Covid Visualization

Software development - HMMA238

Jihène Belgaied, Zakaria Laabsi, Chloé Serre-Combe and Stephani Ujka

Student in Master of Statistics and Data Science at University of Montpellier

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Introduction

The goal is to produce an animated map using covid data and to produce various charts linked to the analysis of the covid crisis.

To this aim we create a covidviz module you can find here :

▸ Github covidviz

Dependencies and import

Package importation :

```
>>> import covidviz as cvz
```

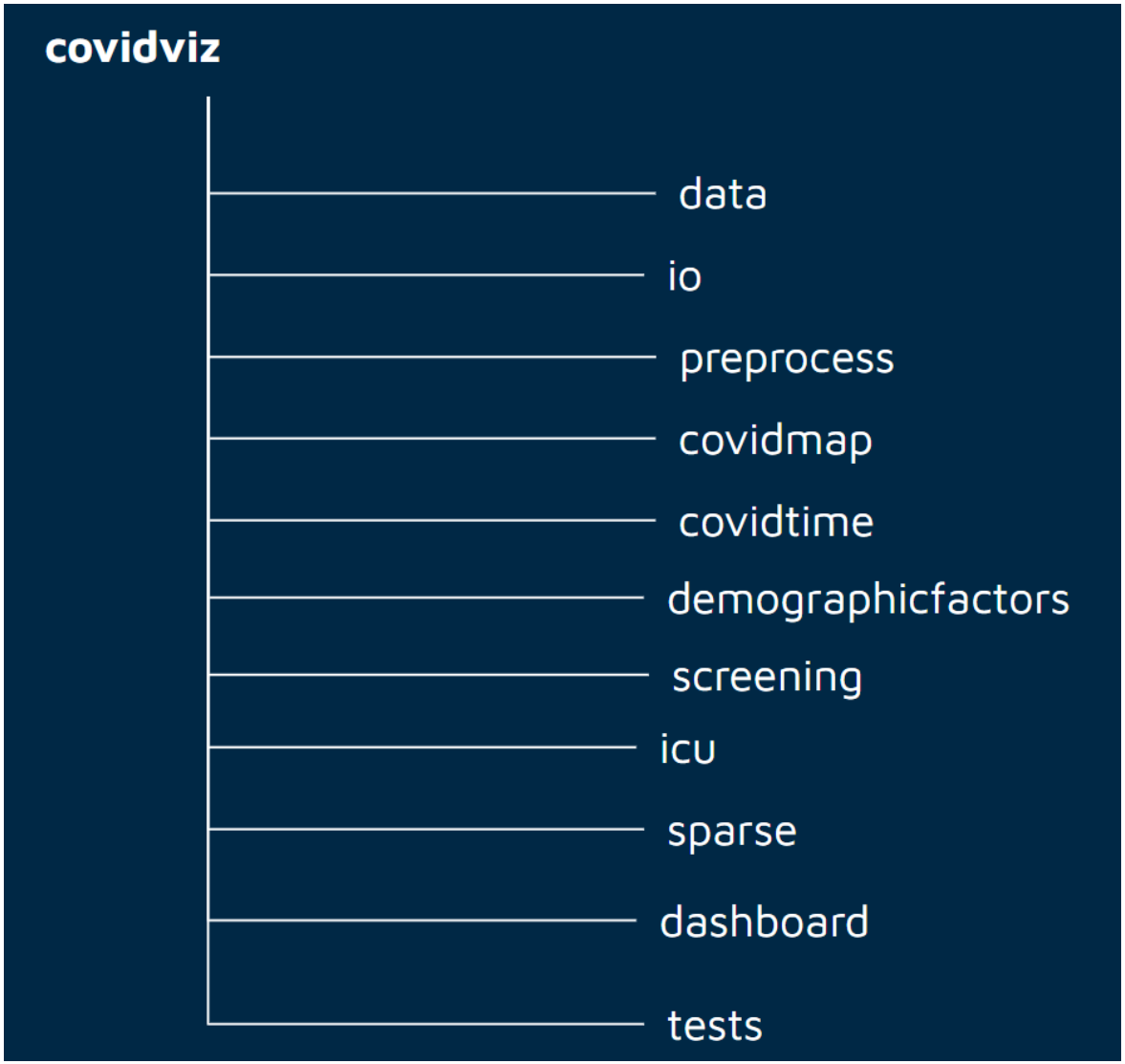
Specific dependencies

1. pyDeck
2. ipywidget
3. folium
4. plotly
5. pandas_alive
6. networkx
7. geopandas
8. dash

