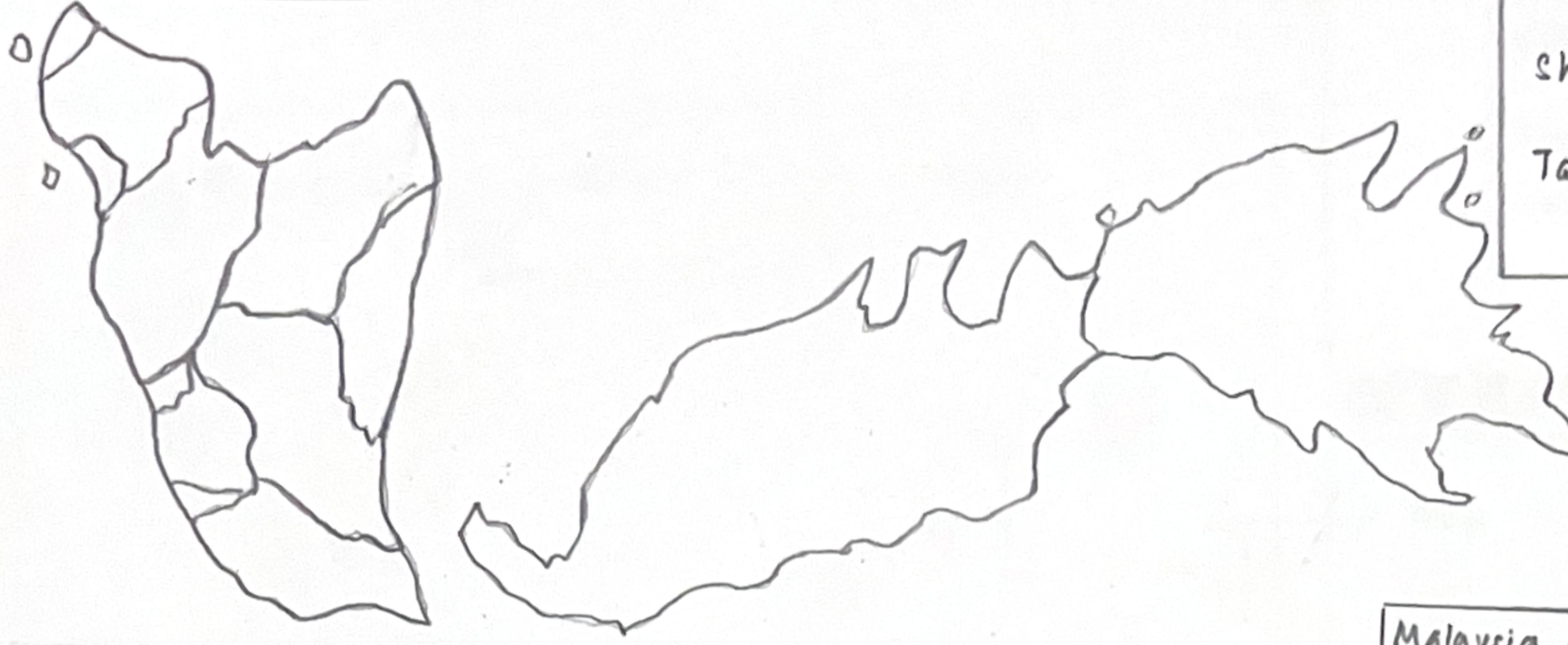


IDEAS



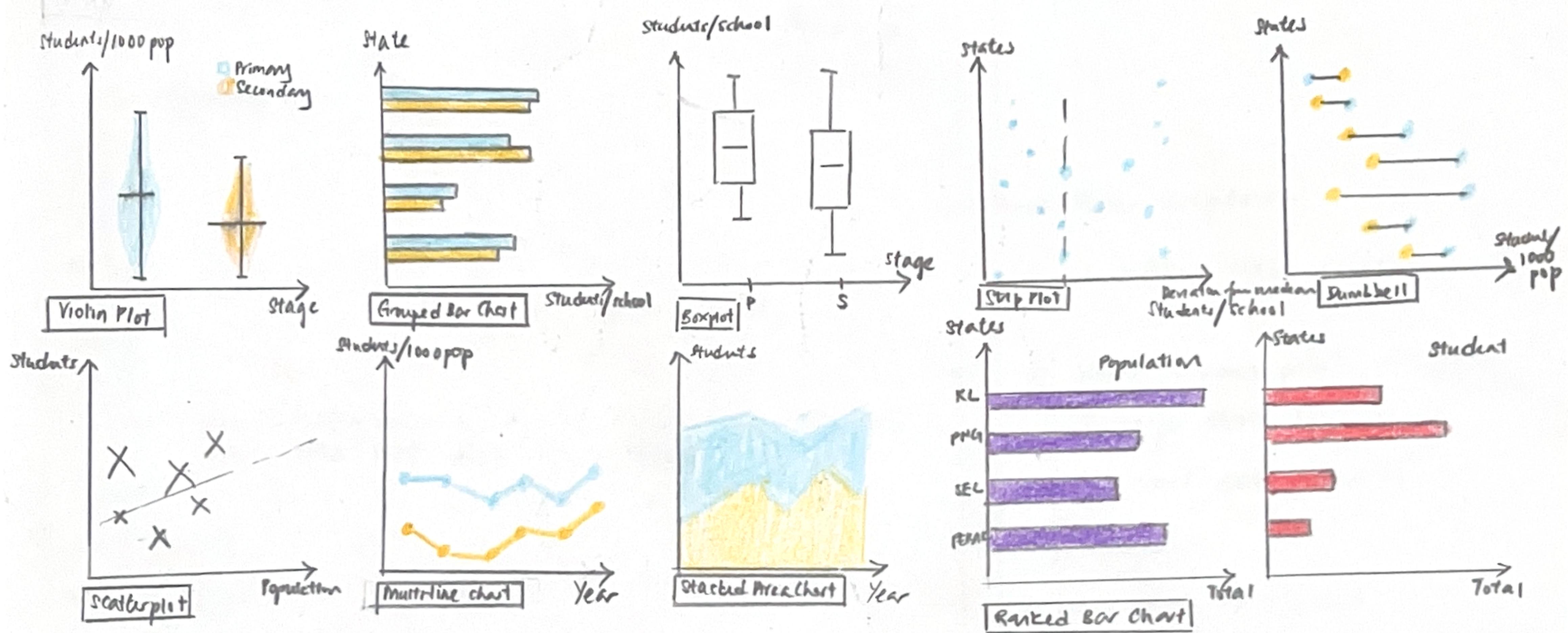
Author : Yuan Kah Mun

Date : 1 October 2025

Sheet : 1

Task : Brainstorm ideas for visualisations

Malaysia Map



FILTER

Remove Violin Plot → hard to read
&

Boxplot → hide individual states

: redundant with Strip Plot

- ✓ shows states & data directly
- ✓ median guided reference on deviation.

Remove Scatterplot

: redundant with Ranked Bar Chart

✓ simpler to interpret

✓ side by side comparisons, clever.

