

Marriage and Divorce in Australia

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INTRODUCTION

Knowing about trends in marriage and divorce is very interesting as it helps us understand the behaviour of the people participating in it. We can get trends that may be applicable to businesses. Example is the month where people usually have marriage. Businesses that relate to its activity can prepare beforehand. This can increase sales and get customer loyalty. Many can be used for the data but overall this is presented for the general public. They can interpret the information as they like.

Marriages and divorces over time is to see how people in Australia see about them. Based on their increase or decrease it may be affected by many factors that may be present in that time. Trends in factors relating to marriage is mostly seeing any interesting or changes that occur in marriages over time. This can be used for many things. As previously mentioned, businesses may use them. Comparing data by states and countries makes us see the big picture of the numbers and where do we lie on.

DESIGN

When designing I like to focus on simplicity. I have viewed many data in the past and as a person who is not experienced in graphs and plots, many were confusing and especially how they were presented. My design focus on simplicity and ease-of-use. I also try use monotone colors and minimalistic designs so it wouldn't overcrowd my presentation.

In designing on paper was very different than I thought. I have already cut back many interactiveness and simplify my plots. However, in actually coding and creating it there are many things that I modify to stay true to being simple and easy to use. I ended up making it look like a simple website. Though it may look too simply, I prefer this than having my users confused.

There was also a problem with the hovering tool. When applied with the click tool on the same plot, I had problems as the information and vertical line projected by both tools seems to be glitching and I thought my user may not be able to read the information that is supposed to be presented to them. So, I took off the vertical tool line to prevent any problems.

Another problem was also how I manage my pages. I thought making my trends combined in one page differentiated by tabs would be best. However, I find that using both tabs and window was very useful especially I had a lot of information and plots to do.

Though I am aware we need to increase our interactiveness, but I believe there should be limits to that as it can confuse the user on how overwhelming it can be. In my last plot I thought it shouldn't be needed to know in detail about the countries' names as it is not needed in the analysis. Just adding any popups can add confusion

to the user. Many interactions also slow down the loading process and interaction response.

IMPLEMENTATION

shiny

Our choices in this assignment was either to use Shiny or D3. In my opinion using Shiny is much easier for me as I am familiar with R and I am experience in making graphs and plots in R. This package is also so far the easiest to use when making interactive platforms.

tidyverse

This package is a great tool for data wrangling. I have a few plots where it depends on the user's choice, thus wrangling is needed inside the function. This package makes it easier to choose from them.

facetscales

This was mainly used in plot1 as I wanted to have the y-axis and x-axis to be different so the reader can focus more on the movement on the data than how they compare to each other in size. This was applied due to the fact I wanted to have a vertical line going across the plot while it being faceted. However, the vertical line was not used in the end but the scale for the axis is still applied for clearance.

ggplot2

I use this as a plotting tool since it is very easy to use, and I like their color scheme for graph. This way I can choose similar patterns with different colors to differentiate my graphs.

patchwork

I used this library since it can add two plots together side-by-side. I needed this to create the population graph since there was many glitch and errors without it. With this it makes my graph easier to make while pertaining their form.

dplyr

I mainly use this package to wrangle data. Tidyverse also use this package and I think its very useful on making some calculations or wrangling easier.

rgdal

I use this to open shape files to make heatmaps or chloropleth for the maps.

leaflet

The package is used

htmltools

Used this package to create map labels

USER GUIDE

There is an overview page presented when the user open the application. It will explain what information you can expect from it and its conclusion and reflection. This should give the user an overall idea of what it is about and what are the findings in this analysis.

Once reading that the user can go though the window one by one starting with M&G which stands for Marriage and Divorce. This should give a detailed explanation about the how its count and rate changes over time. User can get each year information by clicking near its desired year and the side information will change from average throughout the year to a specific year. It has a drop down menu to change the data type that is given in the plot.

Next if trends in marriage factors. This is given in sub-windows so the user know that it is under the trends topic yet there are many to discuss in there. There are some that have tabs inside its window as some findings are found to be very interesting and deserve a highlight.

Lastly is how the numbers compare in states and countries. This is similar to the previous as it is presented in sub-windows to make it clear that there is two discussion in the topic. States comparisons has a summary map to see the colored differences of rank between them and you can hover to see more information on it. The map can also have its color change to represent the variable you are looking into. Countries comparisons are much simpler as when the user hovers it it will just have its country name to appear.

