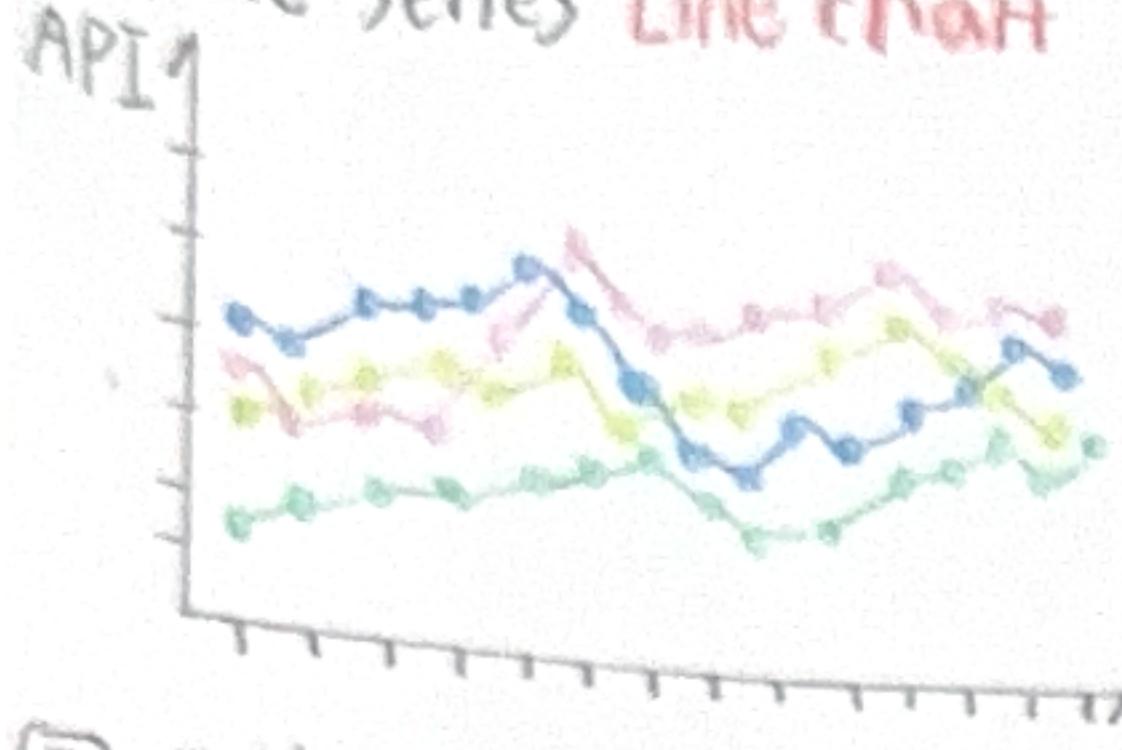


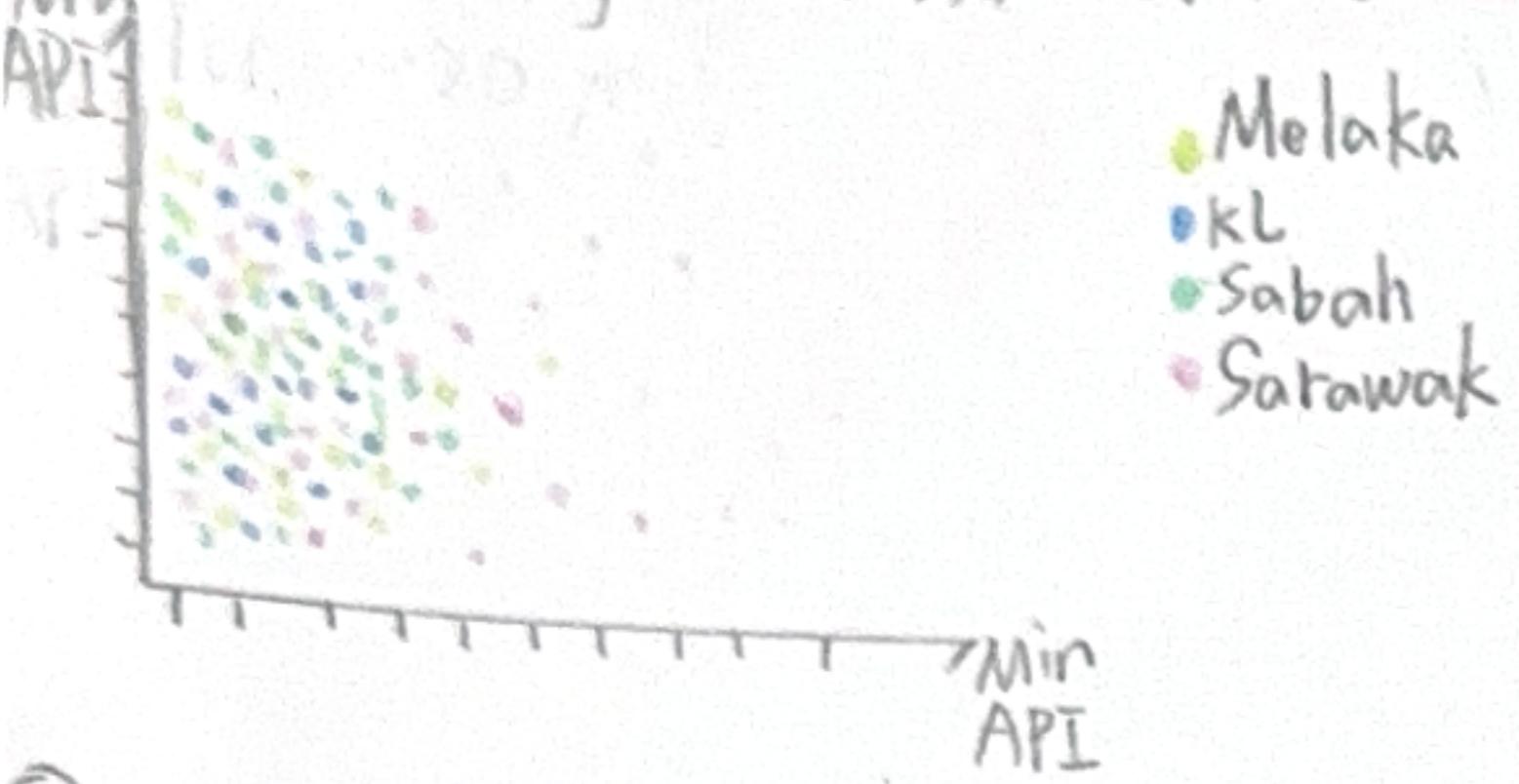
# E:DAB

## 1. Air Pollution Index Analysis

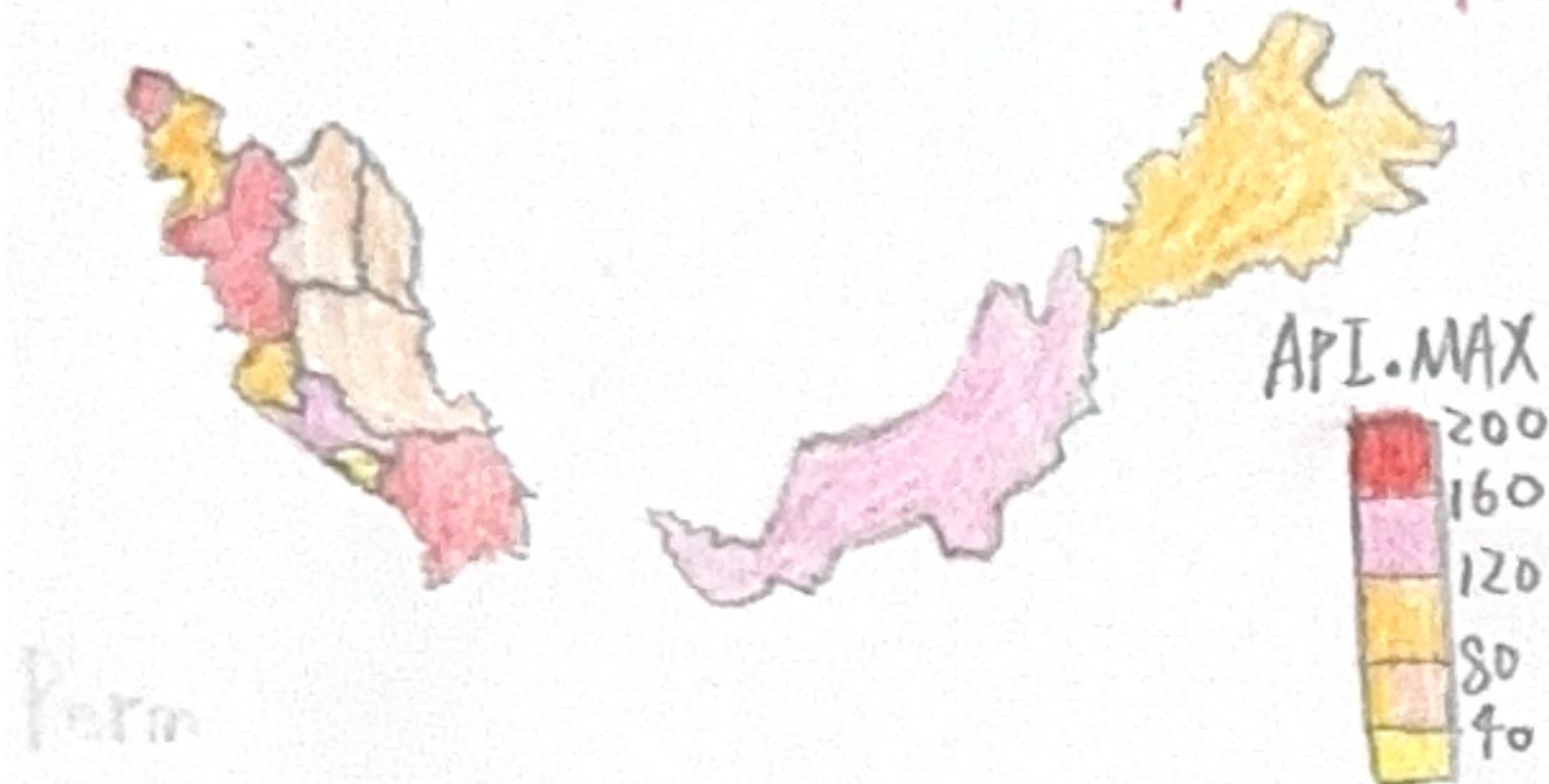
### ① Time Series Line chart



### ② Pollution against max/min values scatterplot



### ③ Air pollution distribution Choropleth Map

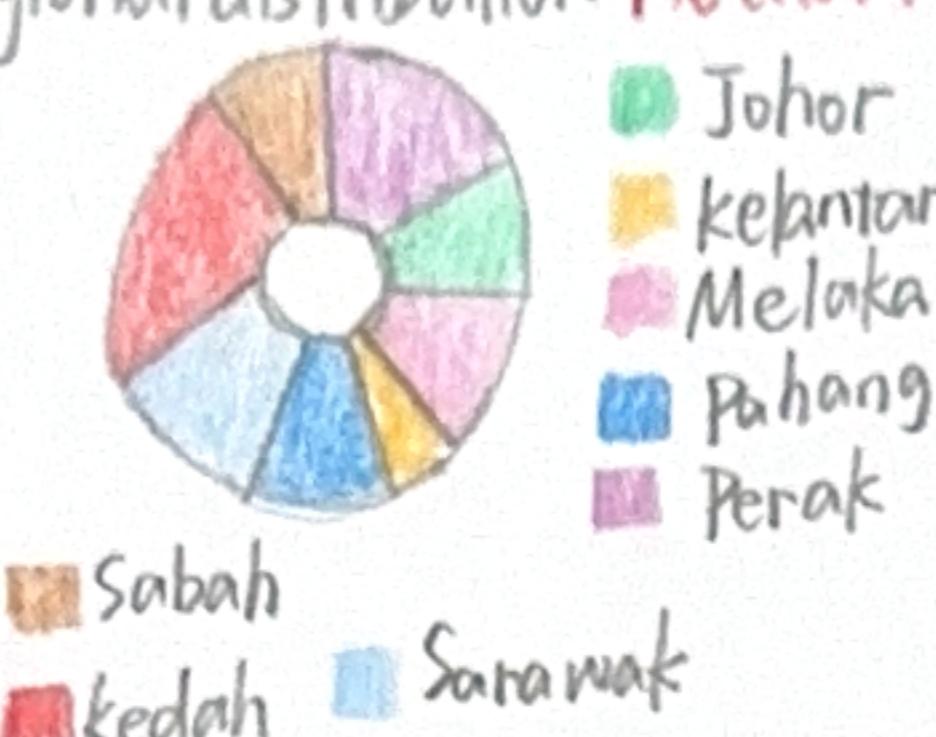