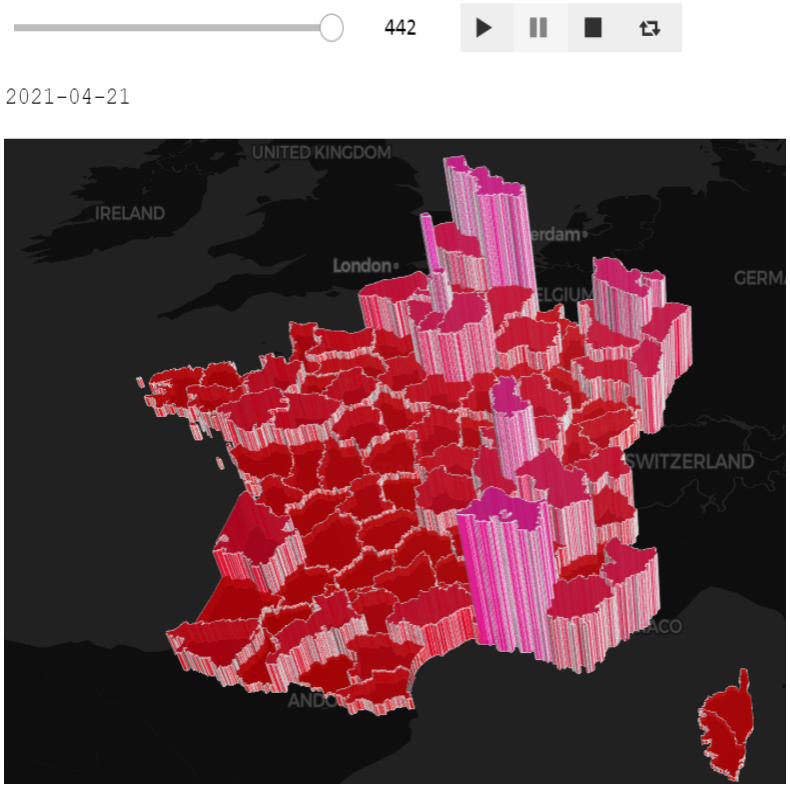
Data used

	Usage	Informations
data.gouv.fr	animated maps gif stats sparse matrix graph	covid deaths covid hospitalized patient transfers intensive care unit (ICU) screening epidemio analysis vaccine data
France GeoJSON	animated maps	geometry for french departments and regions
Santé Public France	statistics	age, gender

Module structure



Animation Map



1. Main code in `covidviz/covidmap`
2. A *Map_covid* class
3. `pyDeck` package
4. `ipywidget` package
5. Parameters :
   - departments or regions;
   - deaths or hospitalized;
   - time slider.

Gif Animation

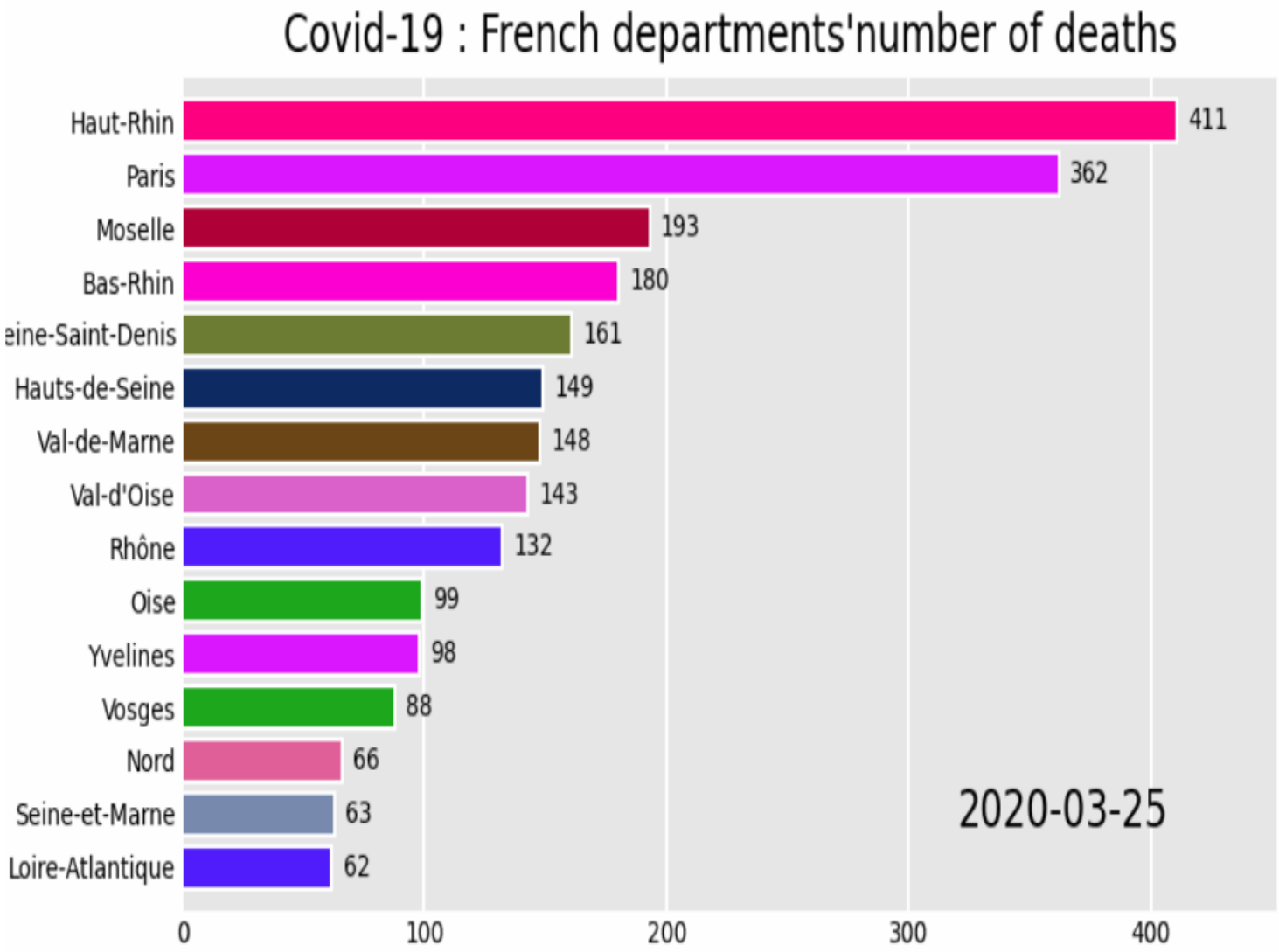
Main code in `covidviz/covidtime`.

We used the `pandas_alive` package.

The main function for generating gif visualizations is :

1. `covidtime/time_gif/plot_animation` with parameters :
   - regions or departments;
   - deaths or hospitalized.

