

# Monash University: Assessment Cover Sheet

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<b>Unit name</b>	FIT3179 Data visualisation - S2 2021		
<b>Lecturer's name</b>			<b>Tutor's name</b>
<b>Assignment name</b>	Data Visualisation II Report	<b>Group Assignment:</b> No <b>Note, each student must attach a coversheet</b>	
<b>Lab/Tute Class:</b>	Karina Rios	<b>Lab/Tute Time:</b>	Lab 11
<b>Due date:</b>	18-10-2021	<b>Submit Date:</b>	18-10-2021
		<b>Word Count:</b>	945 words
		<b>Extension granted</b>	<input type="checkbox"/>

If an extension of work is granted, specify date and provide the signature of the lecturer/tutor. Alternatively, attach an email printout or handwritten and signed notice from your lecturer/tutor verifying an extension has been granted.

Extension granted until (date): ...../...../..... Signature of lecturer/tutor: .....

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# **FIT3179: Data Visualisation**

## **Assignment 2**

Nicholas Chong (29808146)

Lab 11 (Karina Rios)

[Dashboard URL](#)

Word Count: 945 words

### **1. Domain and target audience**

The domain for this project is the state of the housing market in Melbourne between 2016-2018. It is targeted towards anyone interesting in exploring and learning various aspects of how properties are bought and sold in Melbourne, ranging across topics such as the effects of distance from CBD on price, the most popular suburbs by selling frequency, to an in-depth look at the vast variety of properties sold.

### **2. What**

The key data source here was based on Tony Pino's housing data hosted on Kaggle<sup>[1]</sup>. This data source contained scraped property transactions in Melbourne from 2016 to 2018. Each row included various attributes such as the selling method, type of property, number of bedrooms/bathrooms/car spots, selling date and location information.

From there, various data cleaning/filtering/aggregation methods were conducted on Jupyter notebook to produce secondary data sources for all the visualisations. The secondary data sources are as follows:

- Total counts of property transactions, by suburb, by year
  - Used in the bump chart
- Average attribute values by suburb
  - Used in the choropleth map
- Individual property transactions information, with N/A values removed
  - Used in the dot map
- Selling method distribution
  - Used in the donut charts
- House type distribution
  - Used in the donut charts
- Region name distribution
  - Used in the donut charts

### **3. Overall Design**

#### **3.1. Layout**

The dashboard is created in a portrait view, with 4 clear sections covering different purposes. The choropleth map is placed at the visual centre of the visualisation, allowing me to emphasise its importance immediately. The sightlines are minimised as much as possible to give a clear viewing experience. The typography is laid in a simple top-to-bottom path to reinforce readability.

#### **3.2. Colour**

The red and white theming was inspired from RealEstate.com.au<sup>[2]</sup>, a popular real estate listing website, giving the user a sense of familiarity with real-estate. The main text colour was of a lower brightness than pure black to blend in more with the background and allow the visualisation to be emphasised. The map visualisations were based off the Inferno

scheme, keeping to the red theming and the other visualisations used a consistent “category20” scheme, which is colour-blind friendly.

### **3.3. Figure-Ground**

The visualisations and the header were given a strong colour hue to draw the reader’s attention, serving as the **figure**, while the text uses a grey colour and the white/low grey background use dull colours to serve as the **ground**. To provide necessary information, bright red colours and bolding was used in buttons and text to draw the reader’s attention to any key facts or call-to-action.

### **3.4. Typography**

The sans-serif Museo Sans was used, once again inspired by REA, to give off a friendly and simple viewing experience for the reader. A sans-serif font was chosen to keep up with the modern theme.

### **3.5. Storytelling**

This visualisation was an attempt at using the Martini-glass narrative structure which combines author-driven narratives (in the first 3 sections) before encouraging the user to explore more closely in the final section. This was shown by providing more details in the first 3 sections through explaining the observations followed by encouraging the user to use the extensive filtering in “Playing the Agent” to answer the given questions.

Moreover, the theming of the visualisation was centred around those “looking for a home” and wanting to learn more about various aspects of the Melbourne market. This guided the choice of the heading texts and the choice of visualisations.