CONCLUSION

Designing and actually applying is very different. We won't know until we are on hands on it. In this assignment I learned that some features create glitches when applied together and some can work very well with each other even though they are from different packages. Information may need to be limited to communicate to the user, especially general public, to avoid confusion.

If I had a better platform or maybe device, I would try to increase the interaction. My application was lagging when I tried to add a third map. It lagged very much especially when I tried the vertical line hovering tool while having the click tool turned on. Even though many interactions is good, I still stand that too many interactions can only cause confusion to the user. A good example was how the government present data for Covid at first and how they have change it now, it is much clearer and easy to read as before they only have many simple basic graphs. Now they have different types of graph and minimal interaction. Their data interactions are also based on the interest of its users. They do not have many animations or clickable event to represent their data.

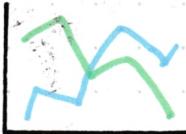
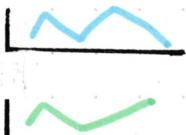
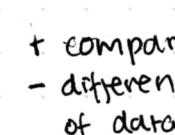
If my target was more specific, I would change the graphs to be more complex and may have animation to assist it as well as many interactions. In my best interest is that I have an animagraphic result that can interact with the user by quizzes, similar to a game though more limited. Though it will still have more complexity in animation than user interaction.

IDEAS

Bar Charts

 <p>side-by-side + amount compare - many variables</p>	 <p>stacked + % compare + easy to read + time compare</p>	 <p>trellis bar chart + compare movement - compare numbers</p>
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Line Charts

 <p>normal line + compare movement - many variables</p>	 <p>line area + easier to compare than normal line - many variables</p>	 <p>stacked + clearer - many variables</p>
 <p>trellis line chart + compare movement - if move. not obvious. hard to compare - compare numbers</p>	 <p>Treemap</p>	 <p>+ compare ratio - different type of data wouldn't fit - compare time</p>

Scatter Plot

 <p>- hard to read - many data - messy</p>

Pie

 <p>+ easy to read - not compare time</p>

Chord Diagram

 <p>+ combine all types of variables - not easy to read</p>

Pictograms

 <p>+ visual for readers - too crowding for many data</p>

FILTER

- trellis bar chart / line chart
- pie chart
- stacked bar chart
- population bar pyramid
- heatmap
- rank map / statistics
- chord diagram

CATEGORISE

Comparing data

- by group
- pie chart
- popn pyramid

group & time

- trellis
- stacked bar chart
- bar / line graph
- heatmap

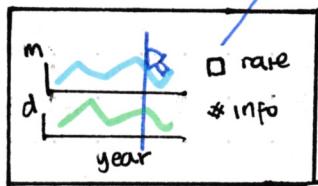
- see connections
- chord diagram

COMBINE & REFINER

- heatmap & statistics & rank map
good to see which location has the most value
- population pyramid bar chart
clearer to compare than line graph
- trellis line / bar graph
compare time & group

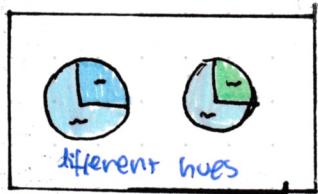
LAYOUT #1

notes: doesn't have tabs just many windows, texts should be below graph, the focus here is maximise interaction



marriage & divorce over time

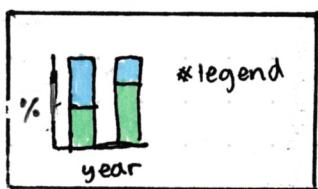
- line over graph on hover
- change graph by rate/count using toggle
- when clicked info will appear for the given year



birth country and previous marital status

- simple explanation since not much need to show
- compare counts
- combined since they're simple

• hover to get %.

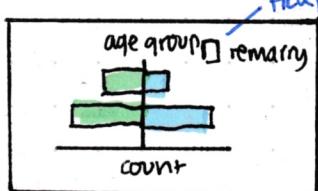


type of celebrant

- use stacked bar chart to compare movement of categories
- hover to get %.

detail of pre chart

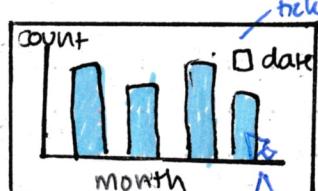
- both different vs both from australia vs both overseas
- first one vs first two vs remarriage



marriage by age

- show comparison of male and female by age category
- change graph type for first marry / remarried

