DATA VISUALISATION 1

Semester 2, 2024. Version 2.0.2

Version history

- 1.0 (22 July 2024): Initial release
- 2.0 (29 July 2024): Corrected proposal due date. Added separate submission of Five Design Sheets (5DS) at the end of week 4. Improved marking rubric for Five Design Sheets.
- 2.0.1 (30 July 2024): Removed duplicate text in introduction.
- 2.0.2 (31 July 2024): Fixed the due date for the proposal in "Task Description".

Submission

Three submissions are required for this assignment:

1. Proposal: Brainstorm your project topic and find a suitable dataset. Then, submit a proposal by **Sunday 4 August 11:55 PM**. Discuss your visualisation project proposal with your tutor in the week 3 studio. The proposal is not marked, but is a hurdle requirement for this assignment.

2. Five Design Sheets: Submit your Five Design Sheets by the end of week 4. Show your Five Design Sheets to your tutor in the **week 5 studio**. In the studio, your tutor will provide feedback.

3. Visualisation due 30 August (Friday of week 6), at 11:55 pm. Publish your visualisation with Tableau Public and submit your work on Moodle.

Introduction

In this assignment, you will design and build an effective data visualization for a specific domain. This will require you to critically evaluate information in a domain of your choice, develop your own visualization, and tell a story. The domain can be broad or specific, depending on the availability of datasets and your interests.

The aim of the assignment is to apply the data visualization methods and techniques discussed during the first six weeks of the semester and demonstrate their use in an innovative context. As such, the visualization should satisfy the following criteria:

- Why? The visualization addresses a particular need within a specific domain of your choosing. It must be targeted to users with specific information needs in this domain or be useful and relevant to individuals interested in the chosen domain.
- What? It visualises data relevant to the domain. Data can be of any kind.

- Who? Design your visualisation for the average Australian or Malaysian, depending on whether you are a student at the Clayton or Malaysia campus.
- The visualisation must transform data into meaningful information and provide insight that would otherwise be difficult or impossible to obtain without it.
- It must provide an appropriate level of interactive exploration.
- It needs to show some innovation. While it does not have to be wholly original, it cannot be a replica of an existing visualisation. It could include an innovative visualisation idiom, or an innovative exploration of an interesting dataset.
- Your submission must demonstrate the use of the Five Design Sheet methodology for sketching and planning the design of your visualisation.
- Your submission must demonstrate the use of Munzer's What/Why/How framework discussed in lectures.
- It must apply design principles discussed throughout the unit, such as data-ink ratio, storytelling, layout, typography and visualisation idioms with appropriate use of marks and channels.

Task Description

1. Choose a **domain** that you would like to explore.
2. Find relevant **data** that is publicly available.
3. Prepare a **proposal** with a summary of your domain, dataset, and possible design ideas and submit it to Moodle **by the end of Week 2**. Present your proposal to your tutor **in the Week 3 studio to obtain approval**. You may amend your proposal after discussion with your tutor, and the proposal will serve as a record of what has been agreed upon. The approval and proposal are not graded but are a **hurdle requirement** for this assignment: you must obtain formal approval from your tutor before submitting the report.
4. Design a narrative visualisation using the **Five Design Sheet Methodology** using analogue pen and paper. Sketches designed with tablet apps or other digital tools are not accepted. By the **end of week 4, submit your Five Design Sheets**, and discuss them with your tutor in the week 5 studio. Failure to do so will result in 0 marks for the five design sheets.
5. Implement your design with **Tableau** and publish the visualisation on the Tableau Public server.
6. Submit the following on Moodle:
   a. The public URL to your visualisation
   b. Information about your visualisation via a form on Moodle:
      i. The **domain,** the **why** and the **who** of the visualisation.
      ii. **What**: The **data** (sources, authors, relevance, creation process, etc.).
      iii. **How**: Give a rationale for choosing the specific idioms and explain how they help users to achieve their tasks. Describe any special features of your visualisation, such as custom-built elements.

Expectations

Data: The visualization must use accurate and reliable real-world data; it must not use fabricated or tampered data. The most recent available dataset should be used. Kaggle datasets must be combined with an additional source. Use existing and reasonably clean data; creating datasets or performing data wrangling are not topics covered in this unit and are not included in the marking rubric.