## **4. Why and How**

Figure 1’s aim was to show the correlation of average house price for a suburb with the distance from the CBD. This was shown visually by using the colour channel for price and seeing a decrease in brightness when moving further from the CBD. A choropleth map was used to display the suburb’s positioning and its average house price. Filtering for the suburb was added to encourage the user to explore suburbs they personally know.

Figure 1: Choropleth map displaying average property prices by suburb

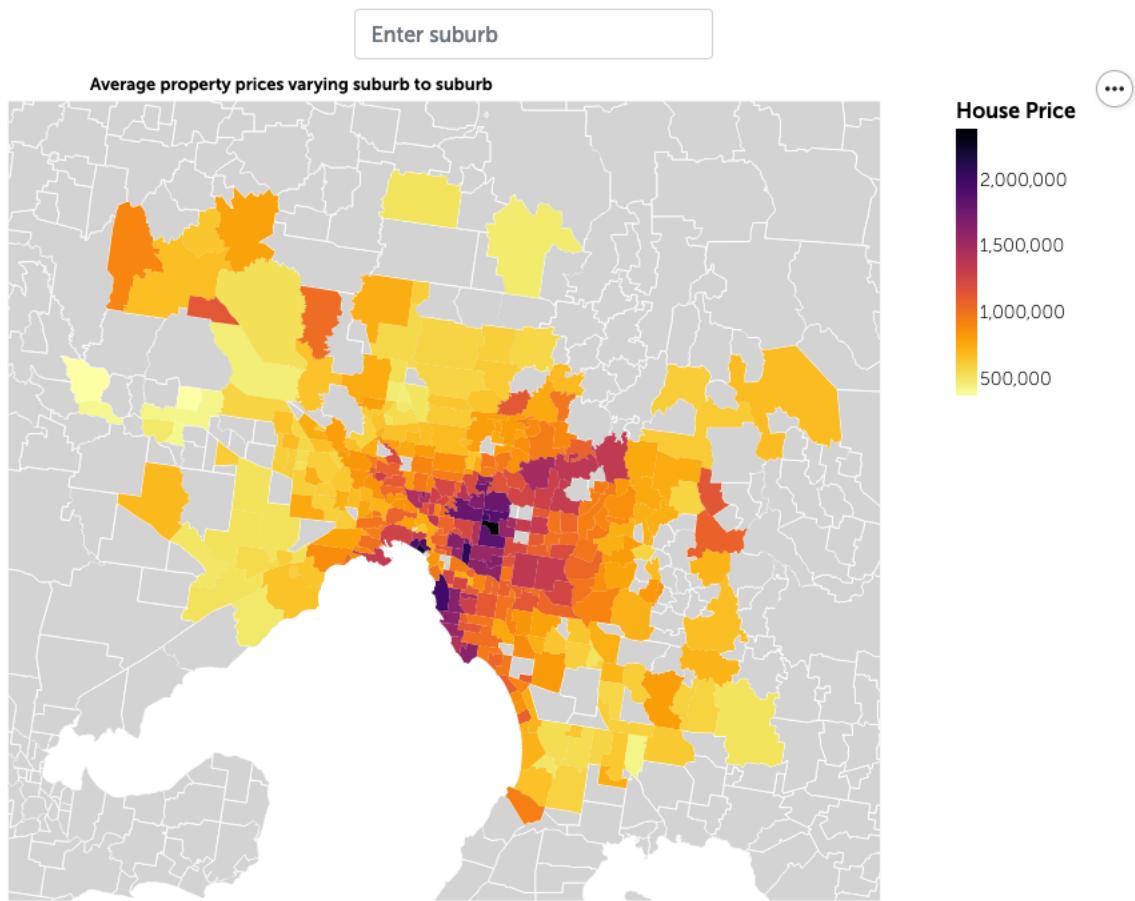


Figure 2's aim was to display the rankings of suburbs by property sales over across time, making it suitable to use a bump chart. Annotations were added to provide insights such as Reservoir's #1 ranking and the volatility between 2017 and 2018. The legend is interactive, allowing the user to find a specific suburb in the visualisation, this is then highlighted while the other line marks will be greyed out.

