



De La Salle University
Data Science Institute

DATA101 - Interactive Visualization Project

The main objective of this project is to apply the visualization concepts through creating an interactive visualization web application. This project will also challenge the skills acquired previously in collecting and processing data.

The proposed project should be geared towards designing the visualization for specific users or audiences. It should also be problem-driven such that the visualization aims to augment human cognition and understanding of the data being presented.

Grouping

Each group is composed of four (4) to five (5) members based on the balancing of the skill levels of the students in the class.

Project Overview

1. Identify who your “clients” will be or who will benefit from the visualization application.
2. Define the datasets that will be used for the visualization. At the minimum, there should at least be two (2) different data sources, with one (1) being a spatial dataset.
3. Identify the actions and targets. Identify what the users should be doing with your visualization.

General Requirements

The entire project should at least meet the following requirements:

- There should be a spatial component in both the data and the design.
- The data should not be loaded entirely to the client’s web browser.
- There should be a minimum of three (3) different visualizations present in the application.
- Interactivity is mandatory.
 - At least two (2) elements or visualizations are linked.
 - At least select and/or navigate manipulations must be included (meaning some form of data filter or reduction is needed).

Students are required to develop a fully functional web application using their language of choice. Some recommended libraries to use for visualizations are D3.js for charts and MapboxJS or LeafletJS for the spatial component. However, other libraries are also allowed, such as Plotly Dash. Tableau and PowerBI dashboards are not allowed since these do not allow you to load partial data only.

Deliverables

The project deliverables are divided into two (2) main parts: the **project report** and the **visualization application**.

The **project report** will be built incrementally in three parts. The schedule of the submission is as follows:

Date	W	Deliverable
Jul 23 (F)	5	Problem Definition & Data Sources
Aug 20 (F)	9	Storyboard & Visualization Choices
Sep 03 (F)	11	Interactivity Techniques & Justification
Sep 22 (T)	14	Final Report

Each deliverable will become its own section in the final report that will be submitted together with the source code of the visualization application.

Problem Definition & Data Sources

In this section, identify who your target audience / users will be and discuss what problem you plan to solve through visualization. Describe in detail the problem and how visualization will be able to address the concerns.

List down your datasets and how you plan to acquire the data (i.e. direct download, web scraping, API, etc.) For the datasets to be used, provide a data dictionary (in tables) of the content of the data you plan to use. If you are still unsure of the features of the data, you may list down the expected features to be collected or requested. This may be updated in the final report.

Together with the data dictionary, provide an explanation of your plan on how these datasets will be connected to each other.

Storyboard & Visualization Choices

For this section, provide a diagram or mockup of your storyboard or visualization prototype. Whether you plan to have a storytelling narrative, a dashboard or a combination of both, draft up the planned application interface for the visualization. Hand-drawn sketches or mockups made with drawing programs like Figma or the like are fine.

In the prototyped interface, include also what kind of charts or visualization idioms you have chosen for your data. To be able to do this, you have to already explore the data and identify the actions and targets for the data. Include in the report the data exploration and processing methods that you have taken, or plan to take.

For each visualization idiom chosen, provide an explanation to justify your choice. Connect these justifications to the discussions on the four levels of visualization design validation (what-why-how model).

Interactivity Techniques & Justification

In this section, discuss how the different chosen charts and components in your application design will interact with one another. Provide a flow as to how you expect your users to interact with the presented elements on screen. Additionally, also provide justification for the choice of interactivity (i.e. why use brushing on a chart to filter instead of using a slider?)

For this submission, also improve on the justification of the visualization choices made. By this phase, the charts should already have corresponding color choices and other design decisions (i.e. the use of various marks and channels).

Final Report

For the final submission after the entire project is completed, compile all the previous submissions and update the content according to the changes made from the comments and suggestions and any other modifications made after the last submission.

Visualization Application

The application code should be hosted on GitHub and the repository should include a README.md which includes the following information:

- Application name
- Link to the deployed application
- Short description of what the application is all about (motivation, target users, problem being solved)
- Project team
- Setup instructions (how to run the application locally)

The project can also be hosted in any free hosting environment (i.e. Heroku, PythonAnywhere, Vercel, etc.). Instructions on how to do this will be discussed in class.

A **final project presentation** demonstration will be done on September 13 and 15 (Week 13) to facilitate live feedback and comments. Applications and reports may be further improved and polished until the set deadline on Week 14 (finals week).

Grading

The entire project (application + report) encompasses 40% of the total grade. All members will receive the same grade for these elements.

The **application** takes 20% of the total grade.

- All general requirements must be met to get at most 90-95% of the grade.
- To reach 100%, any additional or exceptional design and interactivity done outside of the minimum requirements will be considered.

The **project report** is split to phases and each will have a corresponding grade.

- The final report will also be graded and any comments and feedback provided from the previous phases must be addressed in the final report.

Peer Evaluation

To factor in individual contribution to the project, there will be an individual peer evaluation done at the end of the term. Each student will evaluate every member of the group (including themselves). Each student will provide the percentage distribution of work done by each member. The total should equal 100%.

Sample computation:

Group grade: 100

Member 1 evaluation: 50% member 1, 30% member 2, 20% member 3

Member 2 evaluation: 40% member 1, 30% member 2, 30% member 3

Member 3 evaluation: 50% member 1, 25% member 2, 25% member 3

Grades

Member 1: $0.50 + 0.40 + 0.50 = 1.40 * 100 = 140$ (will be capped at 110)

Member 2: $0.40 + 0.30 + 0.25 = 0.95 * 100 = 95$

Member 3: $0.20 + 0.30 + 0.25 = 0.75 * 100 = 75$