IDEAS

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SHEET 1

## Healthcare Resource Distribution and Population by State

Population by state
- age
- gender
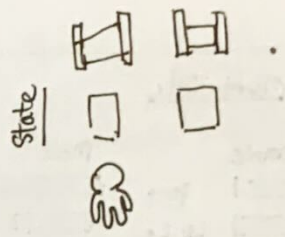- collected date
- ethnicity
- population
- state

Utilities by state
- number of non-icu bed
- number of icu bed
- number of ventilator
- Non-ICU bed utilisation percentage
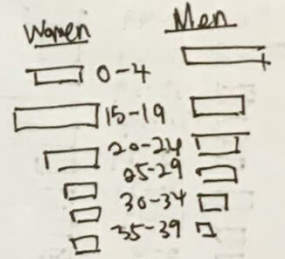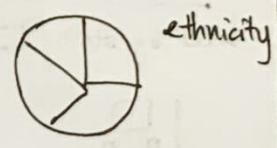- ICU-bed utilisation percentage
- Hospital list by state

③ Bin Maps
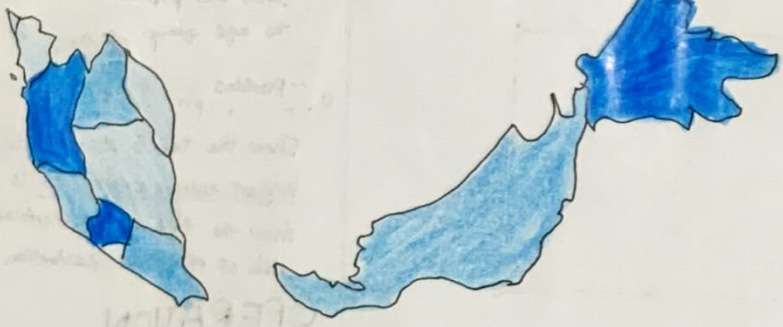

Isotype Dot Plot

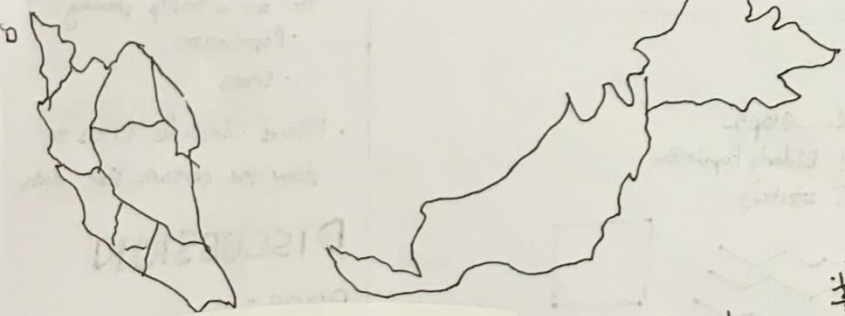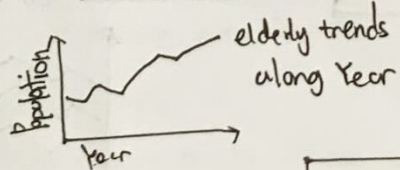## Map

① Choropleth

· utilisation
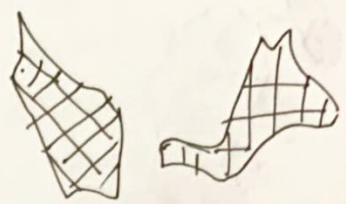
② Proportional Symbol Map

- num of non-icu bed
- num of icu keel
- num of ventilator
- population
- num of hospital

Diverging bar chart

Women		Men
	0-4	
	15-19	
	20-24	
	05-29	
	30-34	
	35-39	

Line chart

eldely trends along Year

Pie chart by state

ethnicity

Grouped bar chart
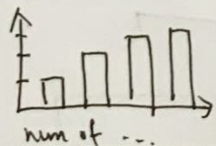
num of ...