Figure 2: Bump chart displaying the top 10 suburbs by number of sales

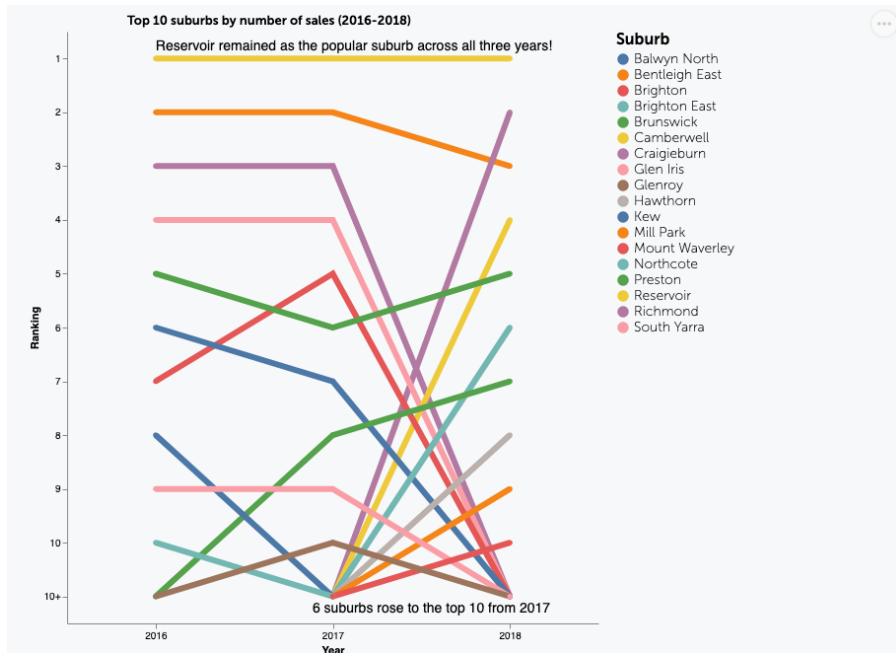


Figure 3's aim was to display the distribution in selling by method, house type and region. A donut chart is used over pie charts to reduce the reader's reliance on viewing the area as the main channel of comparison. Moreover, 3 donut charts are used instead of 3 bar charts in effort to conserve horizontal spacing. To allow for easier comparison, the tooltips provide the % of the total, for each element.

Figure 3: Multiple donut charts showing selling by method/house type and region

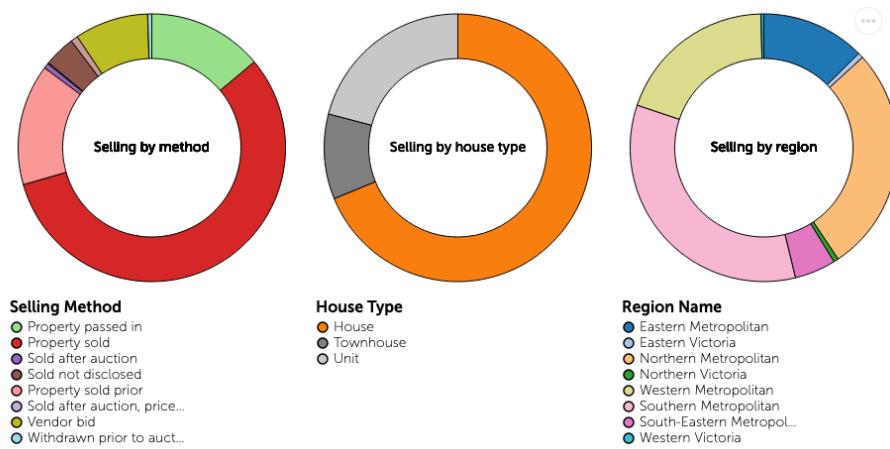
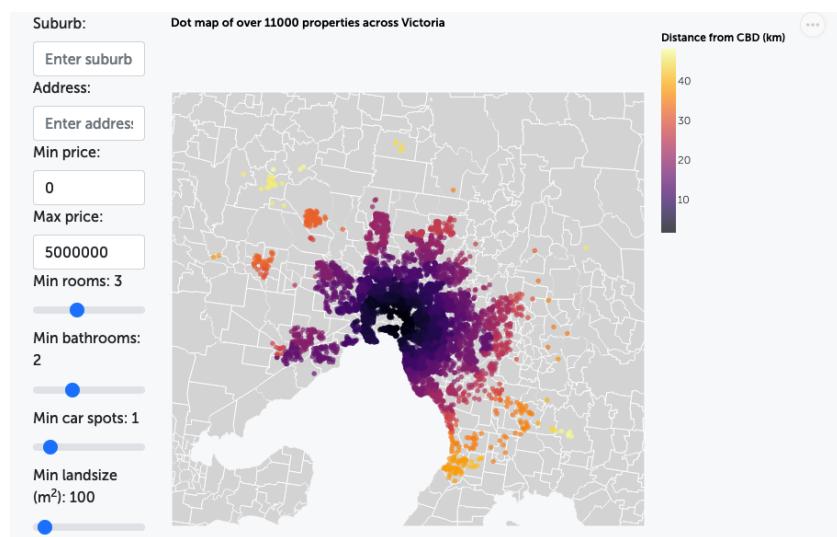


