THE UNIVERSITY OF MELBOURNE

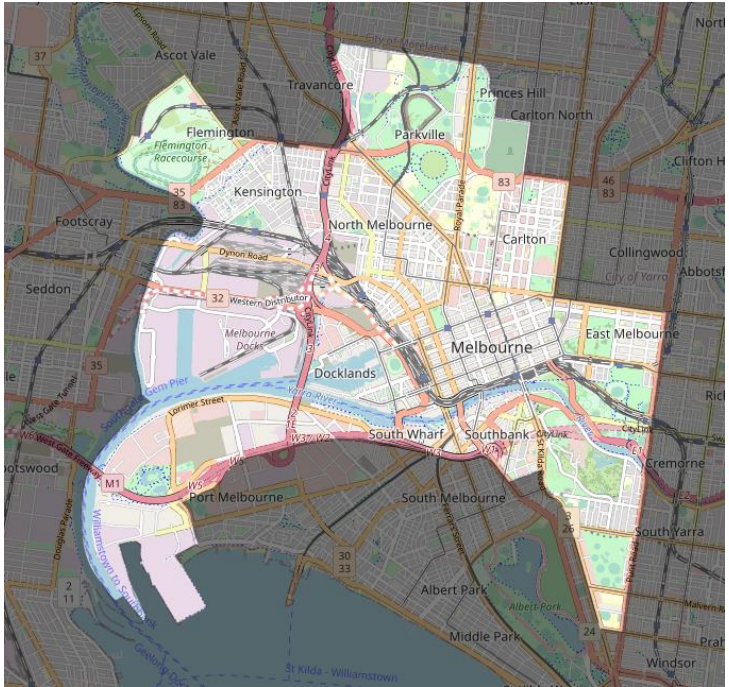
ASSIGNMENT 3 BRIEFING

INFORMATION VISUALISATION

THE TASK

The **City of Melbourne** (your client) has asked you to produce an **interactive interface** to either:

- Help people discover **interesting and practical information** about Melbourne,
  or
- Help a government agency identify **interesting patterns** in the data or **make decisions** for specific tasks.



The boundaries of the City of Melbourne – your interface should largely focus within these boundaries (can include neighbouring areas when relevant)

THE TASK

Your interface is targeted to one of the following **user groups**:

1. **Tourists** that would like to/are visiting Melbourne
2. **Local citizens that commute** to the CBD
3. **State Government department** that is interested in the performance of any government system, such as transport (e.g. public transport, vehicle volumes, pedestrian counts, …)

HOW TO COMPLETE THE TASK

- Work in a **group of 4**
- Prepare an **interface**
- It can either be:
  - An **R Shiny interface** that incorporates one or more Tableau visualisations
  - A **Tableau interface** that incorporates one or more R Shiny visualisations

- Think about:
  - **When and where** will the interface be used?
  - What places are **most popular**?
  - What **patterns** can be found? How can you help the user to discover patterns?
  - Are there any **anomalies or specifics**?
  - What **platform** should be used (computer, mobile, kiosk, …)?

DELIVERABLES – WHAT YOU NEED TO SUBMIT

A Interface and report (25%)

A.1 Interface implementation

- A single ZIP file containing your interface and any required data
- Needs to include a **README.txt** file explaining how to run the interface

A.2 Report

- Design summary (2 pages)
  - Describe audience and purpose
  - What aspects of the design you want to get credit for
- Pattern or use case summary (2 pages)
  - Interesting patterns or info that your target audience can discover using your interface
  - How your tool helped discover these
- Sources and references
- Group member contribution table

DELIVERABLES – WHAT YOU NEED TO SUBMIT

B Video (10%)

- 10 minutes
- Pre-recorded pitch presentation to the City of Melbourne (your client)
- Provide background for, and demonstrate, your interface
- All team members must speak

HOW TO SCORE WELL

What does a great submission look like?

- A very well-designed, revealing, logically structured, interactive Tableau story containing a Shiny viz (perhaps a map)
- An exploratory, highly interactive, polished Shiny app containing Tableau viz(zes)
- It incorporates a fresh and innovative yet effective design, and demonstrates that you have challenged yourselves technically
- Must be designed firmly with the target user group in mind

Assessment criteria

- Basic design
- Technical challenge
- Design innovation
- Report

Note: your interface should include some technical challenges beyond the lab sessions and Assignments 1 and 2.