Gif animation



Covid Statistics

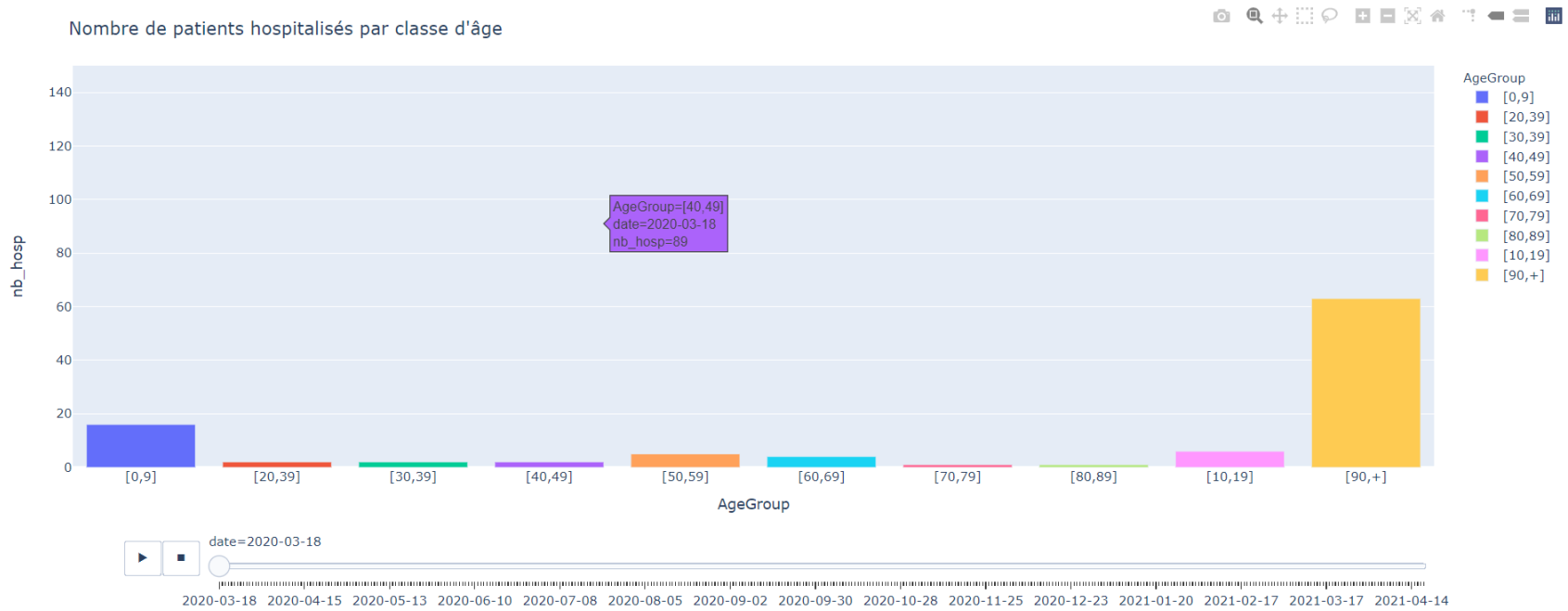
Main code in `covidviz/demographicfactor`.

We used the `plotly` package.

One of the functions for generating charts is :

1. `demographicfactor/utils_plot/df_plot_hosp`
2. `parameters :`
   - group age
   - date
   - number of people hospitalized
3. `time slider:`

Covid Statistics



Covid Statistics

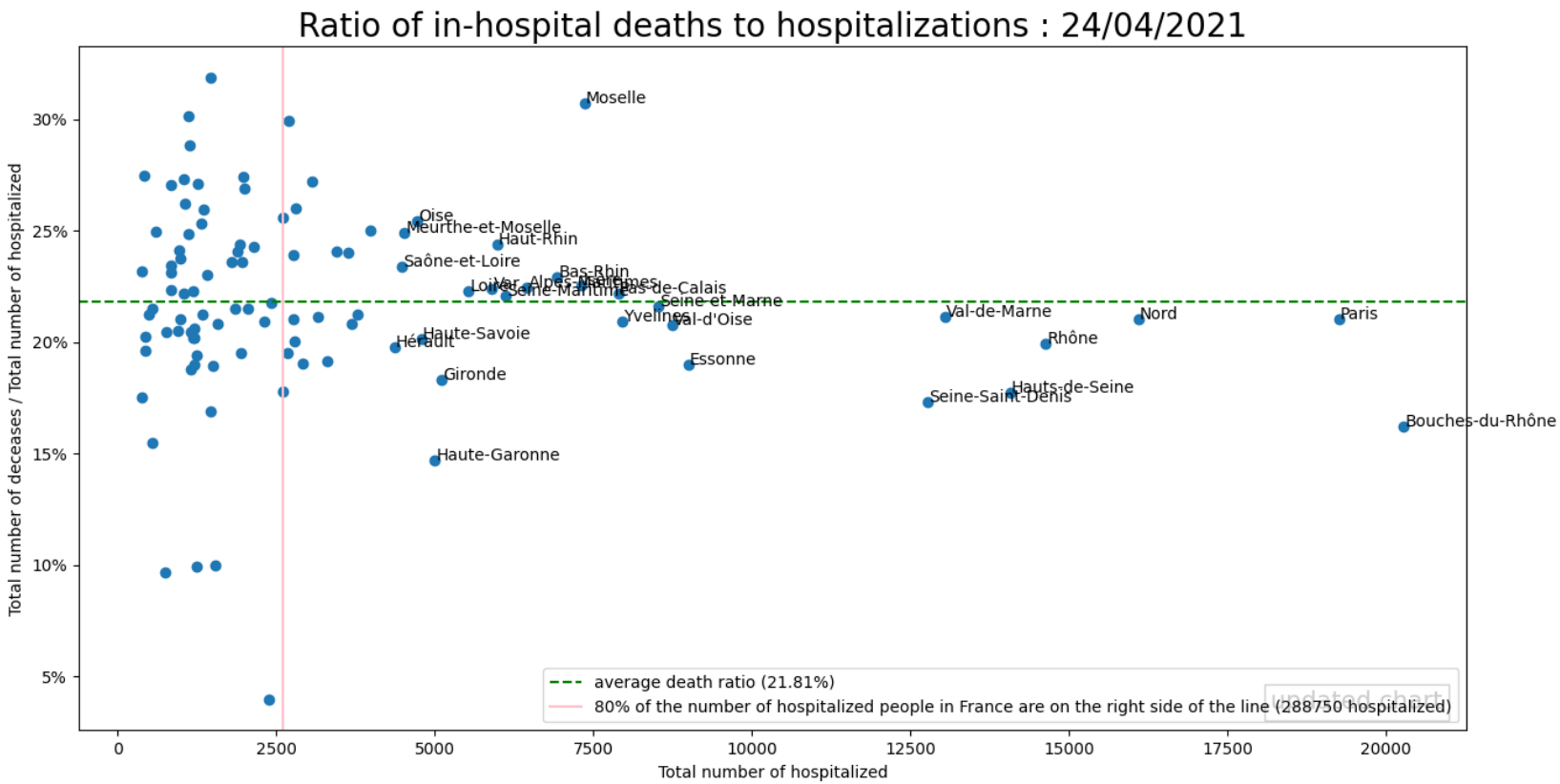
Main code in `covidviz/covidtime`.