## 2. Permanent Forest Reserve Percentage

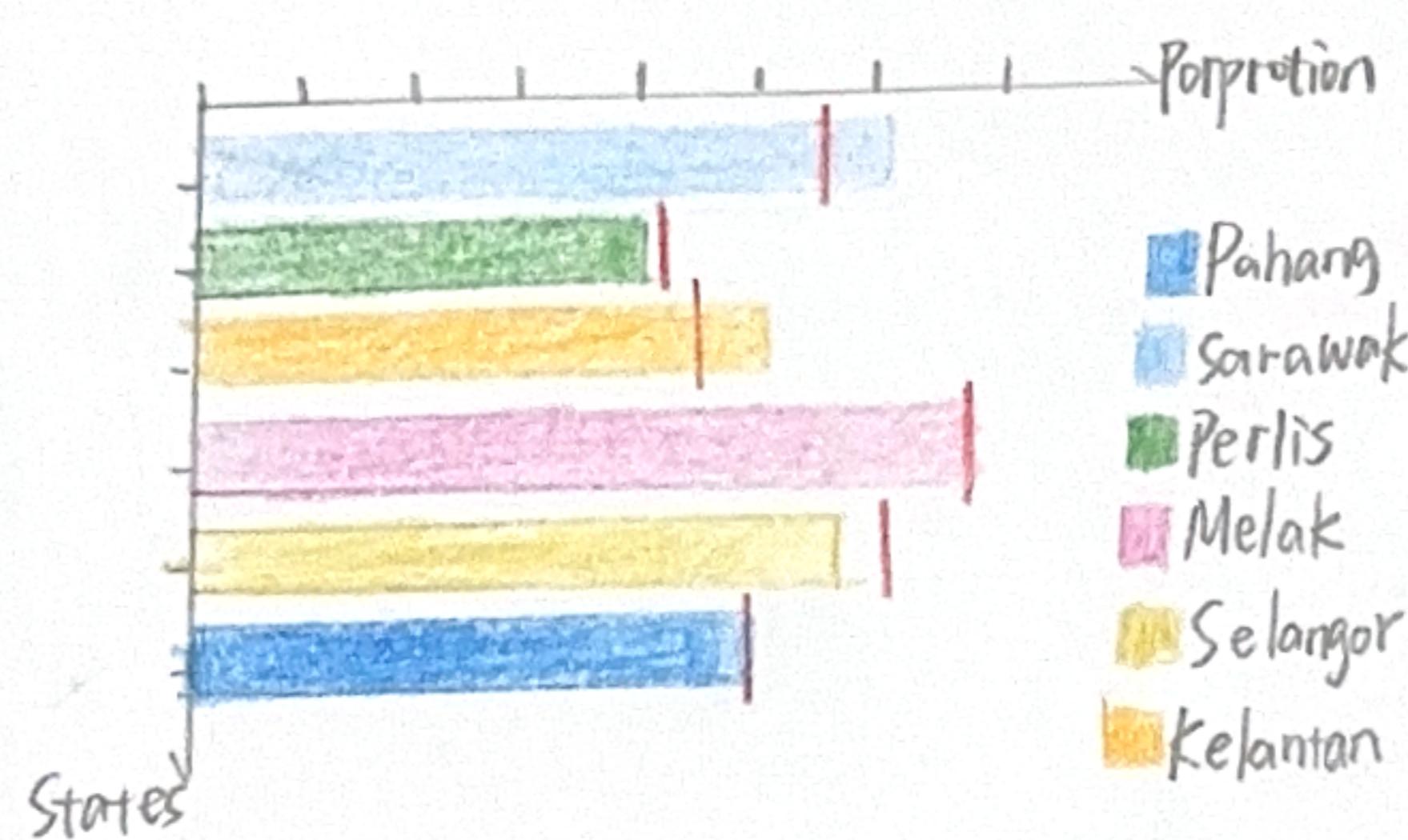
### ① Forest cover rate distribution choropleth Map



### ② Regional distribution Piechart



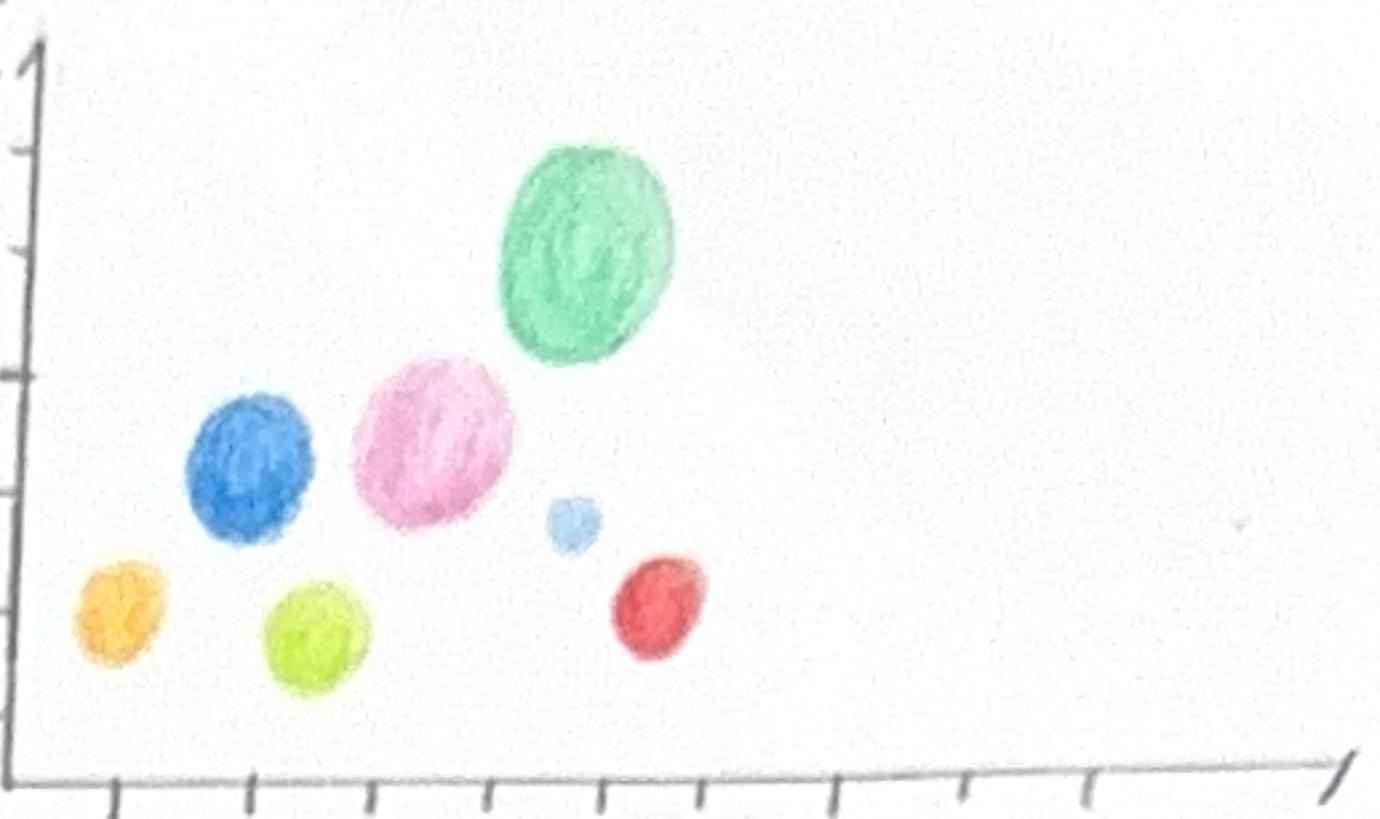
### ③ Comparison of Coverage Rates and means in 2021 Bullet chart



