Monash University

FIT5147 Data Exploration and Visualisation

Semester 1, 2023

FIT5147 Data Visualisation Project

In this project, you are asked to create an **interactive narrative visualisation** that communicates some of your findings from the *Data Exploration Project*.

Implement interactive data visualisations using **R (Shiny)** or **JavaScript (D3)**.

Note that <u>you are not allowed to use R Markdown</u>.
Write a **report** and export it to PDF.
Submit your report and your source code

Report Structure

Write **a 15-page (excluding cover page, table of contents, bibliography, and appendix) report** that consists of the following sections:

1. *Project title*
   Title of your narrative visualisation. This can be included in the cover page.
2. *Introduction*
   A   precise and succinct description of what findings and messages you wanted your narrative visualisation to convey, and who the intended audience is.
3. *Design*
   A   description and justification of your narrative visualisation design process. This should briefly refer to each of your five design sheets attached and **justify your design choices** for instance: describing consistency in design and interaction; reasons for a particular colour palette; referring to aspects of the human visual system or genres of narration style; etc. It is important that this section is not simply a description of which charts you chose, but must also justify your final design choices.
4. *Implementation*
   This section contains a high-level description of your implementation, including libraries used, references to external code sources such as templates, and reasons for any differences between your final design and the implementation, if applicable. You are not required to explain the code in detail. You should also briefly explain the reasons why your project was challenging (e.g., extensive wrangling was required, advanced use of D3, etc. - see Marking Criteria 4 for more information).
5. *User guide*
   This section contains instructions for viewing and exploring your narrative visualisation. This should emphasise any parts of your visualisation that may be easily missed by a reader (e.g., some interaction you have implemented that might not be immediately visible).
6. *Conclusion*

Summarise your findings and what you have achieved with your narrative visualisation. Reflect on what you have learnt in this project, including what in hindsight you might have done differently to improve the result and any future work that you would like to do.

7. *Bibliography*

Appropriate references of all resources that have influenced your work in IEEE or APA style This should include any code templates, design influences and sources on theory, as well as references which influence any data insights.

8. *Appendix*

Include your five design sheets in the Appendix. Make sure you provide clear images and any handwriting is understandable.

Your report should contain high-quality images of your narrative visualisation and five design sheets. If possible, avoid using a single screenshot of the entire page since the resolution might be low; instead, crop and explain individual sections of the page. It is also recommended that you export your PDF using a local word processor (e.g., Microsoft Word), as exporting your document as a PDF directly from Google Docs will result in low-quality images. Make sure you can read and understand the PDF document and its images at A4 size without requiring further enlargement.

Notes on the Implementation

- Your implemented narrative visualisation should be based on the result of your Five Design Sheet process. It does not need to follow it exactly, however it should resemble the final design in Sheet 5. Small changes to your final design are allowed (e.g., layout, visualisation choices, navigation method, colour) but any such differences between your design and how it was implemented must be explained **and justified** in the *Implementation* section of your report. Likewise, any differences between the final design in your presentation and that in your report in light of feedback to your presentation must be explained and justified.
- As a rule of thumb, all *visualisation* packages and libraries that are included in this unit are allowed for your implementation. **This includes, but is not limited to**:
    - For R Shiny: *ggplot2, ggmap, ggraph, Leaflet, Plotly, igraph, wordcloud,* etc.
    - For D3: *D3* itself, *Leaflet, MapBox*, etc. **Libraries which act as high-level wrappers for D3 are NOT allowed (e.g., *C3.js, dimple*).**
- Tools or packages used for data wrangling, data cleaning, Shiny theming, HTML5 templating, CSS styling, etc. are not subject to these rules and can be used freely (i.e., for anything other than the visualisations themselves). However, you should not use server-side code, like *Django* or *node.js,* when implementing your design. Any data used for your DVP must be read from the files submitted with your code.
- For performance reasons, it is recommended that you pre-format all of your data files before loading them into R Shiny or D3. In other words, all data wrangling and cleaning steps (if any) should be performed outside of your narrative visualisation code. You are not required to include the code for data wrangling and cleaning as part of your submission. However, if you have done considerable work since your Data Exploration Project, then you should describe these steps in your DVP report (see Marking Criteria 3).

Marking Criteria

Data Visualisation Project: Report and Source Code

When grading your submission, **all components** (i.e., the quality of your narrative visualisation design, technical implementation, and the written report) are taken into account:

1. **Visualisation Design**
   a. Appropriate use of the Five Design Sheet methodology and evaluation of your alternative designs
   b. Quality of implemented narrative visualisation design: clear signposting of messages and intended narrative, provision of appropriate context for the reader, clean and appropriate layout, attention to detail, good use of colour, references to data sources, and appropriateness for the intended audience
   c. Justification of your final design in terms of the human perceptual system, visual idioms and standard practises for visualisation design

2. **Visualisation Implementation**
   a. Correctness and robustness, performance and usability of the implementation
   b. Code comments and code quality

3. **Project Continuity**
   The degree to which the visualisation and report describes data insights related to the questions proposed in your submitted Project Proposal and explored during your Data Exploration Project. Further exploration or improvements can be done, but need to be described and justified within the report word limit along with the expected data visualisation components.

4. **Project Difficulty**
   The degree to which the visualisation project demonstrates sophistication and complexity in terms of its technical, theoretical and design implementation. Marks for this section will be allocated for the following:
   a. Sophisticated use of different data sources, in particular non-tabular data
   b. Dealing with very large datasets
   c. Advanced implementation of D3 / R (Shiny)
   d. Sophisticated user interaction (e.g., animation, linked interaction)

   Note: Other technical, theoretical and/or design aspects will be considered for marks in this difficulty section. It is therefore crucial to make the marker aware of the complexity of your project by ensuring you mention and justify all elements in your written report.

5. **Project Report**
   a. Quality of writing, images, logical structure, grammar/spelling, appropriate academic referencing and citations
   b. Completeness (i.e., all the above sections should be submitted and complete)