

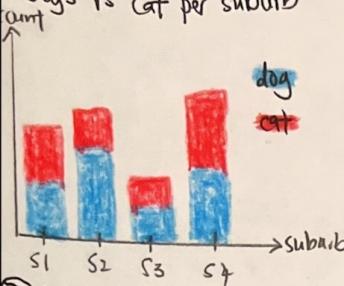
# IDEAS

① Choropleth Map: Total Pets per Suburb

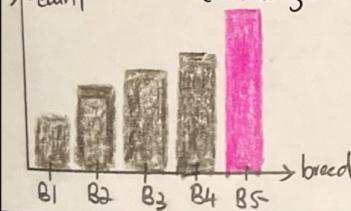


intensity ↑: light → dark

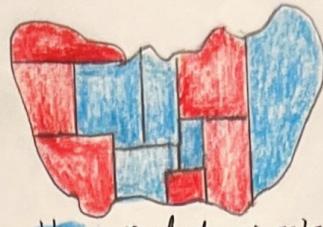
④ Stacked Bar chart  
Dogs vs Cat per suburb



⑦ Bar chart: Top 10 most common breeds (Geelong)

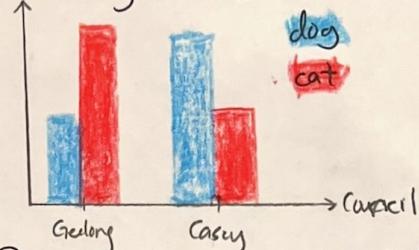


② Choropleth Ratio Map  
(Dog/Cat Ratio per Suburb)



- blue: no. of dogs > cats
- red: no. of cats > dogs

⑤ Side-by-side bar chart  
(Geelong vs Casey)

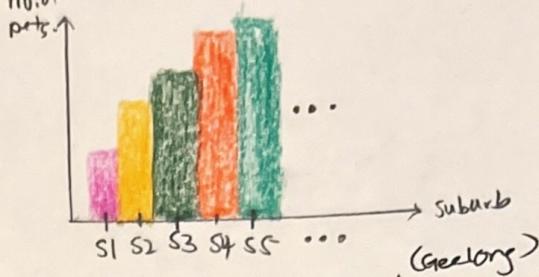


⑧

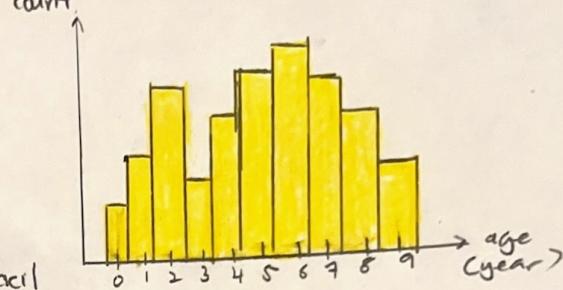
Gender Composition Chart (Casey)



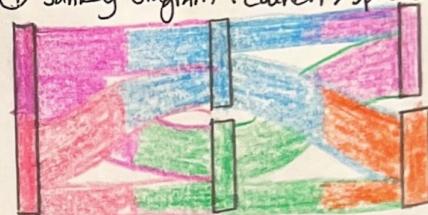
③ Bar chart: Top 10 Suburbs with Most Pets



⑥ Histogram: Age distribution of Pets



⑨ Sankey Diagram: Council → Species → Gender



## FILTER KEEP, REMOVE

① Choropleth Map: Total Pets per Suburb.

- Strong spatial overview, shows geographic patterns clearly, easy to interpret.

② Choropleth Ratio Map (Dog/Cat Ratio)

- Reveals species preference by suburb. Provide insight beyond raw counts.

③ Bar chart: Top 10 Suburbs with Most Pets

- Clear Ranking, complements maps by numerical comparisons.

⑤ Side-by-side Bar chart: Geelong vs Casey

- Simple overview comparison between councils.

⑧ Gender Composition Butterfly Chart (Casey)

- adds demographic dimension.

⑨ Sankey Diagram: Council → Species → Gender

- Shows multistep flow. Highlights details.

⊕: Too cluttered with many suburbs, overlaps with RatioMap + Top 10 charts.

