FIT3179 Data Visualisation Assignment 1 Report

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Word Counting: 1656 words

1. The public URL to your visualisation

   https://public.tableau.com/app/profile/june.jin/viz/FIT3179DataVisualizationAssignment1/Dashboard12?publish=yes

   The **domain,** the **why** and the **who** of the visualisation.

   ① Domain

   The chosen domain of my visualization is "Growth of Malaysia's GDP and Increase in Life Expectancy."

   ② Why?

   The study of this domain can help us understand the relationship between economic growth and public health in Malaysia. By examining how Malaysia's GDP growth correlates with changes in life expectancy, we can gain insights into how economic improvements may influence the well-being and longevity of the population. This analysis can also highlight the effectiveness of government policies and investments in healthcare and other social sectors, which contribute to both economic and health outcomes.

   ③ Who?

   From the domain mentioned, the study focuses on Malaysia's GDP and life expectancy. The exploration of the behavior and preferences related to economic growth and health outcomes is easily understandable for viewers from diverse academic backgrounds. Most viewers of the visualization will find the domain and the analyzed attributes interesting as they provide insights into how economic factors influence public health. The target audience includes anyone interested in understanding the relationship between a country's economic development and its population's well-being, professionals involved in healthcare policy, and individuals interested in national economic growth.

1. Malaysia GDP per Capita

[World Bank - GDP per Capita]

(https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=MY&start=2005)

2. Average Life Expectancy in Malaysia / Life Expectancy by Gender

[Statista - Life Expectancy at Birth by Gender]

(https://www.statista.com/statistics/970902/life-expectancy-at-birth-in-malaysia-by-gender/)

3. Population Changes in Malaysia by Age Group

[Macrotrends - Population by Age Group]

(https://www.macrotrends.net/global-metrics/countries/MYS/malaysia/population)

4. Population Changes in Malaysia by Religion

[Macrotrends - Population by Religion]

(https://www.macrotrends.net/global-metrics/countries/MYS/malaysia/population)

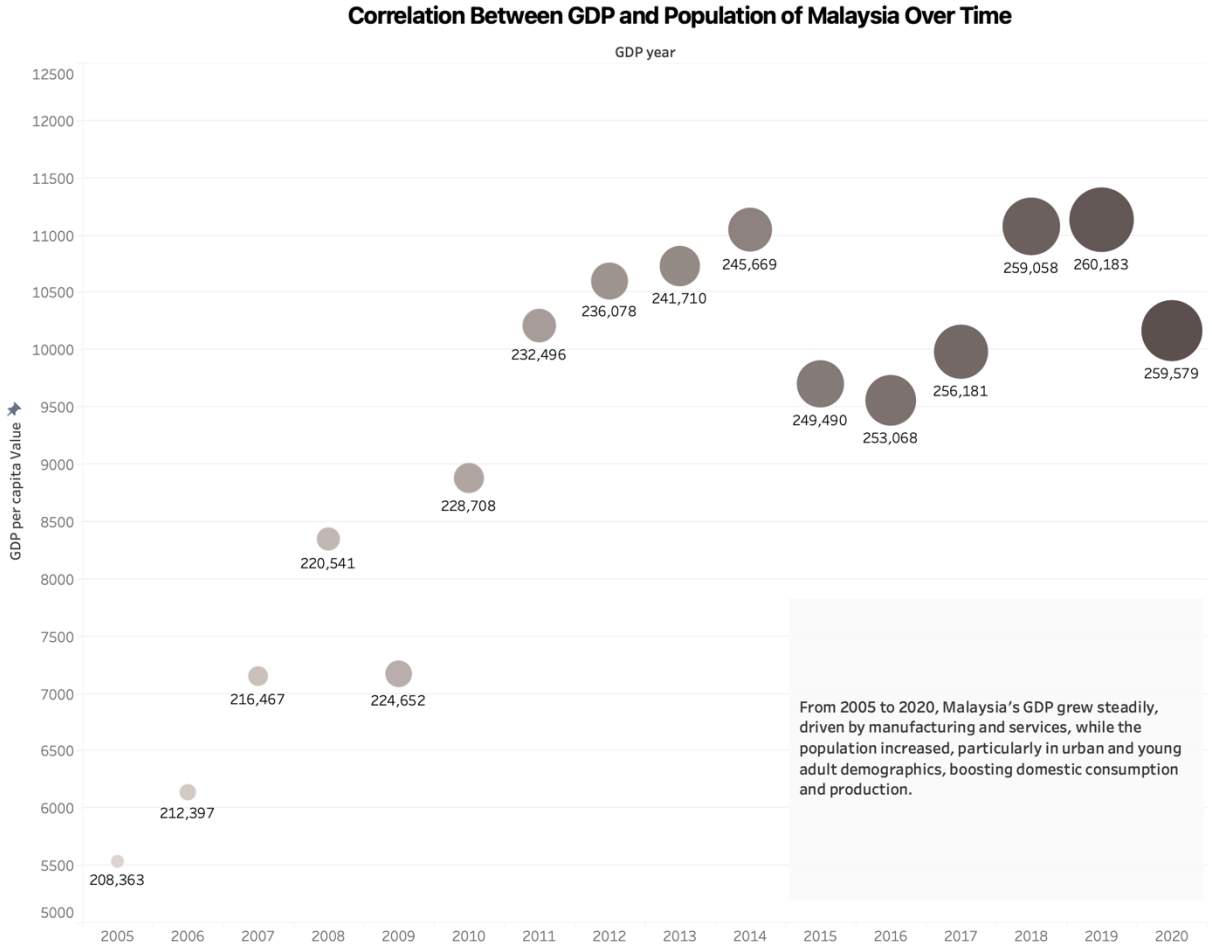
5. Types and Number of Healthcare Workers in Malaysia