Figure 4's purpose is to encourage reader interactivity with various properties across Melbourne, showing the vastness in price/rooms/bathrooms and other factors. This was achieved with a dot map displaying each property, with extensive filtering encouraging interactivity.

Figure 4: Dot map showing properties in Victoria, with multiple filters



## 5. Final Dashboard

### Looking for a Home?

Explore and learn interesting insights about the Melbourne housing market (2016-2018)



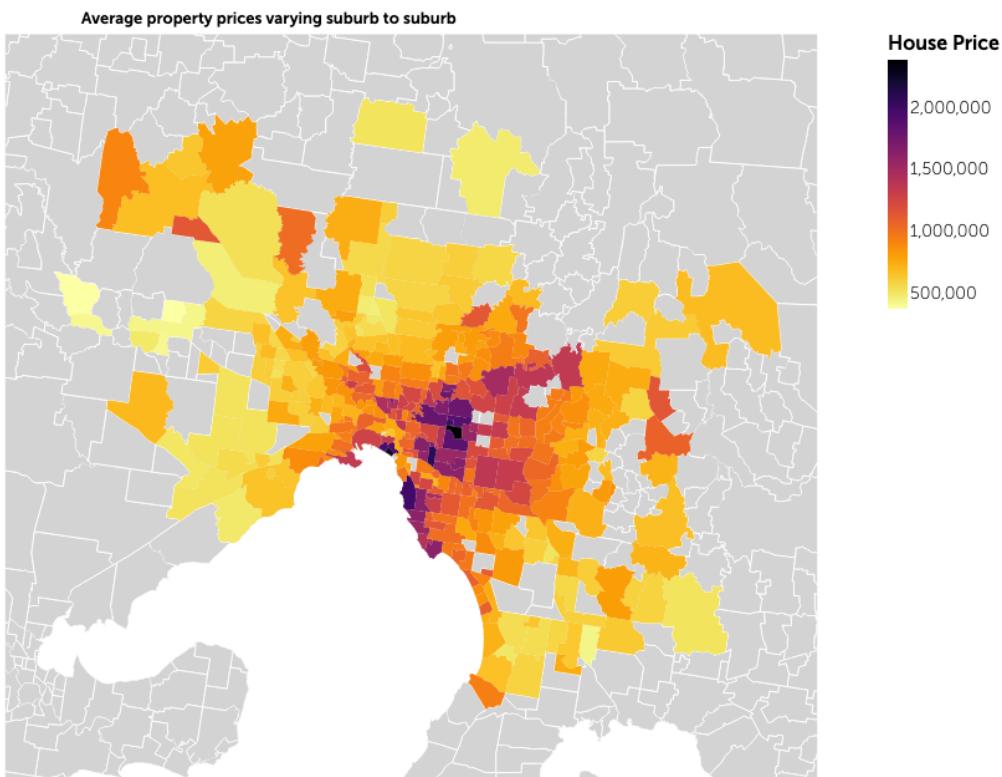
### Living Lavish

We analysed over **35000 sales** all over Victoria with properties selling for as high as **\$11M AUD!**

Notice how the price increases as the suburbs move further away from the CBD.