⊖: Geelong only, breaks symmetry.

⊖: Geelong only, not comparable to Casey.

## CATEGORIES

- Comparative / Distribution: ① ② ③ ⑤
- Composition / Hierarchy: ⑧ ⑨
- Relationship / Flow: ⑨

## COMBINE & REFINING

Combine ① + ② using an interactive toggle (total pet ↔ dog/cat ratio). Same geography so only one map.

Combine ③ + ⑤ as overview → details, council comparison → top 10 suburbs. Add simple filter for council/species. For Sankey, Casey flows extend to gender; Geelong flows stop at species.

Refine overall design: Consistent colours, labels, tool tips.

## QUESTION

- Should the two maps be shown separately or merged with a toggle?
- Should the side-by-side comparisors show totals only or include species?
- Is the full Casey gender breakdown too detailed for the Sankey?
- For top 10 suburbs, do I separate councils or combined?
- Should I add a gender view for Geelong or keep composition Casey only?

# LA YOUT

TEXT

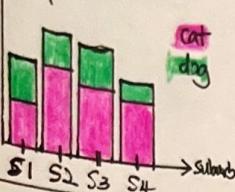


No. of pets

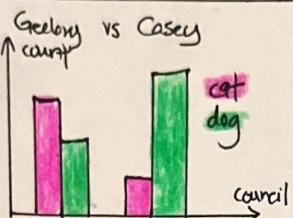
light → dark  
less → more

■ toggle button  
to switch from ① to ②

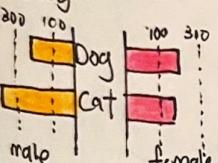
Top 10 Suburbs  
count



Gelong vs Casey  
council



Gender composition in Casey.



TEXT

## FOCUS

**Essence:** This dashboard is centered around the toggle-enabled choropleth map, which acts as the main visual anchor of the layout. The map guides the viewers' attention first to the broad geographic distribution of pet ownership, allowing users to see which suburbs in Casey and Geelong have the highest total registrations. By switching the toggle from "Total Pets" to "Dog/Cat Ratio", the same plot also reveals species dominance patterns, offering two complementary spatial narratives without changing the visual structure.

light  
↓  
dark

as no.  
increases.

■ toggle to switch  
from total to ratio

[See operations for more]



The other panels complement the main map by providing numerical and demographic context. The top 10 suburbs identifies the highest ranking suburbs on the map. Geelong vs Casey shows difference in Council level. Gender Composition and Sankey adds demographic depths, expanding viewers' understanding beyond raw counts.

Title: Spatial Pet Ownership Overview: Suburb and Council Comparisons.

Author: Darren Chen

Date: 06/11/2025

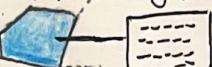
Sheet: 2

Task: Explore geographic patterns of pet ownership across Geelong vs Casey, using suburb-level distribution, demographic information for regional differences.

## OPERATIONS

① Hover Interactivity in all plots.

- Reveals exact values without clutter.
- When hovered over a suburb (map), show name, total pets, dogs, cats, ratio.

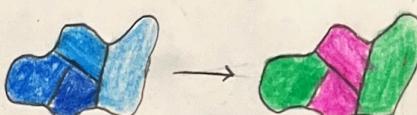


Suburb Alabama, 189 pets  
100 dogs, 89 cats, 1:0.89

- Hovering bars shows exact numbers. Such as 100 dogs.

② Map Toggle (① total pets ⇔ ② dog/cat ratio)

- Compare total pets and dog/cat ratio using the same map geometry.
- User clicks a toggle button, map recolours from total count → ratio scale.