## 3. Combination

### ① The relationship between forest cover and air pollution

#### Bubble chart



# PITER

### remove 1 ③

the number of states with available data is insufficient to cover the hole of Malaysia. So change to other visualization.

At the same time is already a choropleth map here, so

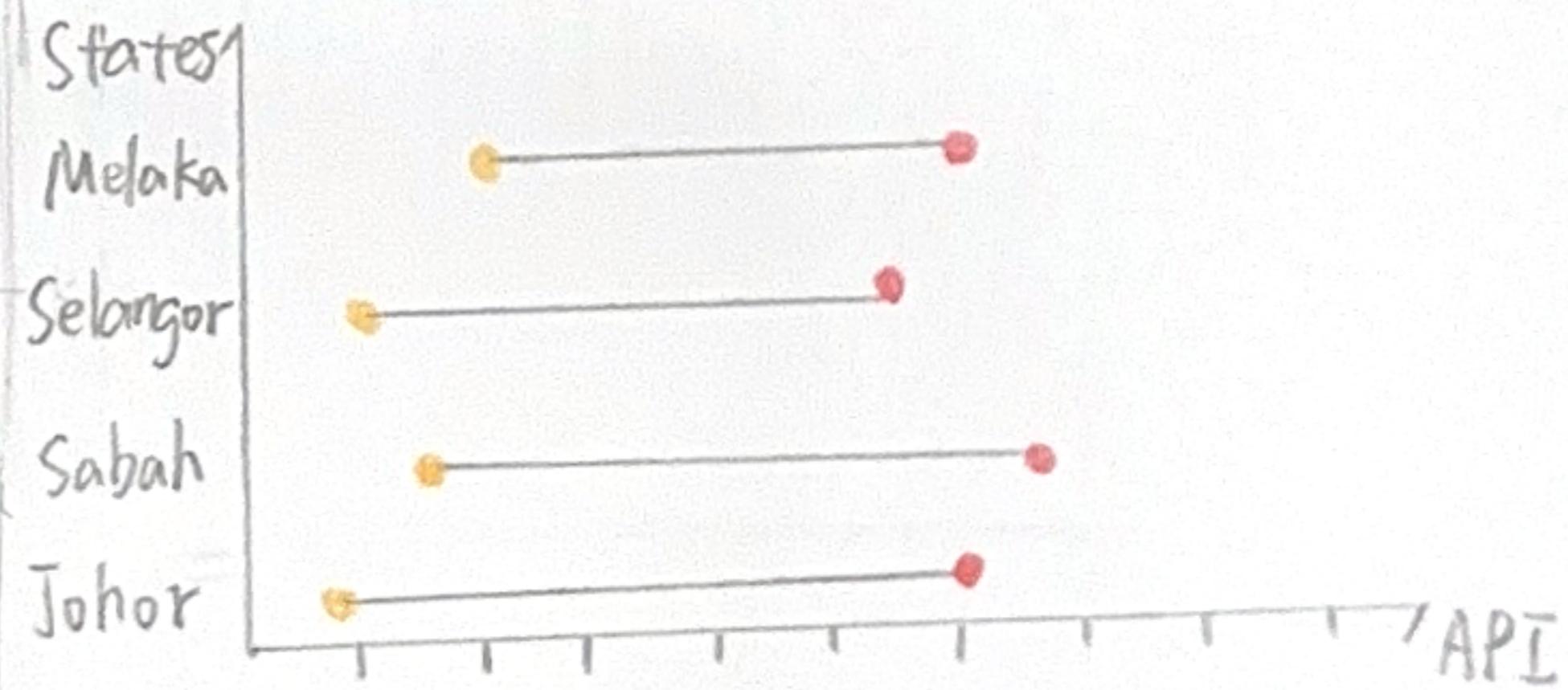
avoid the duplication.

Decide to change it to

Dot plot.

## COMBINE & REFINER

### ① The difference between the max and min air pollution levels across all states in 2020. Dot plot



## QUESTION

- <1> Is the impletation feasible in Vega-lite GitHub?
- <2> Is there an inverse relationship between air pollution index and forest coverage?
- <3> How to combine these two features together by code?

