

IDEAS

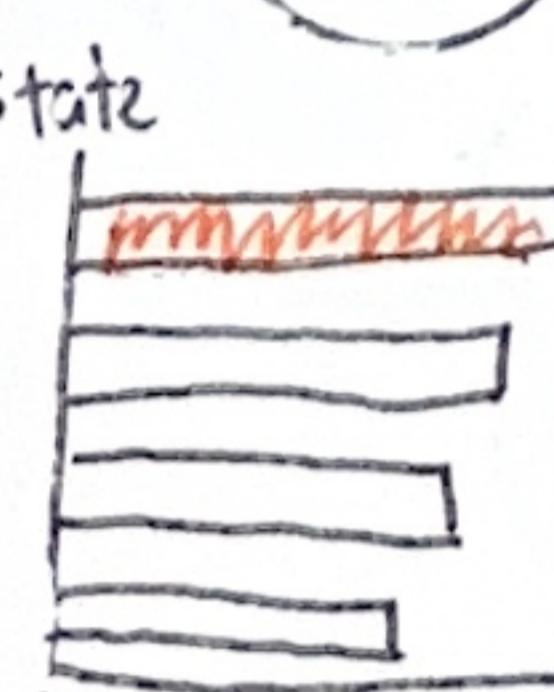
 show where people feel less safe

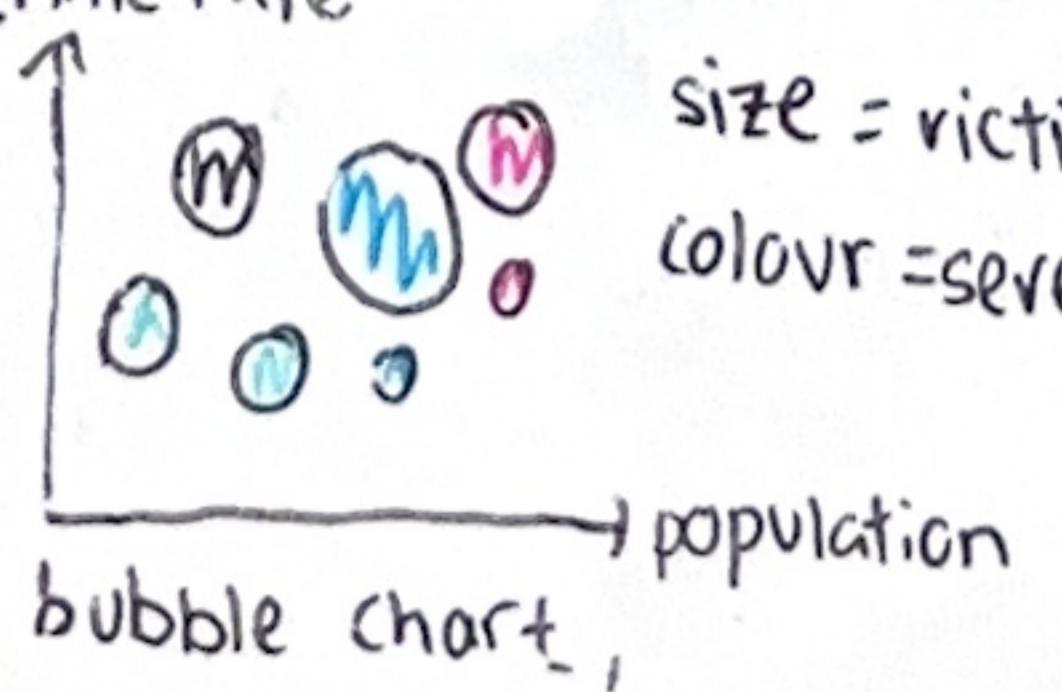
✓ choropleth map ↗ can also show count of cases in different state.

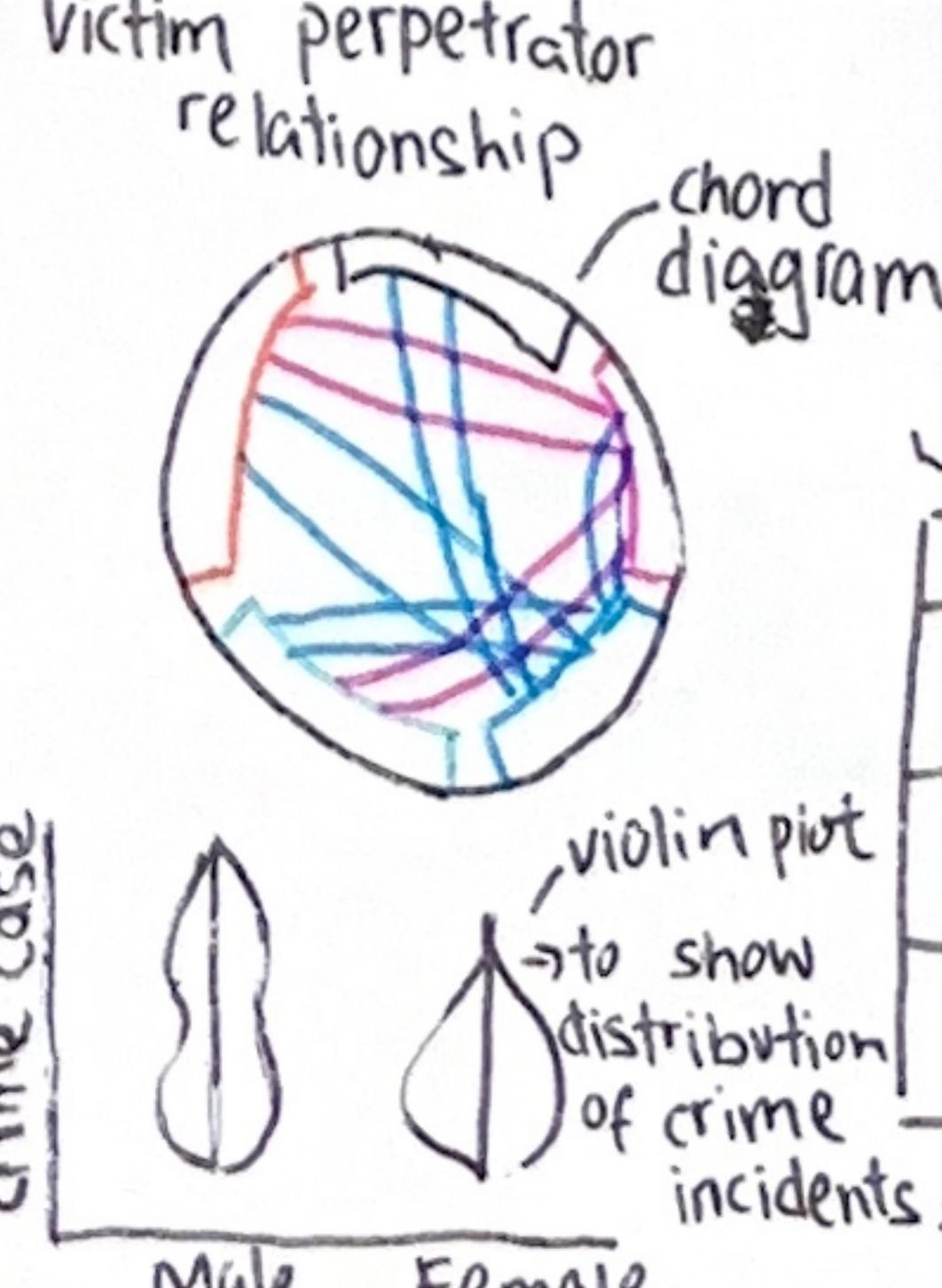
 pie chart
show crimetype breakdown
ROBBERY 25%
ASSAULT 35%

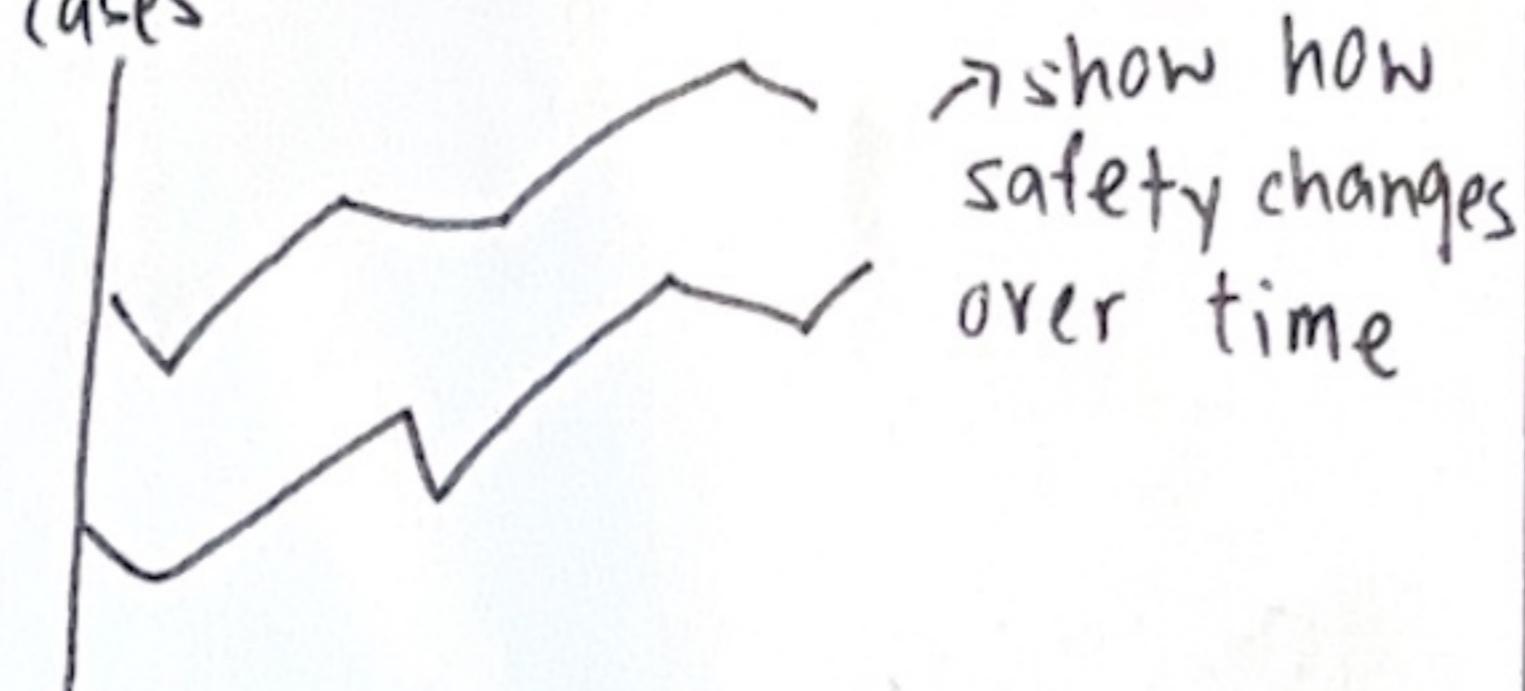
 heatmap ↗ show case frequency
could also use to show relationship between offence type & crime location

