

Individual assignment

Developing interactive data visualizations in React and D3js

Repository with the application templates and the dataset: <https://github.com/nicolasmelodoc/Tuto5-MultiDim-Redux/tree/synconclick>

Instructions

Every student will be asked to implement two synchronized visualizations to represent multivariate data from the criminality dataset:

- One scatterplot with 2D-Brush interaction to select multiple data objects (see <https://d3js.org/d3-brush>)
- A second hierarchical visualization with two levels (state and communityname) representing different attributes of the dataset.
- Try multiple hierarchical layouts among those proposed by D3js: <https://d3js.org/d3-hierarchy>

The two visualizations will be synchronized through user interactions (brush for the scatterplot, click/mouse hover of nodes for the hierarchy visualization). The two visualizations will be highlighted/animated/updated simultaneously to convey useful visual patterns.

The user's objective is to decide in which state/city to settle down to live.

You will reuse the design patterns learned during React and D3Js tutorials:

- useState, useRef, useEffect, useSelector and useDispatch Hook functions in React components
- Javascript classes with D3 classes separated from React components for each visualization
- global update pattern in D3 with enter(), exit() or join() functions when appropriate

You will write a short report (2 pages max with screenshots) to describe and justify your visual design with 4 sections:

- Characterization of the data and the user tasks
- Design rational: discuss the pros and cons of each tested hierarchical layout. What would be your preferred layout and why? Justify the proposed interactions.
- Short conclusion

Submission (deadline 22/02/2026)

- Commit your code in a repository on your own github account
- Don't forget to make it public
- The application showing the two visualizations will be tested by launching npm install + npm start.
- Put your report (pdf) at the root of your repository
- Put your repository URL on arche

Rating

30% proper use of design patterns

40% application running with synchronized interactions

30% design and justification in the report