

FIT 3179: DATA VISUALISATION 2

Name: Thanh Trung Tran

Student No: 32446454

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Title Page

GitHub URL

<https://trung1411.github.io/Data-visualisation-2/>

Document Word Count

This document has a total word count of 799 words

Report

Domain

Road transport crash fatalities in Australia in the past 5 years from Jan 2018 - July 2023

Why

Useful for all Australians to understand the frequency, causes and seriousness of road crashes in Australia

Who

Australian citizens in general, in particular those who regularly drive on the roads of Australia.

What

The dataset contains information about crashes that lead to fatalities in Australia from Jan 2018 - July 2023 including crash_id, state, month, year, date and time, gender, total of fatalities, etc.. . The dataset is collected by the Australian government and can be accessed [here](#)

The dataset is cleaned and collated using SQL to make it suitable for the Vega-Lite visualisation

Why and How

For my visualisation I use four types of idioms: choropleth map, stacked bar chart, time series graph and heatmap

The use of choropleth maps allow readers to visualise the information tied to geographical location - i.e being able to better understand the change in fatalities count in different states of Australia over the course of 5 years.

Time series graphs help in visualising the change in number of fatalities categorised by gender over the period of 5 years.

Stacked bar charts allow users to better make comparisons between different numbers of fatalities caused by either single or multiple crash types.

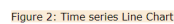
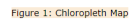
The primary purpose of using a heat map is to better visualise the volume of fatalities sorted by their respective hour in which it takes place (from 00:00 to 23:59) and also help direct readers towards areas on the heatmap that matters the most (either the most most or least highlighted area).

For my visualisation, there is a filtering legend for the choropleth map where the readers can see different fatalities counted aggregate by the respective years, starting from 2018 to 2023. On the other hand, for the time-series graph, there is an interactive tooltip to help

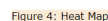
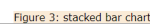
Screenshot of the visualisation

Introduction

Through out the 5 year period from Jan 2018 to Jul 2023, Australia has recorded a total of **5978** fatal crashes nationwide, which results in a total of **645** fatalities. Out of that approximately 3/4 of them are male which is over three times as much as that of female (4805 and 1640 respectively) with 12 fatalities where the gender was unknown. The choropleth map on the right aims to visualise the number of fatalities across different states of Australia in the past 5 years. There is a slider below which can be used to filter the map by the corresponding years from 2018 to 2023



Crashes are usually divided into two types: Single and Multiple. While **Single** crash are crashes where only one vehicle is involved that hits a tree, telephone pole or other objects, **Multiple** crashes involve three or more vehicles in a chains of events from a single event. The stacked bar chart on the right showcase the normalised percentage of these two crash types categorised by the age group of Australians in the past 5 years.



The report is created by Thanh Trung Tran

The dataset is collected from [here](#)

Design

Layout

As English reads from left to right, I implement the graphs and text in such a manner that they are read from left to right and from top to bottom I also try to keep the paragraphs so that information can easily be read by readers. As the choropleth map is the most important visualisation in my website, it is located near the centre of the website so the readers can easily focus on the map details. Symmetry and balance is achieved by using the pure.css framework which makes sure the elements of my website are symmetrically placed and create a more visually appealing website.

Colour

Throughout the website, I try to maintain a colour scheme consistency by having the entire website having a grey background, whereas the container containing the text and the visualisation will have a white background so that the colour contrast is high enough so that the readers will be able to read my website even in low light. Similarly, all the captions for the visualisation have an antique background to maintain sufficient colour contrast. For the heat maps as well as the choropleth maps, light colour is used for lower values in the scale and dark colours for higher values since it is more intuitive for readers.

Figure-ground

Important aspects of my website - title, header as well as important words in a paragraph are accentuated over less significant parts of the website by having them bolded. As a result, those text will stand out from the background and readers are more likely to remember those details which is the main thing that the visualisations and the website wanted to communicate with them.

Typography

Typography is also maintained consistently throughout the website by having only one typeface which is using the font-family: OpenSans and Sans-Serif. The remaining elements of the website are configured to be the default typeface in the css files.

Storytelling

The reader is guided through the visualisation by having a short introduction text box to provide them with the context needed to interpret the visualisation as well as background information regarding the dataset used. Then each of the next containers will always contain a text box positioned either to the left or right of a corresponding visualisation, in ratio 1:2, 1:2 or 1:3 and 2:3 respectively. These text boxes will provide additional information regarding what the visualisation is trying to convey as well as filtering and tooltip information that will help guide the audience through the visualisations. The position of the text box and their respective visualisation are placed in an alternating layout to break monotony and enhance visual interest to my visualisation.