[Data.gov.my - Number of Registered Healthcare Workers]

(https://archive.data.gov.my/data/dataset/number-of-registered-doctors-dentists-nurses-assistant-nurses-and-community-nurses-malaysia)

IDIOMS: What, Why and How

1. Correlation between GDP per Capita and Population in Malaysia



What

A Bubble Chart is used to visualize the relationship between GDP per capita and population over time. It shows the GDP in shades of color that get darker as time progresses, and the population is represented by the size of the bubbles.

Dataset type: Table

Data attribute type:

Quantitative: GDP per capita, Population

Qualitative: Year

Why

Actions: A bubble chart is used to help visualize the relationship between GDP per capita and population growth over time.

Targets: The idiom of this chart helps us identify trends and patterns by visualizing the data, allowing target viewers, such as economists, policymakers, and researchers, to understand how economic growth is related to population changes.

This bubble plot is created for viewers who are interested in the context of economic development and demographic trends, providing a clear visual representation of how these two factors are interconnected.

How

Mark

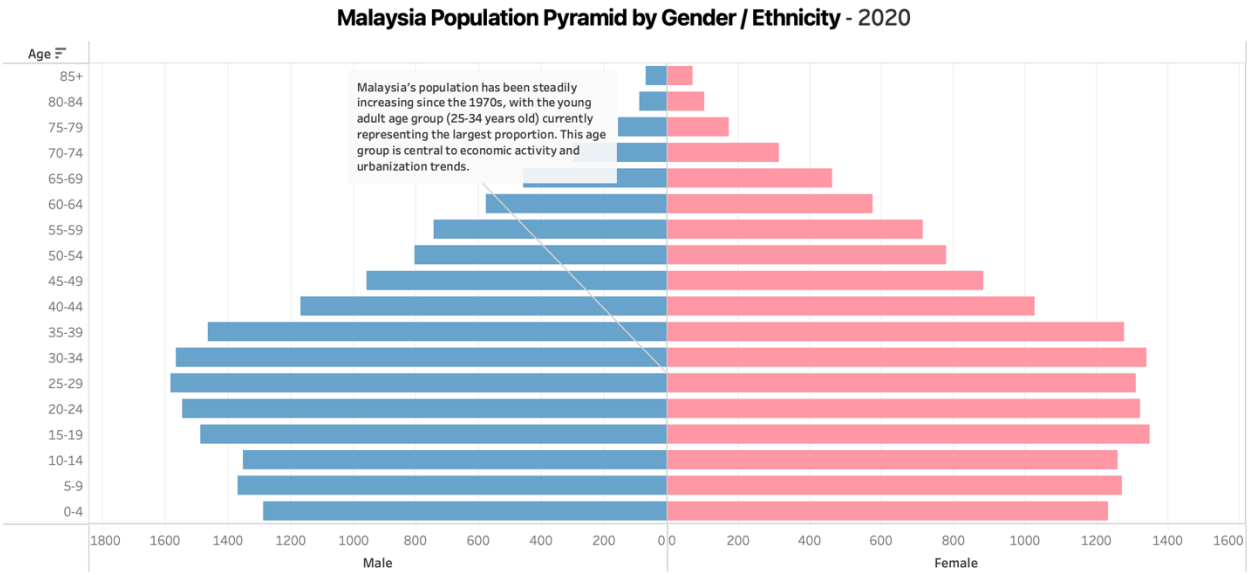
- Point(Bubble)

Channel

- Size : to vary the population size

- Color : to represent GDP per capita

2. Malaysia Population Pyramid by Gender / Ethnicity



What

A Population Pyramid bar graph is used to visualize the age distribution of Malaysia's population by gender and ethnicity.

It shows different genders with different colors and distinct bars, allowing for a clear comparison of age distribution across genders and ethnic groups.

Dataset type : Table

Data attribute type

Quantitative: Age Groups, Population Counts

Qualitative: Gender, Ethnicity

Why

Actions

Analyse the demographic structure of Malaysia's population to understand age distribution and compare it across genders and ethnicities.