## CATEGORIZE

### Environmental Issues

#### Air Pollution Index

##### Time Trend

##### States Comparison

#### Permanent Forest Reserve Area

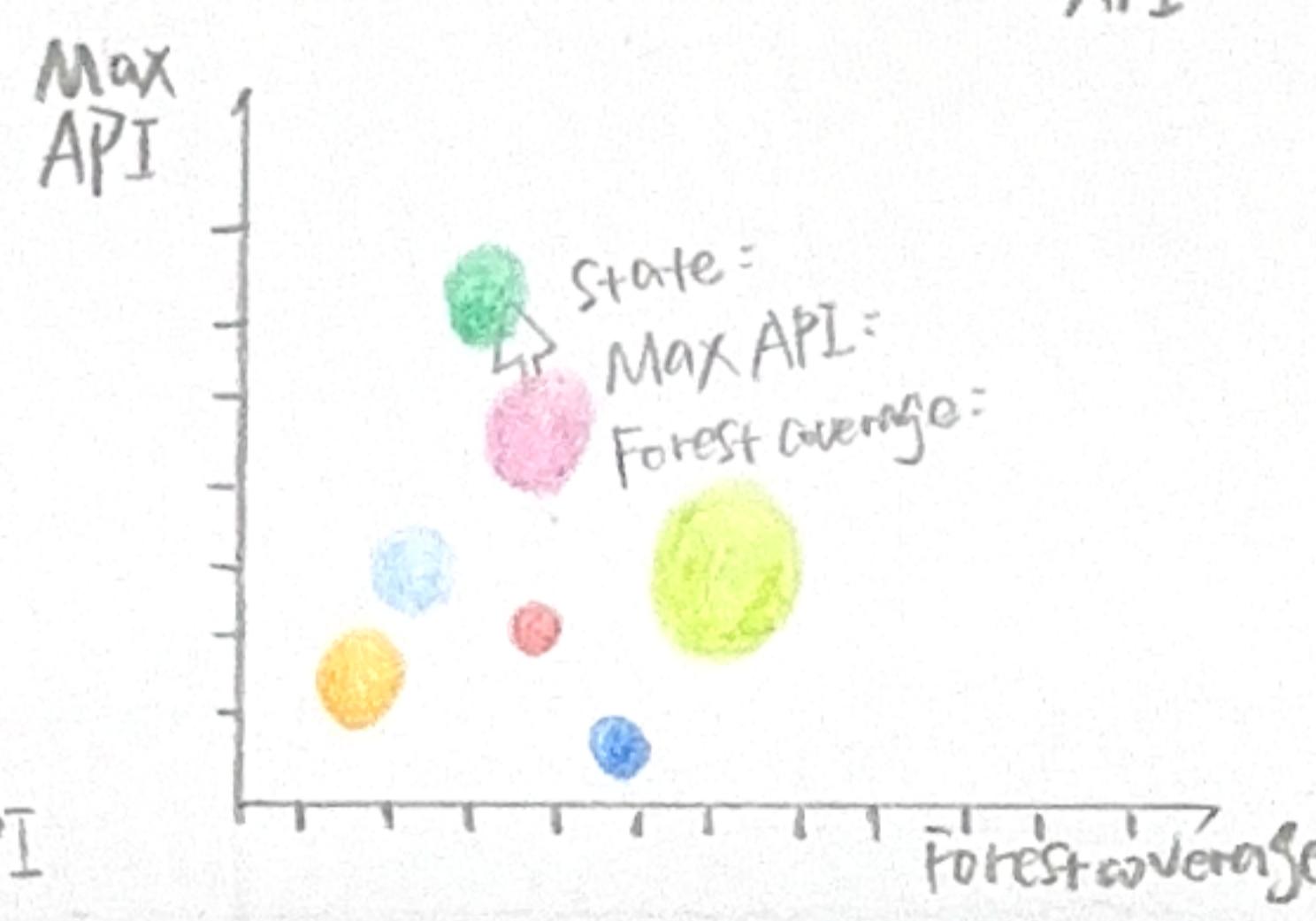
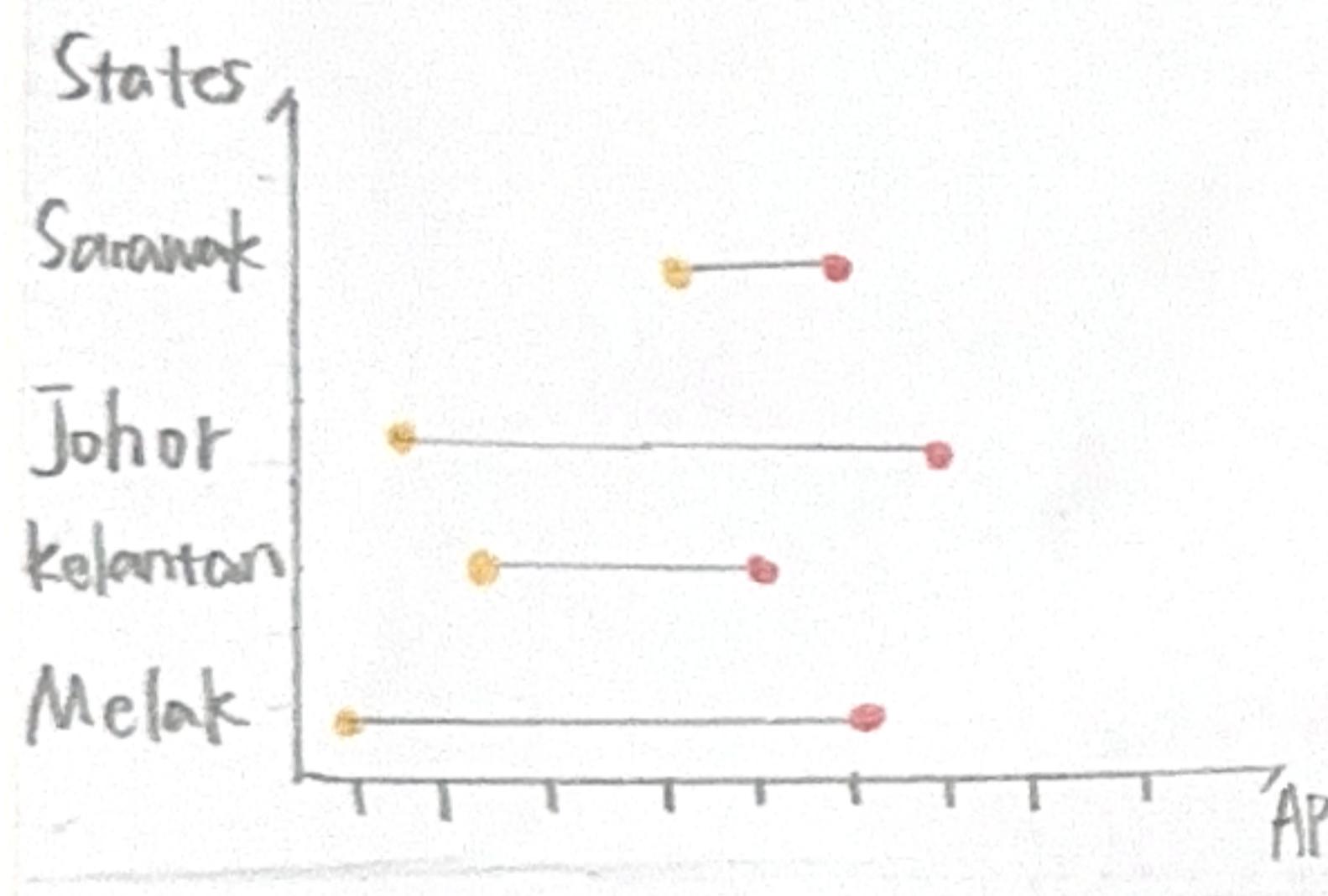
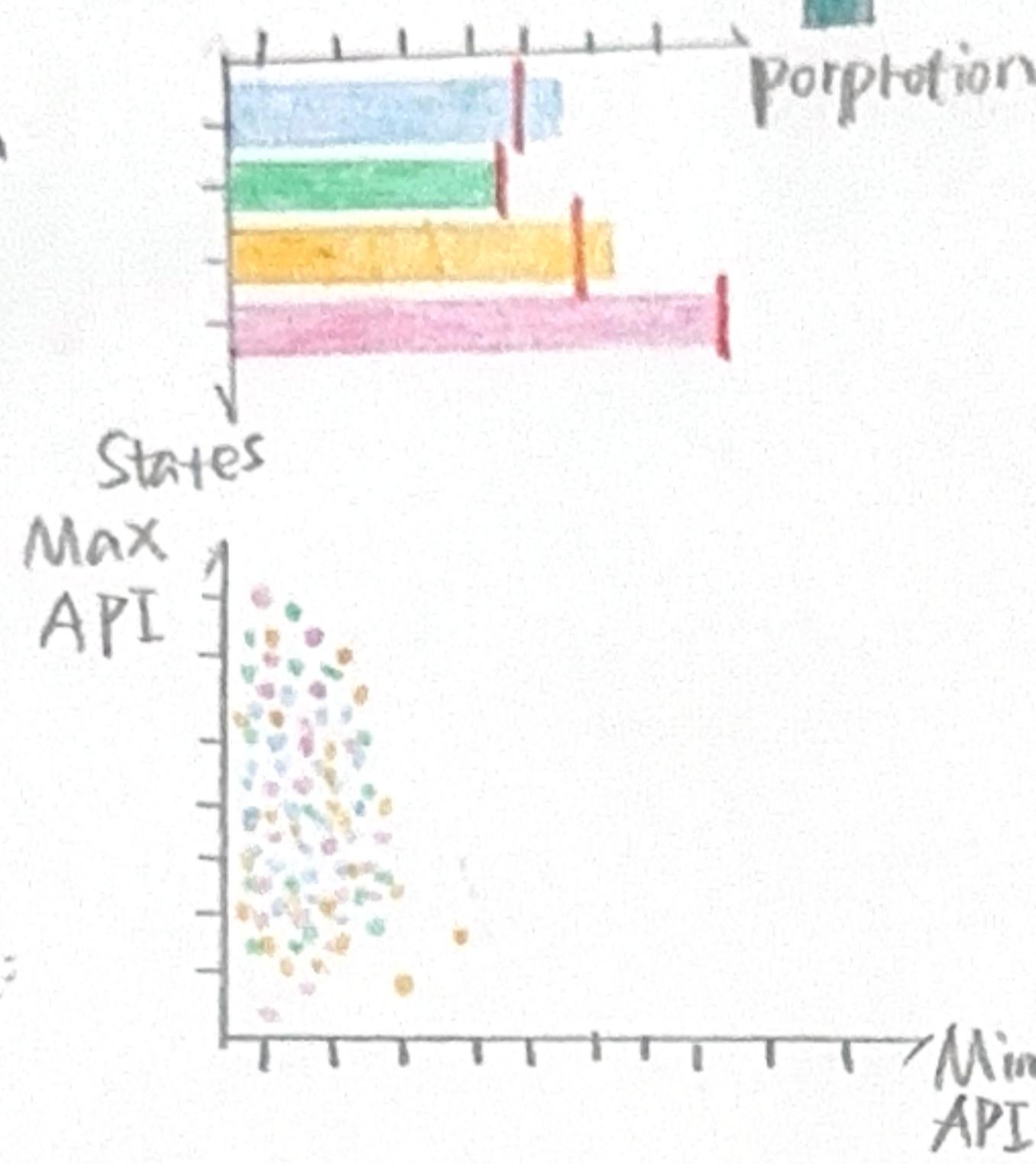
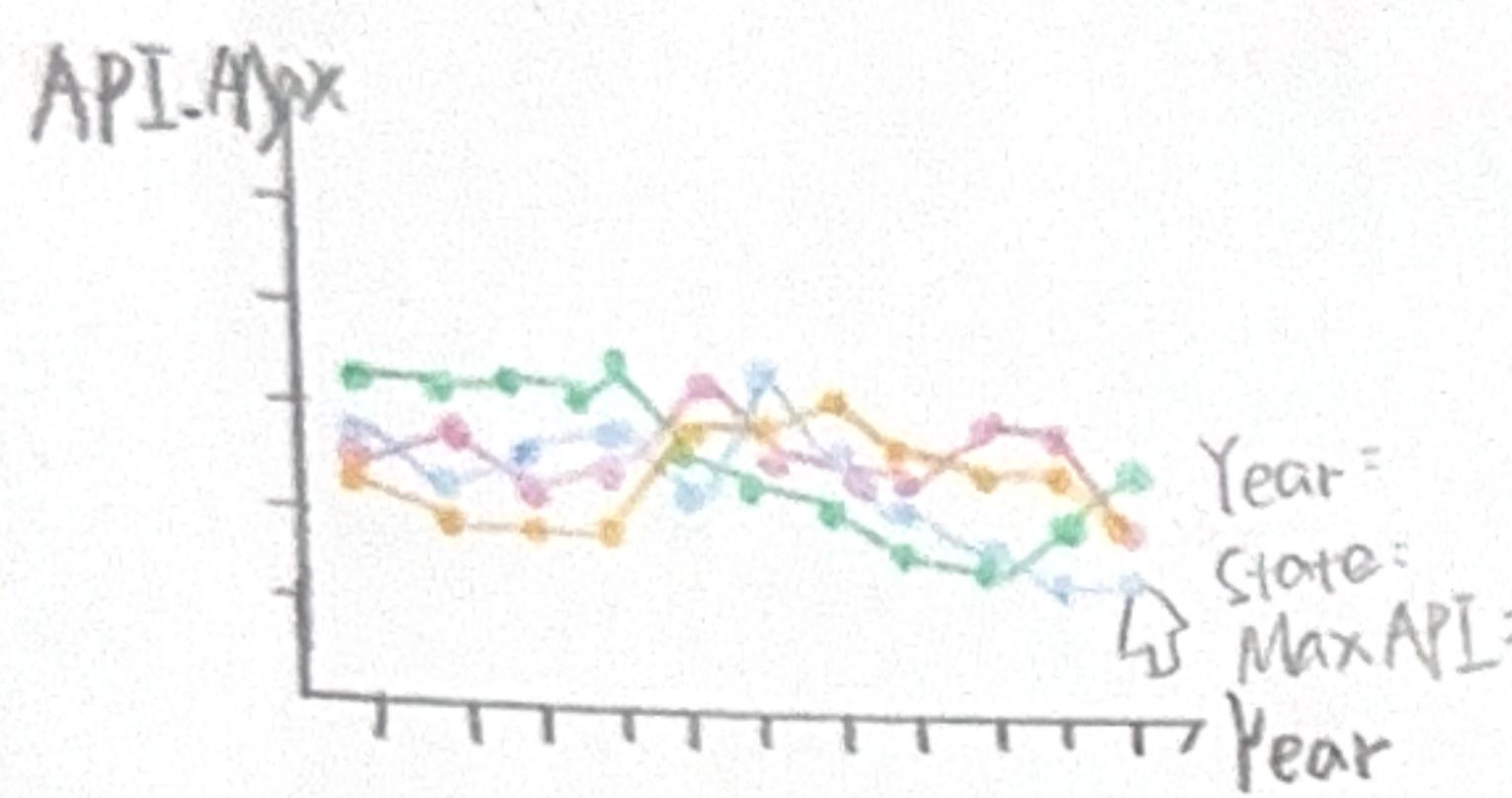
##### Time Trend