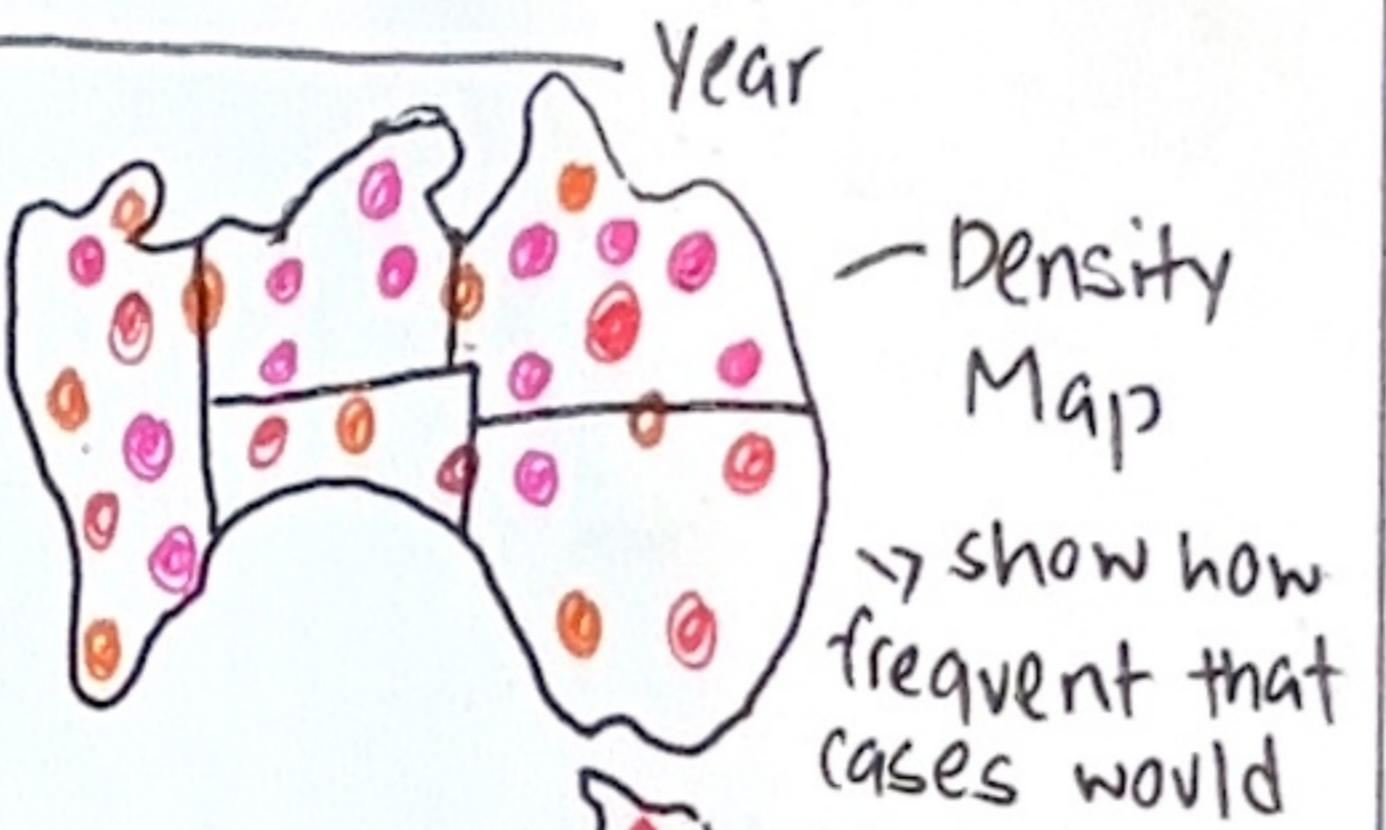
 donut chart
show location proportion
House Street

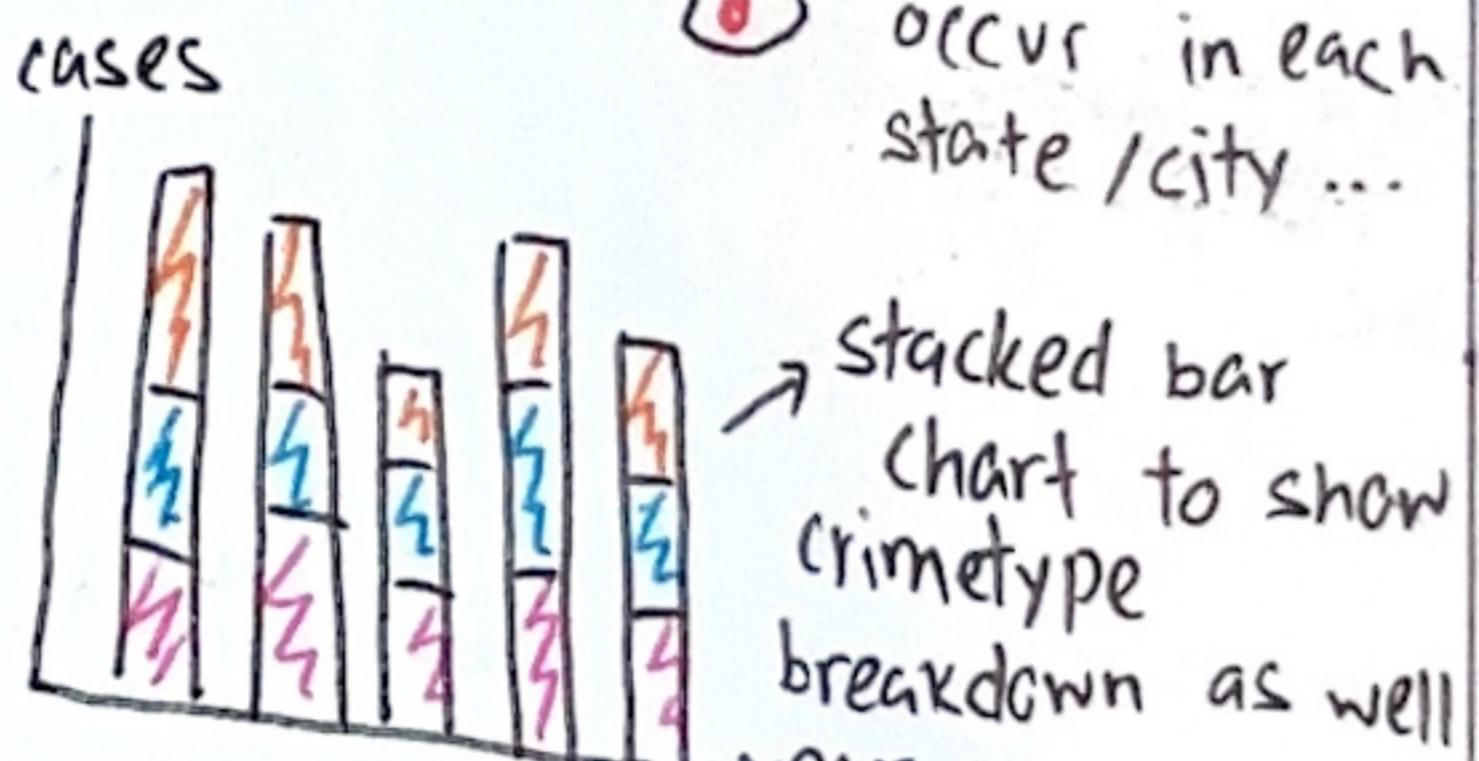
 horizontal bar chart
could use to show top 10 safest / most case dangerous suburbs
size = victims
colour = severity

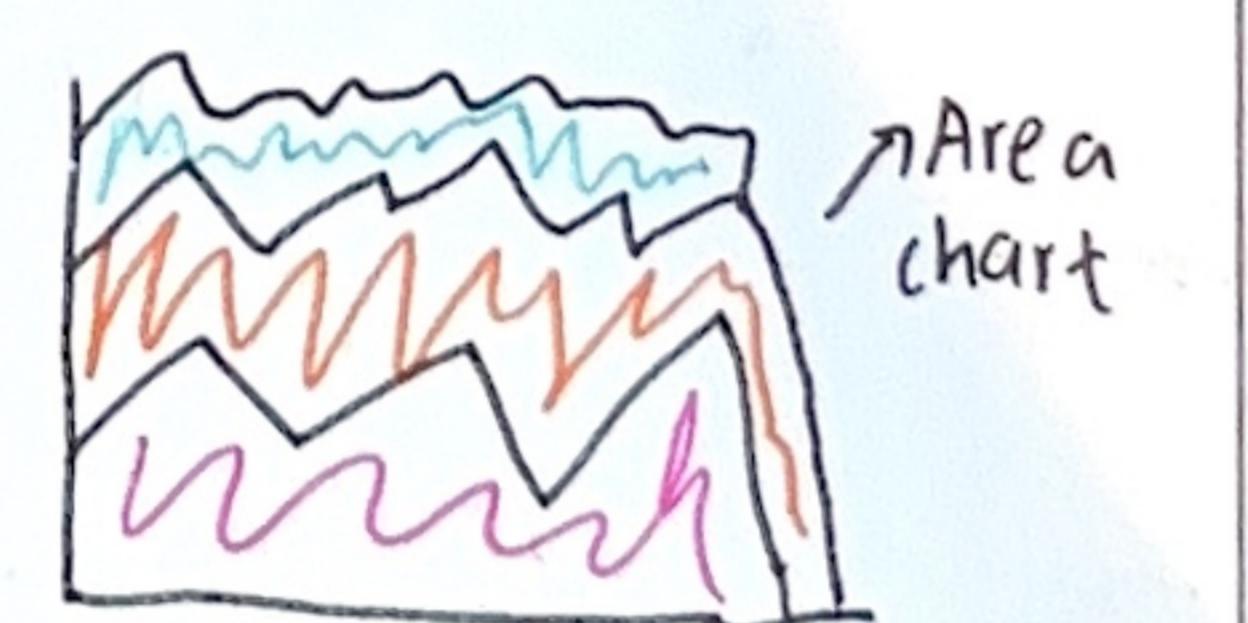
 bubble chart, victim perpetrator relationship
chord diagram