Targets

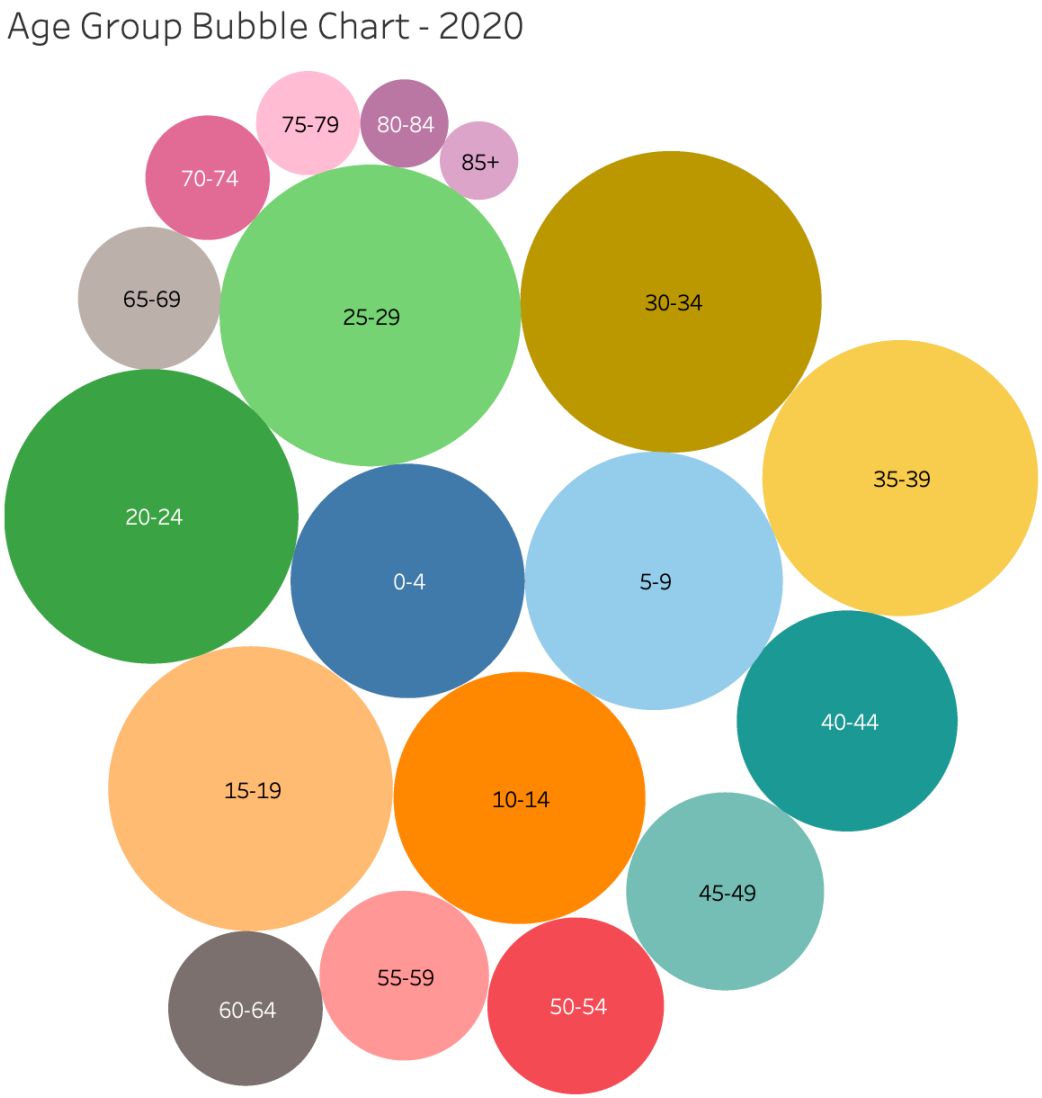
Distribution: Evaluate how different age groups are represented within each gender and ethnicity.

HowMark: Bar

Channel

Color: Gender

3. Age Range of Malaysia Population



What

A packed bubble plot is used to visualize the population in Malaysia. This plot shows the different age groups using color, and the quantity of each age group is represented through the variation in the size of the circles.

Dataset type: Table

Data attribute type:

Quantitative: Population size for each age group

Qualitative: Age group categories

Why

Actions

Analyze: The packed bubble plot is used to analyze the distribution of Malaysia's population across different age groups.

Targets

Distribution: The packed bubble plot targets viewers who are interested in the distribution of the population across various age groups, allowing them to quickly grasp which age groups are more predominant and how the population is spread out among them.

