COS30045 DATA VISUALISATION

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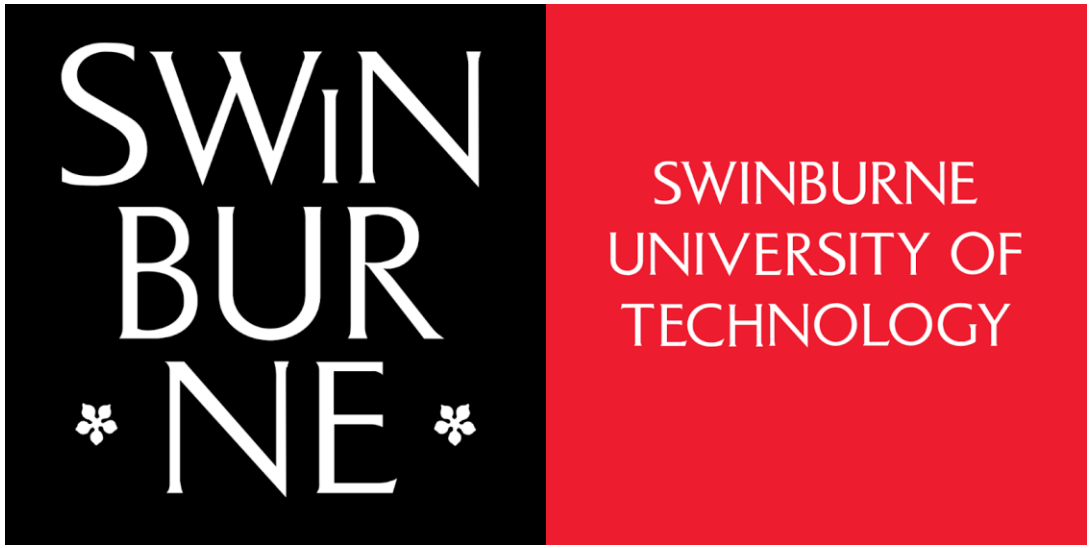


- **DATA VISUALISATION PROJECT**

SUBMISSION GUIDELINES

- Draft of Project Design Book
- Link to team GitHub classroom
- KNIME file

Data visualization project

Purpose of the Assignment

- Creating visual styles and chart layouts (Visualization Design)
- Creating user interfaces and filters (state, year, test stage)
- Making mockups and wireframes for the layout of websites
- Beginning prototypes and sketches for interfaces
- Setting up the coding (loading data, defining constants, creating charts)