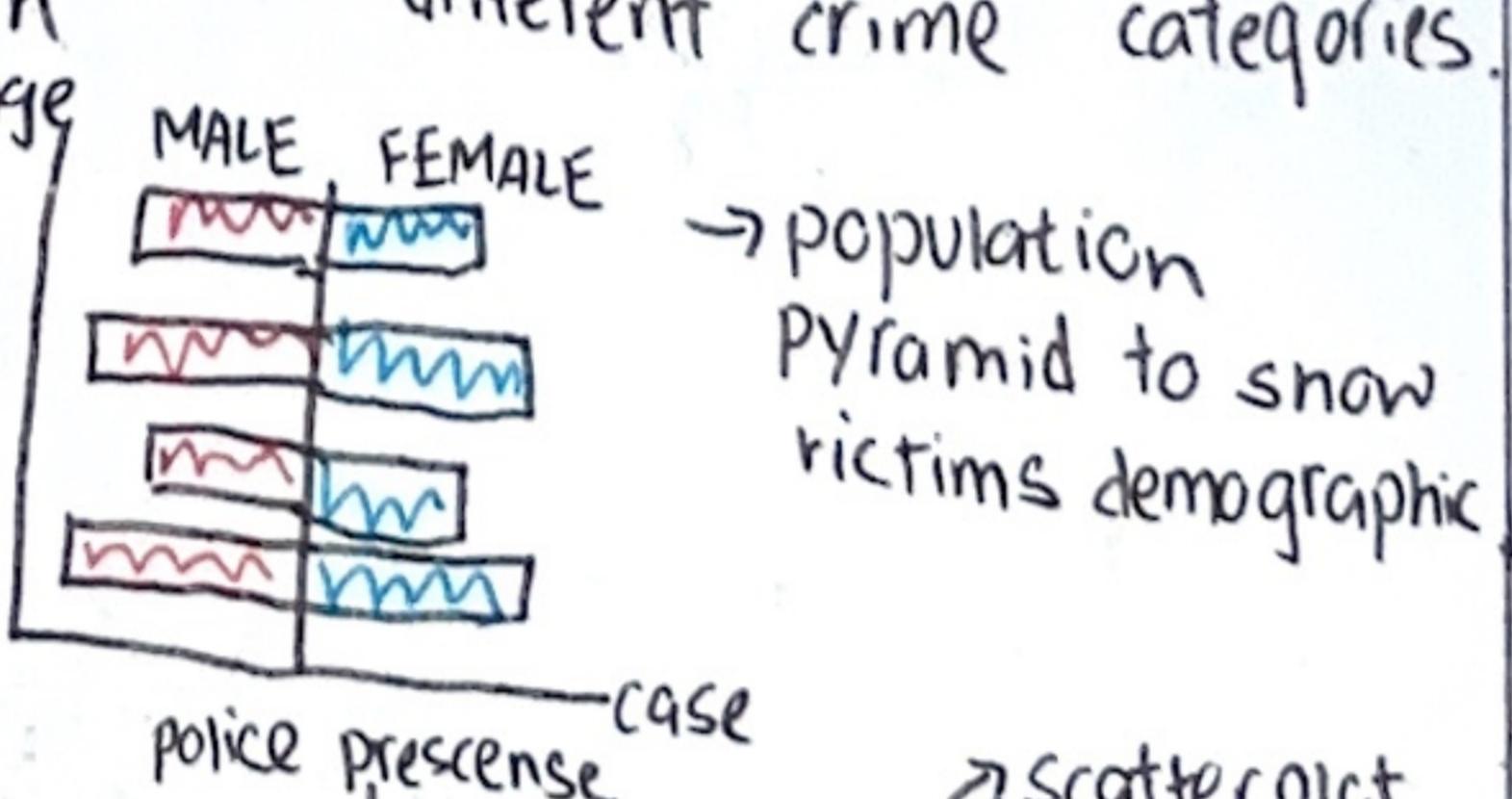
 violin plot
to show distribution of crime incidents
Male Female

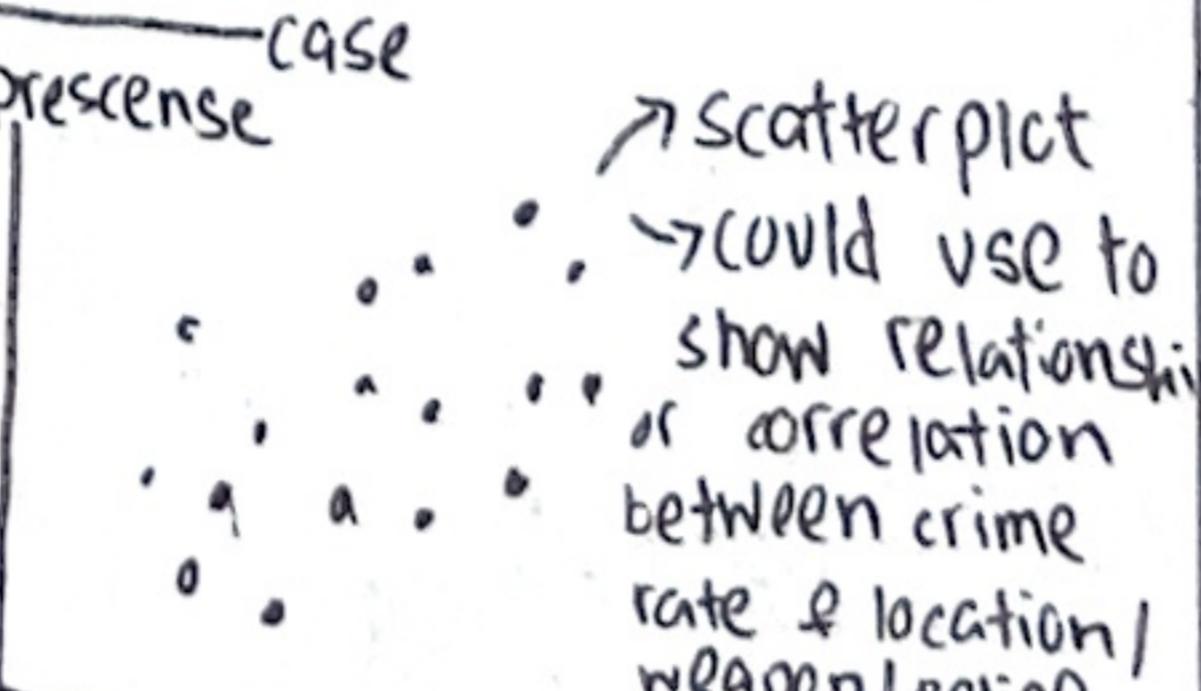
 cases Year ↗ show how safety changes over time

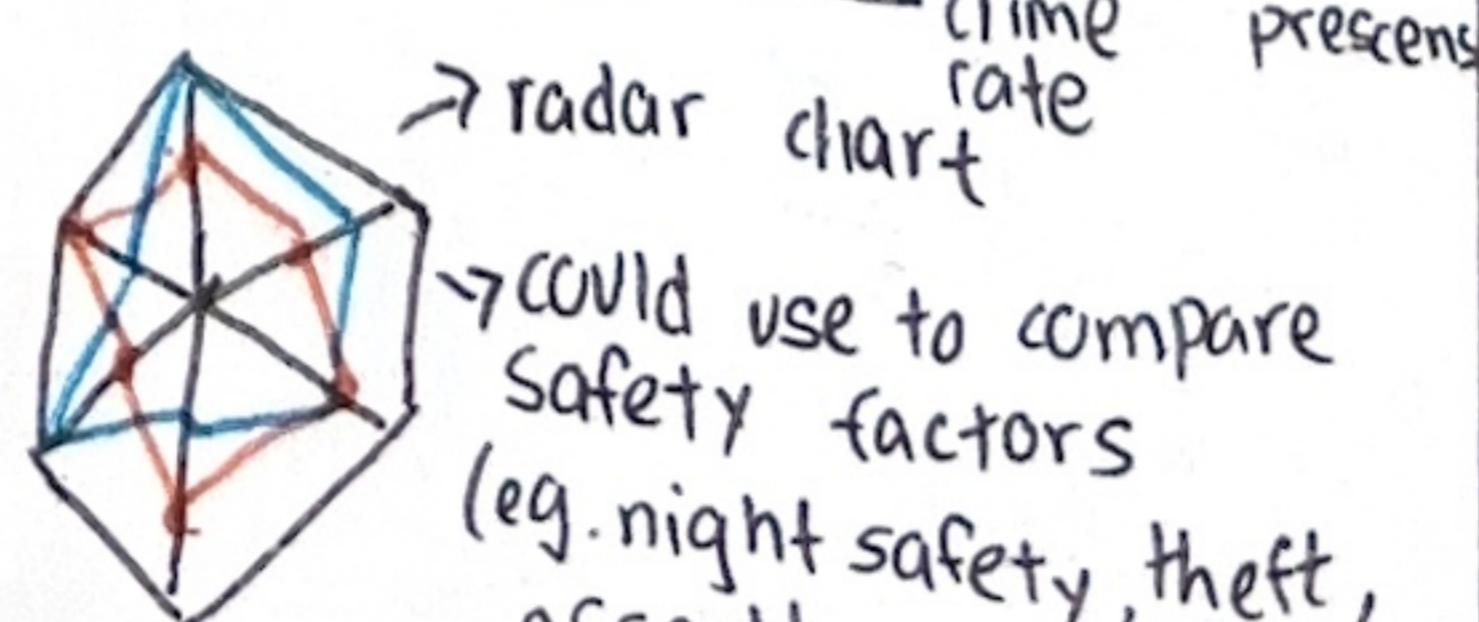
 Density Map
show how frequent that cases would occur in each state / city ...

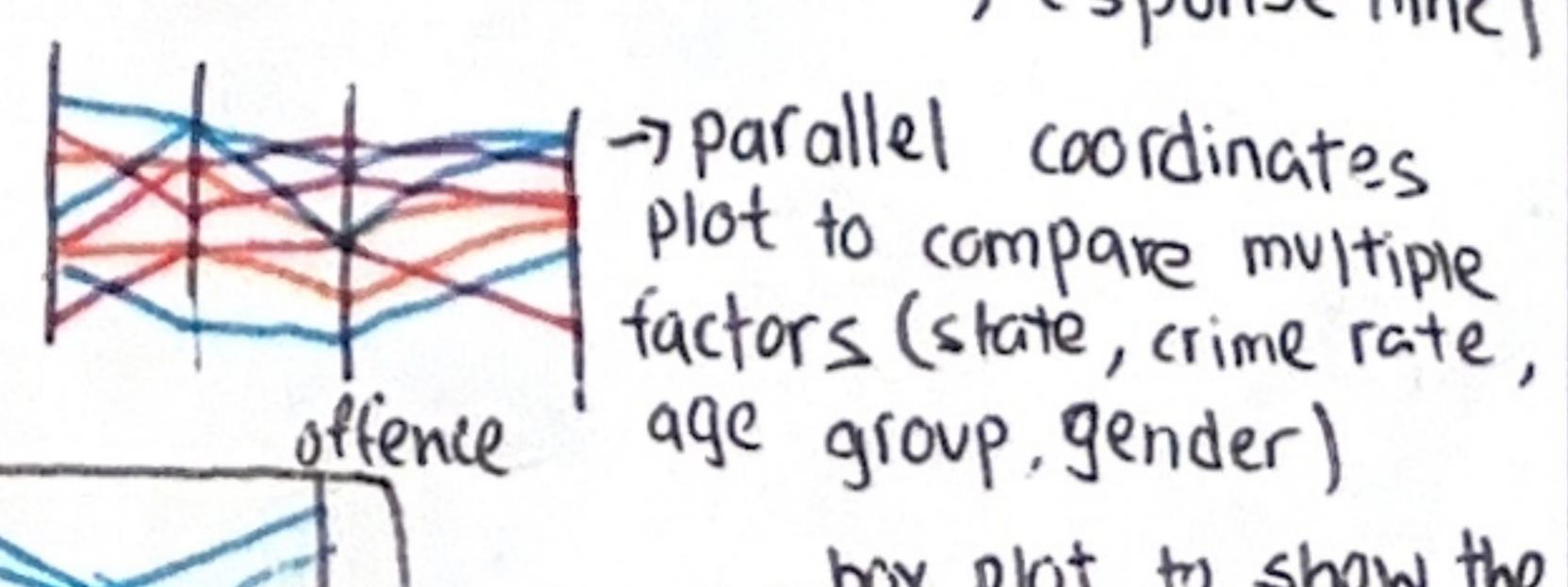
 stacked bar chart
chart to show crimetype breakdown as well year

 area chart ↗ cumulative trends of different crime categories.

 population pyramid to show victims demographic
MALE FEMALE AGE

 scatterplot ↗ could use to show relationship between crime rate & location / weapon / police presence

 radar chart ↗ could use to compare safety factors (e.g. night safety, theft, assault, response time)

 parallel coordinates plot to compare multiple factors (state, crime rate, age group, gender)

 box plot to show the spread of safety scores or crime rate across region
NSW VIC QLD state

FILTER
After generating over 20 visual idioms overlapping and less relevant idioms needs to be filtered out.
 1) choose either pie or donut chart as both shows proportion.
 2) remove bubble chart as it adds distortion
 3) choose either density / choropleth map.
 4) Exclude boxplot as personal safety data are often categorical instead of continuous.
 5) Exclude violin plots as it is very complex, which will reduce clarity & readability.

