

## Weekly Diary Entries

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### Week 9

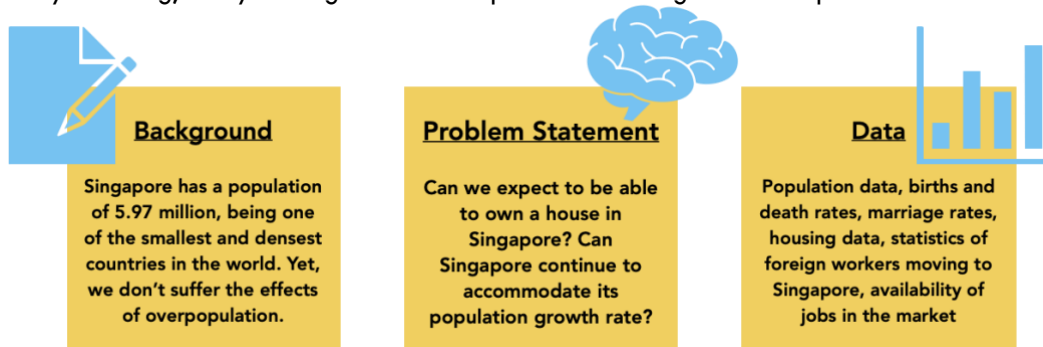
After exploring many different topics and finding available datasets, I finally decided on a topic that is interesting, feasible and relatable! I decided on something closer to home, and intriguing for people of my generation. It's also a question that I have been thinking about for the longest time...

"Would I be able to own a house in Singapore after I graduate?"  
 "Is there enough space left for me in Singapore?"

I also chose this topic because of the abundance of data surrounding it that I may use for my investigation and analysis of the question. A lot of population data is available on SingStat, plus I can use other housing and job data which would be useful as well.

I decided to name my project SPACE since the central theme of my data story surrounds spatial availability/scarcity.

When storyboarding, I only managed to come up with answering the first 3 parts:



### Week 10

**What is your project about?** Spatial availability in Singapore

**What is the data you plan to use?** A data set with population indicators, housing, and job availabilities. Here's a link to the full data set: [dataset space.xlsx](#)

**What is the question you plan to answer?** "How much space is there left in Singapore?" It aims to investigate whether Singapore can continue to accommodate the growth rate of its population in years to come.

**Why is this an important question?** According to World Data.info, the population of Singapore had grown from 1.65 million in 1960 to 5.45 million in 2021. As one of the smallest countries in the world with a land area of 728km<sup>2</sup>, we are also one of the most densely populated countries with approximately 8000 people per square kilometre. With this overarching threat of overcrowding and overpopulation, Singapore still encourages a high influx of immigrants. Therefore, can Singapore really ensure that quality of life is not sacrificed as the population keeps growing?

**Which rows and columns of the dataset do you plan to use, to answer this question?** I plan to use the most recent available data from 1980 – 2022 since I plan to answer a question that involves looking into the future. Therefore, a wider range of data dating back to 1980 up until 2022 can provide clearer trends for more accurate predictions. I acknowledge that there will be anomalies in my dataset between 2020 and 2021 due to the impact of the Covid-19 pandemic which left a significant effect on the general trends seen.

1. Total Population, Resident Population, Citizen Population, PR Population and Non-PR Population.
2. Residents 65 years old and above, Youths aged 0-19 years old.
3. Total Fertility Rate (Per Female), Total Deaths (Number).
4. Total Marriages (Number), Total Divorces and Annulments (Number).
5. Resident Households by Type of Dwelling.
6. Total Employment Level by Industry.
7. Annual Average Job Vacancy.