Tasks accomplished thus far

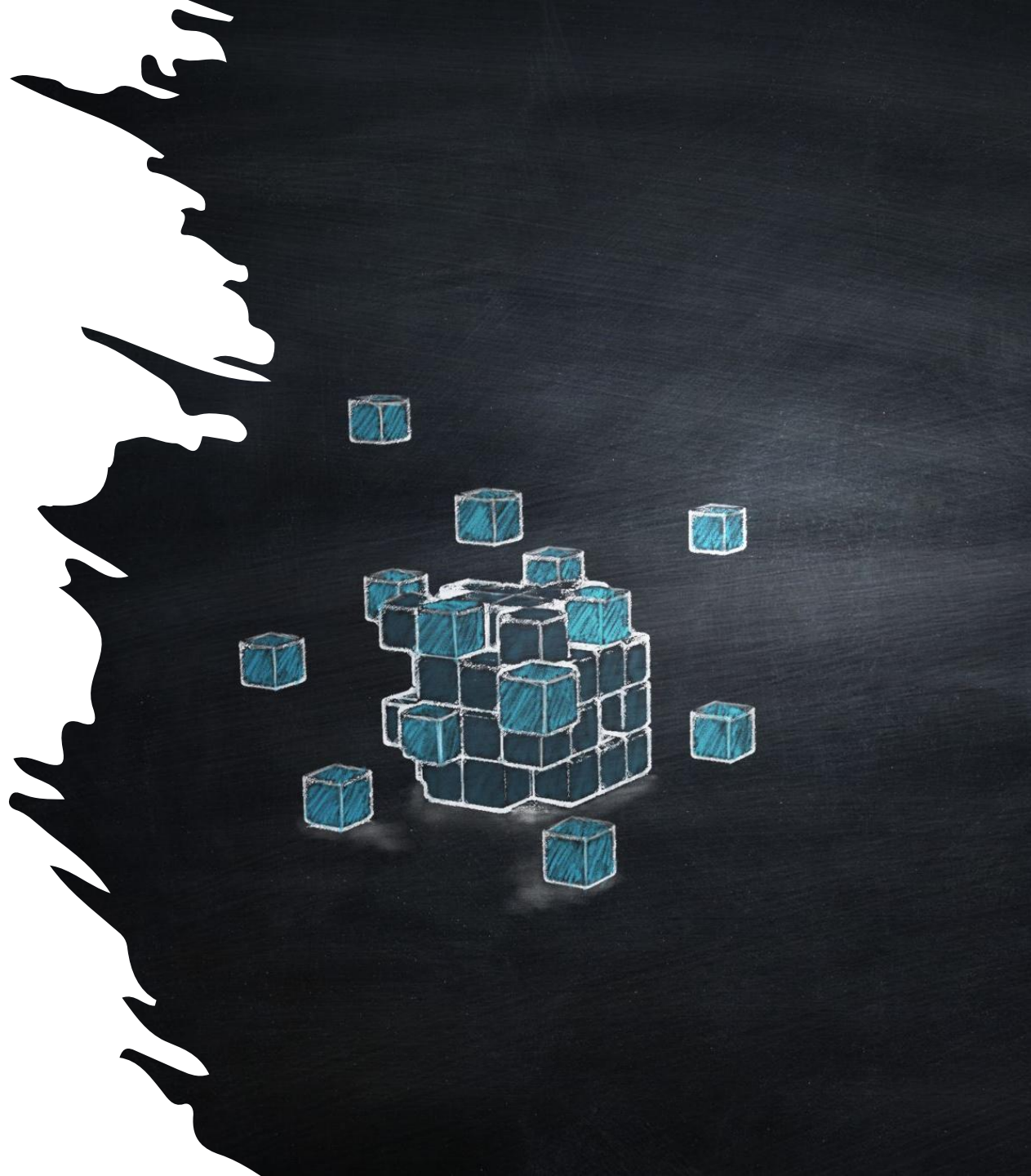
- created a storyboard and wireframe to specify the design of the website and show how users would interact with the dashboard.
- selected suitable chart forms, such as scatter plots, lines, and bars, to successfully display important data trends.
- used fundamental design principles to make sure the dashboard is responsive on all devices, has visual integrity, and is usable by all users.
- In order to improve user engagement and offer instant data feedback, important interactive elements including dropdown filters, hover effects, and tooltips were planned and designed.
- KNIME was utilized for thorough data preparation, which included resolving missing values, removing duplicates, normalizing data fields, and combining datasets to enable precise and insightful visualizations.

Being worked on

- To improve clarity and efficacy, visualisations should be continuously tested and improved in response to instructor and peer input.
- Making plans to compare before and after in order to demonstrate design advancements and support design decisions.
- Modifying to get around programming or technical limitations while maintaining functionality for every feature.
- Examining the design for accessibility, paying particular attention to elements like font readability, color contrast, and device responsiveness.
- Putting together a usability assessment to determine how user-friendly and intuitive the dashboard is for different audiences.

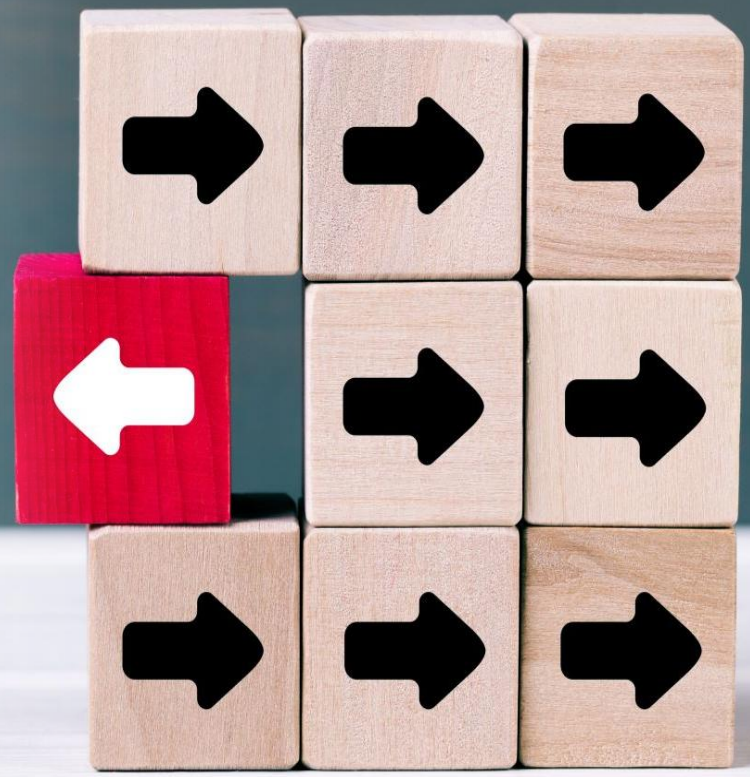
Blockers and challenges

- Comparisons are impacted by incomplete data from states like Tasmania and NT.
- Limitations of KNIME for sophisticated interactive visualizations
- Only data from 2023 is provided for testing stages, which restricts multi-year analysis.
- Managing the workload across design, development, and documentation became increasingly difficult when working alone.