How

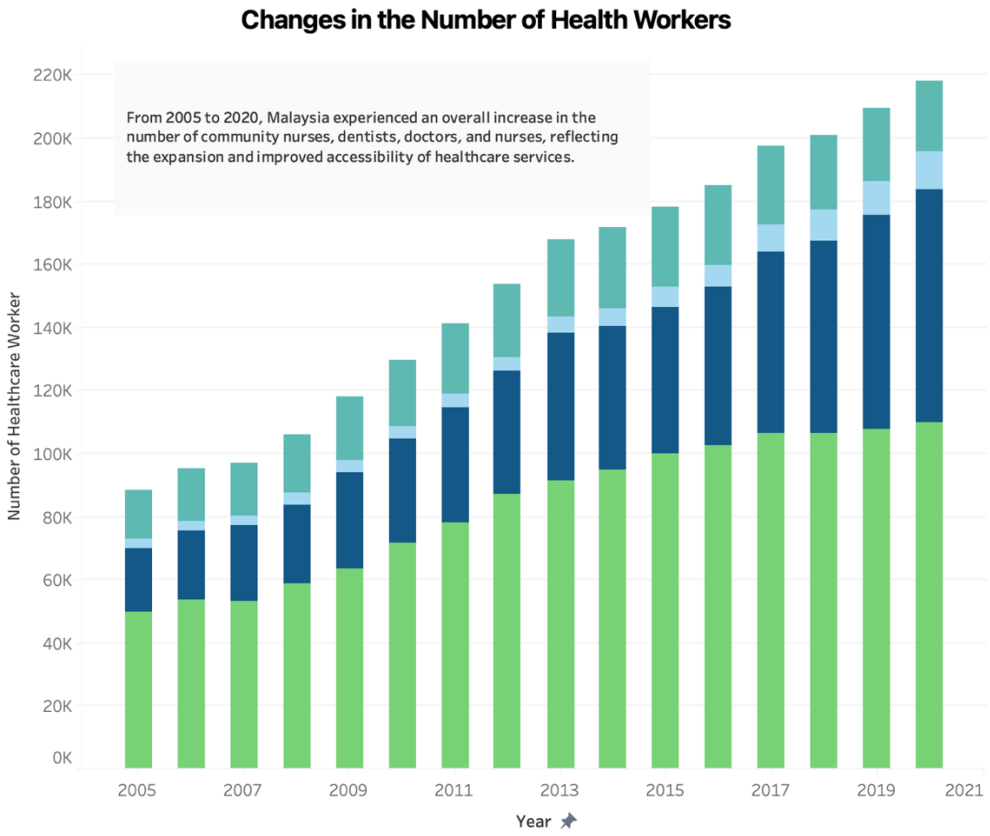
Mark: Point

Channel

Size: The size of each bubble represents the population size of the corresponding age group, with larger bubbles indicating larger populations.

Color: Different colors are used to differentiate between age groups, making it easier to identify and compare the demographic segments.

4. Changes in the Number of Health Workers - Stacked Bar Chart



What

Stacked bar chart is used as an idiom here to visualise the number of healthcare workers in malaysia as time goes.

This idiom would help bring relevance on what kind of job increases > indirectly reflect to life expectancy

Dataset type: Table

Data attribute type

- Quantitative: The number of Healthcare workers.

- Qualitative: Healthcare sectors : Nurse, Dentist, Community nurse, Doctor. Year

Why

Action

Analyse: to analyze the distribution of healthcare workers across different job sectors in Malaysia.

Task: To illustrate the part-to-whole relationship by comparing the number of workers in various job sectors. It helps the target audience understand the relative size and importance of each sector. Target audience can identify which job sector might be of greater focus for contribute in Life Expectancy.

How

Mark

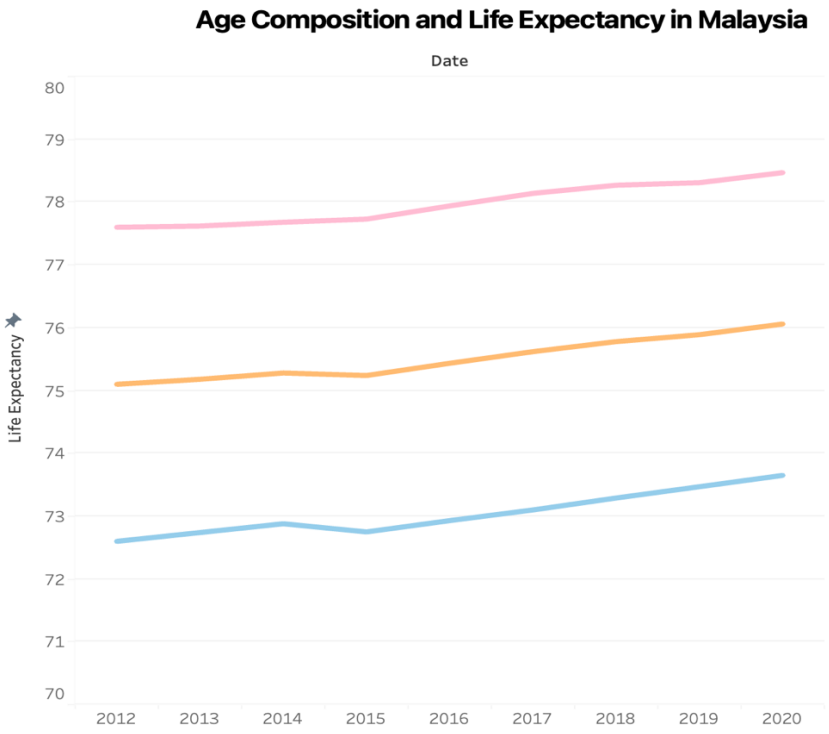
Stacked bar chart with stacked segments representing different job sectors to express the number of healthcare workers.