Bibliography/list of references

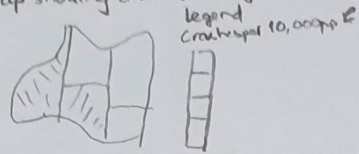
Muth, L. C. (2021). Retrieved from <https://blog.datawrapper.de/colors/>

Salazar, K. (2017). Retrieved from <https://www.nngroup.com/articles/zigzag-page-layout/>

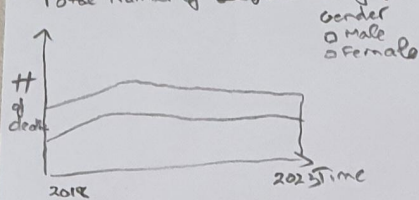
Appendix

1. Ideas

Map showing distribution of crashes / fatality

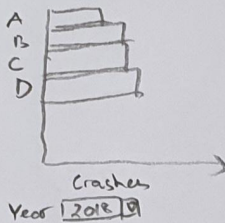


Total number of ~~crashes~~ fatalities by gender over the year

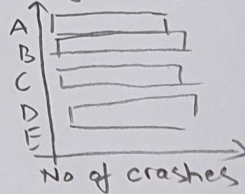


Number of crashes by type

Track and element

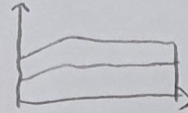
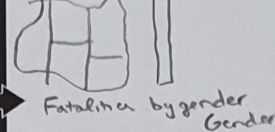


Distribution of crashes by weekday



2. Filter

Map



3. Categorize

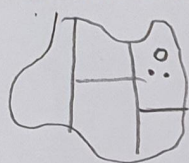
Crashes map

Time series
of crashes

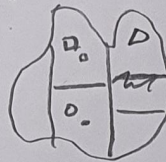
Crashes
by type

Crashes by
Weekday

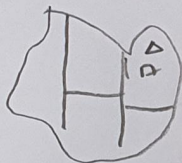
4. Combine and Refine



size shows count of fatalities



shape shows crash type

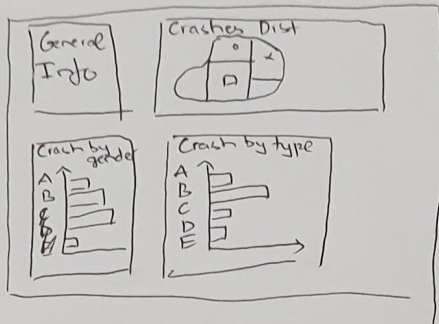


Map showing
distribution of fatalities
with shape showing
type and
size for count

5. Question

- What color palette used for gender?
- How to implement tooltip legends?
- How to clean dataset?

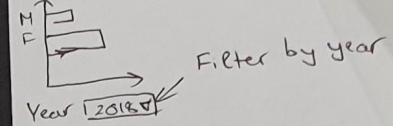
Layout



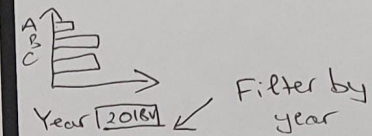
Title: Dashboard View
 Author: Thanh Tung Tran
 Date: 4/10/2023
 Sheet: 02
 Task:

Operations

Crash by gender

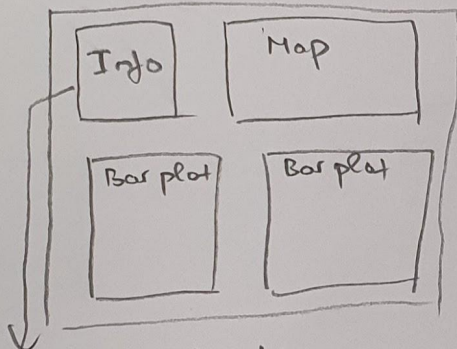


Crash by type



Focus

Everything is focused

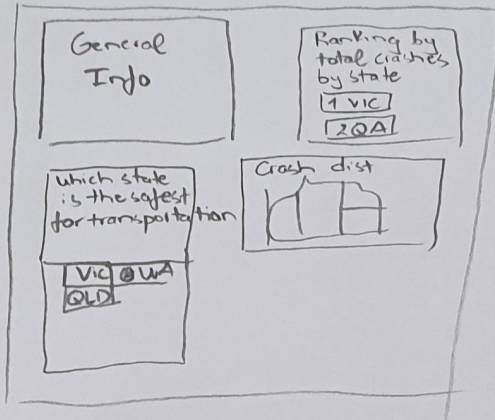


Info on road crashes
 in Aus

Discussion

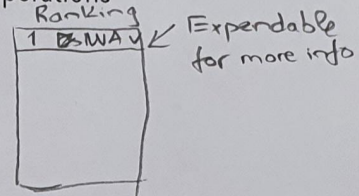
- Might be too much info
- No emphasis on important info