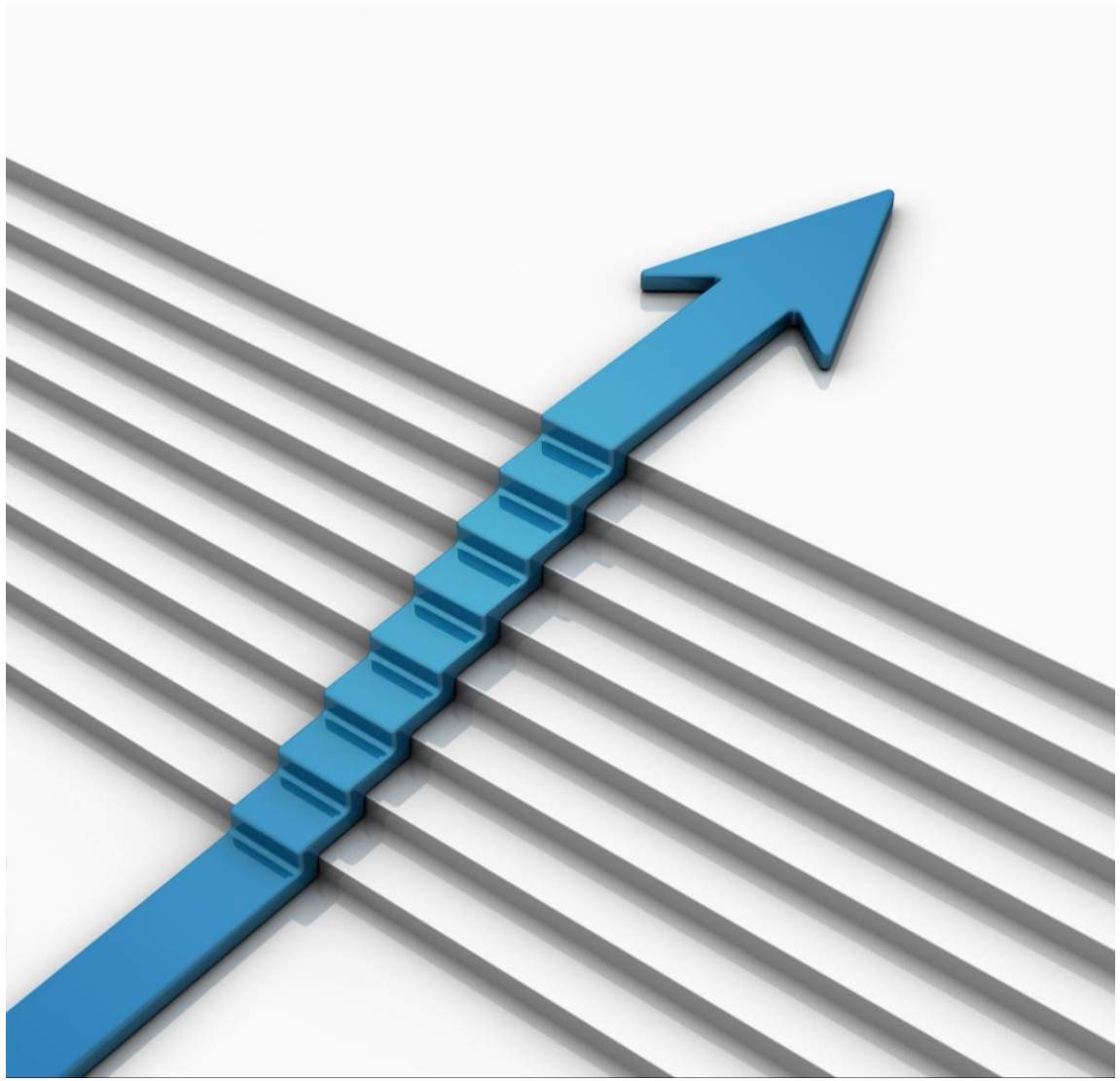
Potential solution for Blockers and challenges

- When test counts were absent, proxy values (fines + charges) were used.
- Concentrating on states with comprehensive data (such as NSW and QLD)
- KNIME was simply used to clean the data; D3.js or Chart.js were to be used to create the visualizations.
- Charts with clear labels that only use data from 2023; summary views for prior years
- Workload was managed using a planned schedule, with tasks completed in phases and critical deliverables given priority.



Next Steps

- Complete the Iteration & Validation section by adding the results of the tests and the scheduled usability assessment.
- Refine and update the website, interaction, and visualization parts of the design in light of current comments and advancements in the field.
- Thorough documentation of the user flow and dashboard layout, guaranteeing conformity with the desired user experience
- Using the cleansed dataset, start writing the interactive elements, such as tooltips, filters, and charts, making sure they work on all devices.