Try typing in your suburb and see what happens!

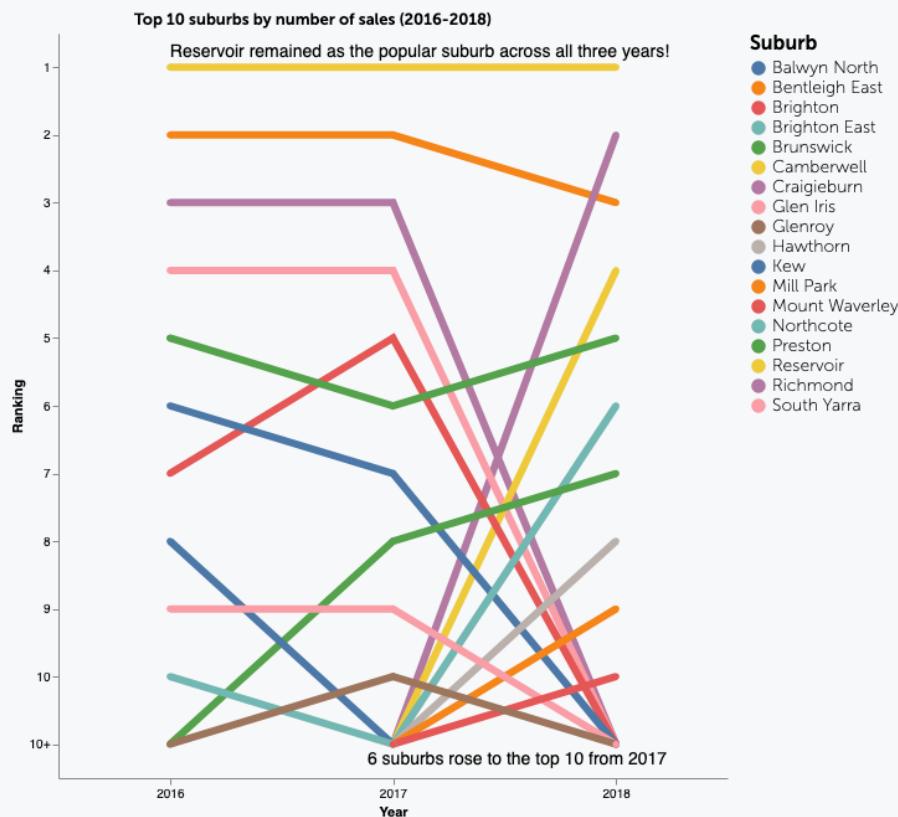
Enter suburb



### New Kids on the Block

We ranked every suburb by their popularity, that is, how many properties were sold in that

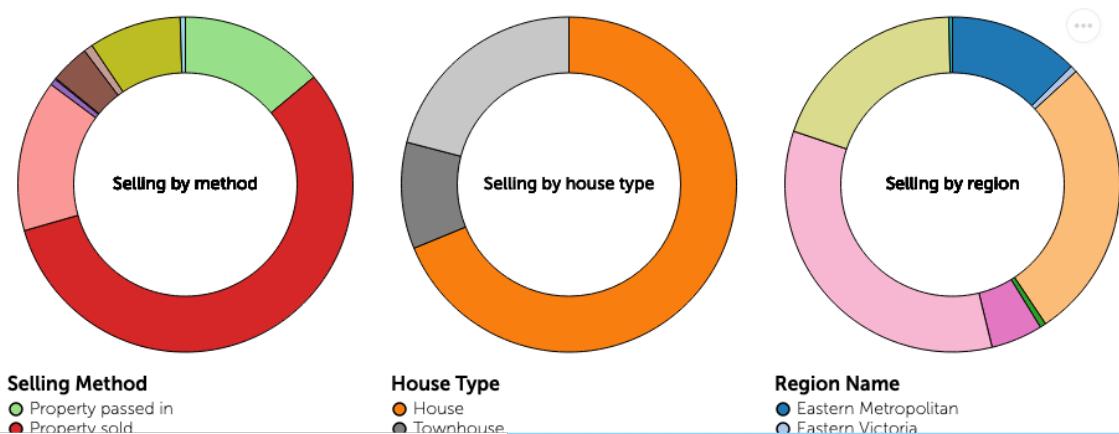
suburb each year and ranked them accordingly. Significant changes were made between 2017 to 2018.