CATEGORIZE

- Proportional Symbol Map with num of non-icu bed, icu bed, ventilator, hospital is same as grouped bar chart or Isotype Dot Plot
- Grouped bar chart is same with Isotype Dot Plot
- For the chart needs to show in different categories
  - the states are too many :13
    - focus on elderly group population

COMBINE & REFINE

- Show the top 5 states which have highest elderly population for grouped bar chart or Isotype dot plot
- Remove dot of num of... from Proportional Symbol Map

FILTER

- Bin maps might not suitable as the data didn't provide district
- Too crowded to show too much information in Proportional Symbol Map
  - Separate the diagram
  - Zoom in certain area (Putrajaya)

QUESTION

1. Does the idea help readers to understand the relationships between population and healthcare resource.

2. Does the map indicate the data with meaningful insight without misleading?

LAYOUT

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Title
_____

Descprictiun

Year ●————●

Population

○ ·-- ·-·
● xxx — xxx
● xxxx — xxx

Description

Chart Title
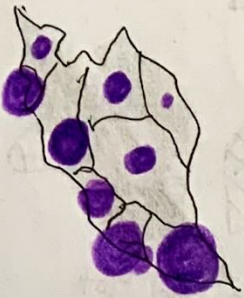
Chart Title

Year : ⊙————
Select by State ▽————

Description

Female	Male
70+
65-69
60-64
55-59
50-54
45-49
40-44
35-39
30-34
25-29
20-24
15-19
0-4
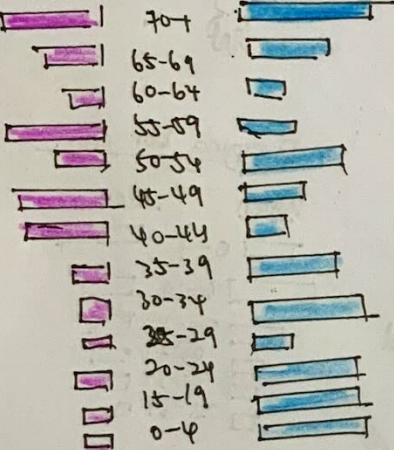
Isotype dot plot

Select by state ▭————
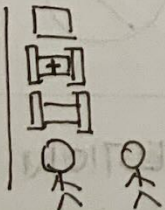
Description

Line graph
Highest Elderly Population (5 states)
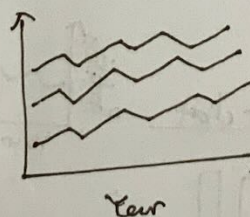
Year

Description

FOCUS :

1. Proportional Symbol Map
   - Show the population of different states along with year

2. Diverging Bar Chart
   - Show the population of different age categories according by the states

3. Isotype dot plot .
   - Show the number of related devices by state with symbol to have a overview of the number of devices

4. Line graph
   Show the top 5 states with highest elderly population To show the trends of potential risk of resources distribution

OPERATION

- Interaction: Hover over a state tou see a tooltip sharing :
   - Population
   - State