Channel

length: Used to show the quantity of healthcare workers in each sector.

Color hue: Differentiates between various healthcare jobs

5. Age Composition and Life Expectancy in Malaysia - Line Graph



What

Line Graph is used to visualize life expectancy by gender in Malaysia over time.

It shows different genders with different colors for life expectancy vary by gender.

Dataset type

Quantitative: Life Expectancy

Qualitative: Gender, Year

Why

Actions

Analyze: Analyze life expectancy trend to understand demographic shifts and health outcomes over time.

Targets

Distribution: Evaluate life expectancy change over different years.

How

Mark: Line

Channel

- Color with different gender to distinguish between different genders and average of both gender.

Design

Layout

The layout of my visualization represents the economic growth and increase in life expectancy in Malaysia. This layout is designed to make it easy for users to read and understand the data. Generally, the visualization consists of easy-to-read graphs, including a bubble chart, a line graph, a population pyramid chart, and a stacked bar chart. I did not include overly complex visual elements because I felt they were unnecessary for my data and could potentially make it more difficult for viewers to understand. Therefore, I aim to prevent information overload. I placed the most important graphs, such as the flow of economic growth and overall population growth, at the top so that viewers encounter these key graphs first. Additionally, as you move further down, the more detailed graphs (such as age group composition, life expectancy by gender, and the number of healthcare workers) are included to support the top graphs, enhancing the overall understanding for the reader.

Colour

For the bubble chart at the top, I intentionally chose a color scheme that gradually deepens over time, becoming darker gray as it approaches the present. This is to convey not just an increase in bubble size, but also a growth in intensity through color. In the population pyramid chart, I used blue for males and pink for females to represent gender, and the same colors are applied to the line graph that shows life expectancy. These gender-specific colors are color-blind friendly, and this intent is also carried over to the stacked bar chart (using color-blind accessible colors). This ensures that observers with visual impairments can easily distinguish between the color ratios. Lastly, for the bubble chart representing age groups, I used a wide range of colors because there are a total of 18 different age groups. Overall, I aimed to use colors only where necessary, thereby increasing the data-ink ratio.

Figure-ground

My overall visualization has a white background, so I used black text to contrast sharply against it. Additionally, when selecting healthcare worker professions or gender, I added a gray background to make it clear to viewers that these are buttons. The colors used in the graphs are designed to contrast well with the white background, ensuring clarity and readability.

Typography

The title of the visualization uses the Times New Roman MT font with the bold function applied. This font has clearly defined letter shapes, ensuring readability without causing any issues for the viewer.

For the general descriptions throughout the visualization, the Tableau Book font is used. This font is like a sans-serif typeface, enhancing readability for the audience. It helps prevent eye strain, even when reading long passages of text.

Overall, bold text is used for major titles in the visualization and the titles of each graph, allowing viewers to quickly understand the purpose of each graph before diving into the details. Important parts of the textual explanations are highlighted in different colors to make it easier for readers to identify the key points among the various pieces of information presented in the graphs.

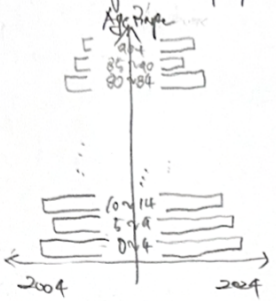
Storytelling

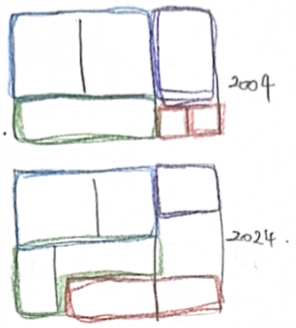
This visualization is designed with the goal of a Comic Strip Layout, as planned in my 5DS. The overall layout uses area annotations alongside the graphs to explain important information related to each graph. After the top graph, the layout splits into two side-by-side graphs. These graphs are filled with related information, allowing the reader to understand the content without confusion, regardless of the order in which they view the graphs. This ensures a smooth flow of information without any issues of sequence. Additionally, I intend to include the year on the Page shelf so that the population pyramid changes over time like an animation. This will also be incorporated into the Age Bubble Chart, allowing readers to see how the size of the bubbles changes by year.

BRAINSTORM.

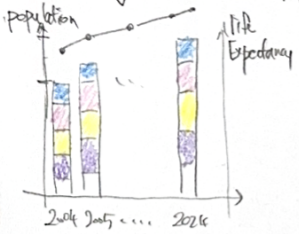
IDEAS

1. A Change in population density over time in Malaysia



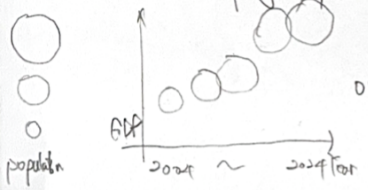


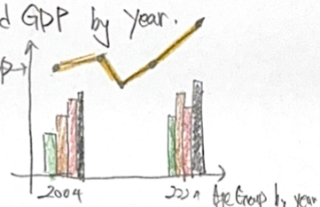
2. Change in overall population and life expectancy.