Layout

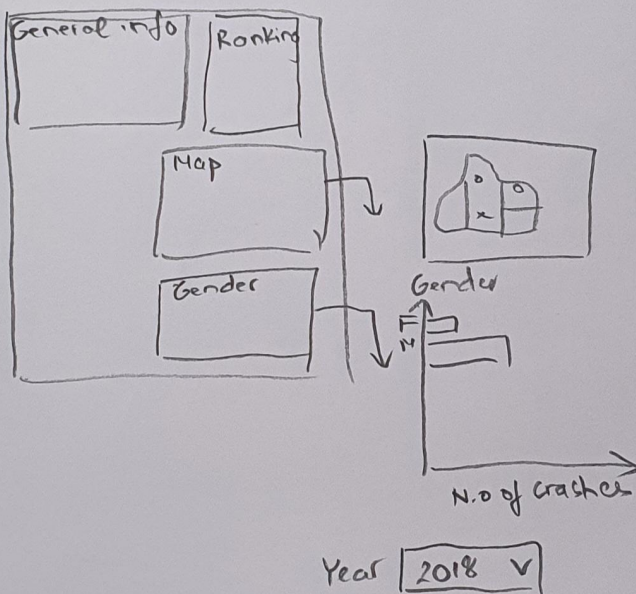


Title: Narrative
 Author: Thanh Trung Tran
 Date: 4/10/2023
 Sheet: 03
 Task:

Operations



Focus on the total crashes ranking per state



Discussion

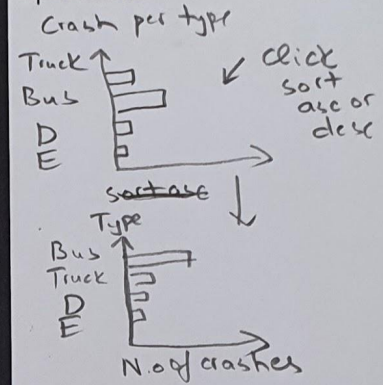
- * Interactive for users
 - ⇒ more engaging
- * Need data base
- * Is it possible to do with vega lite
- * Narrative might make data look not impartial

Layout

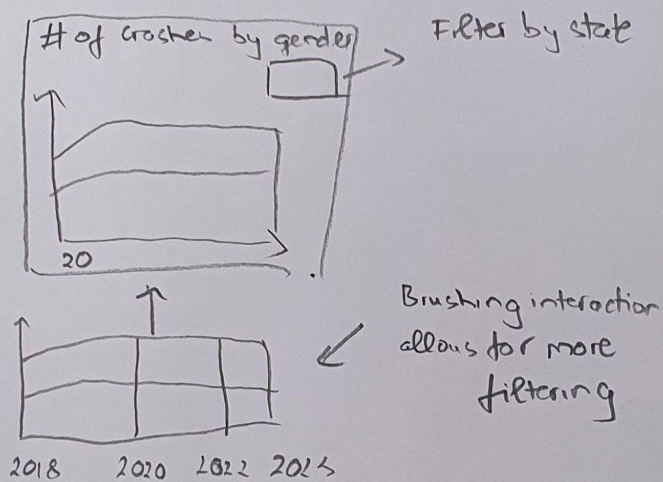


Title: Simple narrative
 Author: Thanh Trung Tran
 Date: 04/10/2023
 Sheet: 04
 Task:

Operations



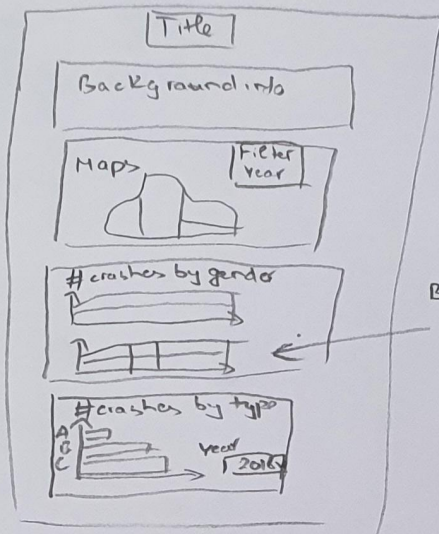
Focus



Discussion

- Is the order of info helpful to readers
- Is lack of background info good or bad

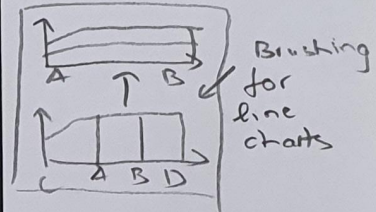
Layout



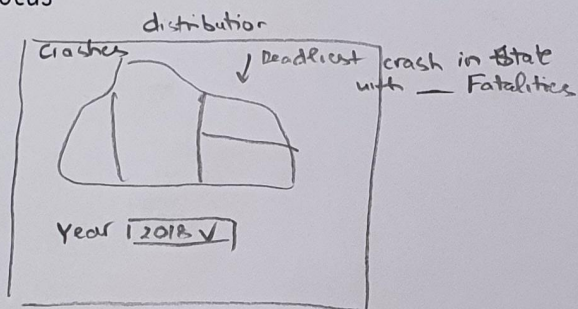
Brushing interaction

Title: E design sheets
 Author: Thanh Trung Tran
 Date: 24/04/10/2023
 Sheet: 05
 Task:

Operations



Focus



Shape: different type of crashes
 Size: see n.o of crashes

Detail

- Clean data using sql
- Download topojson file for Aus border
- Use vegalite for visualisation and html/css for website interface