CATEGORIZE
The ideas can be categorized into 4 parts.

- ① spatial analysis (where incidents happen)
↳ choropleth map / density map, donut / pie chart
- ② overview
↳ line graph, horizontal bar chart
- ③ comparative analysis (how offence type differs).
↳ radar chart, bubble chart, stacked bar chart
- ④ correlation (how factors relate)
↳ heatmap, population pyramid, sankey, chord

COMBINE & REFINER

- choropleth map + timeline slider
↳ to explore safety levels across states over time
- population pyramid + interactive offence type selection
↳ to explore how age + gender influence victimisation rate & offence pattern.

Question

- 1) "Do visualisation highlights the relationship between victims demographic & offence types clearly."
- 2) what insights must be missing?
- 3) Is the layout interactive & intuitive enough for general users?
- 4) Does this combination of idioms effectively communicate personal safety variation across Aus?

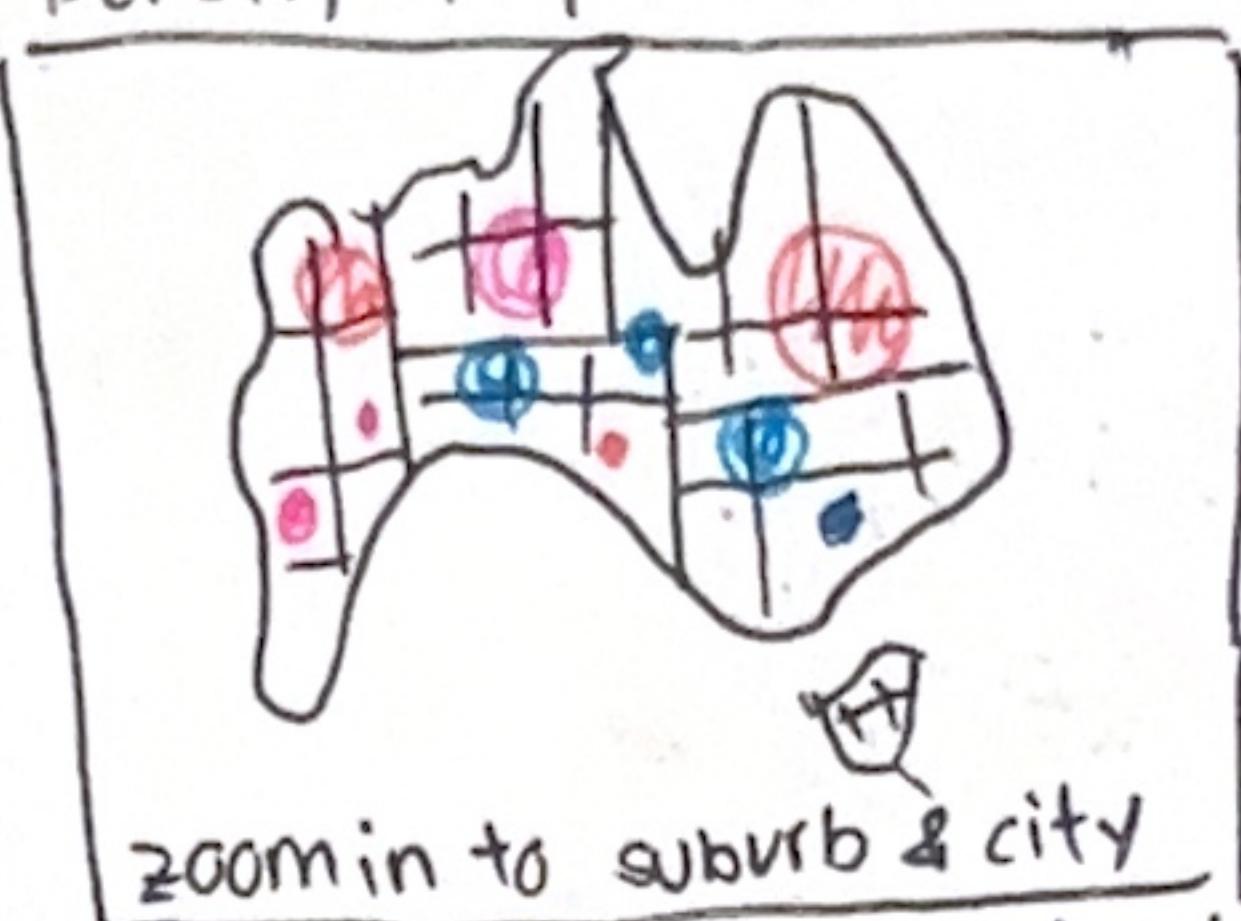
THE LANDSCAPE OF SAFETY

choropleth Map



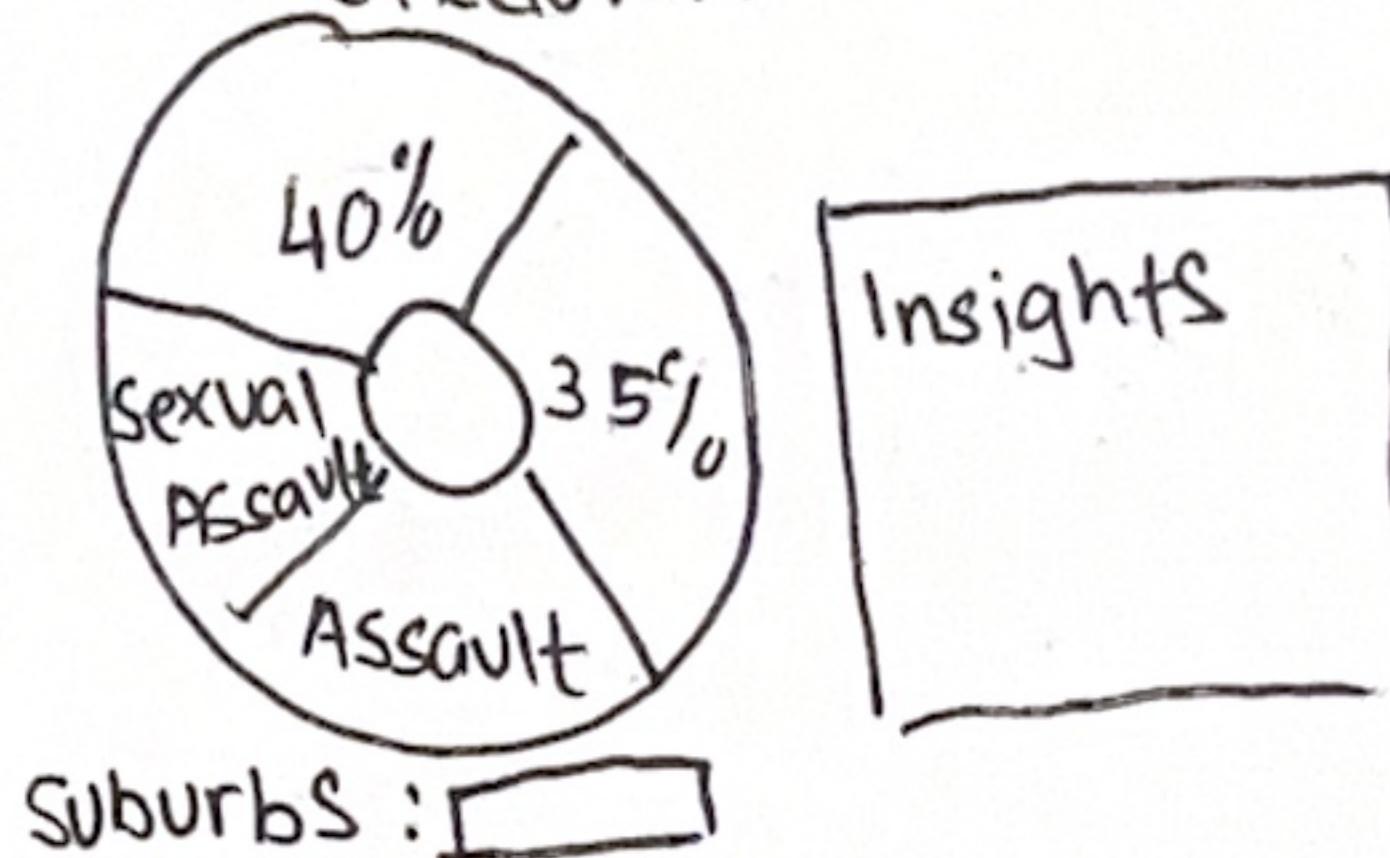
↳ show safety score of ~~Australia~~ Australia