= no.  
of cats > dogs  
= no.  
of dogs > cats

## DISCUSSIONS

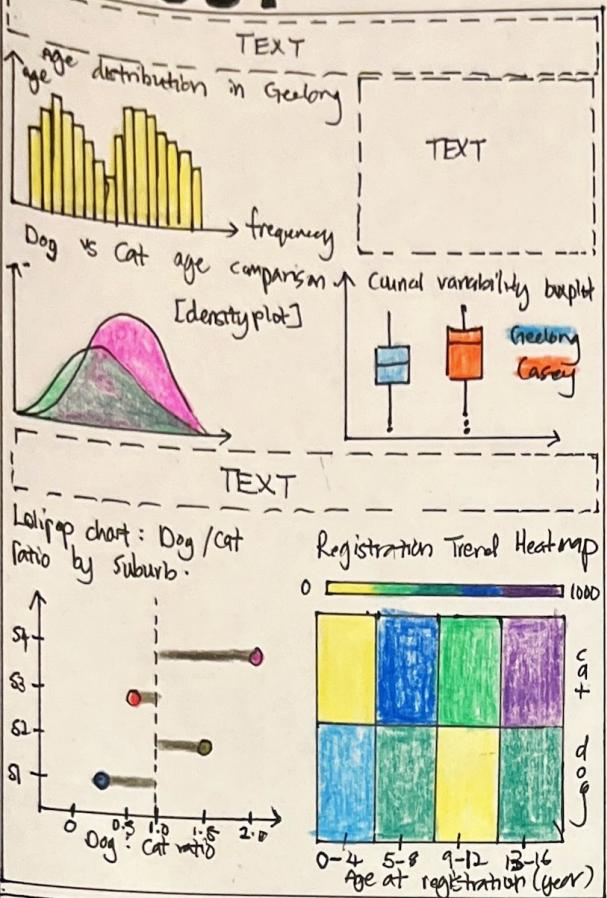
**Advantages:** ① Multi-perspective insight: the dashboard combined spatial, comparative, demographic, and relational plots. This gives the readers a well rounded understanding of pet ownership pattern.

② Main map provides clarity: the toggle-enabled choropleth map quickly communicates which suburbs have high pet densities and how species dominance varies.

**Disadvantages:**

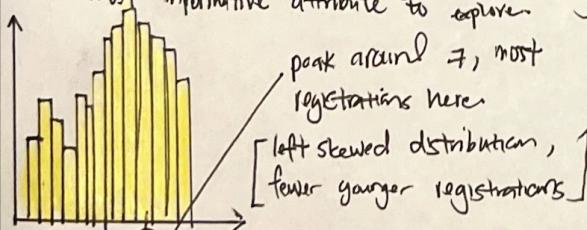
- ① Cognitive loads: Having five plots might overwhelm users.
- ② Uneven data availability: Gender data is only available for Casey. Geelong flaws in Sankey stop at species level, creating an imbalance with comparing both councils.

# LAYOUT



## FOCUS

This dashboard focuses on behavioral patterns in pet registrations, shifting away from the spatial and demographic overview in sheet 2. The central visual is the age distribution histogram of Geelong, which anchors the dashboard by revealing when pets tend to be registered and highlighting key behavioral peaks. Age is the unique variable available only in the Geelong dataset, making it the most informative attribute to explore.



Surrounding (7) charts complements this focus by adding analytical perspectives. The density plot compares age trend between species, showing whether rats or dogs tend to be registered earlier/later. The boxplot introduces a statistical dimension by comparing the spread of suburb level counts in Geelong and Casey. The Dog/cat ratio dot plot shows species dominance at suburb level while the registration trend heatmap combines age and joint distribution specific into a compact view.

Title: Pet Registration Behavior Explorer : Age, Species Patterns, and Suburb Variability

Author: Darren Chen

Date : 07/11/2025

Sheet : 3

Task : Investigate behavioral patterns in pet registrations by analysing age distributions, species difference, and cultural variability.

## OPERATIONS

### ① Age brushing on Histogram

user can click-and-drag across histogram to brush a specific age range. All other plots instantly update to show:

(b) ratio recalculated based on filtered data.

(c) heatmap highlighted on selected age bins.

### ② Heatmap cells hovering

Hovering on a cell reveals:

• species  
• exact age bins  
• no. of pets.  
- also highlight corresponding bar in histogram density curve segment

## DISCUSSIONS

**Advantages : Behavioral Depth :** This dashboard provides insights that are not visible in sheet 2. Age distribution and density plot reveals when pets are registered, uncovering behavioral patterns such as early age clustering.

**Multi-dimensional analysis :** The combination of histogram, density plot, ratio and heatmap allow users to explore a story telling narrative, offering richer analytical depth.