We used the `matplotlib` package.

The function used for generating the chart :

1. `covidtime/plot_covidtracker/ratio`
2. `parameters` :
   -several lists for variables in df_covid such us name locations ,number of hospitalizations;
   - current date.

Covid Statistics

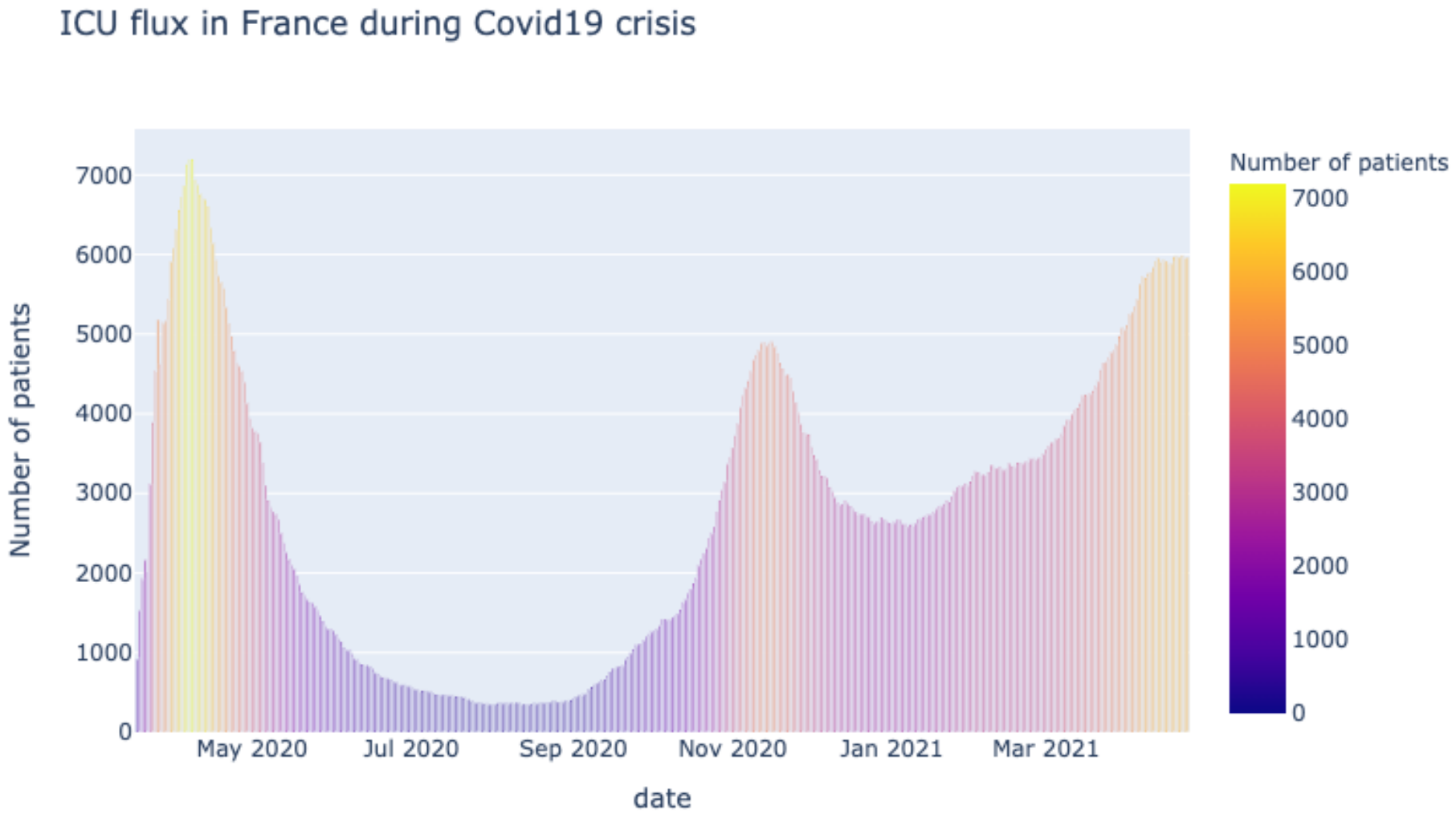


ICU Statisics

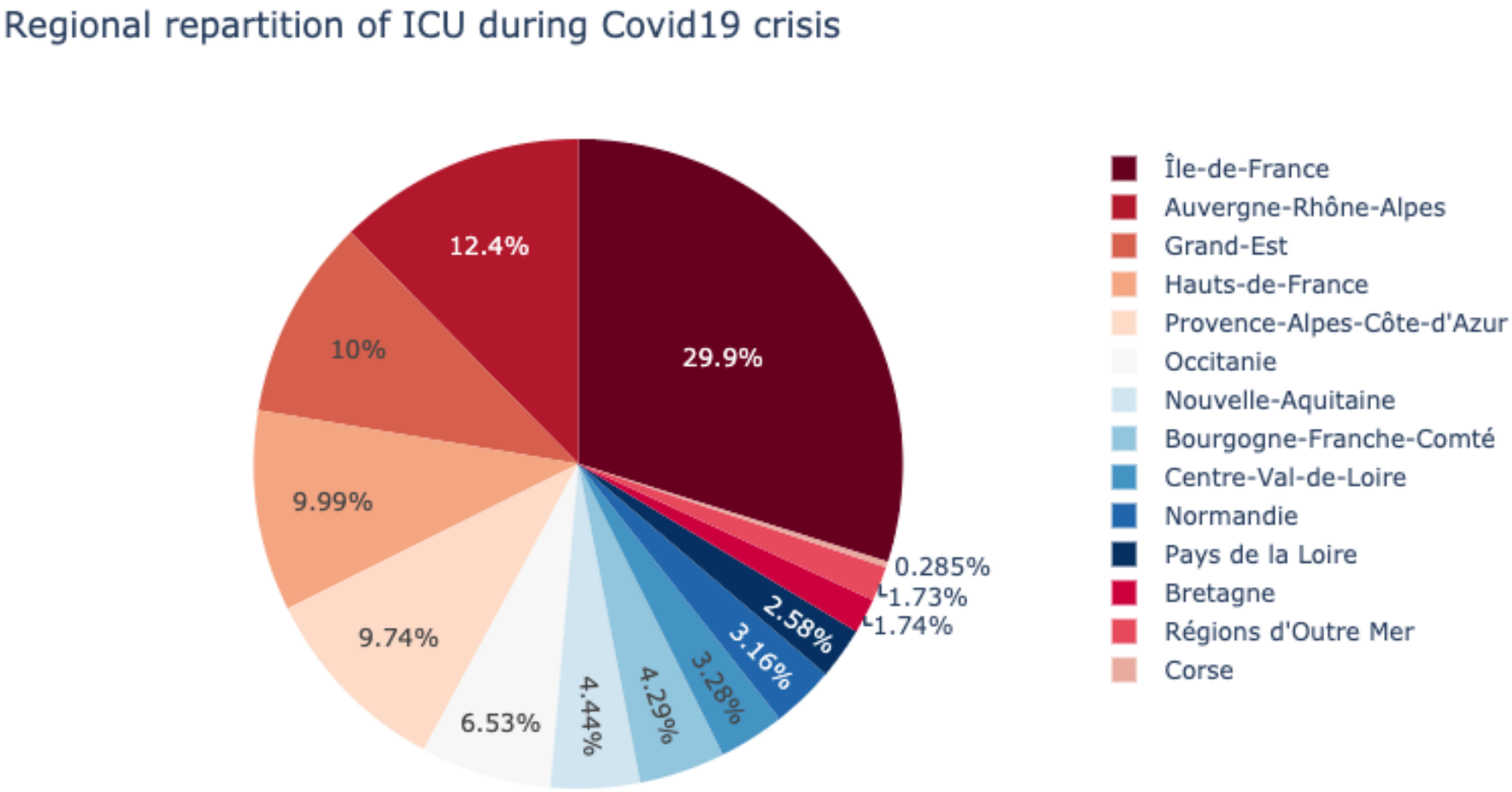
Main code in `covidviz/icu`.
We used the `plotly` package.
Some functions for many visualizations :

1. `icu_dep_display` with parameters : period, icu in each department.
2. `icu_by_reg_display` with parameters : period, region, icu in each department of the region.
3. `icu_all_reg_display` with parameter : icu in each region.
4. `icu_reg_repartition` with parameter : icu in each region.
5. `heat_map_icu_reg` with parameter : icu in each region.