##### States Comparison

Relationship between these two

# AYOUT

Dashboard view



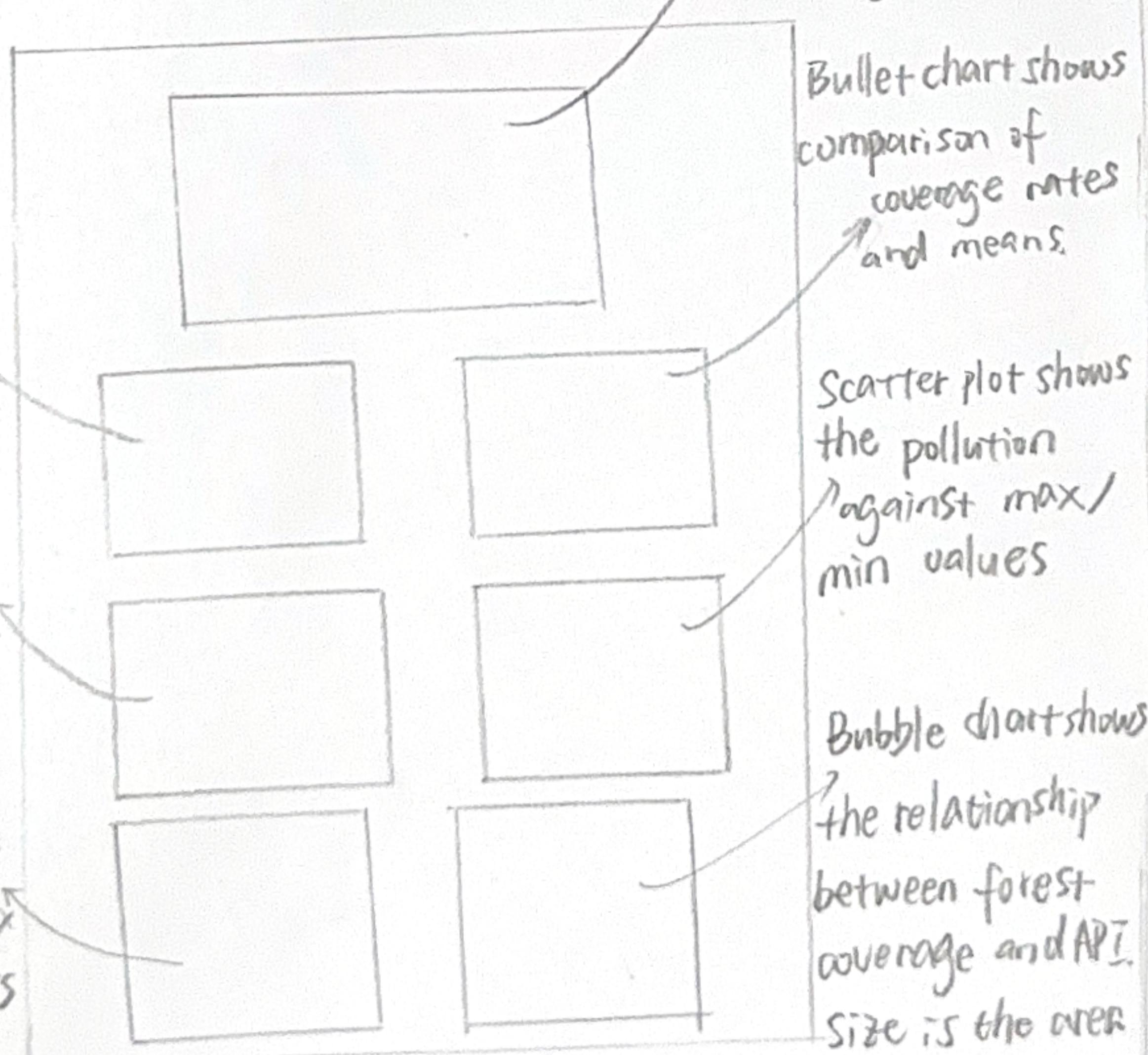
## FOCUS

In dashboard, everything is being focused.

Pie chart shows the regional forest coverage distribution

Line chart shows the API trend by years

Dot plot shows the gap between the max and min API across all states in 2020.



Title: Environmental issues

Author: Li Wanyue

Date: 30/9/2025

Sheet: 2

Task: Visualisation for API and forest coverage

## OPERATION

### 1. Select by state

When hover the mouse over a region, the tooltip will appear the state's name and coverage of permanent forest or the value of API in particular year.

### 2. Select by point (line, scatter, dot)

when the mouse hovers over a point on the line chart, scatterplot, dot plot, a tooltip will appear showing the max API and min API of each state.

### 3. Select by circle (bubble chart)

When the mouse hovers over a circle on the bubble chart, a tooltip will appear showing the max API and the forest coverage of the state. The size of circle is area.

## DISCUSSION

### Advantages:

- ① Clear display of permanent forest coverage proportion for each states.
- ② An interesting way to engage users.
- ③ Show the relationship between API and forest coverage clearly.

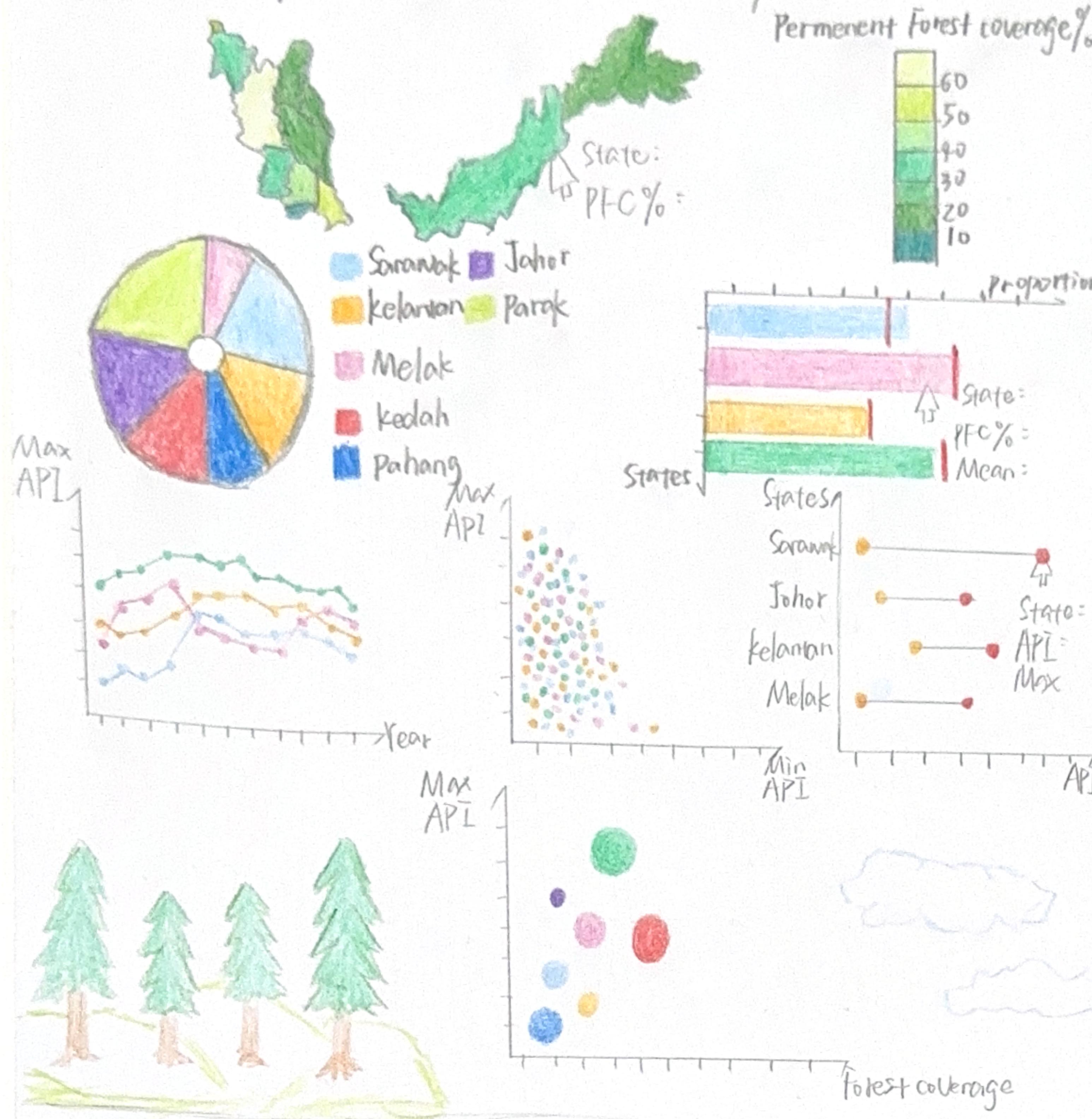
### Disadvantages:

- ① Not enough data for API for each states.