• hover to get numbers



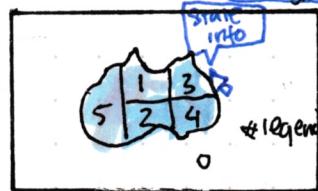
marriage by date

- can toggle to see by date/month
- need to show movement
- hover will get count

marriage by month & date

- simple graph as complicated already
- faceted bar graph
- need to show movement
- hover will get date

from month to date without toggle



states compare

- use color heatmaps
- have numbers for rank
- pop up message on hover to show info of average counts



world map

- use color to compare
- hover for info of country data

FOCUS / ZOOM

- able to "zoom" to dates by month by clicking bar graph

OPERATION

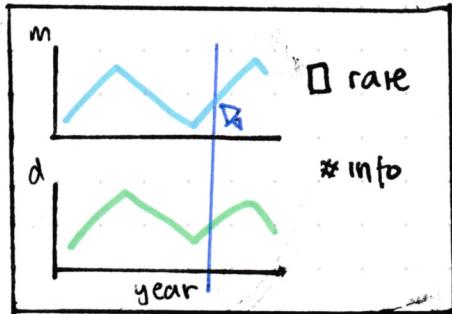
- toggling for different graphs
- hover for information
- click for information

DISCUSSION

- pages are not connected to each other
- take a week to perfect
- use R Shiny
- there are a lot of data and some may be combined and cause confusion
- eg: date count and month count have different findings reader may find it confusing if mixed
- similar topics are separated with no clear connection
- interaction may not relate to findings

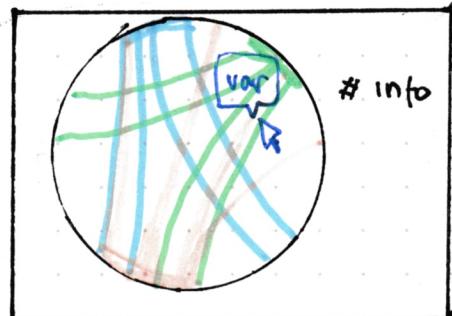
AYOUT #2

notes: layout focus on summarising data to minimal windows. So 3 questions = 3 windows.



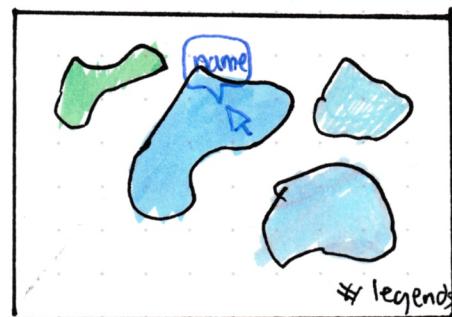
marriage & divorce over time

- similar to layout 1
- compare data over time
- click for information of that year
- hover for vertical line guide to help user compare data movement
- toggle to change output format



trends

- all factors related to marriage summarized in this, factors may need to be filtered
- hover for variable name
- click to see info summary



compare by country & states

- hover for country info
- can click to Australia to get Australia States comparisons by zooming in



- hover for info
- colored by numbers

FOCUS / ZOOM

- zoom to see Australia States comparisons

OPERATION

- toggle for output format
- hover for information
- click for information

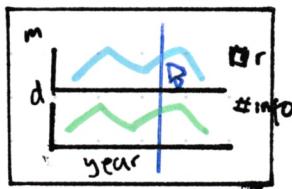
DISCUSSION

- short and straight to the point
- use shiny R
- may be confusing for some people to read
- in States Comparison some may not know about the feature and miss the information
- Chord diagram variables may need to be filtered and we won't be able to present full findings
- date findings may not be used at all and that is a shame since it was very interesting

AYOUT #3

notes: layout focused on simplicity and easy to use and read. grouping of topics is applied. Graphs are focused to be simple

GROUP 1 - Marriage & Divorce Over Time



- I think bellis line chart is a good way to present this data
- hover for line
- click for info summary