ICU Statisics



ICU Statisics



Screening Statistics

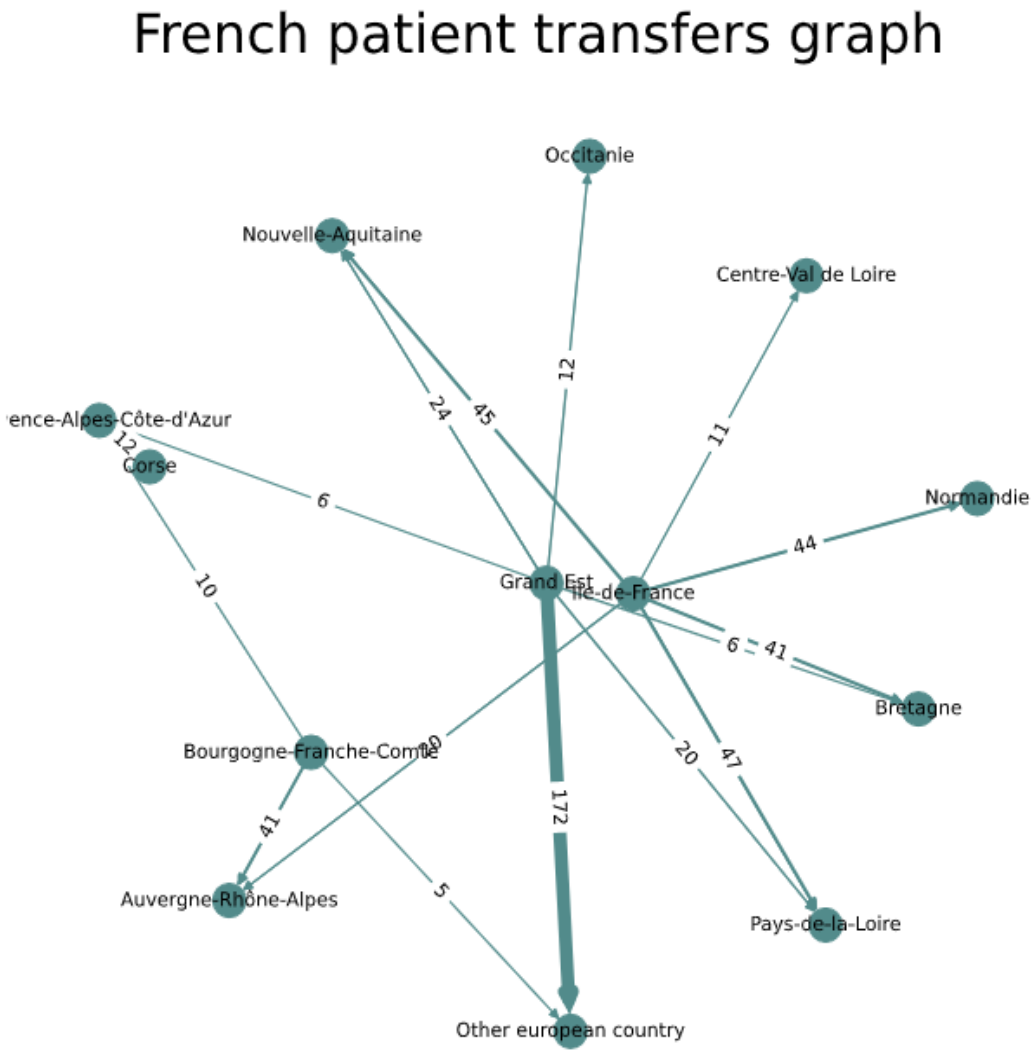
Main code in `covidviz/screening`.
We used `plotly` and `folium` packages.
Screening by different indicators :

1. `daily_test` with parameters : department, classe age, tests performed.
2. `daily_test_dep` with parameters : department, tests performed.
3. `daily_test_age` with parameter : classe age, tests performed.