Density Map

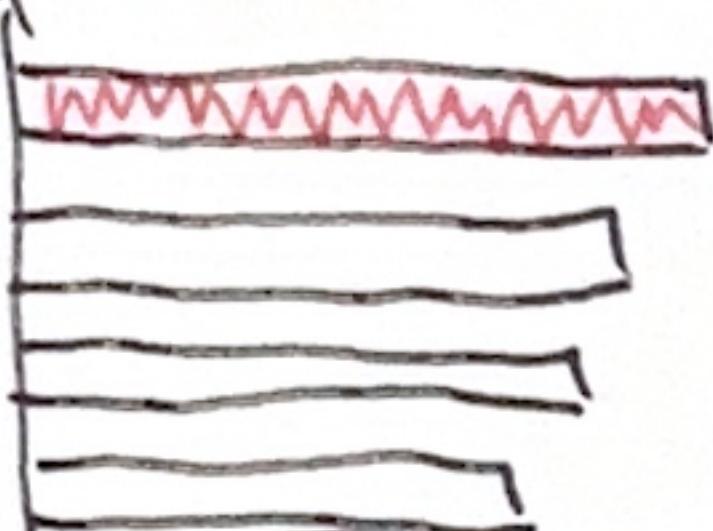


bigger size - more incident
different colour represent
different offence type

safety Incident
Breakdown

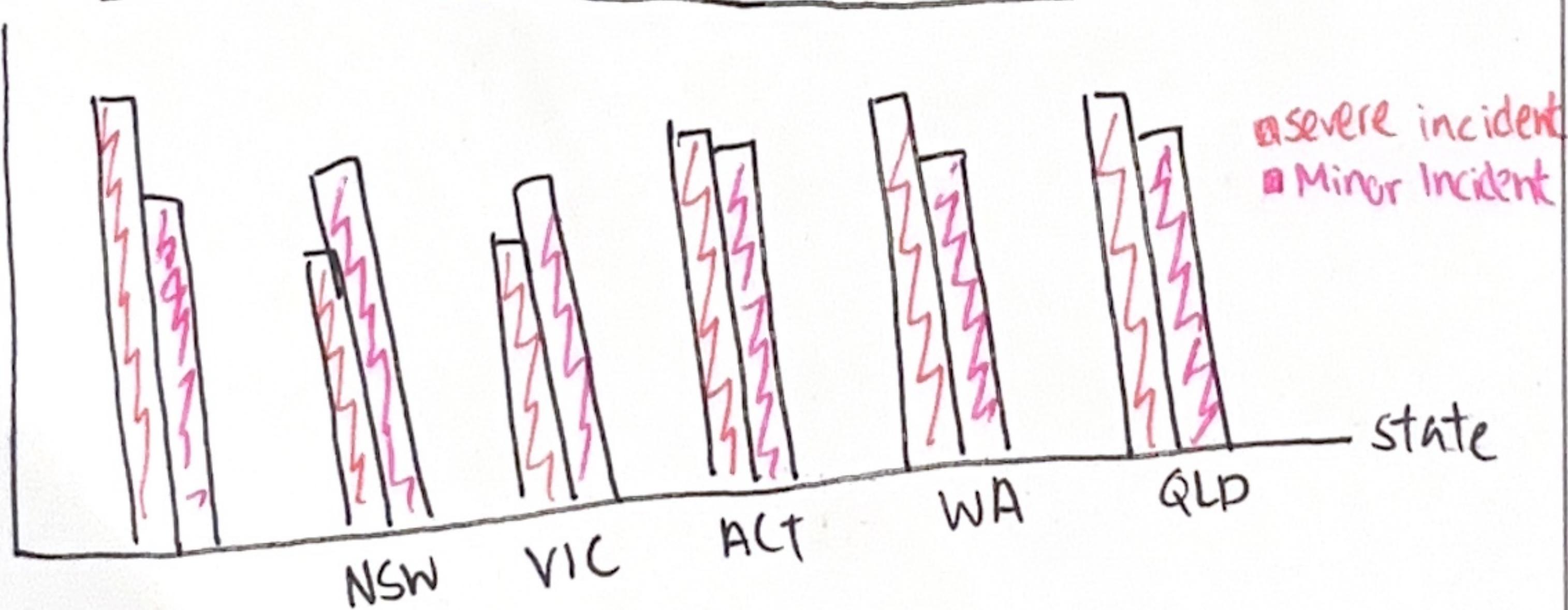


Top 10 Dangerous Suburbs

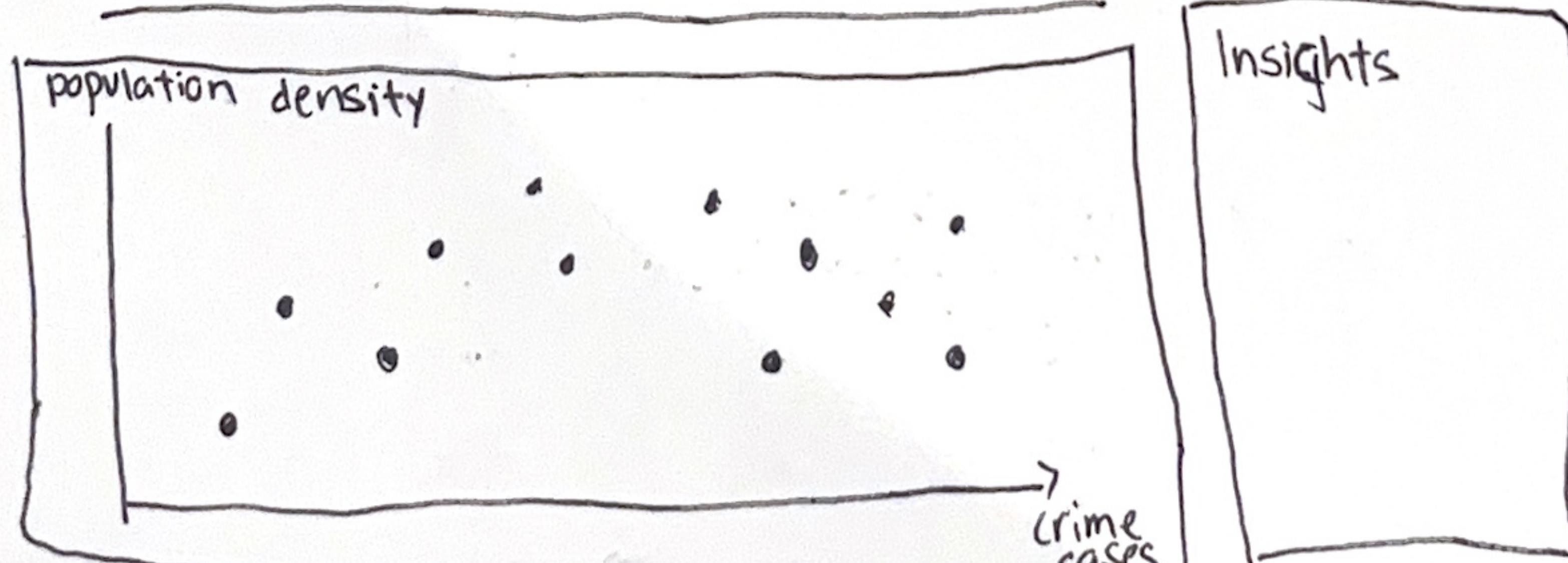


To move focus from broad region to specific hot spots.

cases HOW SEVERE ARE INCIDENTS REGIONALLY



DOES DENSITY PREDICT DANGER



each dot represent each suburb /city.

How HAS SAFETY CHANGED OVER TIME

Insights &

Conclusion

Total incident

Assault
Robbery
Sexual Assault

Year

META INFO

Title: The Landscape of safety

Date: 14th October 2025

Sheet: NO. 2

Author: Yan Xuan Khoo

Task: Help users understand where personal safety risks are highest & how they relate to population & environment.

OPERATION

① Hover tooltips

↳ display exact number & safety score for map & charts

② Pan / Zoom in to explore city level crime clusters

③ Use filter dropdown to filter suburbs for ~~the~~ donut chart

FOCUS

This design focus on spatial disparities, revealing that safety is not uniform across Aus. The user can zoom ~~in~~ from a national to local level, uncovering patterns & comparing urban vs rural safety.

④ It uses a narrative flow:

↳ Bird's eye view of Aus

↳ zoom into dense city clusters

↳ examine regional differences

↳ concludes with "how the big picture has shifted."

DISCUSSION

① PROS: strong geographic narrative

↳ combines overview + detail

↳ Great for travelers.

② Cons: Requires more detailed location data

↳ not enough details for victims demographic & factors.

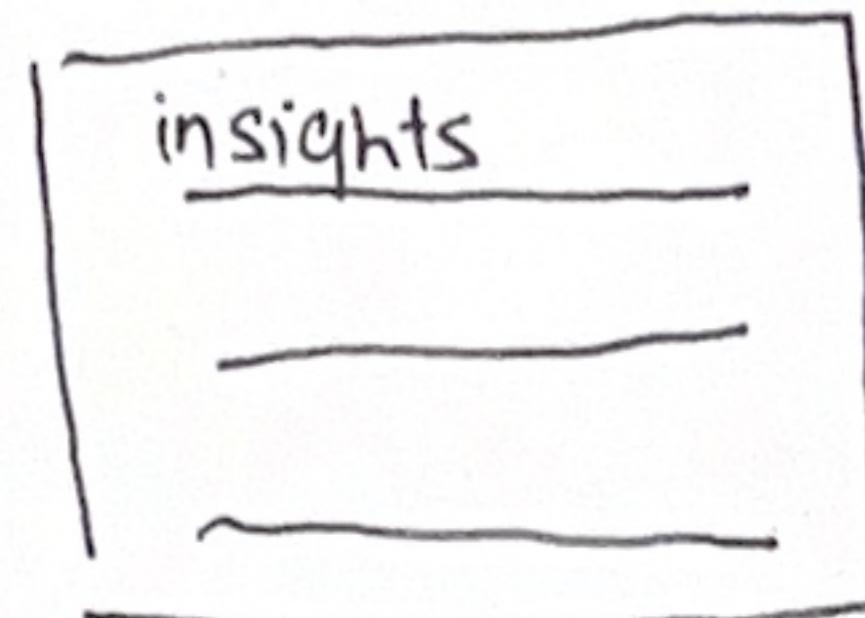
Feasibility: Low to Medium, 2 map is needed, which are complicated to do in vegalite, but with only few interactive func

THE HUMAN SAFETY OF STORY OF SAFETY

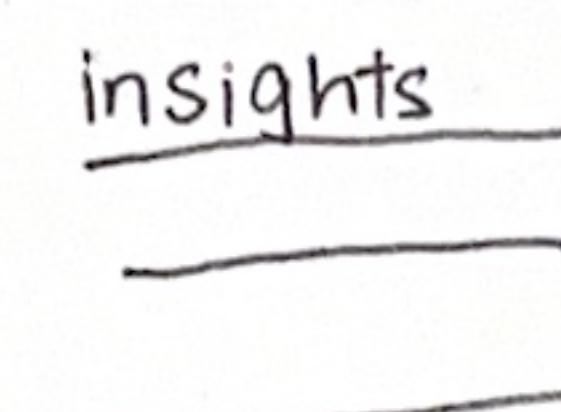
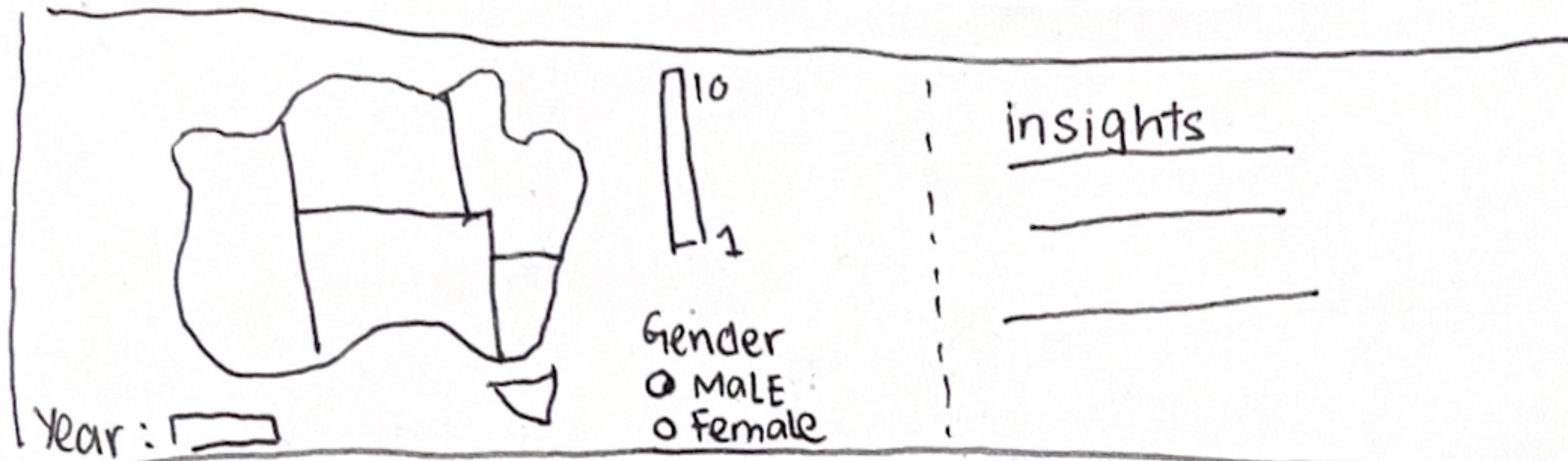
Introduction