Remove Stacked Area Chart

: redundant with Multi-line trend

CATEGORISE

Basic Education Access → (i) Comparative Analysis

✓ In Malaysia

(ii) Multivariate Analysis

↓
(ii) Time series

- Ranked bars

- Multi-line trend

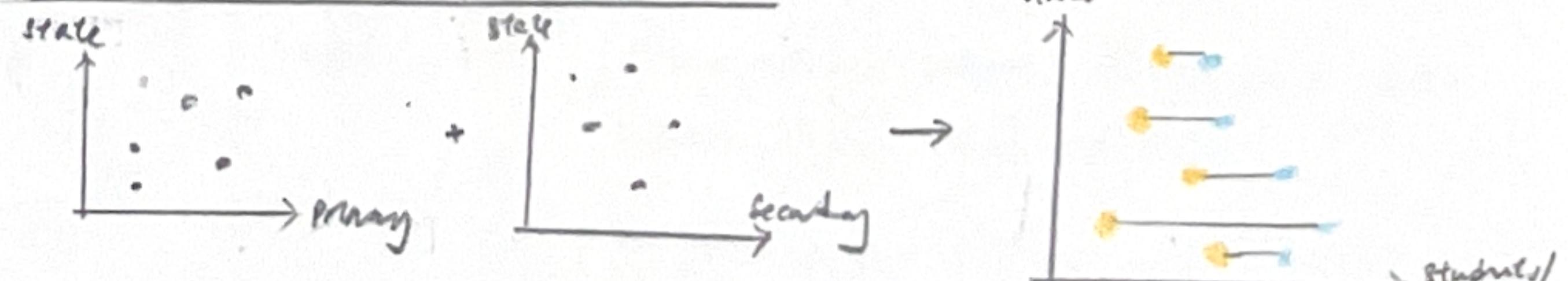
- Choropleth map

- Dumbbell

- Grouped bars

- Strip plot

COMBINE & REFINER



→ Easier to interpret with primary & secondary shown in one idiom, differences can be studied clever

• Allow direct comparisons

QUESTIONS

1. Should the filtering options be used across all idioms in the dashboard?
2. Should the name for all states be labelled or only mark those with special takeaways?
3. How to organise the layout of the dashboard so that they tell interesting stories & insightful overview.