## Going once... going twice...

Property transactions come in different shapes and sizes. Find out how selling varies across different factors.

A typical property sold would be a house selling by conventional means (offers).



- Property sold
- Sold after auction
- Sold not disclosed
- Property sold prior
- Sold after auction, price...
- Vendor bid
- Withdrawn prior to auct...

- Townhouse
- Unit

- Eastern Victoria
- Northern Metropolitan
- Northern Victoria
- Western Metropolitan
- Southern Metropolitan
- South-Eastern Metropol...
- Western Victoria

## Playing the Agent

Browse and search your way through the various properties of Melbourne by playing as a real-estate agent for your clients!

New text message: Rhi G.	▼
New text message: Alex W.	▼
New text message: Sam C.	▼

Suburb:

Address:

Min price:

0

Max price:

5000000

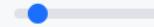
Min rooms: 3



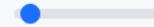
Min bathrooms: 2



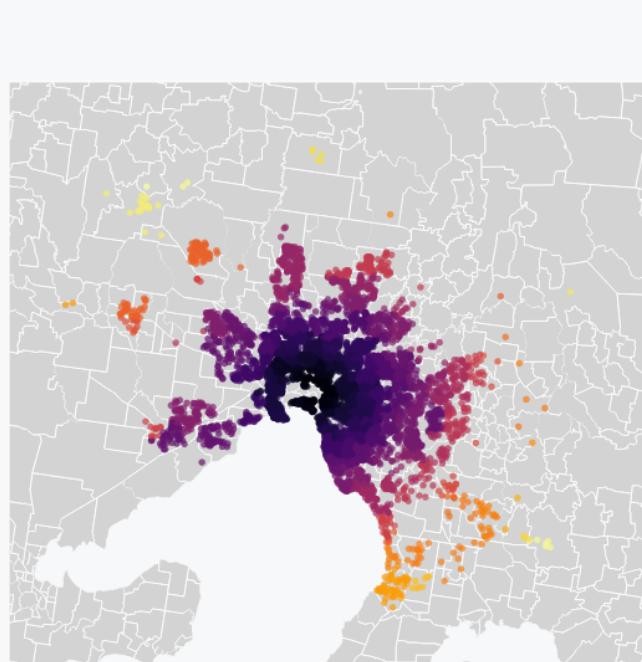
Min car spots: 1



Min landsize (m<sup>2</sup>): 100



Dot map of over 11000 properties across Victoria



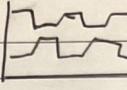
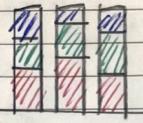
Distance from CBD (km)



## Bibliography

- RealEstate.com.au. (n.d.). *RealEstate.com.au*. Retrieved from RealEstate.com.au: <https://www.realestate.com.au/buy>
- Data Visualisation & Human Rights. (n.d.). *Storytelling through narrative visualizations is most efficient when combining author- and reader-driven approaches*. Retrieved from Data Visualisation & Human Rights: <http://visualizingrights.org/tldr/narrative-storytelling.html>
- Pino, T. (2016). *Melbourne Housing Market*. Retrieved from Kaggle: <https://www.kaggle.com/anthonypino/melbourne-housing-market>