Maps of screening centers : `map_screening` function

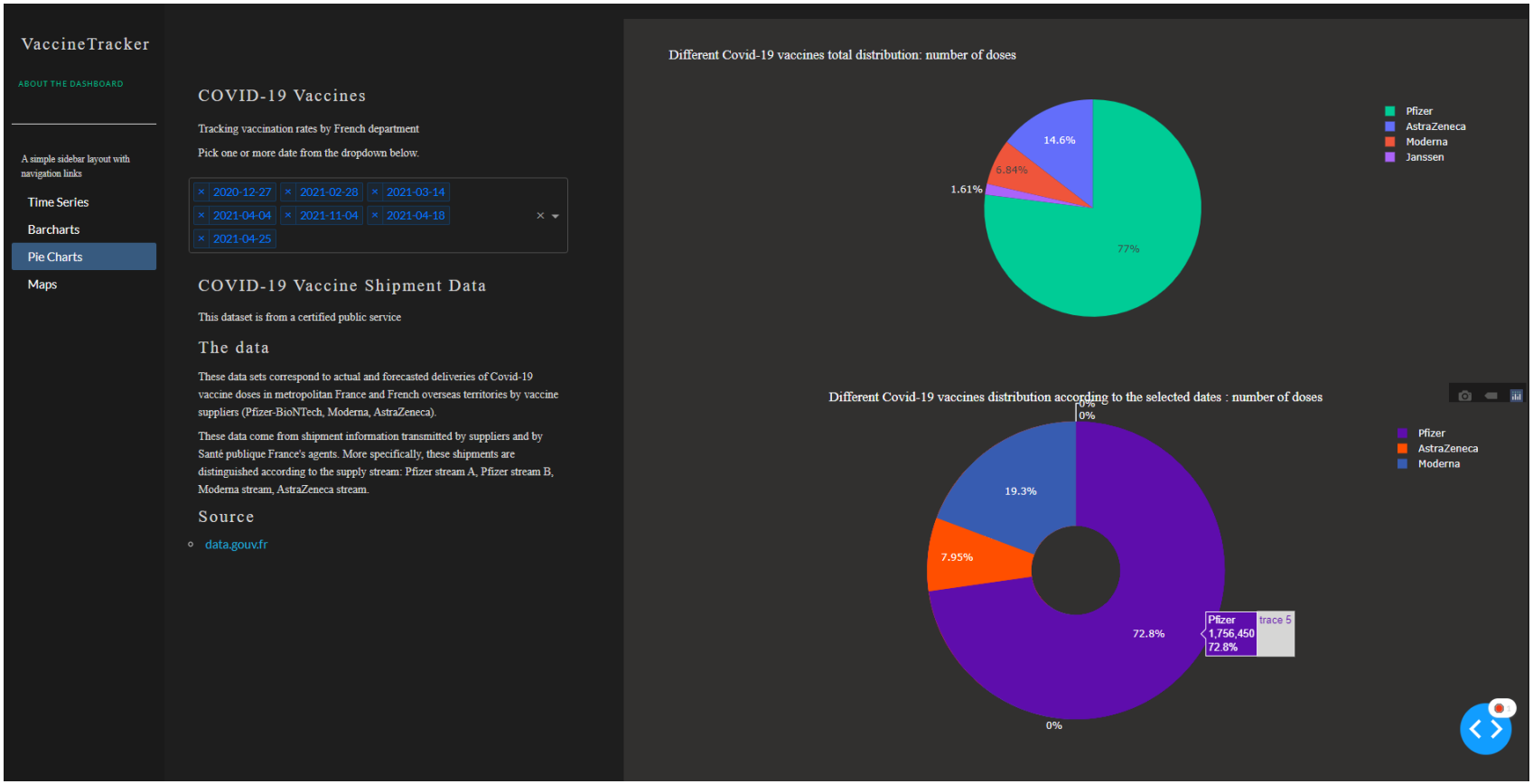
Screening Statistics

Sparse matrix and graph



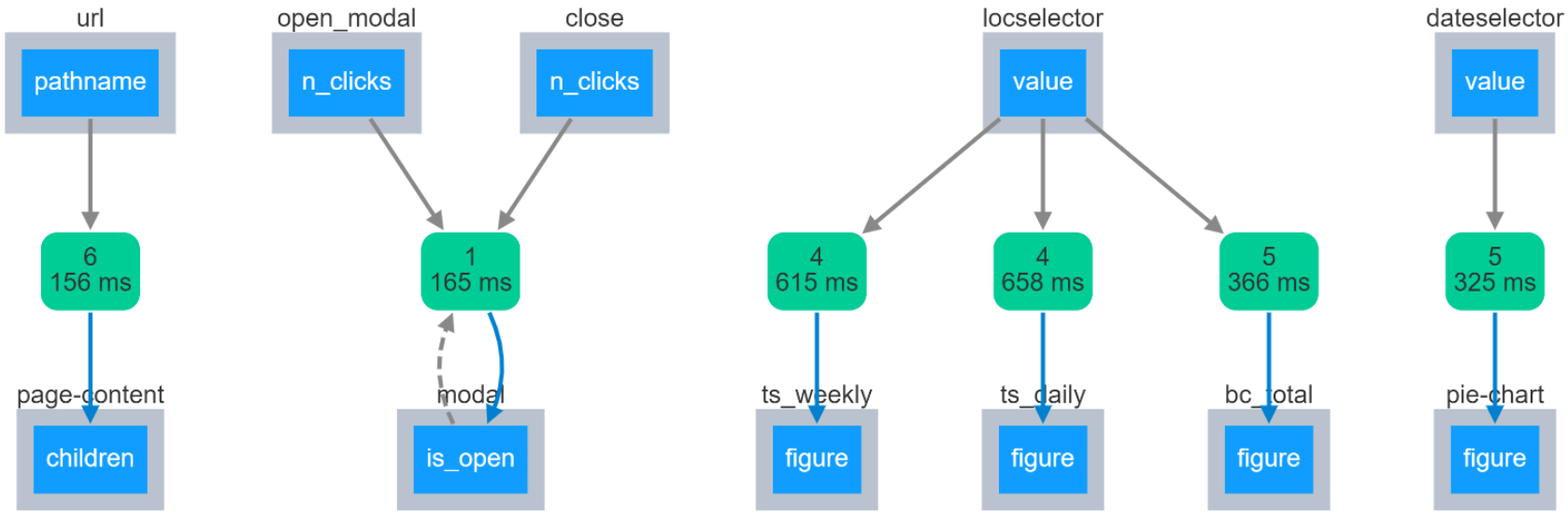
1. Main code in `covidviz/sparse`