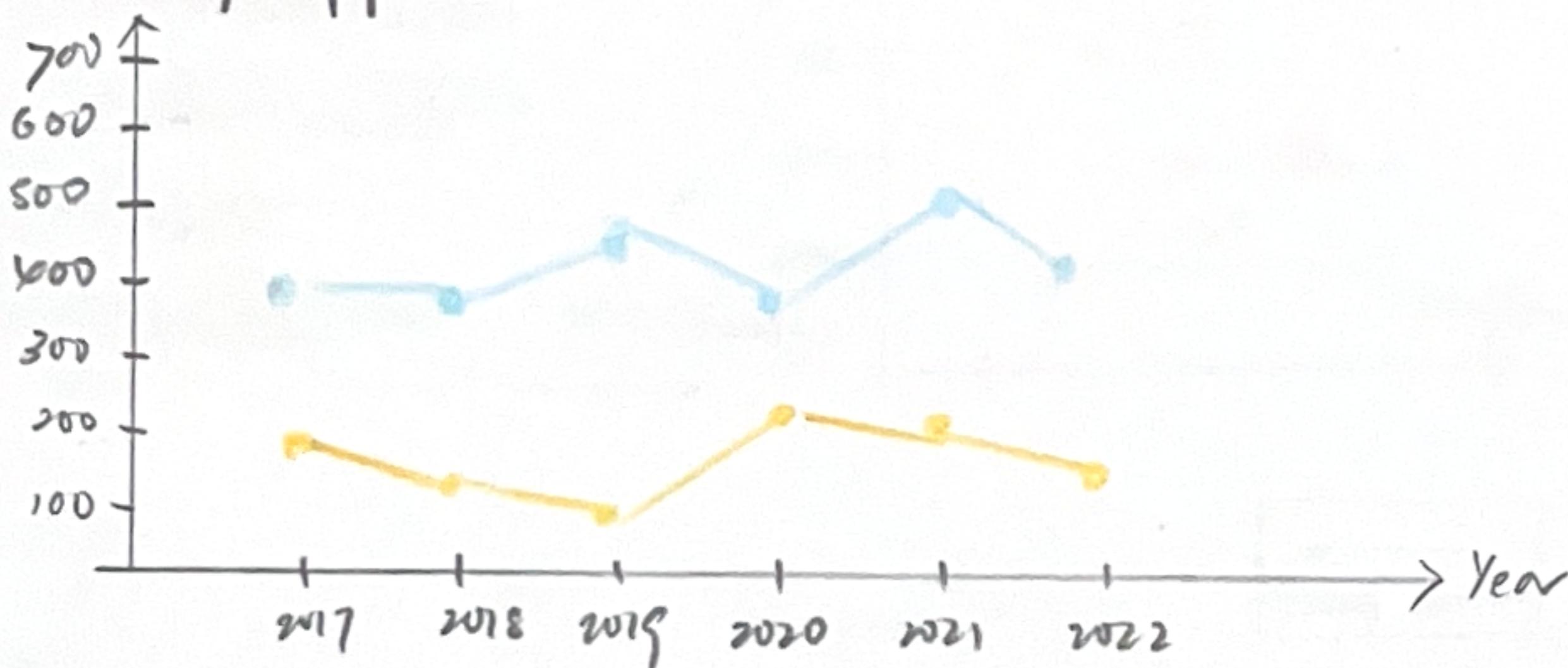
AYOUT

Basic Education Access Across Malaysian States

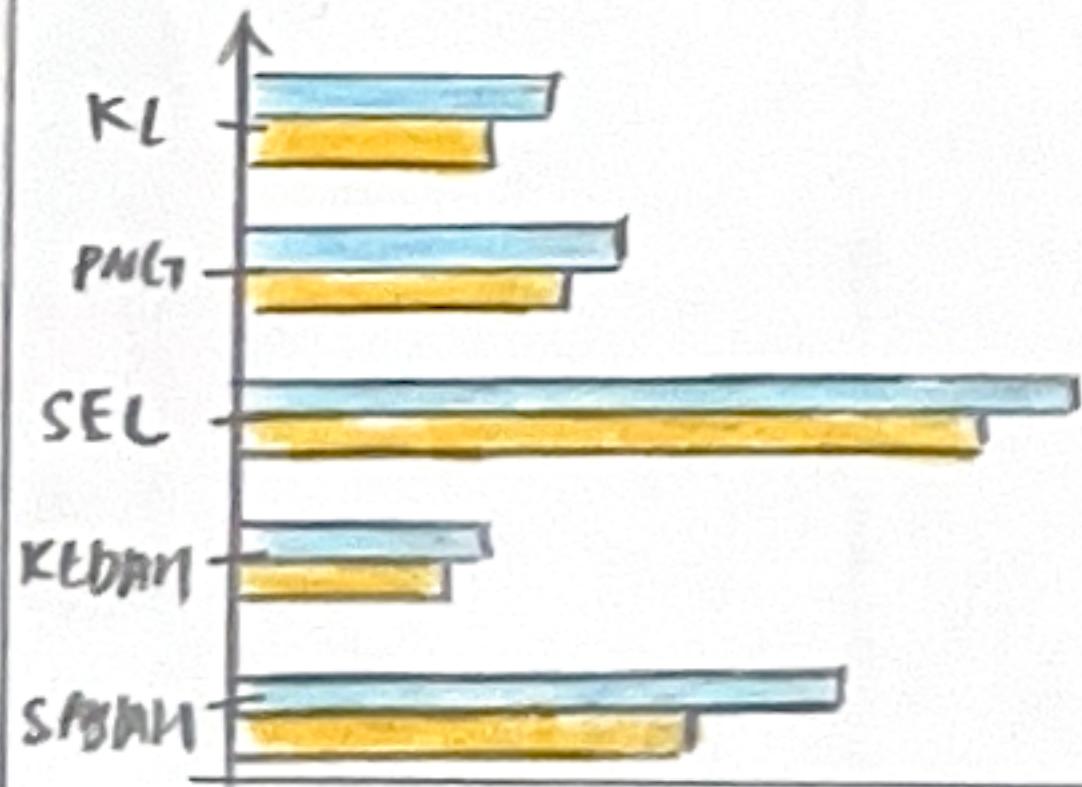
2017 2020



Students/1000 pop.



States



→ Students/school

Title: Partitioned Poster

Author: Yuan Kah Mun

Date: 2 October 2025

Sheet: 2

Task: Design Infographic Dashboard

OPERATION

→ Map: add Time Slider

Legend -

→ Filter dropdown

- Allows state selection

→ Hover to data points, show Tooltips that has all relevant data details

→ When state is selected,

highlight the box of that state

FOCUS



• Vertical layout

Multi-variable Proportional Symbol Map

- encode number of primary & secondary schools by state.

Multi-line chart

- encodes temporal trends in enrolment rate, allowing users to observe how access to education changes over time.