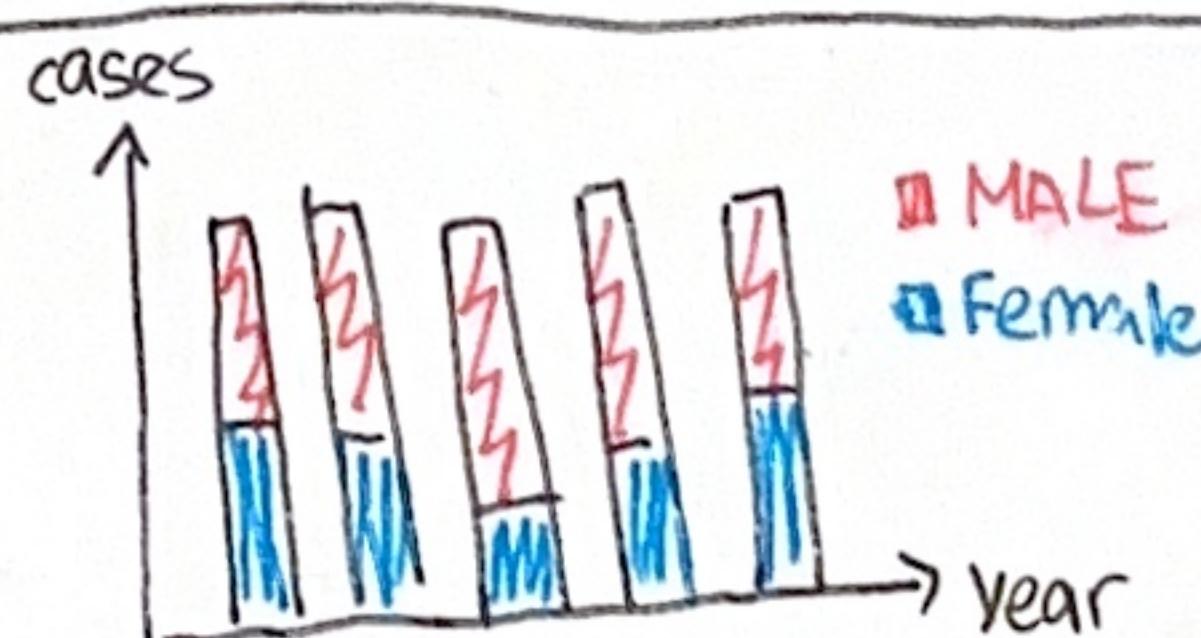
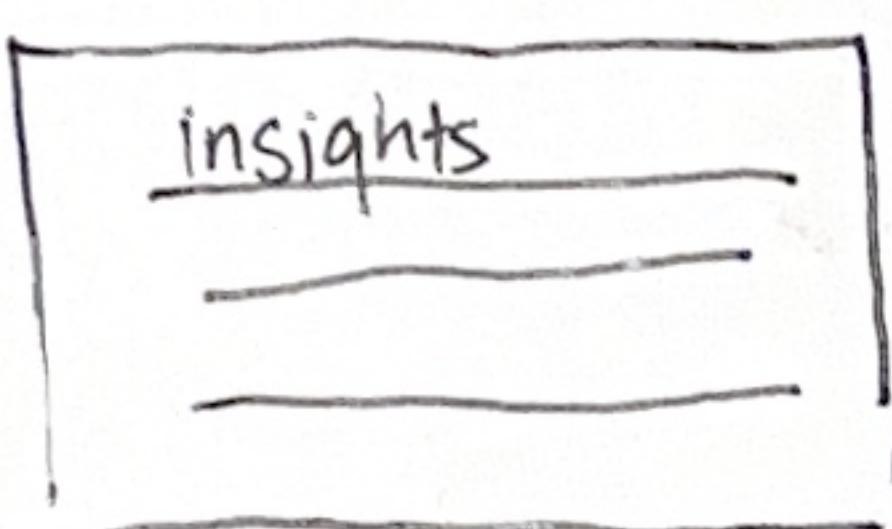
→ chord diagram to show relationships between victims & perpetrators



Choropleth Map - Gender based safety index across states



AGE PATTERNS



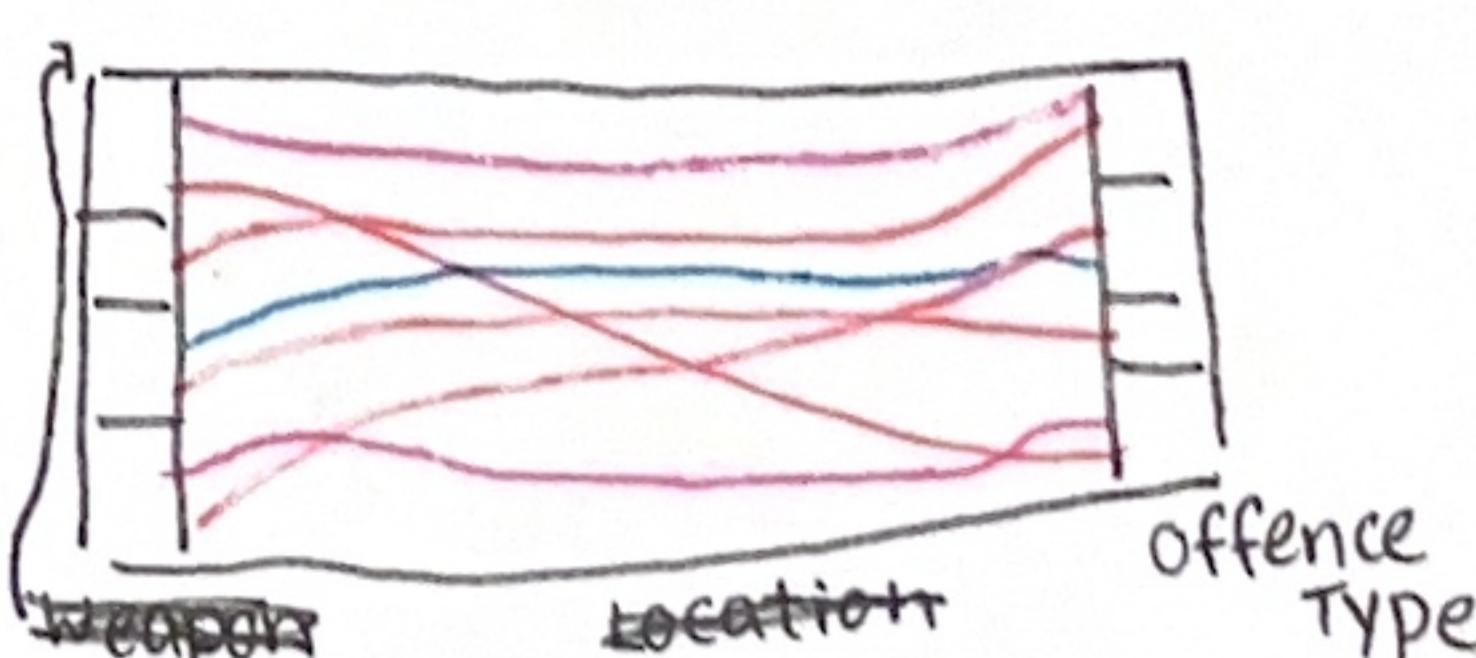
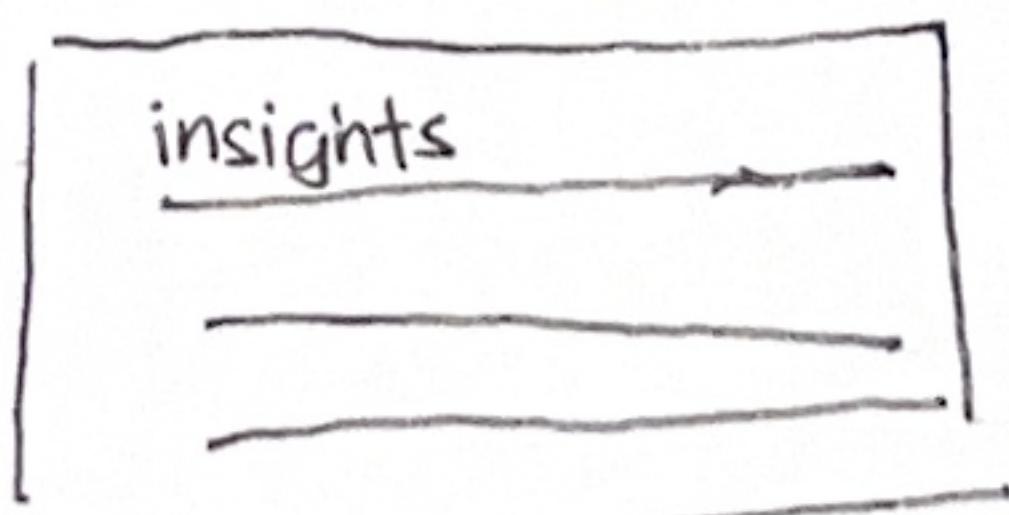
Crime Composition



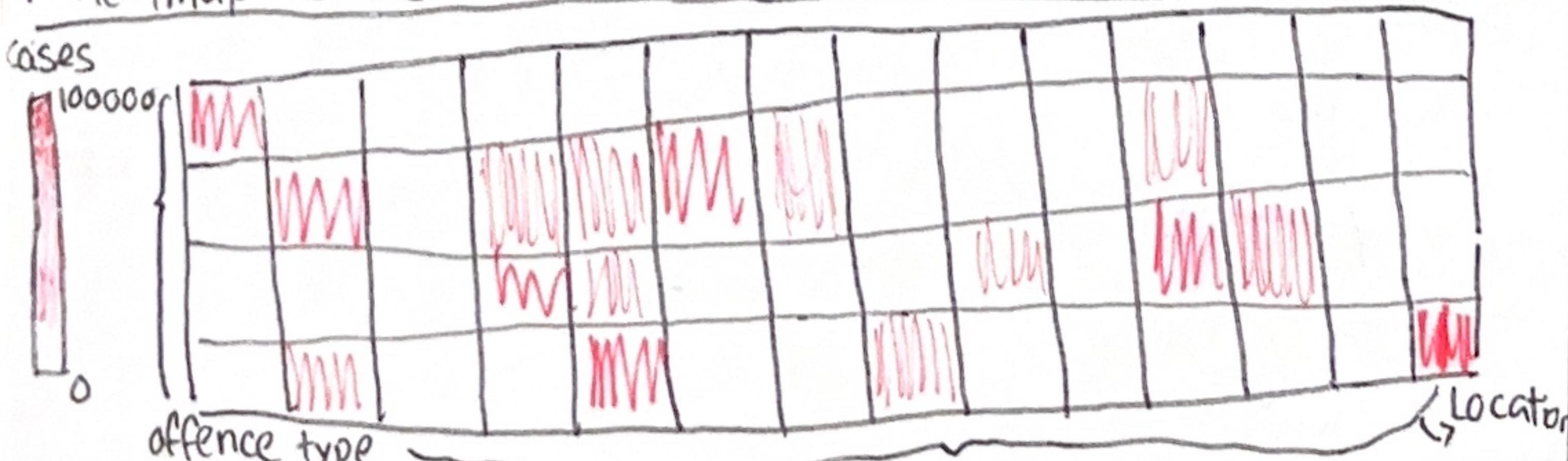
-- % Male
--- % Female



Sankey Diagram - Weapon Used



Heatmap - crime location



insights + conclusion

META INFO

Title : The Human Story of Safety

Date : 14th October 2025

Sheet: NO.3

Author: Yan Xuan Khoo

Task: Explore how gender, age & relationship influence risk pattern

OPERATION

■ Hover Tool tips

↳ display exact number to see victim-offender link counts

↳ display male & female proportion when click on particular offence type (pie chart)

■ Filter Dropdown

↳ filter year & gender for choropleth map

↳ filter year for pie chart

FOCUS

This design personalised safety, transforming data into human experience. Each graph idioms reveals who is most affected, how relationship plays a role, & which groups are most at risk.