2. `networkx` package

Dashboard : Overview



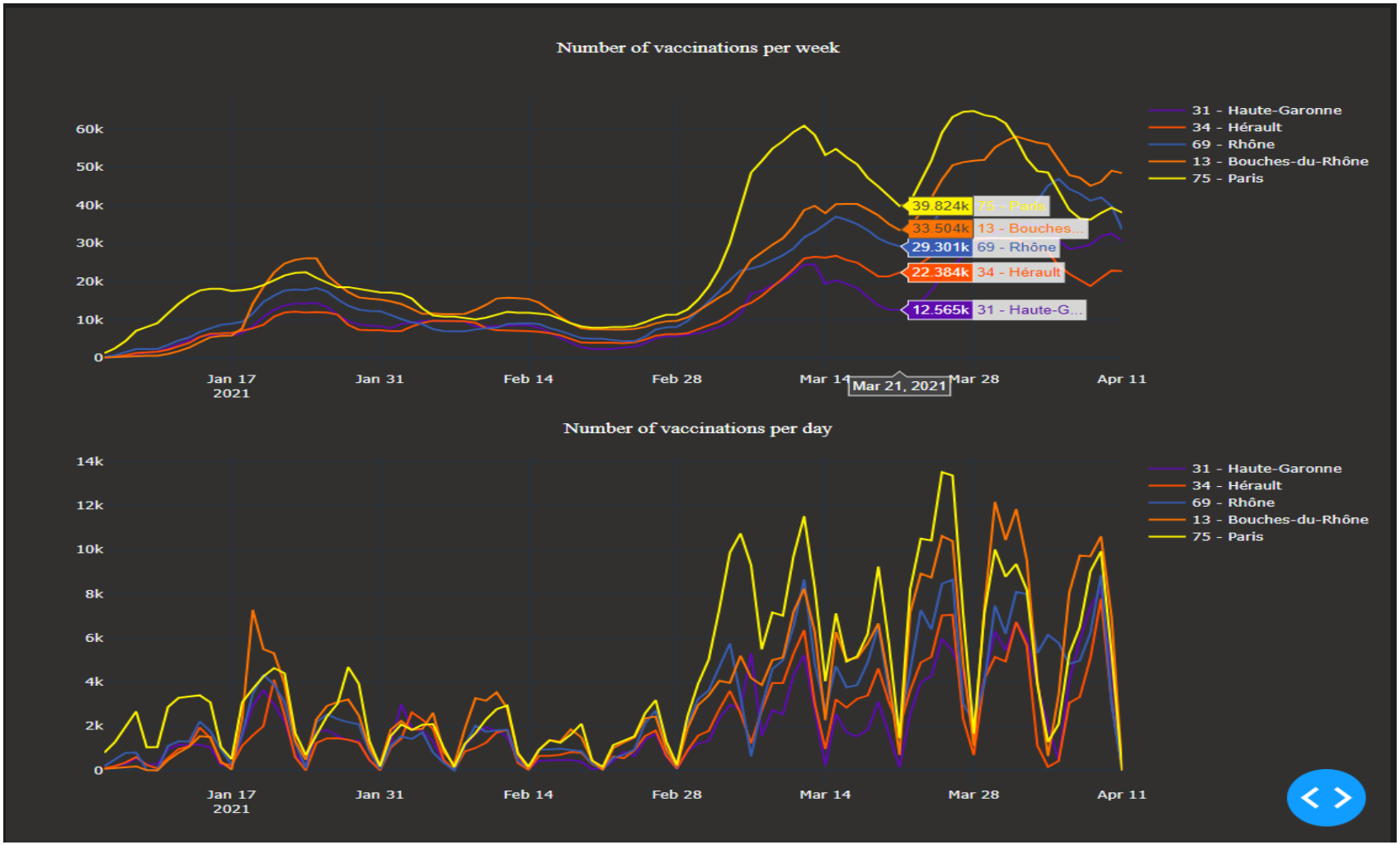
Dash app written in Python with the `dash` package and `Bootstrap`
Code available on `covidviz/dashboard`