- Filters : Includes filters to show the certain Year data
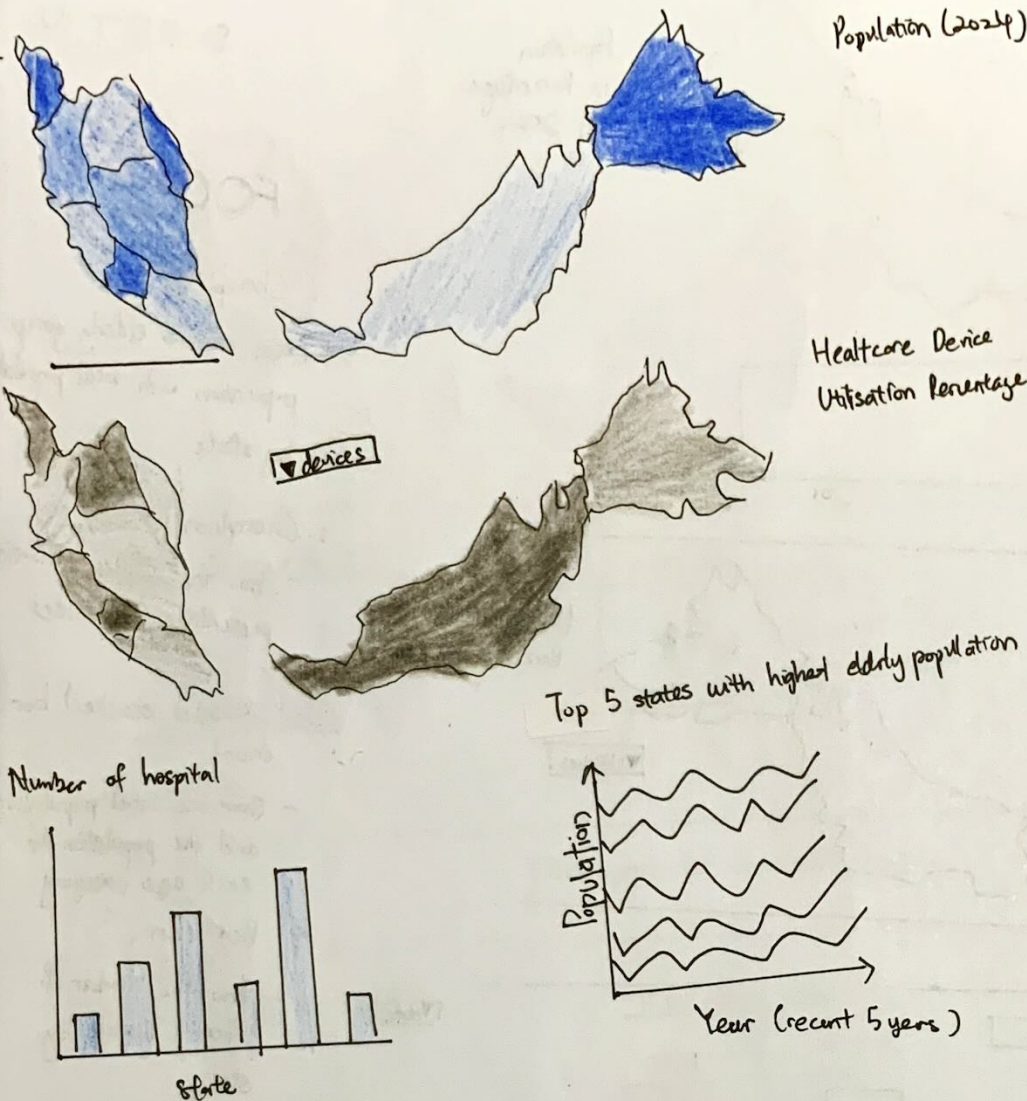
DISCUSSION

PROS :

- Targeted insights : Highlists the age population and the number of devices.

- Provides year filter to have specific year data

CONS :

- Not too much information about the healthcare resource, the data are too focus on population

- Line graph might double encode the age categories information with diverging bar chart

LAYOUT

Population (2024)

Healtcare Device
Utilisation Percentage

▼devices

Number of hospital

State

Top 5 states with highest elderly population

Population

Year (recent 5 years)

FOCUS:

To show the elderly population
and the healthcare resources

1. Proportional Symbol Map
   - Show the population of
   current year as the
   utilisation data is real
   time data

2. Choropleth percentage
   - To show the ulication of
   different healthcare devices by
   states

3. Bar Chart
   - To show the number of hospital
   by state

4. Line Chart
   - To show the trends of elderly
   population along with time

OPERATION

- Interaction: For maps, hover a state too see tooltips:
  - Proportional Symbol Map: - Population
    - State
  - Chroropleth: - Percentage of the devices
    - State
- Filters: For choropleth
  - To select certain devices utilisation
  percentage
- Colour-blind friendly

DISCUSSION

PROS:
- Show adequate amount of charts from population and
  healthcare resource data