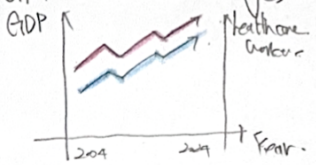
or. Separate Graphs.

3. Chart for comparing Population and GDP by year.

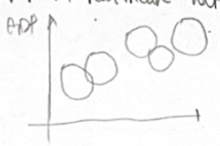




4. GDP Growth and changes in the number of healthcare workers.



or.



5. Malaysia Government expenditure on healthcare and life expectancy.

Or.

COMBINE and REFINE

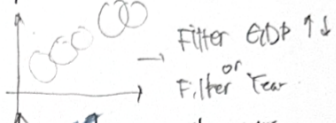
population
+
Age, Expense Scatter Plot

FILTER.

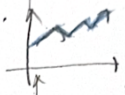
1.

2.

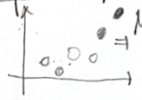
3.



4.



5.



CATEGORIZE.

Age range density by year

⇓

Overall population and life expectancy

⇓

Compare population and GDP Growth by year

⇓

Review GDP Growth with the number of healthcare workers

⇓

Government expenditure on health care and life expectancy

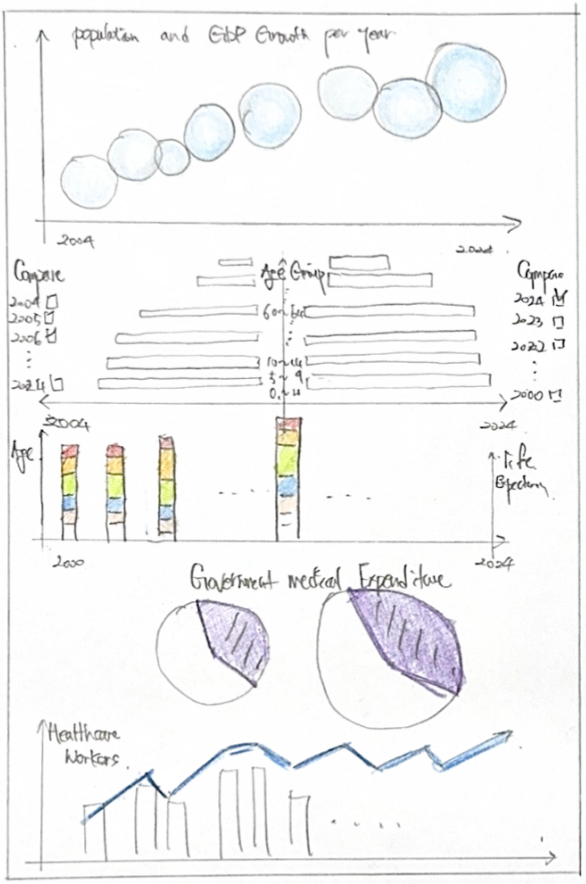
Question

- Can the correlation between GDP growth and the number of healthcare workers be effectively conveyed when visualized in the same graph?

- Can the visualization convey the data's complexity without oversimplifying it, while still making it easy to understand?

LAYOUT.

Dashboard View.



Title: Multi-face view of GDP Growth and its impact on Life Expectancy in Malaysia.

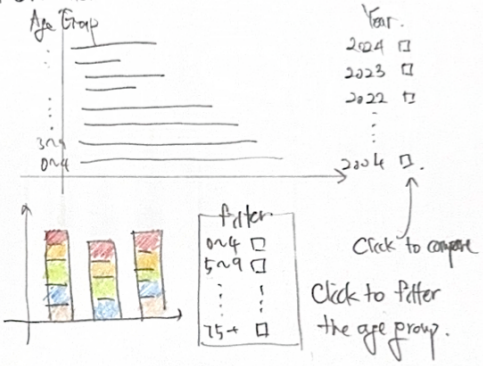
Author: June Jin

DATE: 12/08/2024

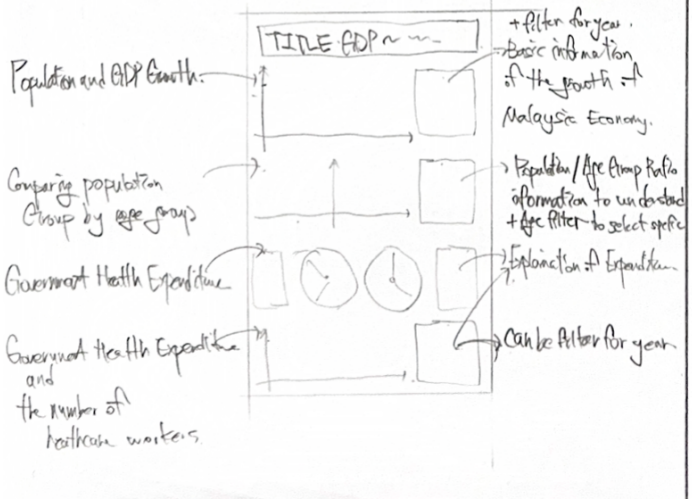
SHEET: 2

Task: Malaysian expected life age by GDP Growth

OPERATION



FOCUS.