# AYOUT

Dashboard View

## Malaysia Environmental Health Analysis



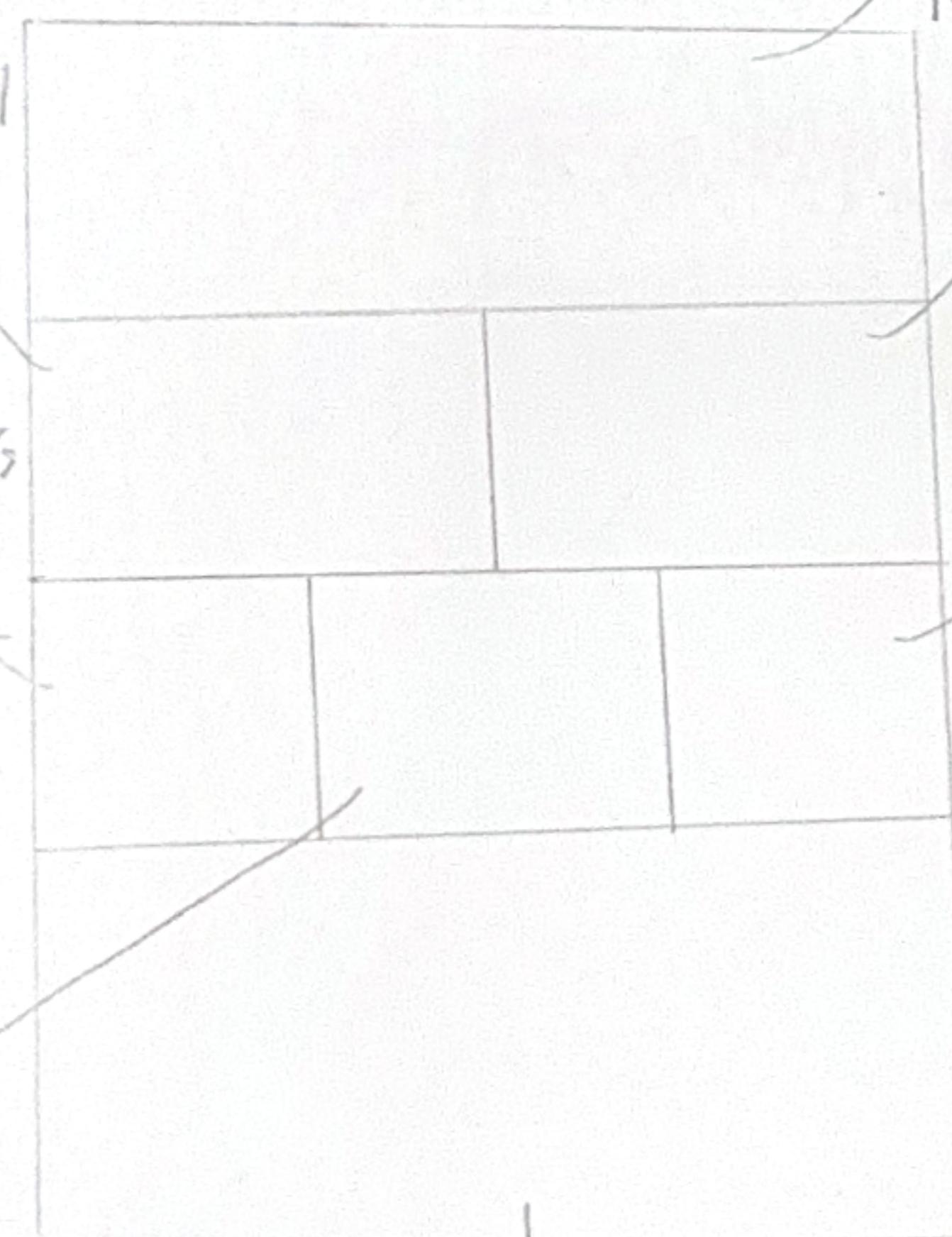
## FOCUS

In dashboard, everything is being focused

Pie chart shows the regional forest coverage distribution

Line chart shows the state's API trend by years.

Dot plot shows the gap between the max and min API across all states in 2020



Bullet chart shows comparison of coverage rates and means for state all the time

Scatter plot shows the pollution against max/min values to find the relation.

Bubble chart shows the relationship between forest coverage and API. The size of circle means the area size of state.

Title: Environmental issues in sustainable development

Author: Li Wanyue

Date: 30/9/2025

Sheet: 3

Task: Visualisation of combination of relation of API and permanent forest coverage

## OPERATION

1. Select by state

When hover the mouse over a region the tooltip will appear the state's name and coverage of permanent forest or the value of API in particular year.

2. Select by point (line, scatter, dot)

When the mouse hovers over a point on the line chart, scatter plot and dot plot, a tooltip will appear show the max API and min API of each state.

3. Select by circle (bubble chart)

Choropleth map shows the forest coverage distribution. Deeper green means higher permanent forest coverage%.

When the mouse hovers over a circle on the bubble chart, a tooltip will appear to show the max API, min API and PFC%.

## DISCUSSION

Advantages:

① Show the API and Permanent forest coverage separately and show the relationship between these two at the end.

② Interesting way to interact with users.

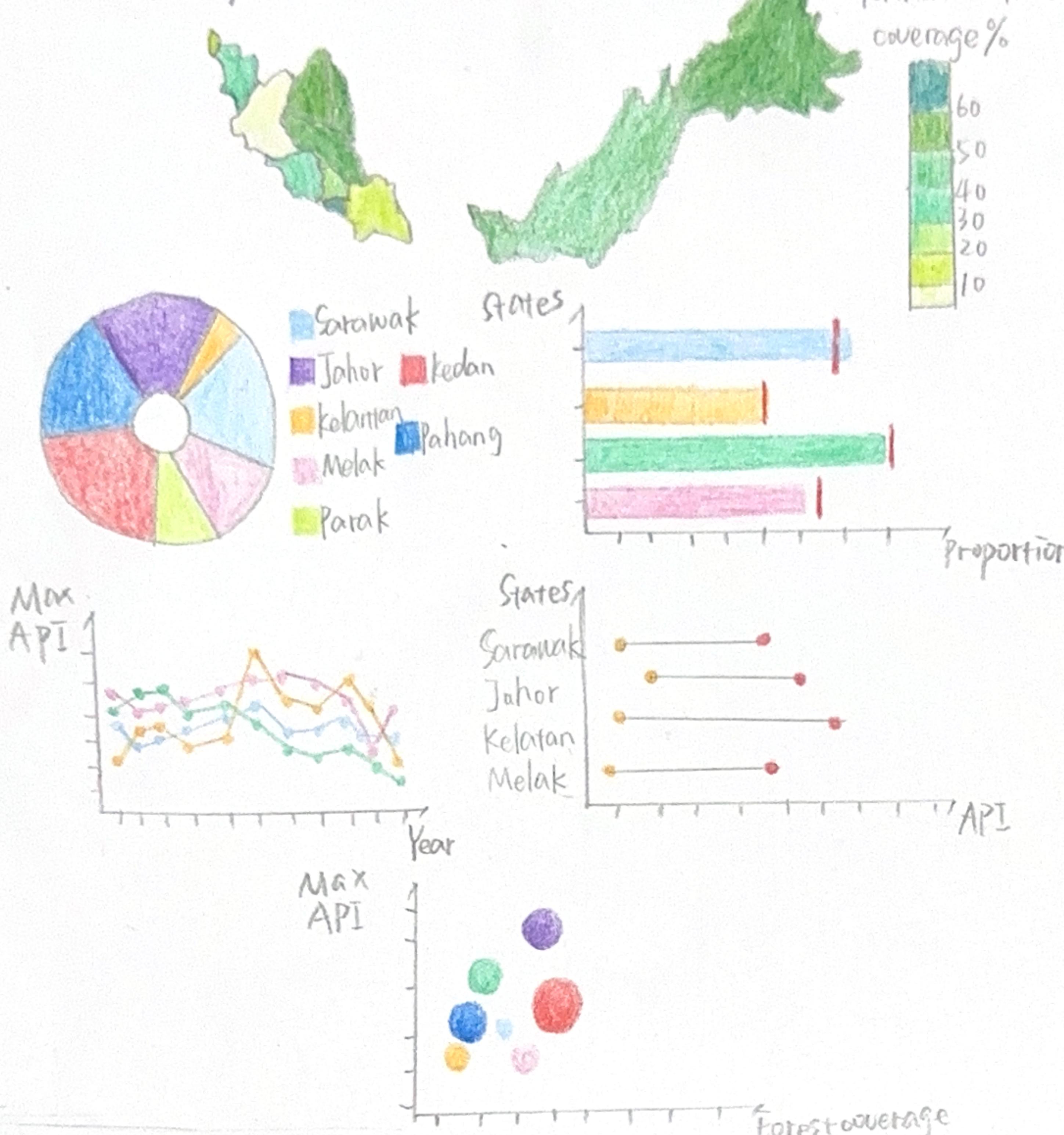
Disadvantages:

① Similar charts are layout together it is kind of boring to watch.