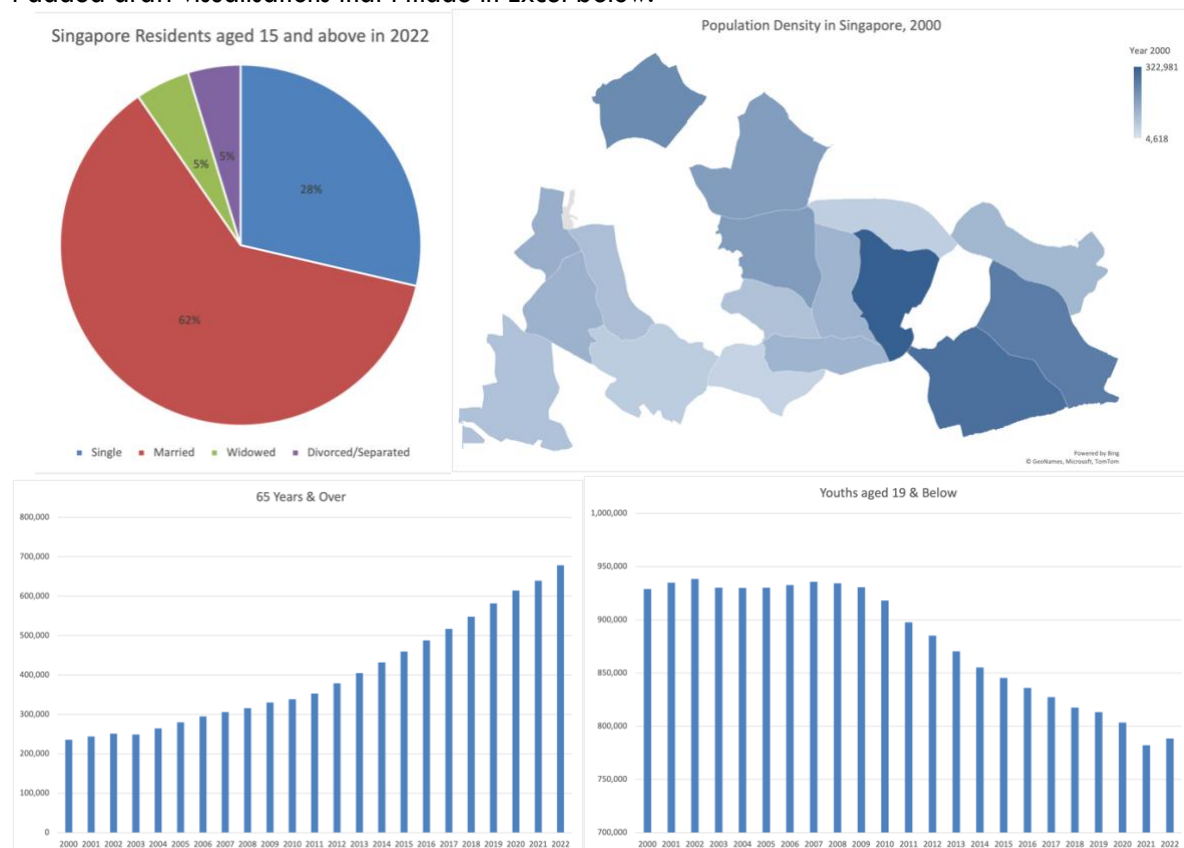
## Week 11

This week, I spent a lot of time diving deep into the data and trying to make sense of it to form logical connections to my research question. I prepped the data to ensure it was suitable for processing and analysis.

Since a lot of my data surrounds a significant trend over 20 years, I believe it was most suitable to use line graphs/bar charts to highlight the increasing/decreasing nature of the data. Pie charts are also an apt visualisation method to show a breakdown of the category within a single year, therefore I plan to use a pie chart to show the comparison between marriages and divorces within a single year.

Furthermore, since my project is on space, I wanted to add geographical visualisations such as map charts with degrees of colour shading to show population density and changes over 20 years. I tried to explore methods to do this, however many different softwares do not support or contain the database of detailed regional areas in Singapore. As seen below, there are missing regions within the population map. Therefore, for this visualisation, instead of making it interactive where readers can click on views to change this visualisation, I might do a presentation of the data in a way that is set (e.g. a showing of the population changes over time, like in the gun violence deaths example done in Week 10 Tutorial).

I added draft visualisations that I made in Excel below.



## Week 12

I decided to recode from scratch since making drastic changes to my code felt slightly daunting. I worked on an "indexdraft.html" that was linked to the same main.js and appstyle.css files as my previous HTML file where I tried new layouts and tweaked details here and there.

I faced some minor issues such as a non-working 'text-align: center' on the banner element, and misaligned list items in the navigation bar. Thus, I did some guess-and-check work on my CSS file to figure out what was wrong. I found that removing the display element (appstyle.css:120) fixed the text-alignment issue, and adding the margin-top and -bottom properties (appstyle.css:44-45) were the only things that, when changed, allowed my code to work in the way I wanted it to.

```

117 .banner {
118     position: relative;
119     background-image: url(../resources/);
120     display: flex;
121     background-size: 100%;
122     background-position: center;
123     padding: 20px;
124     width: 100%;
125 }

36 .top-bar {
37     display: flex;
38     align-items: left;
39     overflow: hidden;
40     top: 0;
41     width: 100%;
42     padding: 0;
43     background-color: #000080;
44     margin-top: auto;
45     margin-bottom: auto;
46 }
```

I have added a Leaflet map of Singapore with population density on my homepage, using code from a tutorial made by GIS Tech Adventurer. I tried to do a Plotly map but was unable to do so because of the lack of Singapore map data and location codes. There were no tutorials I could find as well, thus I resorted to following another reference using Leaflet instead.