- Targeted insights:
  - Highlights the elderly population and the resources of the
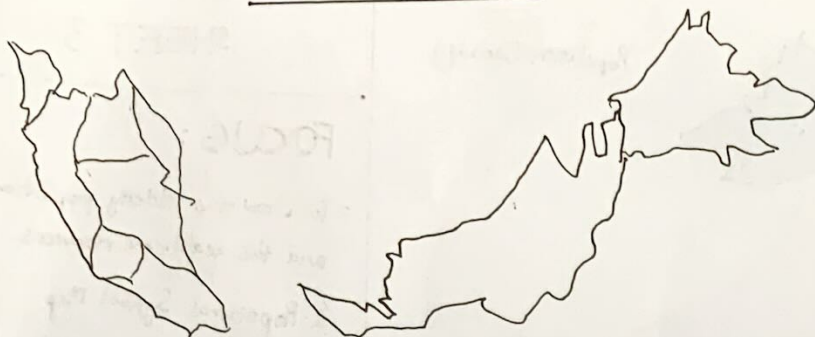 healthcare devices.

CONS:
- No text description and title lead to misunderstanding
  or doubt about the chart
- Bar chart might be too crowded as there is 13 states.
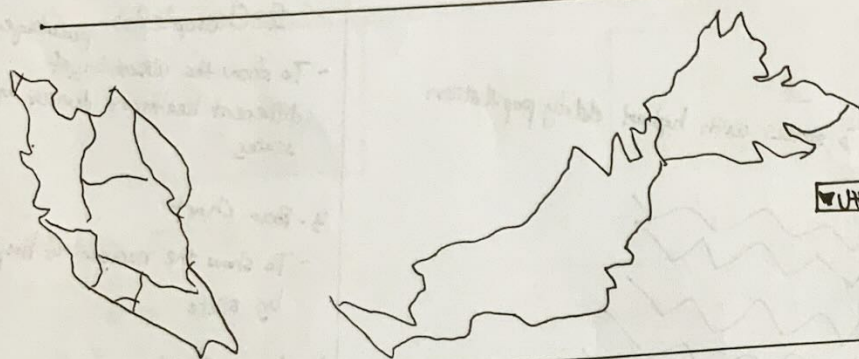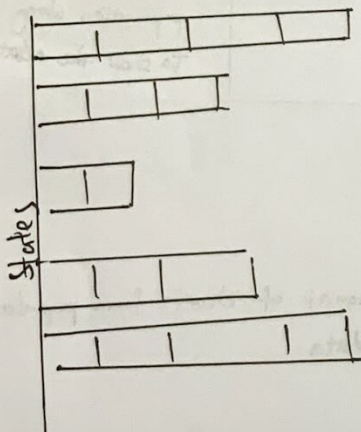
LAYOUT

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SHEET 4

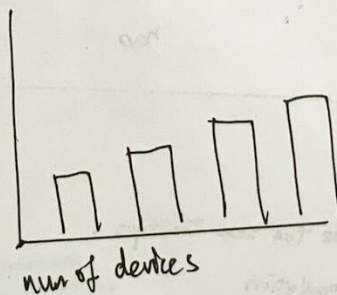Population in Percentage of 2024

Description

Utilization in Percentage

▼ Utilities

▼ State

states

num of devices

Sum of population of each age group

Description

Description

FOCUS

1. Choropleth
- focus on the elderly group population with total population by state

2. Choropleth
- Show the utilities utilisation percentage by states

3. Horizontal stacked bar chart
- show the total population and the population of each age category

4. Bar chart
- show the number of different devices by states

OPERATION

- Highlight the highest and lowest number in bar chart.
- Interation : Tooltips
  1. Choropleth
     : States
     : Percentage
  2. Choropleth
     : Sates
     : Percentage
- Filters : Includes filters to show the states