DISCUSSION.

+ top to the bottom scroll guide viewer eyes.

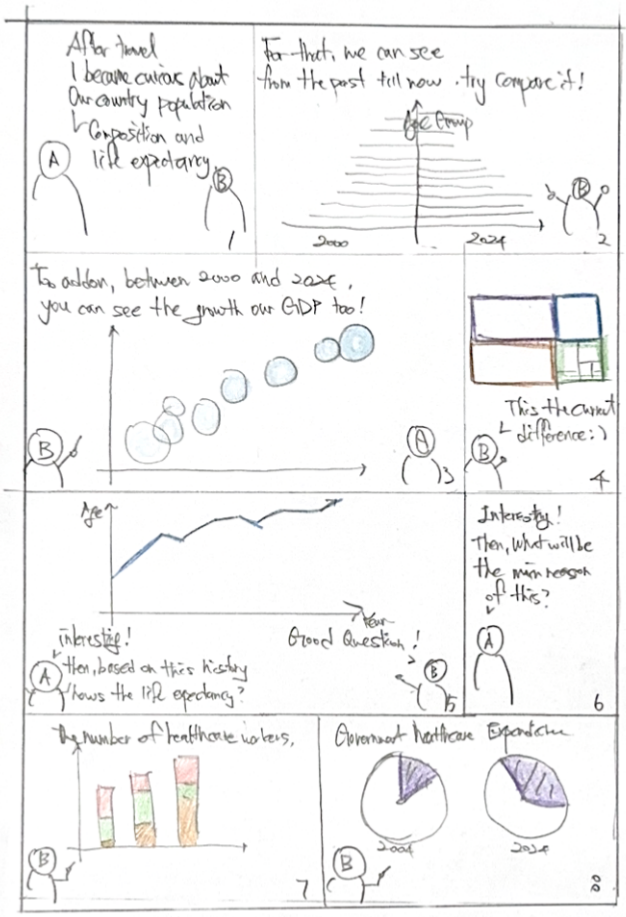
+ Make it simple to understand for viewer.

- Not interactive enough for some attributes. I assume need more research.

- Need short description for explain data.

LAYOUT.

Comic Strip Layout



Title : Multi-face view of GDP Growth and its impact on Life Expectancy in Malaysia

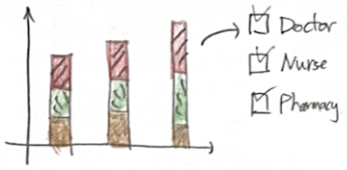
Author : Jure Jin

Date : 13/08/2024

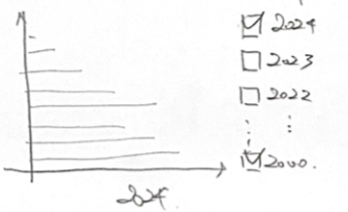
Sheet : 3.

Task: Malaysian expected life age by GDP Growth

OPERATION.



- Click specific data visualization jobs/sectors. will lead to different sum up calculation

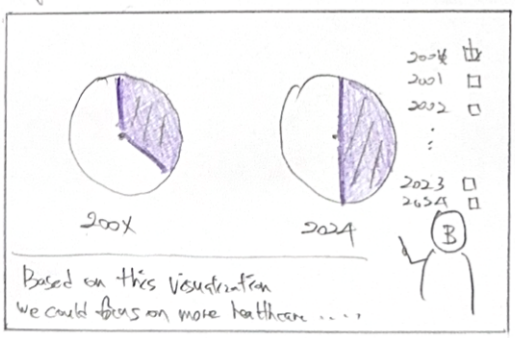


- Click the year that user want to compare the information of age group between the other years.

FOCUS.

Focus on the reply of question, base on the visualization

Example Image



DISCUSSION

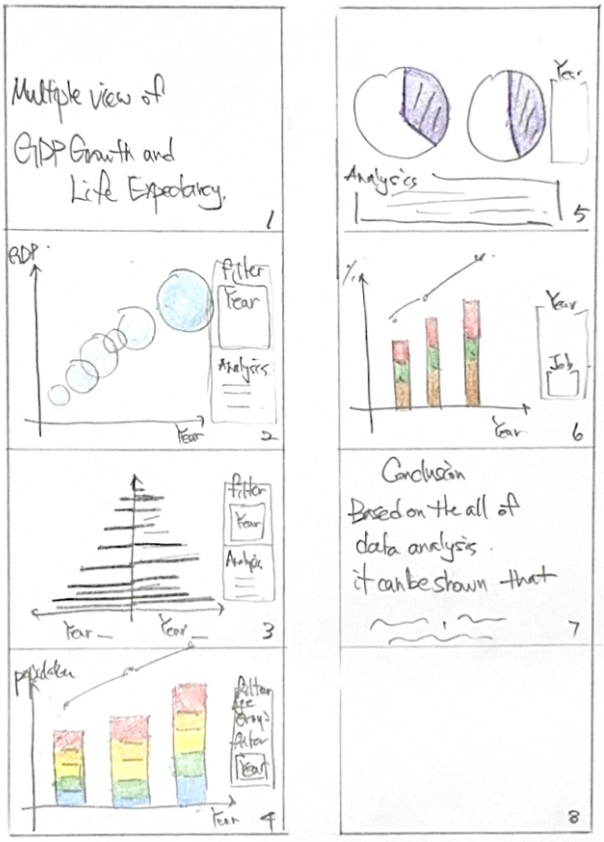
+ Make it interesting with good story.
+ Easy to understand with communication between person A and B (friends) by analysing the Data / Graph

