
- average flight duration
- average flight distance
- total distance traveled by flights
- total number of delayed flights
- average depature delay
- average arrival delay

If a specific combinaison of inputs gives a 0 result for one of these values, an "Unknown" text will be provided for this value with a question mark as icon.

All values are rounded to the nearest hundredth.

The display of the value for "average depature delay" and "average arrival delay" is dynamic :

- If the given average is below 0 :
  - Color panel becomes green
  - Show a positive value corresponding to the advance in minute
- If the given average is exactly 0 :
  - Color panel becomes green
  - Display the text "On time"
- If the given average is above 0 :
  - Color panel becomes orange
  - Show a positive value corresponding to the delay in minute

Map

Map ploting the airports according their geographical localisations.

Each airport is represented by a red circle on the map. The radius of each circle depends of the total number of flights having as departure this specific airport.

Airports are clickable on the map and show different information concerning the selected airport :

1. The city where the airport is.
2. The airport name.
3. The total number of flights having as departure this specific airport.
4. The average departure delay.

Besides the airport, the flights are also represented on the map. Each fligh is ploted as a blue line between the departure airport and the different arrival airports.

It is possible to filter the flight traffic according the airline and the airport.

If a specific airport is selected, the departure airport is ploted with the standard red circle whereas the arrival airports are ploted in blue circle. In this configuration, click on the departure airport will also provide the information about the average distance traveled by flights.