**Variability insight through boxplot :** Boxplot introducing patterns across Geelong and Casey.

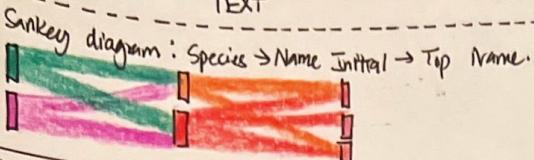
### Disadvantages:

**Risk of visual density :** If many suburbs included, the ratio lollipop chart can be cluttered, and the heatmap can lose clarity if too many age bin are presented.

**Asymmetry in available attributes :** Casey only has aggregated data while Geelong has granular information.

# LAYOUT

TEXT

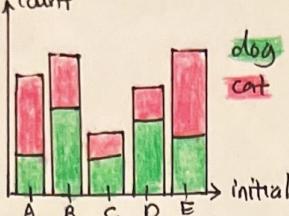


Name cloud.

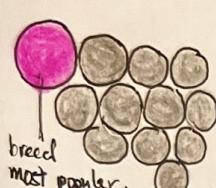
NAMES  
NAME1  
NAME2  
NAME3  
NAME4  
NAME5

TEXT

Name Initial Distribution.

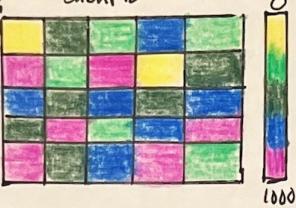


Breed Bubble Cluster chart



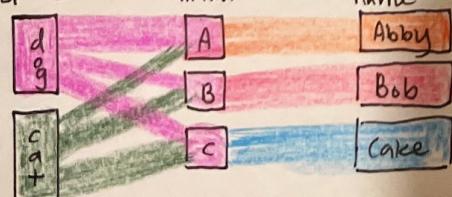
size : no. of pets  
colour : popularity tier

Breed - species heatmap.  
row: top breeds (Geelong)  
column: species (dog/cat)



## FOCUS

This dashboard focuses on pet identity patterns. With the Sankey diagram acting as the central visual anchor, it maps how species branch into name initial and then into the most common pet name in Geelong, revealing structural naming pathways and species-specific preferences. The surrounding visuals expand this identity perspectives: The Name Cloud highlights overall naming popularity; The Name Initial distribution chart shows letter-based naming trends for dogs and cats; the Breed Bubble Cluster Chart visualises Geelong's breed popularity using size and colour encoding; and the Breed - Suburb heatmap uncovers how certain breeds are concentrated in specific Geelong suburbs. Together, these identity-driven visuals provide a cultural and behavioral view of pet ownership in Melbourne.



Title: Pet Identity Explorer: Naming & Breed Patterns

Author: Darren Chen

Date: 08/11/2025

Sheet: 4

: Explore identity based attributes of pets by analysing naming structures, initial and breed popularity.

## OPERATIONS

① Sankey hover + flow highlight

- when hovering over any node (e.g. dog), the hovered branch becomes fully coloured, all other flows fade to grey.

- when hovering a flow line:  
highlights the specific path,  
and the Name Cloud and Initial Distribution chart.

② Cross-fitting from Name Cloud.

- hovering over a name in the Name Cloud:  
highlights the name's initial in the initial chart.

- highlights the name's flow in Sankey.  
- tooltip: name, species, total count  
- non-matching flow fades out.

## DISCUSSIONS

**Advantages: Identity-focused insights:** This dashboard offers a complete different analytical angle by focusing on naming and breed identities patterns.

**Multilevel naming exploration:** The combination of Sankey, name cloud and initial distribution enables viewers to move fluidly between high level naming pathways and detail name-level insights.