Also, I finally found a solution to the problem where my header banner was going in front of my sticky navigation bar when scrolling on the page. I added "z-index:1000" to the navbar CSS (appstyle.css:40).

I'm trying my best to get everything done, but I keep encountering many breaks in my code such as the charts not being able to load on my web file but being able to load on others. I will relook at this ASAP. In the meantime, this is a draft page layout.

```

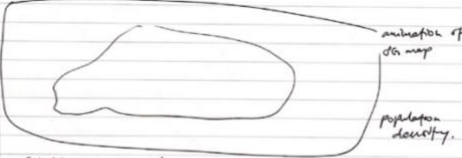
32 .navbar {
33     display: flex;
34     align-items: left;
35     overflow: hidden;
36     top: 0;
37     width: 100%;
38     padding: 20px;
39     background-color: #000080;
40     z-index: 1000;
41 }
```

**SPACE** <sup>population data indicating</sup> <sup>land use</sup> <sup>housing</sup> <sup>development</sup> <sup>Final Report</sup>

## How much space left in Singapore?

# Homepage

write up about the project, can be similar to final report



Learn more → button to bring you to Data story

Plot using frames?

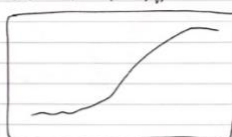
1980 ————— 2020

can't work out the project

Learn more → button to bring to exploration tabs

# Evaluation (analysis)

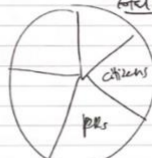
### 1) Population Indicators type



change to pie chart

### Total population in SSG

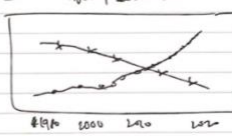
breakdown of population types in SSG



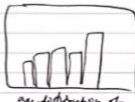
### 2) Age!

5 years x older      5 years x younger

ages of the over time



What does this mean about age in Singapore?



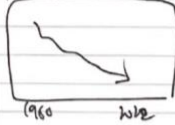
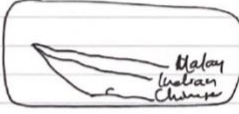
age distribution of population in Singapore

\* insert death rates here!

fertility rate → show decreasing no. of babies, fertility rate

1960: 5.76 / female → 2022: 1.05 / female


view by race

death rate

use crude death rate → measure of no. of deaths scaled to size of the population.

show that crude death rate is quite constant.



Make an evaluative statement abt how death rate shows fertility lowered.

Yet increasing population

→ marriage data → prebirth

Now that we've looked at the population, let's explore the physical spatial aspects of SSG.

land area? housing in SSG

up at map. ↑ in HDBs, not by race? scatter plot?

## Concepts & Challenges

encountered while making the data story; documentation of coding

Week/Topic	Utilisation of Concepts	Directory
2/ Paths, HTML, CSS	<b>Relative paths with confidence</b>  <b>HTML and CSS elements</b> Used CSS styling to create the general look of my page.  Created buttons for users to toggle intuitively.  Used <div> tag to separate content and organize it.  Used <li> tag to create a list for my navigation bar.  Used <img src> to embed images and charts into my page.  Used different <h1> and <h2> tags to organize the header titles on my page.  There were underlines on my nav bar menu items as they were links. Therefore, used CSS and changed text-decoration to "none" so that it would not appear to have been clicked before.  Created classes for different components on my page and gave them special attributes in CSS. For e.g., mouse hover on the navigation bar will make words pop bigger	(../css/appstyle.css)  (index.html:50) (see index.html)  (index.html:22) (index.html:38,54)  (see index.html)  (appstyle.css: (appstyle.css:68,83)
3/ JS	Variables Created variables for my functions.  Conditionals Created a nav bar but found it hard to access it as I had to scroll all the way up/down to click on it. Therefore, used JS functions to make a sticky navigation bar, with the 'if...else...' statement.	(main.js:5)  (main.js:12)
4/ JS	Functions Created a function to change the graph shown when button is clicked.  Objects  DOM Used DOM, and "getElementById", to attribute to a specific button, and event listeners to change the graph shown when button is clicked  Debugging through outputs  Commenting Code	(main.js:21-41)
5/ JS	Model View Controller  Coding colour	

	Global variables Event Listener Added event listeners to my buttons	(main.js:21-41)
6/ JS	Arrays and Lists  For Loop  While Loop  Accessing objects (and properties) within loops	
7/ Charts	Chart.js  Will use chart.js to add line plots and bar charts	
8/ Charts	Data visualisation	