DISCUSSION

PROS :
- Easy to implement and straightforward
- Simple and easy to observe
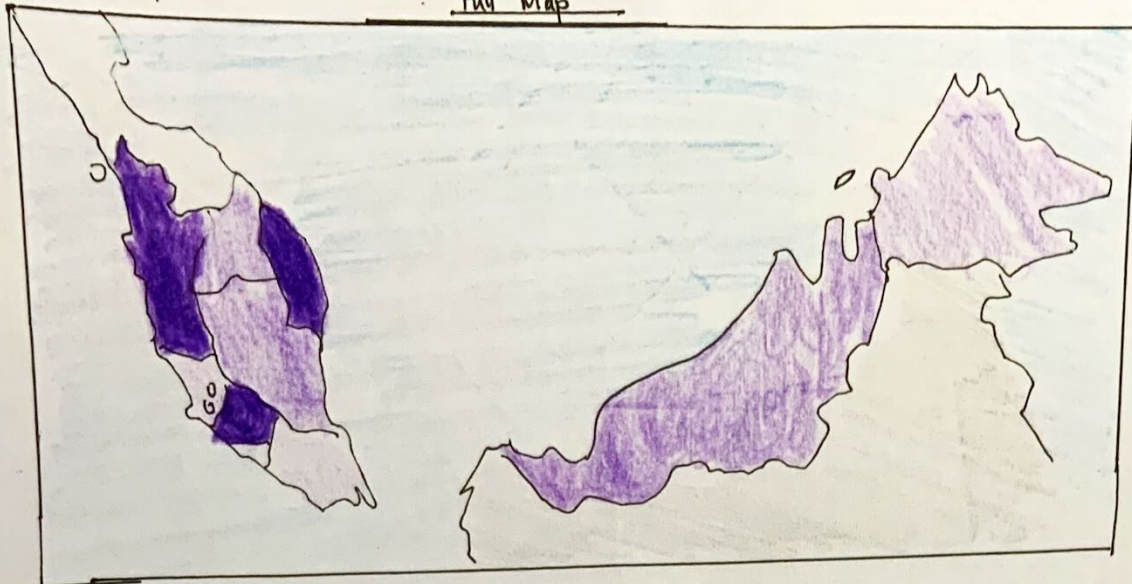- Show adequate amount of graph from different dataset

CONS:
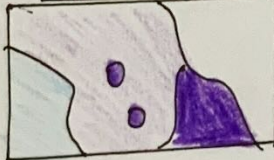- Oversimplified the data for choropleth of Population for elderly only

LAYOUT

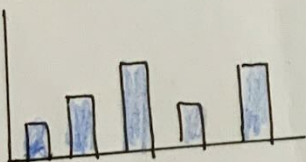## DEVICES UTILISATION IN MALAYSIA
Full Map

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SHEET 5

Utilisation (%)

100
75
50
25

Zoom Selangor & KL

Labuan

Device [▾]

x x x x
x x x x x x

⌐ Description for choropleth map

NUMBER of HOSPITAL BY STATE

POPULATION PYRAMID

Age
0-4
5-9
10-14
15-19
20-24

Female   Male

Year:
2004 — 2024

State: [▾]

TOP 5 STATES HIGHEST PERCENTAGE OF ELDERLY

FOCUS

- Provide a comprehensive of overall healthcare & devices utilisation and the population by states.

- Allow readers to select specific states, devices or year to explore their the growth of elderly or the utilisation of healthcare device.

OPERATION

- Interaction:
  - Hover on the choropleth map : tooltips
  - Hover on the bar chart : tooltips
  - Hover on the population pyramid : tooltips
  - Hover on the donut chart : tooltips

- Tooltips: Show the detailed maps information or other information

- Filters:
  - Device: Dropdown to select different devices to show their utilisation on map.
  - State: Dropdown to select different state to show the population data
  - Year: A slider to select the year from 2004 to 2024.

- Color scheme:
  - Consistent colour across all charts.
  - Color blind friendly:

DETAILS

- Vega-lite, HTML, CSS

- Data
  └ geographic : topojson
  └ Data from KKMNOW

- The data to show ocean or other lands to show where is the malaysia.

- Vertical – scrollable