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*.

It is an **individual assignment** and **worth 40%** of your total mark for FIT5147.

Relevant Learning Outcomes

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

Overview of the Tasks

1. Identify which **findings** from the Data Exploration Project you wish to communicate. You can be selective, and you do not need to share everything you have found. The visualisations and accompanying narration should reflect the answers to your questions.
2. Clearly define your **intended audience**. The audience might be your classmates, the general public, politicians or whoever you like. The interactive narrative visualisation should be designed for the intended audience.
3. Design an **interactive narrative visualisation** using the five design sheet methodology.
4. Prepare a short **presentation** based on your five design sheets (one sheet per slide).
5. **Implement** your visualisation **using R (Shiny)** or **JavaScript (D3)**. The use of other visualisation libraries and packages is subject to approval by your tutor (See section “Notes on Implementation”). Note that you are not allowed to use R markdown.
6. Write a **report** and export it to PDF.
7. **Submit your report and your source code** (see section “How to Submit”).

Presentation Details

The presentation is an opportunity to gain feedback on your designs from your tutors and peers. Prepare a **three minute** presentation based on your five design sheets. Your presentation should consist of **6 slides** covering:

1. An **Introduction**: Name, project title, aims and motivation (one slide)
2. Each of your **Five Design Sheets** (i.e. one sheet per slide).

Report Structure

Write a 15-page (excluding cover page, bibliography, table of contents, 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. *Your identity*

Your full name, student ID, tutorial number, and tutor name. This can be included in the cover page.

3. *Introduction*
   A precise and succinct description of what findings and messages you wanted your narrative visualisation to convey and who the intended audience is.
4. *Design*
   A description and justification of your narrative visualisation design process. This should briefly refer to each of your five design sheets (you must provide the 5 design sheets in the appendix), and justify your design choices based on the theoretical content of the unit (throughout Weeks 1-12), 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 should justify your final design choices.
5. *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 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, advanced use of D3, etc - see marking criteria 4 for more information).
6. *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).
7. *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.
8. *Bibliography*
   Appropriate references of all resources that have influenced your work in IEEE or APA style (refer to this page for Monash citing and reference style). This should include any code templates, design influences as well as references which influence any data insights.
9. *Appendix*
   Place your five design sheets in the appendix. Make sure you provide clear images.

Your report should contain high-quality images of your narrative visualisation and five design sheets. It is 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.

Notes on 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. Any differences (e.g., layout, visualisation choices, navigation method, colour, etc,) should be explained and justified in the *Implementation* section of your report.
- As a rule of thumb, all *visualisation* packages and libraries that are covered 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).**

- If you are unsure if a particular visualisation package or library is allowed, please discuss with your tutor.
- 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., anything other than the visualisations themselves).
- 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 you should describe these steps in your report (see Marking Criteria 3).

Marking Criteria

Data Visualisation Project: Presentation [3%]

- Quality of oral presentation (confidence, speed, voice) and quality of slides (legibility, design, images) [1%].
- Logical structure [1%].
- Choice of content (completeness, appropriate level, discussion of design and implementation alternatives) [1%].

Data Visualisation Project: Report and Source Code [37%]

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 [15%]**
    a. Appropriate use of five design sheet methodology and evaluation of your alternative designs [5%].
    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 [7%].
    c. Justification of your final design in terms of the human perceptual system and human communication assumptions [3%].
2. **Visualisation Implementation [5%]**
    a. Correctness and robustness, performance and usability [3%].
    b. Code comments and code quality [2%].
3. **Project Continuity [2%]**
    The degree to which the visualisation and report describes data insights related to the questions proposed in your submitted 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 [10%]**
    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 [2%].
    b. Dealing with very large datasets [2%].
    c. Advanced implementation of D3 / R (Shiny) [3%]
    d. Sophisticated user interaction (e.g., animation, linked interaction) [3%]

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

5. **Project Report [5%]**
    a. Quality of writing, images, logical structure, grammar/spelling, appropriate academic referencing [1.5%].
    b. Completeness (i.e., all the above sections should be submitted and complete) [3.5%].