GROUP 2 - Trends this will be presented in tabs within one page



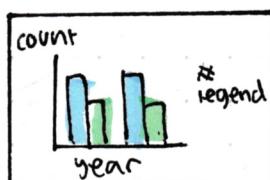
birth country

- % already on plot
- separated for clearance



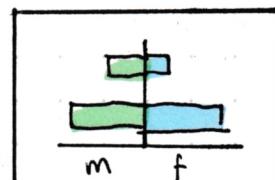
prev. marital status

- % already on plot
- separated for clearance



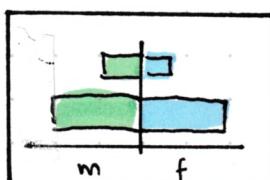
type of celebrant

- side by side to compare count than percentage



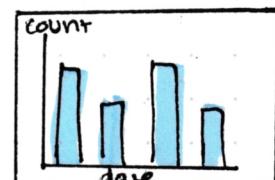
first marriage by age

- good for comparison
- hover for count



remarriage by age

- hover for count



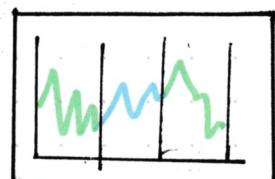
marriage by date number

- separated for clarity



marriage by month

- separated for clarity
- simple bar chart



marriage by month of the year

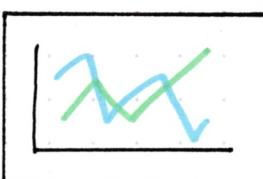
- line chart use to indicate movement
- cleaner than area / bar

GROUP 3 - States & Countries again this will be put in one page with tabs



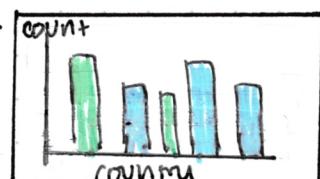
states by marriage

- both easy to understand
- states by civil cel.



countries compared

- by color difference



FOCUS / ZOOM

none to minimize ease of use

OPERATION

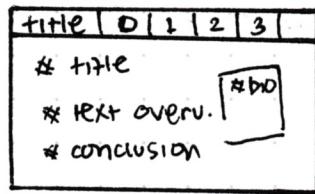
- hover for information
- hover for line guide
- click for information

DISCUSSION

- easy to use as everyone understand the graphs and simple with little interaction
- straight forward
- may be too simple
- some (eg States & Countries) better w/ map since graph like these may hard to keep up

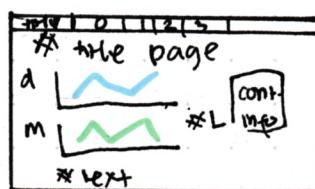
REALISATION

PAGE 0 - OVERVIEW



this will be the opening page of the app. It will have a menu bar on top w/ group 2 and 3 being a drop down menu. Since they have many underlying data for it. User can see the main topic and findings from the analysis.

PAGE 1 - MEG



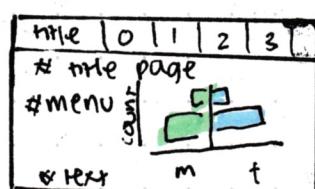
we will use the trellis line graph with click feature to get summary at its side. Hover vertical line was not used due to glitch

PAGE 2 - Trends sub menu:

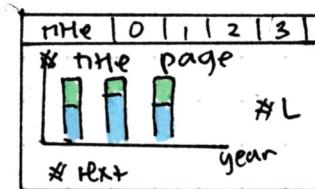


- for ① birth country
② prev marital status

it will be put on separate pages as if combined in the same window it doesn't relate to each other and it have its own discussion



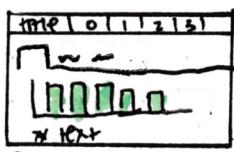
- ③ marriage based on age
population pyramid w/
drop down menu to choose
1st marriage / remarriage
graph will change based on choice



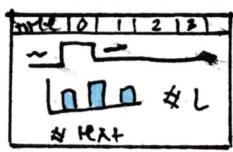
- ④ m. based on
celebrant
use of stacked bar
chart since info is
compare %.

⑤ marriage by time of the year

will be
separated
by tabs



(a) by date



(b) by month



(c) marriage by days in year days in months vs count

- ① normal bar chart
date vs count

- ② normal bar chart
month vs count

- ③ trellis bar chart
days in months vs count

PAGE 3 - COMPARE sub menu:

① compare by states - tabs: summary, marriage, civil celebrants

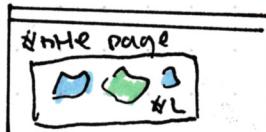


- (a) summary
map of australia
when hover will see
average numbers of (b)
and (c)
colored by numbers
can change coloring based on var w/menu



for marriage & civil celebrants
use of line chart for multiple
states to compare overall.
Give detail about (a)

② compare by country



world map
color coded
based on rate
number

when hover can see name
of country

FOCUS/ZOOM - none since trends has too much data
- maps don't need them

OPERATION - click (pg. 1) - toggle (pg. 1, 2 ③, 3 ①)

DISCUSSION

- hovering plots take time to load so we minimize the need.
- trends was a lot of info so simplify and tabbed to group
- may add more interaction but most are unnecessary
- maps were important in pg 3 to visualise