# AYOUT

Dashboard View

## Malaysia Environmental Health Analysis

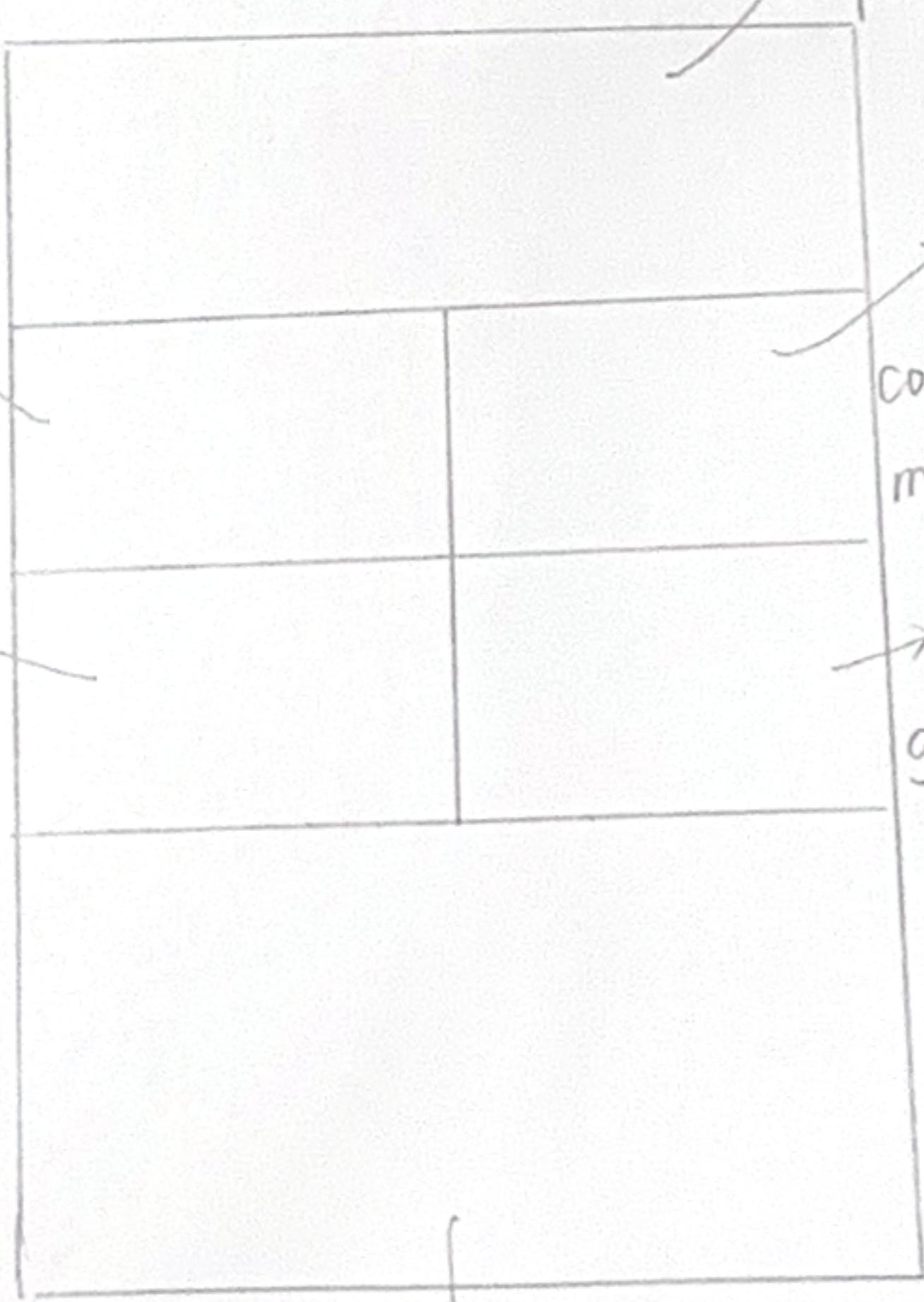


## FOCUS

In dashboard, everything is being focused

Pie chart shows the regional forest coverage distribution.

The line chart shows the states API trend by years from 2003 to 2020.



Choropleth map shows the forest coverage distribution. Deeper green means higher forest coverage %.

Bubble chart shows the relationship between forest coverage and API. The size of circle shows the area size of state.

Title: Visualisation of Environmental Issues in Malaysia

Author: Li Wanyue

Date: 1/10/2025

Sheet: 4

Task: Focusing on API and forest cover performance and relationships

## OPERATION

1. Select by state (choropleth/pie)  
When hover the mouse over a region, the tooltip will appear the state's name and coverage of permanent forest or the value of API in specific year.

2. Select by point (line, dot)  
When the mouse hovers over a point at the line chart and dot plot, a tooltip will appear show the max API and min API of each state.

3. Select by circle (bubble chart)  
When the mouse hovers over a circle on the bubble chart, a tooltip will appear to show the API and PFC %.

## DISCUSSION

Advantages:

① Interest method to interact with users.

② Remove the duplicated chart to be more clear and clean

Disadvantages:

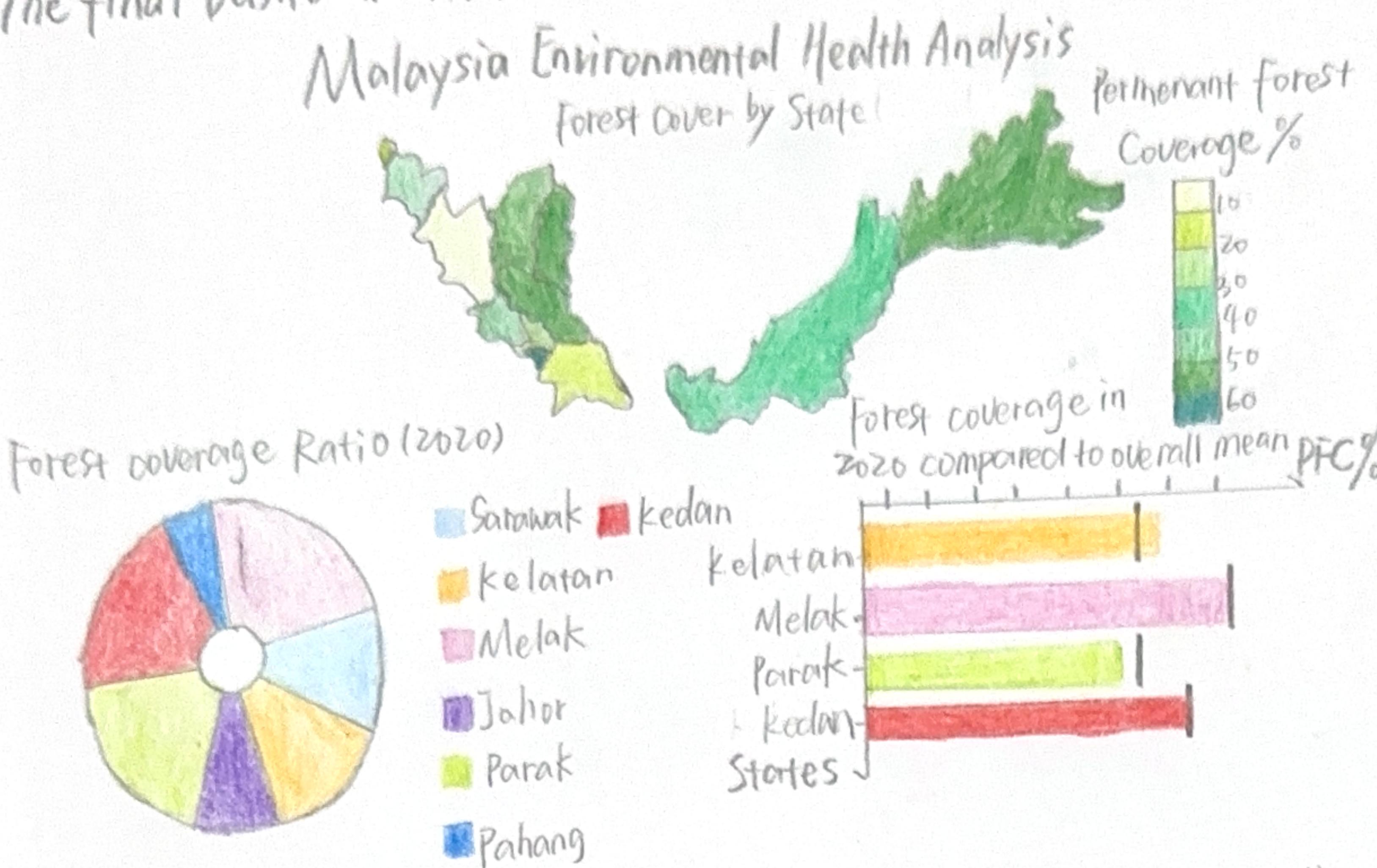
① Maybe too simple to visualise.

② Looks boring.