Check Your Code!

Please be sure to check that your code runs correctly. Check on other computers and operating systems if possible. If you do not have access to another computer you can try checking via the Monash MoVE platform.

If your code requires some steps for it to run then be sure to make these very clear in readme notes for your grader and describe this in your user guide section. Your code must run on your grader's computer on the first attempt for us to be able to mark your submission. **If your submission does not run correctly, 5% (from implementation) will be instantly deducted from your grade.** If after some troubleshooting your grader is still unable to get the code to run, further deductions will occur as we will not be able to fully grade your interactive narrative visualisation.

Please note that your code will be checked for compliance with the University's academic integrity policy, along with your report. **Be sure to acknowledge sources that influence your code through your comments and references in your bibliography. Do not copy complete designs from any external sources.**

Submission Due Dates

- Submit your presentation slides to Moodle, due **Monday Week 11 (see Moodle for date and time)**. Presentations will take place during Week 11 & 12 in your tutorial. Attendance for both weeks is **mandatory**.
- Submit a PDF report and a zip file containing your code to Moodle, due **the first Monday of exam period (see Moodle for date and time).**

NOTE: All submission times are in Melbourne, Australia local time.

How to Submit

Presentation

1. **Prepare a PDF file** containing all five of your design sheets.
2. Name the file *StudentName_StudentID_Presentation.pdf*
3. Submit it via Moodle under Assessments/Presentation (3%).

Report and Source Code

1. **Prepare a PDF report** (max 15 pages) and a **ZIP file** containing the source code for your narrative visualisation and any data files that are required to run it
2. Name the files using the following format:
    a. StudentName_StudentID_Report.pdf
    b. StudentName_StudentID_Code.zip

3. Submit both files via Moodle under Assessments/Data Exploration Project Submission (33%). These **must** be two separate files. **Do not put your PDF inside of the ZIP archive.** Note that only .zip is recommended, and you should **not** use other extensions such as .rar or .7z.

Notes on submissions:

- We **cannot mark any work submitted via email or stored on file hosts such as Google Drive.** Please ensure that you submit correctly via Moodle since it is only in this process that you complete the required student declaration, without which your work cannot be assessed.
- Your assignment **MUST** show a status of "Submitted for grading" before it will be marked.
- If your submission shows a status of "Draft (not submitted)" **it will not be assessed and will incur late penalties if submitted after the due date/time.** Note that this applies even if your file was uploaded to Moodle as draft prior to the due date.
- It is your responsibility to **ENSURE** that the files you submit are the correct files. We strongly recommend after uploading a submission, and prior to actually submitting on Moodle, that you download the submission and double check its contents.
- Turnitin is used for all submissions. A Turnitin report will be created for your PDF file only. It will not be able to create a report for your ZIP file. The X under this is expected.
- There is a maximum file size of 500MB. This is rarely hit by students in the unit but it can cause an issue if your data files are very large. If you believe the limit affects you, check your zipped folder size and look to reduce the size of your data (e.g., by removing columns you are not using). If this is not possible consider storing your data remotely e.g. via Google Drive, but be sure to test your code and provide access. Be sure to note this restriction in your code comments and any instructions if needed.
- You **do not** need to publish your app on the web.

Late Submissions and Special Consideration

Presentation

- We encourage everyone to submit their presentation slides on time. **All Presentation Slides submitted late will receive zero marks**.

Report and Source Code

- Assessments received after the submission deadline, or after the extended submission date for those with special consideration, will be **penalised 10% of the available total marks per day up to a maximum of seven days.** Submissions seven days after the due date will receive a mark of zero, and may not receive feedback.
- For information on eligibility for **Extensions** and **Special Consideration**, please refer to the relevant section on the Assessment page on Moodle.

Resubmissions

If you are retaking this unit from a previous semester, discuss your circumstances with your tutor and ensure you have chosen a completely new topic and dataset.