WORKING TOGETHER

- Your group members will have different backgrounds
  - For example: uncomfortable with coding / may have a lot of experience with mapping / may not be strong at aesthetic design / …
- Discuss your individual skills and strengths
  - What are you each good at?
  - What would you not like to work on?
- Stay in contact
  - Agree on a weekly meeting time via Zoom (or other tool)
  - Reply to your group members' messages; do not "disappear"
- We will check that all team members have been contributing
  - If there are issues in your team, do not leave it until the end

RESOURCES

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Tableau

- Week 8 pre-lab videos on integrating Shiny and Tableau
- Publish to Tableau Public
  - Note: This makes your work publicly visible and searchable. Do not submit private or copyrighted datasets to Tableau Public.
- Actions in Tableau
- Tableau Embedding API v3
  - When embedding Tableau into Shiny, you can incorporate small pieces of JavaScript code into your R Shiny code using the **runjs** function. For example, you can make Tableau update a filter when a user clicks something on a Leaflet map in Shiny.
  - Tableau Embedding API v3 Tutorial

RESOURCES

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R and Shiny

» Training materials listed in Weeks 4-7

» R and Shiny textbooks listed in the Assignment 2 page on LMS

» R Graphics Cookbook

» ggplot2 cheat sheets | ggplot2 workshop video | ggplot2-book

» ggiraph-book

» Learn Shiny

» Leaflet Tutorials | R leaflet package

RESOURCES

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Web programming

Advanced students may wish to include web programming in their Shiny app.

» HTML for custom content: Using HTML in Shiny | HTML with W3Schools

» CSS for custom styling: Using CSS in Shiny | CSS with W3Schools

» JavaScript for custom interactivity: JavaScript with W3Schools | tutorial | guide

» Web programming cheat sheets:

– HTML: This cheat sheet includes a list of every HTML tag, in alphabetical order.

– CSS: There are many CSS properties, and it's easy to forget the specific name for one particular visual modification you want to make. This cheat sheet lists all of them.

– JavaScript: This cheat sheet provides an overview of many basic aspects of JavaScript.

RESOURCES

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Visualisation tools

» Non-spatial visualisations
  – Tableau's many built-in visualisations (Lab 2) | R **ggplot2** and **ggiraph** (Labs 4 to 6)
  – 30 R Packages For Data Visualization That You May Not Know Of
  – Research other available R packages
  – Invent your own visualisation type! Draw a static visualisation using R graphics or (for advanced coders) make an interactive graphic using d3.js and the **r2d3** R package

» Geovisualisation
  – Tableau maps (Lab 3) | R **leaflet** (Lab 7)
  – Make your own custom basemaps using Mapbox Studio and add them to **leaflet** using the **mapboxapi** R package

RESOURCES

Data

- Suggested datasets provided on LMS
  - Download the geodatabase (.gdb) with all the data – can view in Tableau or QGIS
    Note some datasets are outdated! Take care.
  - Find up-to-date datasets at data.vic.gov.au or data.melbourne.vic.gov.au
  - This is spatial data, but your interface does not need to use the spatial component. However, consider the needs of your user group
- https://unimelb.libguides.com/GIS

Data theme	Data source	Credit type
BusMetroRoutes	DELWP	CC BY 4.0
BusRegionalRoutes	DELWP	CC BY 4.0
CityActivitiesAndPlannedWorks	City of Melbourne	CC BY 4.0
Melbourne_Bicycle_Routes_MGA	City of Melbourne	CC BY 4.0
Melbourne_Building_Footprints_MGA	City of Melbourne	CC BY 4.0
Melbourne_CityCircle_tram_MGA	City of Melbourne	CC BY 4.0
Melbourne_Municipal_Boundary	City of Melbourne	CC BY 4.0
Melbourne_OpenSpace	DELWP	CC BY 4.0
Melbourne_POIs	City of Melbourne	CC BY 4.0

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Thank you!