■ It uses a narrative flow

1) Start with social relationship

2) Locate the risk geographically;

3) break down demographics & offence type composition ,

DISCUSSION

PROS : Human-centered storytelling

↳ Good for awareness

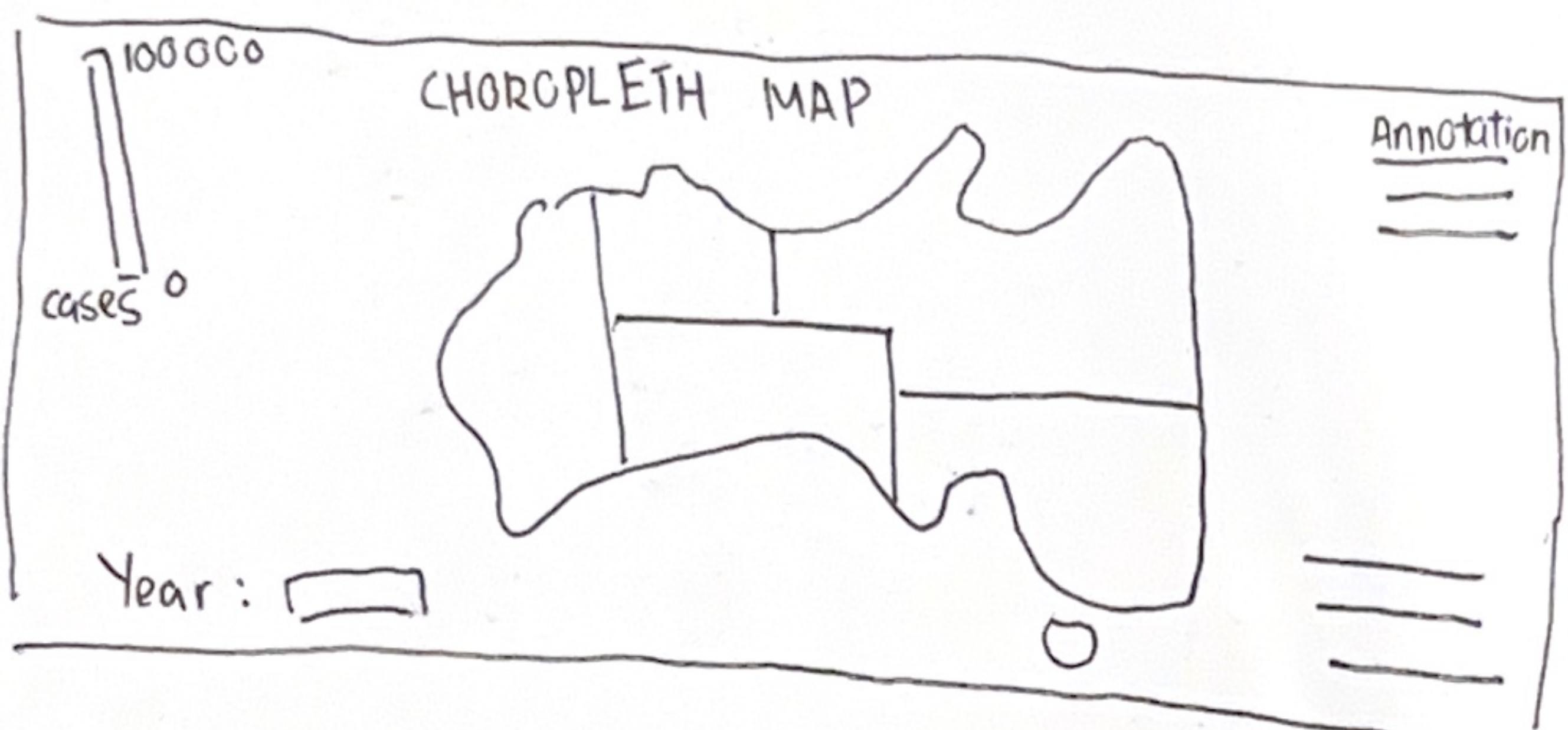
↳ Aesthetic & cleaner design helps audience to focus on 1 dimension

Cons : Less engaging for general public who may want a fuller context.

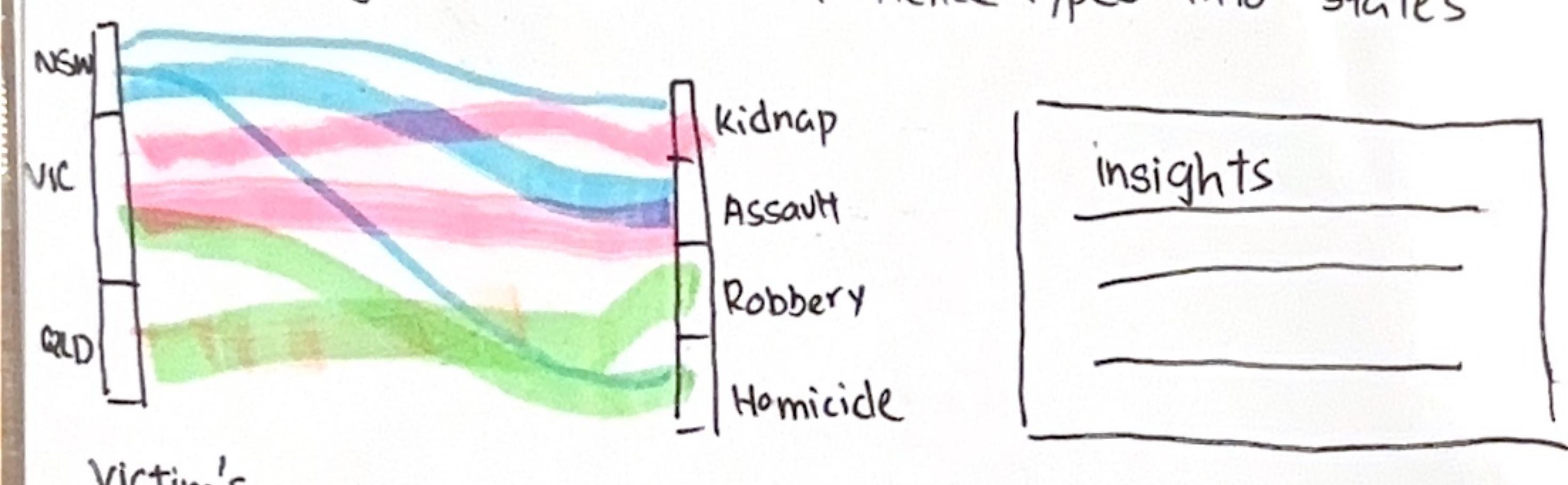
Feasibility: Medium to High

↳ All graph idioms are not too complicated except for chord / map. Another library needs to be used for chord. c

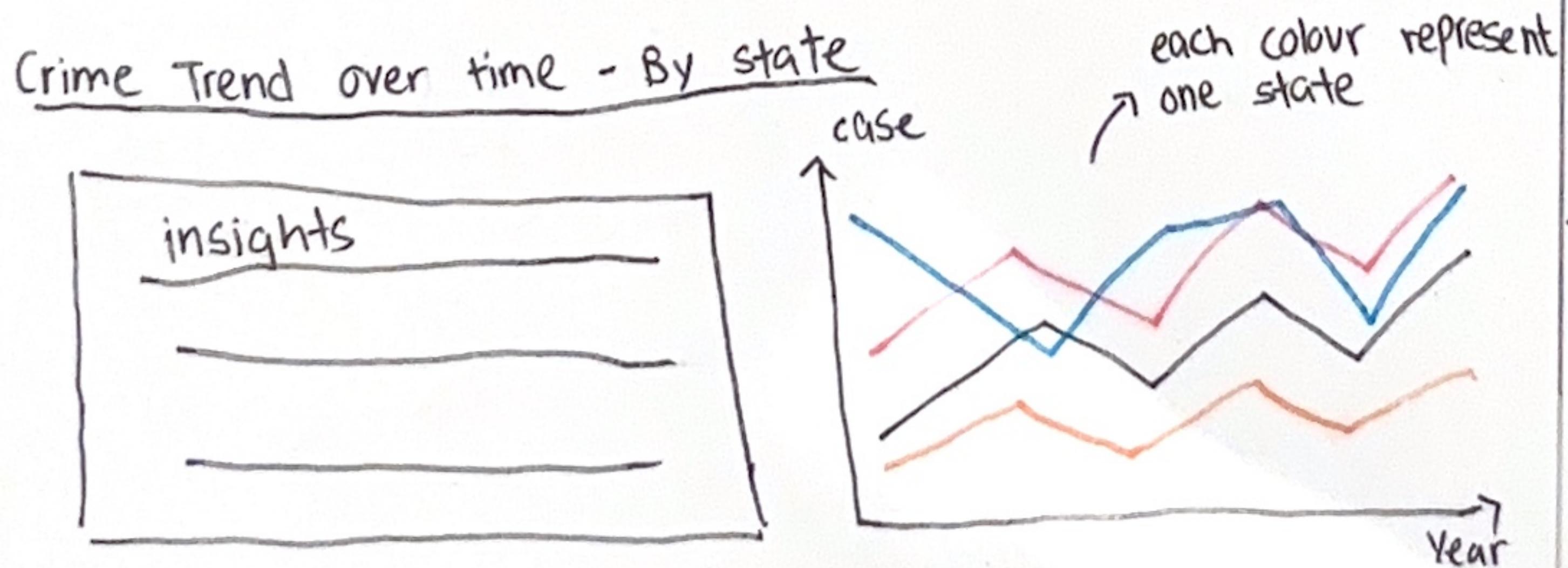
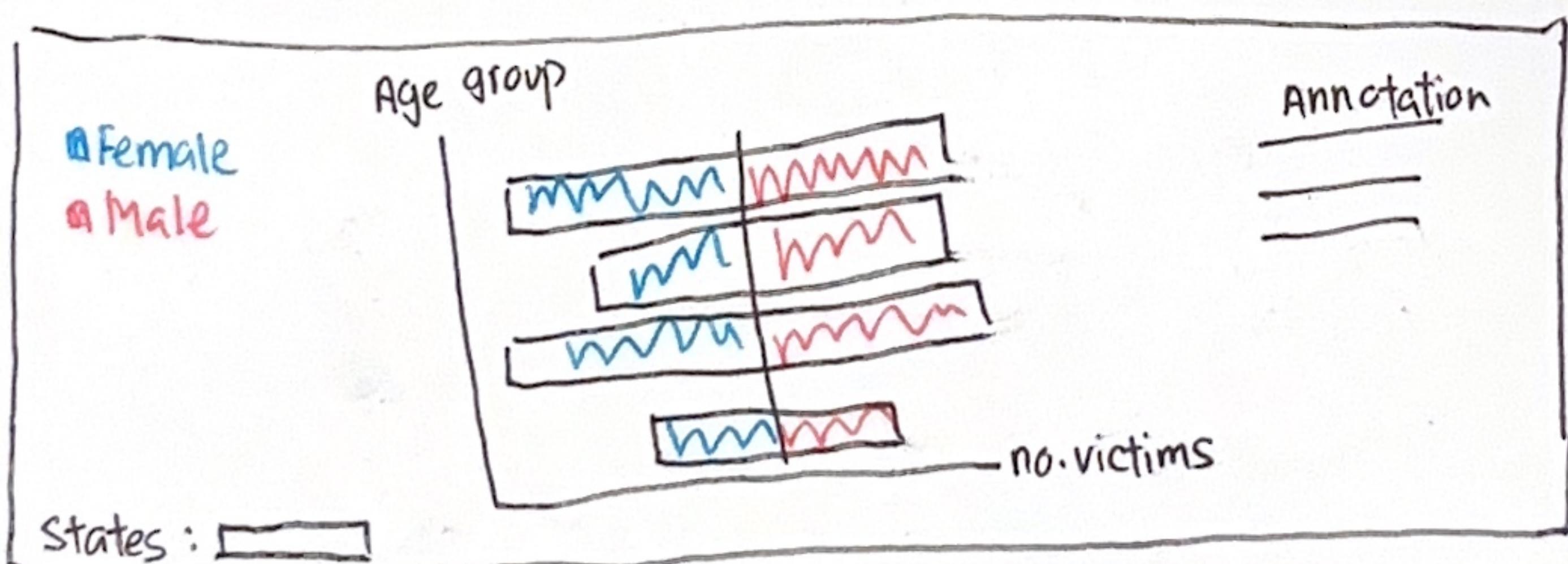
A NATIONAL DIVIDE : PERSONAL SAFETY ACROSS AUSTRALIAN STATES