- Looks a bit packed if the screen is small size.
- Too much compact filtering.

LAYOUT.

SIMPLE Narrative visualization

↳ kind of powerpoint / Canva Slide can scroll down.



Title: Multiline view of GDP Growth and its impact on Life Expectancy in Malaysia

Author: Jure Jin

Date: 13/08/2024

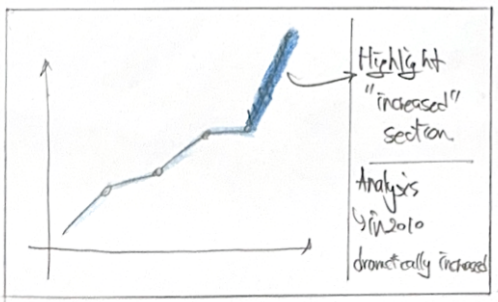
Sheet: 4

Task: Malaysian expected life age by GDP Growth

OPERATION

FOCUS

Focus analysis, highlight the important data



DISCUSSION

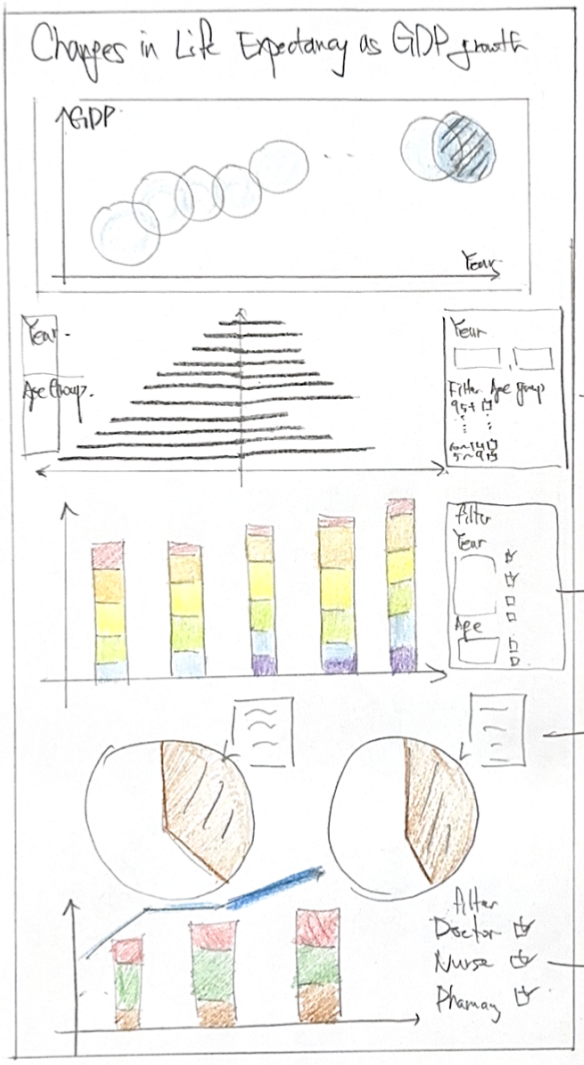
+ Good slideflow of Reading

+ Clear section.

- Too general?

- If sentence is too long.
it will be bored to read all.

LAYOUT.



Title: Final Design Sheet

Author: Jure Jin

Date: 15/08/2024

Shut: 5

Task: Final Implement Design

OPERATION.

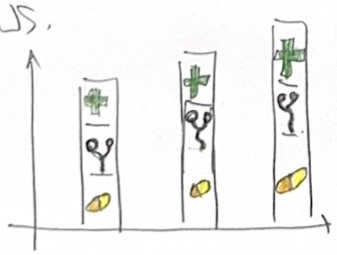
→ filter the comparing year
filter the Age group.

filter the comparing year.
→ filter the Age group

→ Explanation of important things to notice by comparing the year.

filter the year
→ filter the Job (Doctor / Nurse / Pharmacy And so on..).

FOCUS.



We can include the icon / symbol of the each job for better identification.

DETAIL

1. CSV data file and tableau data should be sufficient
2. Adding a few icon / image would help reader for better understanding
3. More dynamic Design.
4. Estimated time builds : 1.5 weeks.