Making Use of Tooltips and Annotations

Each chart will have insight boxes and brief notes below to highlight imp trends or explain the visual's purpose. When users hover over individual objects, like bars, lines, or map areas, tooltips will be added to show sp data values. This will allow users to quickly and easily obtain deeper ins without having to make any further clicks or navigate. The overall layout drug test dashboard facilitates precision, clarity, and data exploration. Through the integration of well selected chart types, a straightforward structure, and interactive elements such as tooltips, the dashboard

Feature	Interaction Method	User Behaviour	System Response
Filtering	Dropdown	Select year, state, or test stage	Charts and metrics update dynamically with smooth transitions
ToolTips	Hover	Hover over bars, lines, or map areas	Tooltip fades in showing detailed data
Reset View	Click	Click the "Reset View" button	Clears all filters and resets dashboard to default view
Animation	Triggered by data change	Apply filter or reset view	Charts animate to reflect new data

A range of interactive visualisations are displayed to users as they scroll down the website, including:

- A **line chart** showing national drug testing trends over time
- A **heat map** highlighting test rates across states
- A **multi-line chart** comparing positive test rates between jurisdictions
- A **donut chart** illustrating drug tests per 10,000 driver licences by state

Notes describing the dataset and a download link to the original data are located at the bottom of the website. The general layout and interactive flow are intended to facilitate data exploration and make it simple for users to spot patterns and insights pertaining to drug enforcement in Australia. The dashboard is kept both readable and educational for all audiences thanks to its clear layout and unified style.

3.Visualization Design

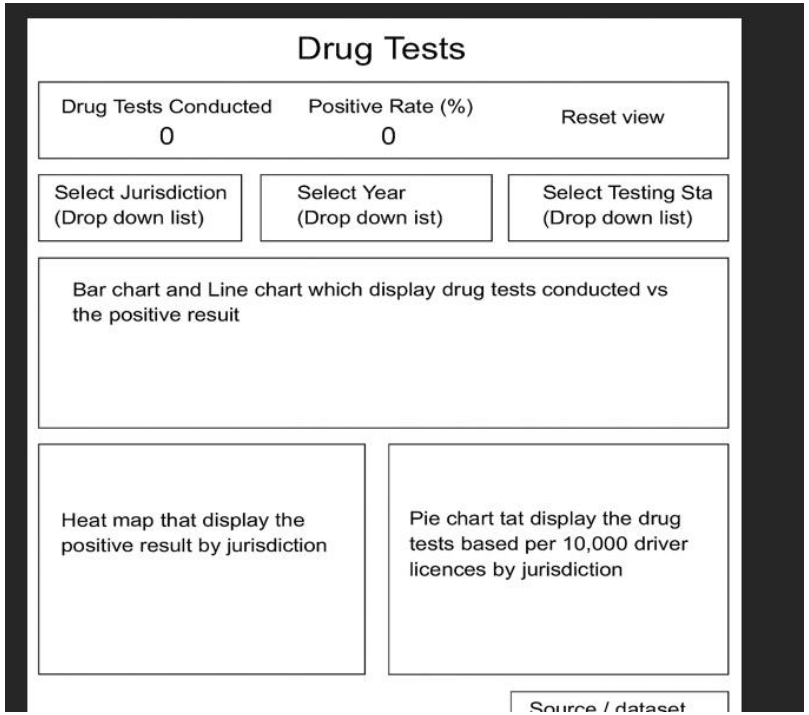
3.1. Website Design

The goal of the drug test visualization website is to make complicated information easy to understand and useful for users. With a focus on usability, the website and dashboard's overall layout will be created to make it simple for users to explore important insights using distinct headings, filters, and visual components. Navigation will be smooth and easy thanks to the layout's vertical scrolling structure, which guarantees accessibility on all devices, including desktops and smartphones.

A filtering bar at the top of the page will offer three important dropdowns to help customers navigate:

- Explore by Year: This feature makes it simpler to spot yearly trends by allowing users to filter and examine drug test data unique to a chosen year.

- Users can compare drug testing efforts across several locations by using the "Explore by Jurisdiction" feature, which enables them to filter results by state or territory



SCREENSHOTS

Gen AI declaration

I acknowledge the usage of generative AI techniques to help with certain aspects of my project. Throughout the design documentation, these tools supported idea generation, helped summarize data findings, and enhanced the written content's clarity and organization.

The data analysis, KNIME processing, dashboard design, and coding choices, on the other hand, were all done independently. AI was not meant to take the role of originality or critical thinking, but rather to be a supplementary tool to boost productivity. Prior to final submission, I carefully analyzed and improved every output.