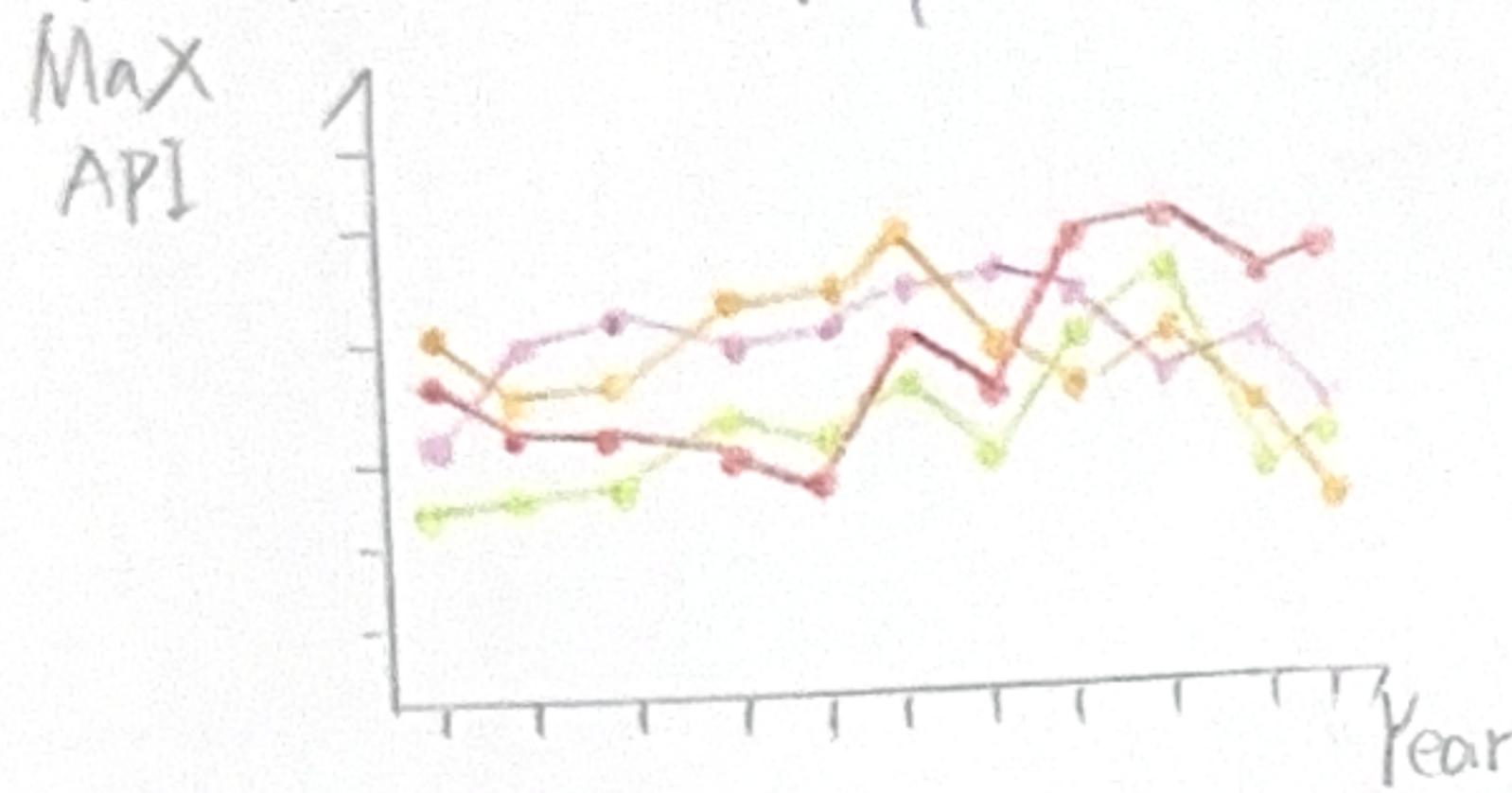
# AYOUT

The final Dashboard View

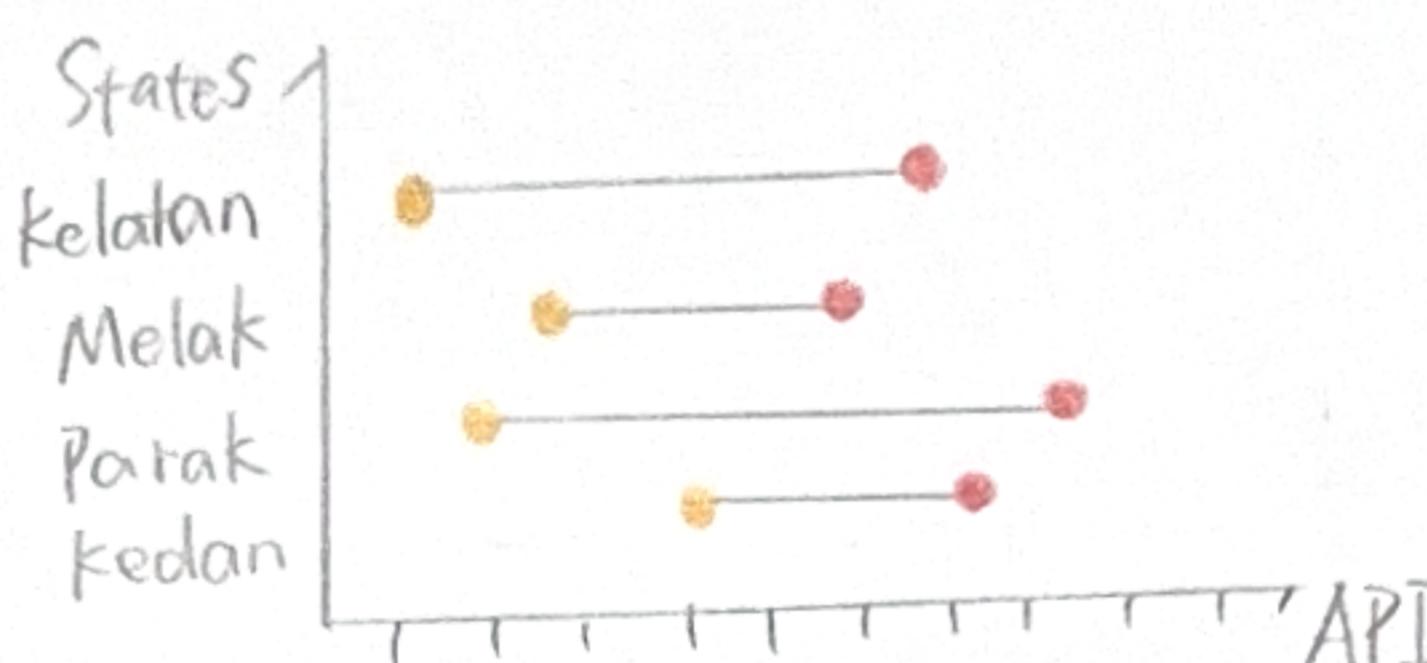
## Malaysia Environmental Health Analysis



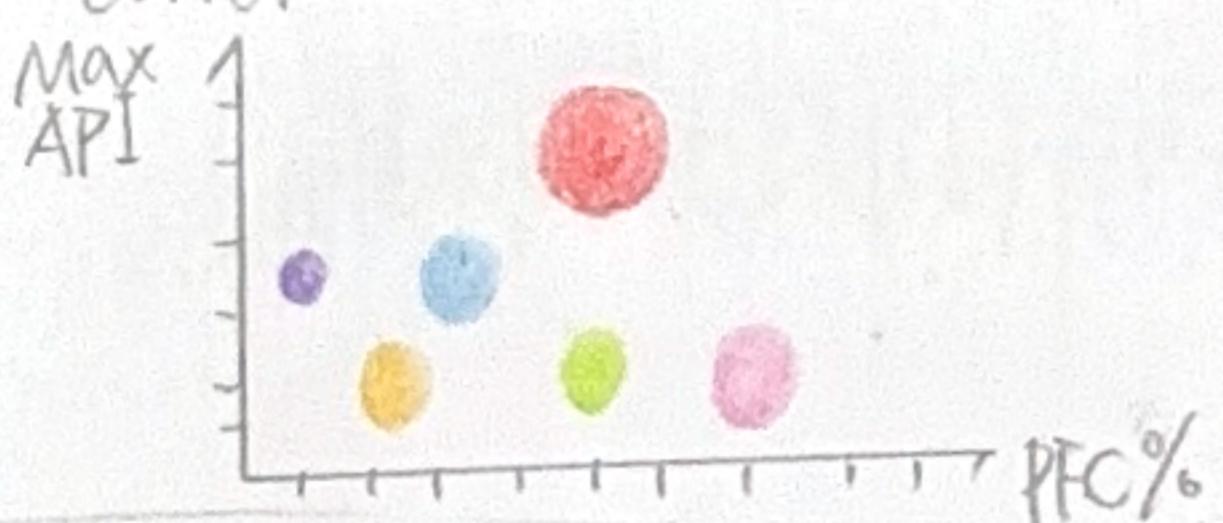
Variations in the API from 2003 to 2020



### Comparison of Max and Min API Values Across States



### Correlation between API & PFC



## FOCUS

In dashboard, everything is being focused, but the most essential one is the Forest Cover by State Choropleth Map.

Since the task requires the map related to Malaysia, the focus of this visualisation task is to analyse the permanent forest coverage in Malaysia and differences between states, and to use Air pollution index information to analyse the air health of Malaysia.

In addition, merge the csv files by state, then analyse the relationship and impact between API and forest cover.

Title: Final Design Sheet

Author: Li Wanyue

Date: 1/10/2025

Sheet: 5

Task: Design the final layout

## OPERATION

Primarily follow the layout and structure of Sheet 4, adding the corresponding headings and text paragraphs.

① Drag the year bar to switch between time periods and view different presentations of the forest cover choropleth map.

② Drag the year bar to switch between time periods and view the dot plot representations for different APIs.

③ Wherever the mouse hovers over the image, corresponding information will be provided to the readers.

## DETAILS

- Using CSV files to implement the database
- Cleaning and processing datasets by R Studio (panda, ggplot, dplyr)
- Test data feasibility and font layout before creating Vega-lite visualisation.
- Time to build / implementation is 2 weeks
- Need to download the relevant map files to create map.