## Appendix

<p>1. Ideas</p> <p>(1) - Which suburbs were popular in selling frequency? - Bar chart</p>  <p>(2) - Choropleth map showing densely populated suburbs via. property density</p>  <p>(3) - Stacked bar chart showing distribution of method of selling</p>  <p>(4) Does selling frequency change month-over-month? Are there any seasonal trends here? - Overlaid the chart of selling frequency</p>  <p>(5) Reader-driven points to explore your own data</p> <p>Choropleth maps of average prices per suburb Proportional symbol maps of suburbs by toilets</p> <p>① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩</p> <p>① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩</p>	<p>2. Filter</p> <p>Nicholas Chang 29808146</p> <p>(1) - Suburb comprising all popular properties</p> <p>(2) - Showing suburb composition on expensive property</p> <p>(3) - Method of selling differences between white suburbs</p> <p>(4) - Seasonal trend <del>analysis</del></p> <p>(5a) - <del>good</del> Suburb composition of average house prices (Central theme)</p> <p>(5b) - <del>Choropleth</del> Display of multiple factors that makes property highly priced</p> <p>(6) and (5b) very similar - consider merging</p> <p>3. Categories</p> <p>Suburb composition</p> <p>1 2 5g 5b</p> <p>3 4</p> <p>Whole overview</p>
<p>(1) - Same</p> <p>(2) - Shift to 5b - name 5b as factor section</p> <p>(3) - Same</p> <p>(4) - Same</p> <p>5a - Same</p> <p>5b - see (2)</p>	<p>5. Questions</p> <ul style="list-style-type: none"> <li>- Will (4) be significant enough to display?</li> <li>- Is (5) technically possible?</li> </ul>

## Layout

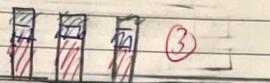
Nicholas Chang - Sheet 2

### Operations

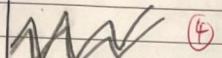
- Web page friendly style
- Scroll and view section by section
- Read
- Title → Subtitle  
    → Graphic
- Explore section & for reader driven & explanatory

TITLE (graphic)  
A Look at the Melbourne Market (16-18)

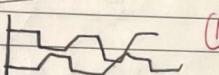
Going once, going twice...



SOLD!

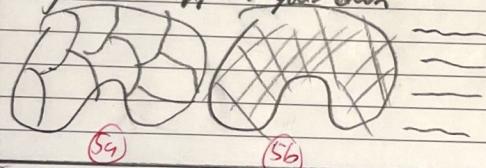


New Kids on the Block



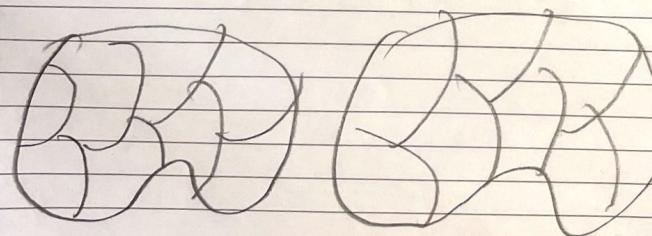
Some cool graphical fact...

Lilith Lavish: Explore your own



## Focus

Lilith Lavish: Explore what  
what makes Melbourne's  
market tick?



STATIC graphic of  
Melbourne suburb's  
average price

Dynamic graphic persists  
including...

- No. of toilets
- Average Property size / Building area
- Avg. No. properties / Suburb area
- No. of rooms
- Land size (sq.m.)

## Discussion

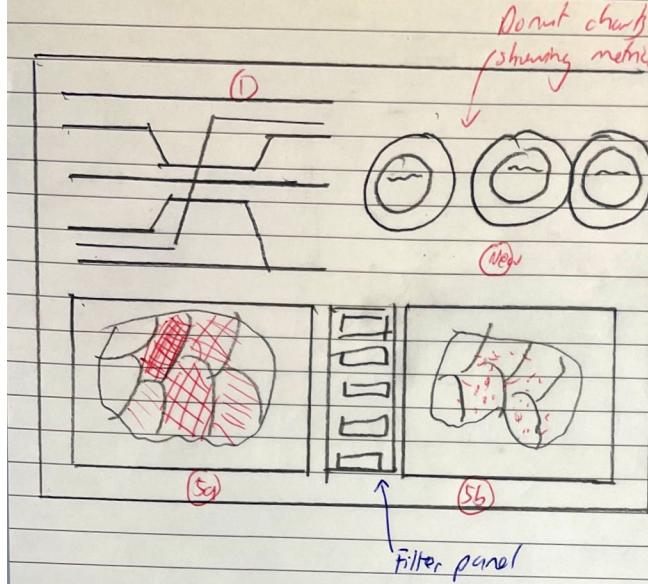
### Pros

- simple layout
- web page friendly
- fair good side by side comparison

### Cons

- Lack of wider view initially  
(maybe put 5a in section above?)
- 5b takes a lot of work