Topic: The following visualization topics are not allowed: World happiness, COVID-19, Airbnb, crime in Victoria, road accidents in Victoria, data science salaries, house prices in Melbourne, university rankings, car sales, and electric vehicle sales. In general, the topic must be related to Australia (for students in Australia) or Malaysia (for students in Malaysia). For example, tobacco consumption in the US is not an acceptable topic, but tobacco consumption in Australia or Malaysia is acceptable. Exceptions are possible, particularly if you have a specific area of interest. If in doubt, discuss your topic with your tutor.

Format: The entire visualization must be accessible from a single URL on the Tableau Public server. It must be viewable on a single web page that can be scrolled, and the full width of the visualization must be visible on a small laptop screen without horizontal scrolling. There should be no buttons (or other web links) that swap major sections of the web page, though you may use buttons to show and hide visualization elements.

Presentation not exploration: The goal of this assignment is to create a visualisation that communicates interesting information in an easily accessible and graphically engaging way using storytelling elements, layout principles, typography, and graphical design. The goal is not to create an expert tool for exploring and analysing a dataset.

Audience: The topic must be relevant to and easily understandable by an audience in Malaysia (for students in Malaysia) or Australia (for students in Australia). Avoid jargon and technical terms when possible. If specialized terminology is necessary, introduce and explain these terms. Avoid visualizations that require knowledge of statistics (e.g., understanding standard deviation or confidence intervals), as the general audience is not expected to have such expertise. If statistical concepts are necessary, introduce and explain them.

Quality, not quantity: Your visualization will likely contain between three and ten charts or diagrams. There is no set minimum or maximum number of charts. Instead, we are looking for carefully designed and annotated charts that, in combination with text, icons, and pictures, guide the user through an interesting story using layout principles, typography, and graphic design principles. Avoid pixelated images, non-informative graphical elements, or trivial text. Complement your visualization with concise, informative, and grammatically correct narrative text that tells a story.

Interactivity: Interactive features are easy to add in Tableau. Integrate interactivity where it makes sense, but avoid adding interactive elements merely for their own sake.

Maps: Geographic maps will be required for the second visualisation assignment. For this first visualisation assignment, it is recommended to use non-geographic idioms; geographic maps will be disregarded when marking your submission.

Copyright: You are encouraged to use icons and other simple graphical elements where appropriate. As your visualization will be publicly accessible, it is your responsibility to ensure that you have the right to use data, icons, images, etc. Consult with your tutor if in doubt. You need to indicate the source and URL (if available online) for any external elements you use, such as datasets, photos, articles, academic papers, and other sources of information. There is no need to indicate the source and URL for simple icons, such as emojis, flags, or company logos.

Authorship: As your visualisation will be publicly accessible, you need to indicate your authorship and date your work. You may choose to release your work under a copyleft license, but this is not a requirement and doing so does not influence your mark.

Plagiarism: We will follow up on any kind of academic misconduct. For this assignment, you cannot integrate non-trivial graphics (such as diagrams, charts, information graphics, etc.) created by others. The submission must be your own genuine work. Simply plugging a dataset into an existing Tableau visualisation and making tweaks to layout, typography, colour design, etc. is considered plagiarism.

Use of Artificial Intelligence

Generative artificial intelligence (AI) tools can be used for this assignment. Any use of generative AI must be appropriately acknowledged (see Learn HQ). Since grammar and style of text are part of the assessment, you are encouraged to use AI tools to ensure that the text included in the visualisation is grammatically correct and stylistically appropriate.

Marking

This assignment is worth 25% of the final unit mark, including 2% for the Five Design Sheets. A detailed marking rubric is provided on the next page. If the submitted URL does not point to your publicly accessible visualisation, the mark is 0. Remember that maps included in the visualisation will be disregarded when marking.