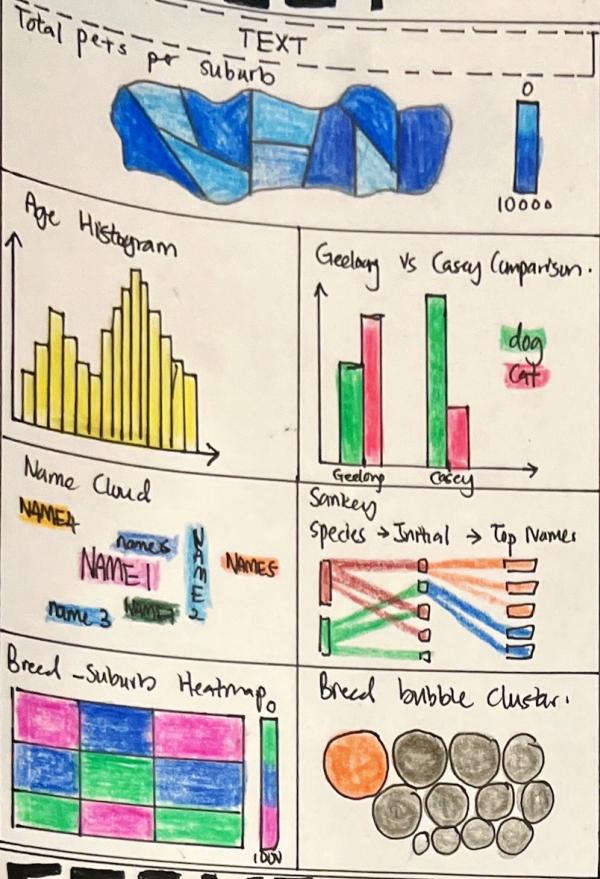
**Discoverable patterns and behavior:** The heatmap and bubble chart help uncover whether particular breeds cluster in specific suburbs, while naming visuals show cultural trends.

**Disadvantages:**

**Data Imbalance:** Geelong provides names, but Casey provides only counts. The asymmetry may confuse users if not properly communicated.

**Noise in Naming Data:** Pet names often includes spelling variations or unusual entries, which can fragment counts. Preprocessing might be needed.

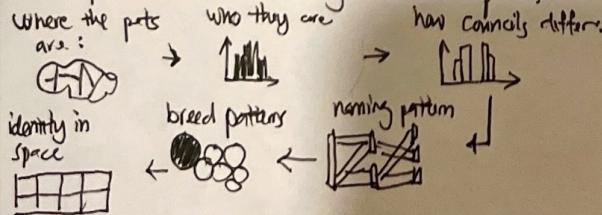
# AYOUT



## FOCUS

This final dashboard unifies the strongest elements from the previous three sheets into one coherent narrative guiding the user from broad spatial pattern into behavioral insights, comparative structures and finally into identity-based interpretations of pets across councils. The design balances high-level overviews with detailed relationships, ensuring both accessibility for general audience and analytical depth of decision makers.

It begins with the choropleth map to establish where pets are concentrated, followed by the age distribution histogram to show who these pets are. The council comparison bar chart bridges into deeper identity analysis by contrasting overall pet structures in Geelong vs Casey. The Sankey reveals how pets are named through species, initial, top names flow. While the breed bubble chart shows dominating breeds. Finally, the breed suburb heatmap reconnects identity back to places.



Title: Petan Ownership in Geelong & Casey

Author: Darren Chen

Date: 10/11/2025

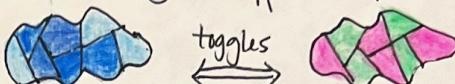
Sheet: 5

Task: A dashboard that allows the viewer to understand pet ownership in Geelong & Casey.

## OPERATIONS

① Choropleth Map Interactivity:

- hover suburb → show total pets, dogs, cats in tooltip
- click suburb → highlights its attributes across other panels.
- toggle (total ↔ dog/cat ratio) → recolors maps using the same geometry to support comparison.



② age distributions histogram:

- hover bins → reveals exact pet counts per age bin
- filter from map click, show only pets from selected suburbs.
- species toggles: switches between dog/cat or both
- ③ council comparison bar charts.
- click on council segments → filters Sankey tree panel.
- hover → shows dog/cat total with percentage breakdown.
- acts as a bridge filter between demographic and identity panels.

## DETAILS

Algorithm: CSS, HTML, Javascript & Vglnite  
all visualisations produced with Vglnite

Dependency: Vglnite Library, dataset, github repository.

preprocessing with Excel.

Effort: 3 weeks from SDS. to dashboard

Technical Requirements:

Javascript & CSS knowledge

Vglnite knowledge.

Git knowledge.