## Layout



Nicholas Cheung - Sheet 3

## Operations

### - Dashboard overview

#### style

- Clear left to right, top to bottom
- style

- How do we ensure interactivity between the reader to use the control panel?

## Focus

Suburb: [ ]  
 Address: [ ]  
 Min price: [ ]  
 Max. price: [ ]  
 Min. rooms: [ ]  
 Min bathrooms: [ ]  
 Min car-spots: [ ]  
 Min land-size: [ ]

Colour and Legend?

extensive filtering  
panel to filter  
properties

Dot map showing  
individual properties  
in Melbourne

## Discussion

#### yes

- Simple layout
- 

#### yes

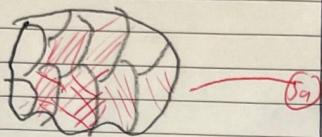
- Control panel makes things interactive

-Layout

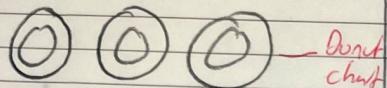
Nicholas Chong - Sheet 4

Discussion  
Operations

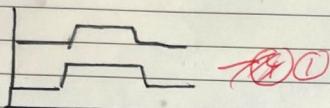
Welcome to Melbourne!



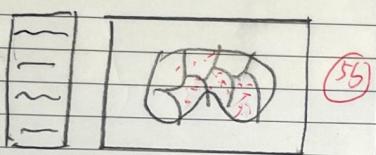
(5a)



Donut  
chart



(5b)

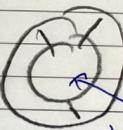
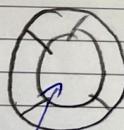


(55)

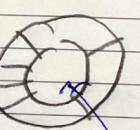
- Brochure style
- Melbourne tourist/residential theme
- (advertisement style)
- Simple top-to-bottom scrolling

Focus

Discussion



defining method



region

Plus: Multiple donut charts

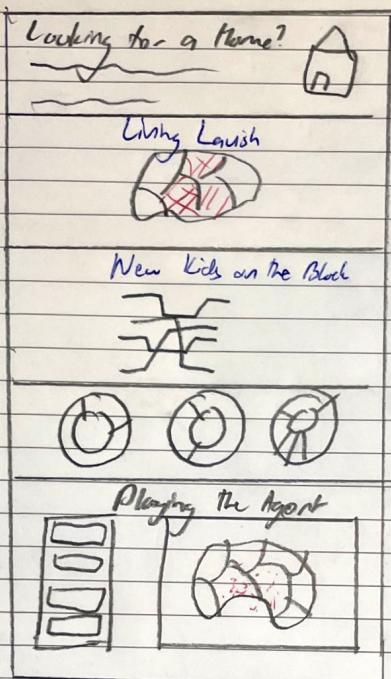
- Plus:
- simple layout
  - good theme
  - and a clean
  - direction for
  - implementation

plus: good to show distribution while conserving physical space

-ve:

## Final Layout

Nicholas - Sheet 5  
Cheng  
Operations



- Brochure style
- Centred around the idea of someone looking for a home and educating/reminding
- Each section clearly having its own purposes
- Labels for each section

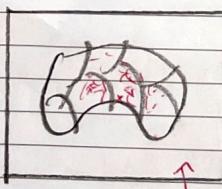
## Focus

New text message  Different prompts  
New text message  encouraging user to use the filters  
New text message

## Detail

- + vcs
- Good interacting
- Good storytelling

Suburb  
Address  
Rooms  
Bathrooms  
Car park



Multiple filters

Outrageous individual housing

- May not have enough information with just just 4 vizzes