Late penalty:

- **5% per day and a cut-off of seven calendar days.**
- **2% for late submission of the five design sheets (due in week 5 studio).**

	HD (80–100)	D (70–79)	C (60–69)	P (50–59)	N (0–49)
Five Design Sheets 2%, 0 if created with digital tools or not presented in W5 studio.	Five sheets completed, large variety of detailed sketches, creative and useful outcome.	Five sheets completed, large variety of sketches, useful outcome.	Five sheets completed, some variety of sketches, some useful outcome.	Five sheets completed, limited variety of sketches, limited outcome.	Incomplete submission, repetition in sketches, outcome difficult to implement.
Visualisation (a) Idioms and complexity 10%	A substantial number of appropriate standard and creative custom-built idioms. Demonstrate a high-level of understanding of the use of visual marks and channels.	A substantial number of appropriate idioms. Demonstrate a good understanding of the use of visual marks and channels.	Standard idioms (e.g., bar chart, line graph). Visual marks and channels are applied correctly.	A small number of standard idioms (e.g., bar chart, line graph). Slightly incorrect use of visual marks and channels resulting in difficult to read visualisation.	Inappropriate idioms, small number of standard idioms, incomplete visualisation. Visual marks and channels not applied correctly (e.g., hue channel for ordered attribute).
Visualisation (b) Layout, colour, figure-ground 4%	Balanced and symmetric layout clearly structured in columns/rows with good use of white space. All elements aligned with sight lines. Very clear visual hierarchy by using consistent colour and figure-ground.	Balanced and symmetric layout mostly structured in columns/rows with use of white space. Most elements aligned with sight lines. Visual hierarchy by using colour and figure-ground.	Somewhat balanced and symmetric layout not consistently structured in columns/rows. Arbitrary use of white space. Some elements aligned with sight lines. Some visual hierarchy.	Layout not balanced or not symmetric, no apparent layout structure. Some elements aligned with sight lines. Limited visual hierarchy.	Layout not balanced and not symmetric, no apparent layout structure. Most elements are randomly placed. No visual hierarchy by using colour and figure-ground.
Visualisation (c) Typography, 2%	Advanced typography, (non-standard typeface matching the topic, excellent readability of main text, appropriate line height, size, weight, colour, line length, alignment, spacing of text elements, etc.)	Consistent typography (standard typeface and attention to typography).	Standard typography with minor issues, but still easy to read.	Typography with some issues that impact readability of text (e.g., overuse of highlighting, poor or inconsistent spacing of text, centred text blocks, long text lines, etc.)	Inconsistency in fonts, sizes and weights. Typography with poor readability (e.g., inappropriate typeface, poor or inconsistent font size, weight, line lengths, etc.)
Visualisation (d) Storytelling, annotations, grammar and style 5%	• Clearly structured and engaging storytelling guides the reader through the visualisation. • Extensive use of informative annotations on diagrams and text outside of diagrams. • Correct grammar. • Writing is easy to follow and understand. • Metadata (data sources, author, date, etc.) is complete and well formatted.	• Storytelling guides the reader through the visualisation. • Use of informative annotations on diagrams and text outside of diagrams. • Correct grammar. • Writing is mostly easy to follow and understand. • Metadata is complete and well formatted.	• Some guidance of the reader through the visualisation. • Use of coherent annotations on diagrams and text outside of diagrams. • Some grammar issues. • Writing is not always easy to follow and understand, jargon or obscure abbreviations are used. • Metadata is complete and well formatted.	• Limited guidance of the reader through the visualisation. • Limited amount of annotations on diagrams and text outside of diagrams, with some incoherence. • Grammar issues throughout. • Writing is not easy to follow and understand, jargon or obscure abbreviations are used. • Some Metadata is missing or not well formatted.	• No apparent guidance of the reader through the visualisation. • Small number of incoherent annotations on diagrams and text outside of diagrams. • Major grammar issues throughout. • Writing is difficult to follow and understand, jargon or obscure abbreviations are used. • Metadata is incomplete or poorly formatted.
Description of domain, who, what, why, how 2%	Domain, who, what, why, how are appropriately and succinctly described.	Domain, who, what, why, how are described with minor issues.	Domain, who, what, why, how are described with major issues.	Domain, who, what, why, how are partially described.	Substantial aspects of domain, who, what (e.g., data source), why, how are not described.