Dashboard : Callbacks



Callbacks : adding interactivity.
Inputs/Outputs are described as the arguments of the `@app.callback` in the script

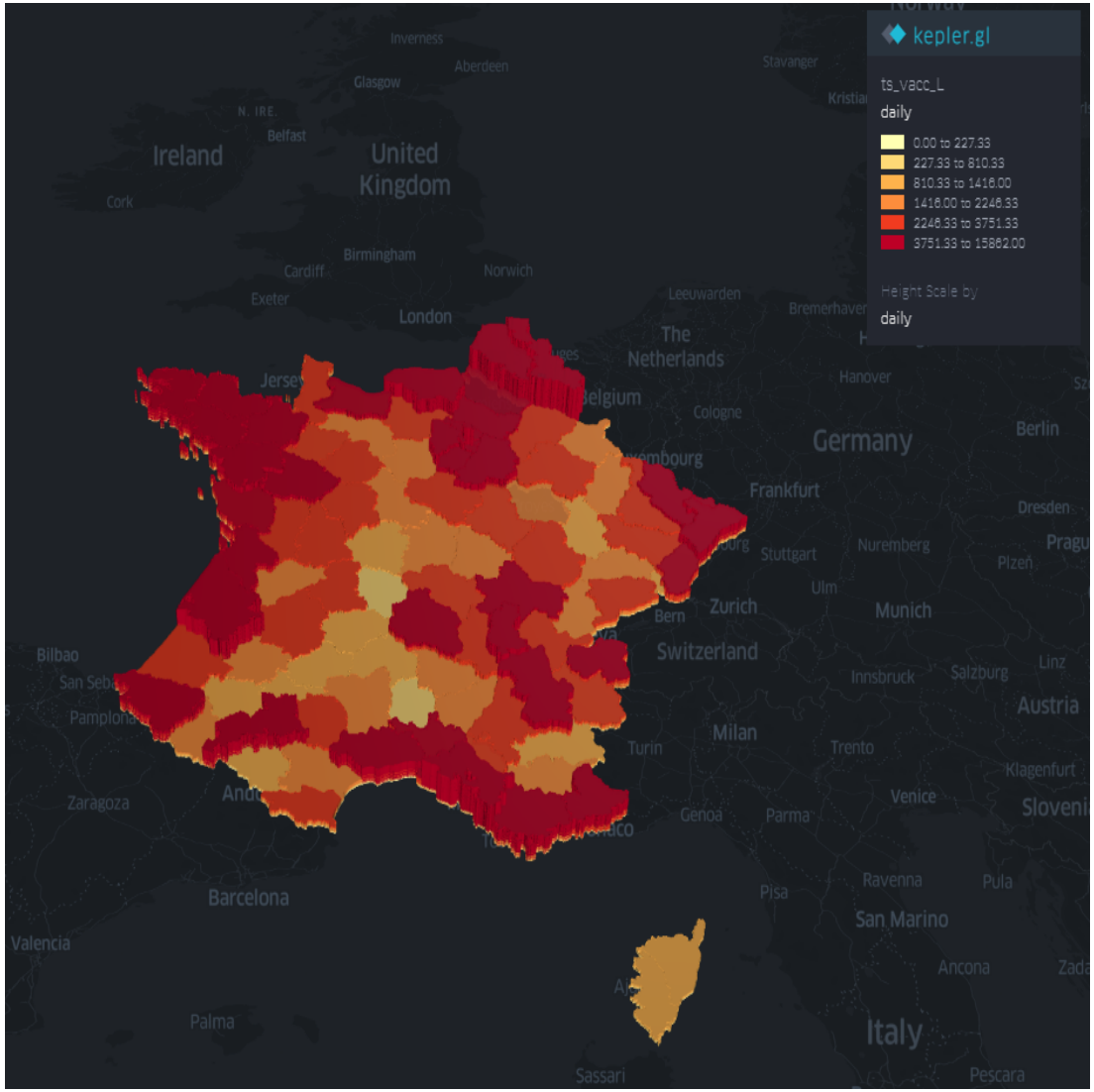
Dashboard : Chart Example



Time series made with the `plotly` package.

Parameters: **number of vaccinations/ date/ departments**

Dashboard : 3D interactive map



1. Built with `Kepler.gl` with `MapGL` render
2. Time-series map
3. Display with the `HTML` tag `Iframe` in the dashboard
4. Available on `/html files`

Covid Visualization

Thank you

For more information: ▸ Github covidviz