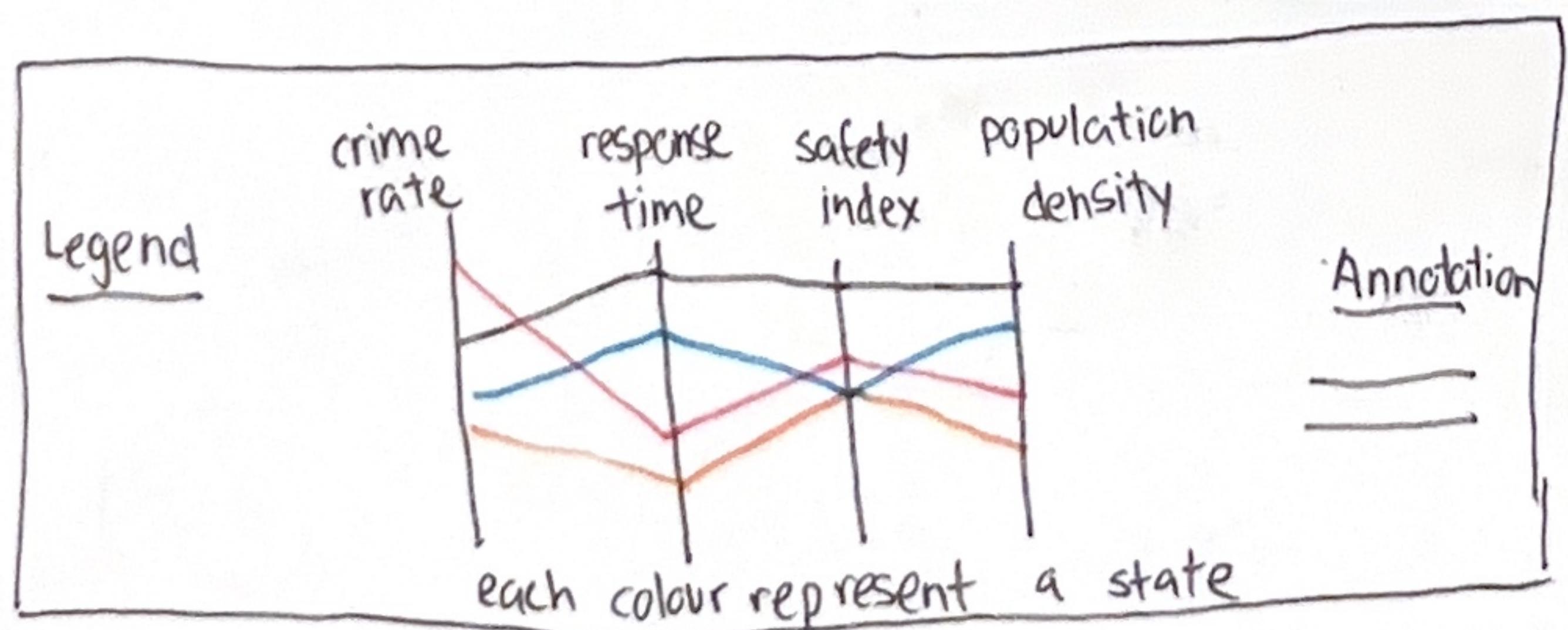
Sankey Diagram - shows flow of offence types into states



Victim's Demographic by States



Compare Safety Indicators - parallel coordinate plot



META INFO

Title : A National Divide: Personal safety across Australian States

Sheet : NC.4

Date : 14th October 2025

Author : Yan Xuan Khoo

Task: Explore how personal safety varies dramatically across Australian states.

OPERATIONS

▪ Hover Tooltip

↳ Display exact number for maps & charts

↳ Hover on to highlight related states

▪ Filter dropdown to filter states & year

FOCUS

This design is about exploration of state safety. The users can follow a clear narrative flow from the choropleth map to see overall offence case in each state then explore how different crime types dominate specific region, then to victims demographic, & how each factors affect crime rates in each state. It explores patterns of violence & perception of safety

DISCUSSION

PROS : strong state-based narrative allows clear story segmentation

▪ Encourage interactive exploration & pattern discovery

▪ It is easy for audience to follow

CONS : Rely heavily on data quality & consistency between states

▪ Requires consistent colour coding & scale to avoid confusion

Feasibility : Medium to High. Overall graph idioms is straight forward with minimal interactive

Personal Safety in Australia

understanding violence patterns

About personal safety in Australia....

IMAGE

National Overview

Total Offence case

- Rate
- Count



Insights of the graph ...

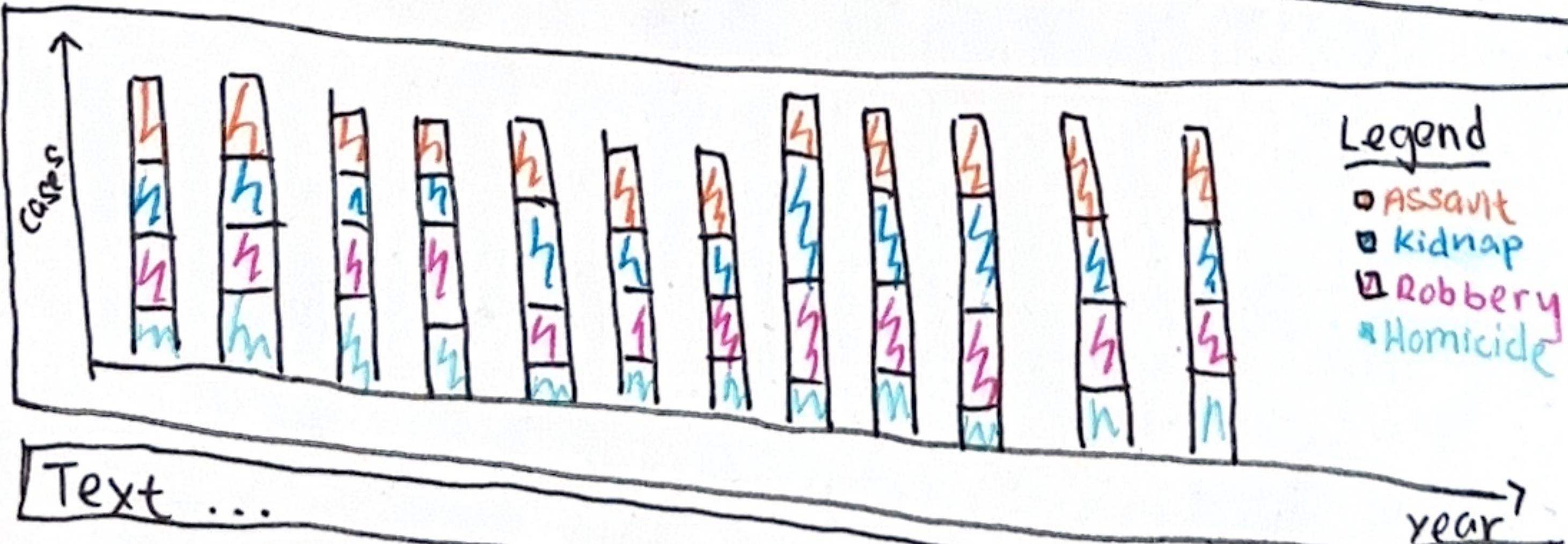
State Comparison

insights of the graph ...

Personal safety in Aus by state

select year:
offence type:

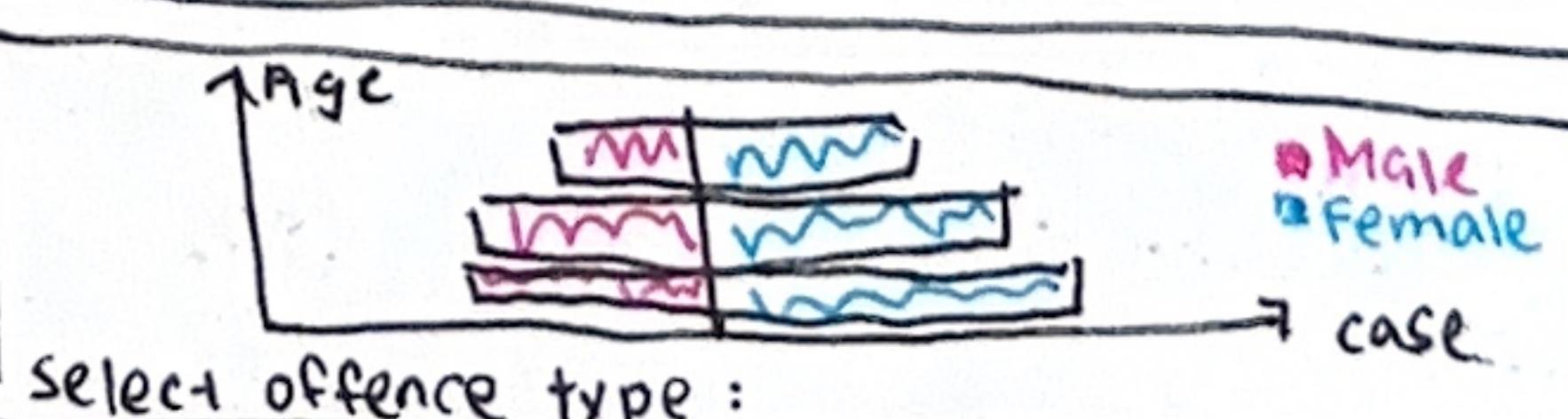
Offence Type Composition



Text ...

Gender & Age Patterns

insights of the graph



WEAPONS, LOCATION & RELATIONSHIP WITH PERPETRATORS



META INFORMATION

Author : Yan Xuan Khoo

Sheet : 5

Date : 18th October 2025

Title : Personal Safety in Australia

Task : To visualise how personal violence have evolved over time, vary across states & ~~demographic~~, differ by demographic factors

Description of algorithms / techniques

- cleaning & merging data.
 - the data of personal safety from ABS is quite messy (with a lot of np etc)
 - for correlation graph, data has to be merge.
 - calculation of rates/percentage might be needed for some data.

Dependencies

- vegalite will be used to create this visualisation (with github)
- Excel will be used to tidy-up & merge the data.

Specific Requirements of Materials or Hardware

- Other than the dataset, only a laptop is required for this visualisation (excel, vegalite & maybe visual code)

FOCUS

In this visualisation, it focus on flowing from big picture → details. It uses a narrative flow.

- Linegraph at the start to show total offence case across the year
- Then zoom in to offence type composition & state cases to give more insights about the patterns
- Then, pattern of victim's demographic is shown.
- Finally, location, weapon used & relationship with perpetrators is shown

* By using this narrative flow, it helps to guide the audience to understand violence patterns step by step

DISCUSSION OPERATIONS

- Due to space issue, the last part is supposed to be like the upper section with graph & insight side by side.
- Hover Tooltips (exact incident counts, offence type etc)
- Selection dropdown for audience to filter year, offence type
- Important insights & keywords will be coloured.