Grouped Bar chart

- encodes school crowding intensity, allows direct w/in state comparison of school capacity

DISCUSSION

Advantage :- Easy to see which states have more schools than other states.

- Allow comparison at a glance across the infographic dashboard in school counts, timeline growth and enrolment rate.

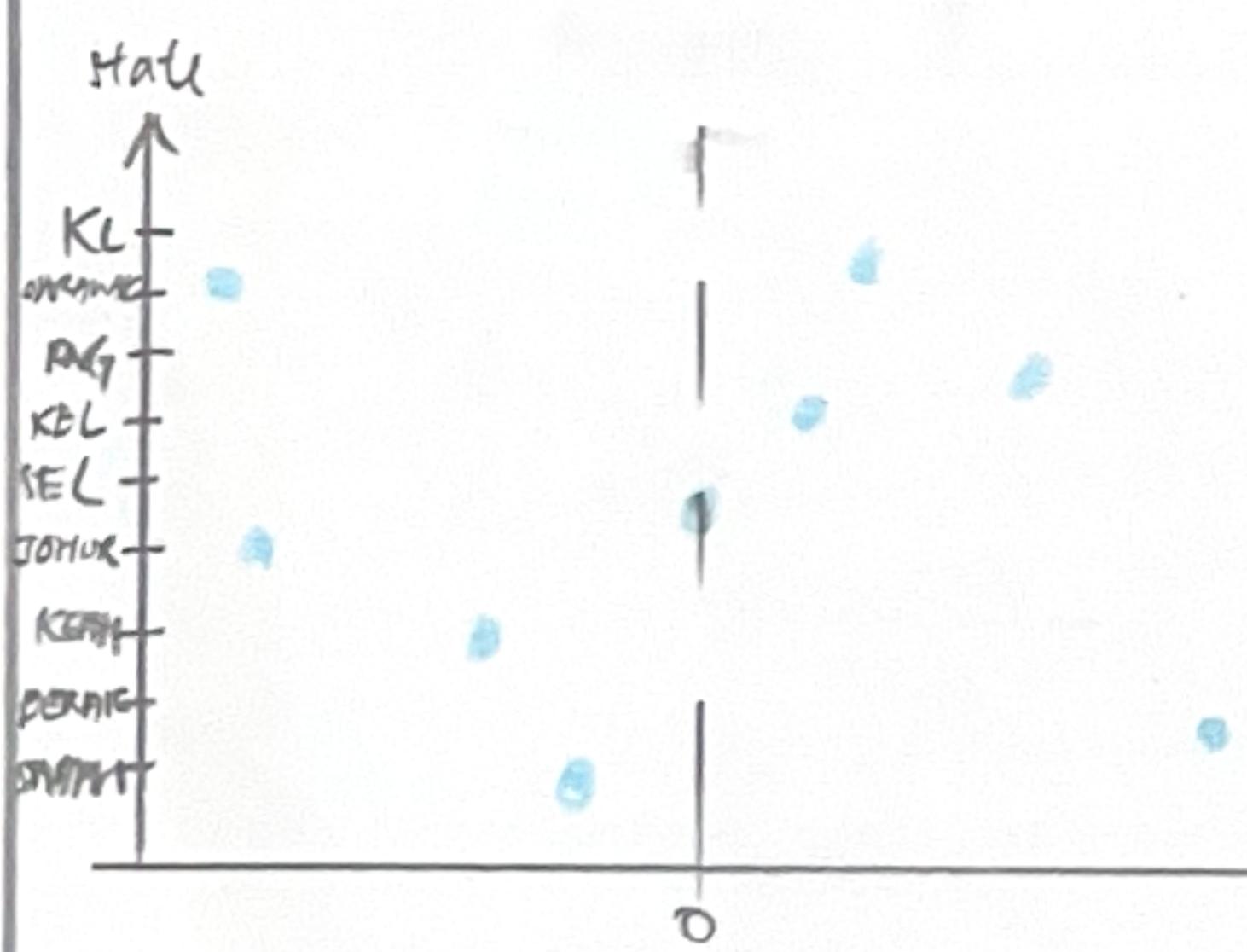
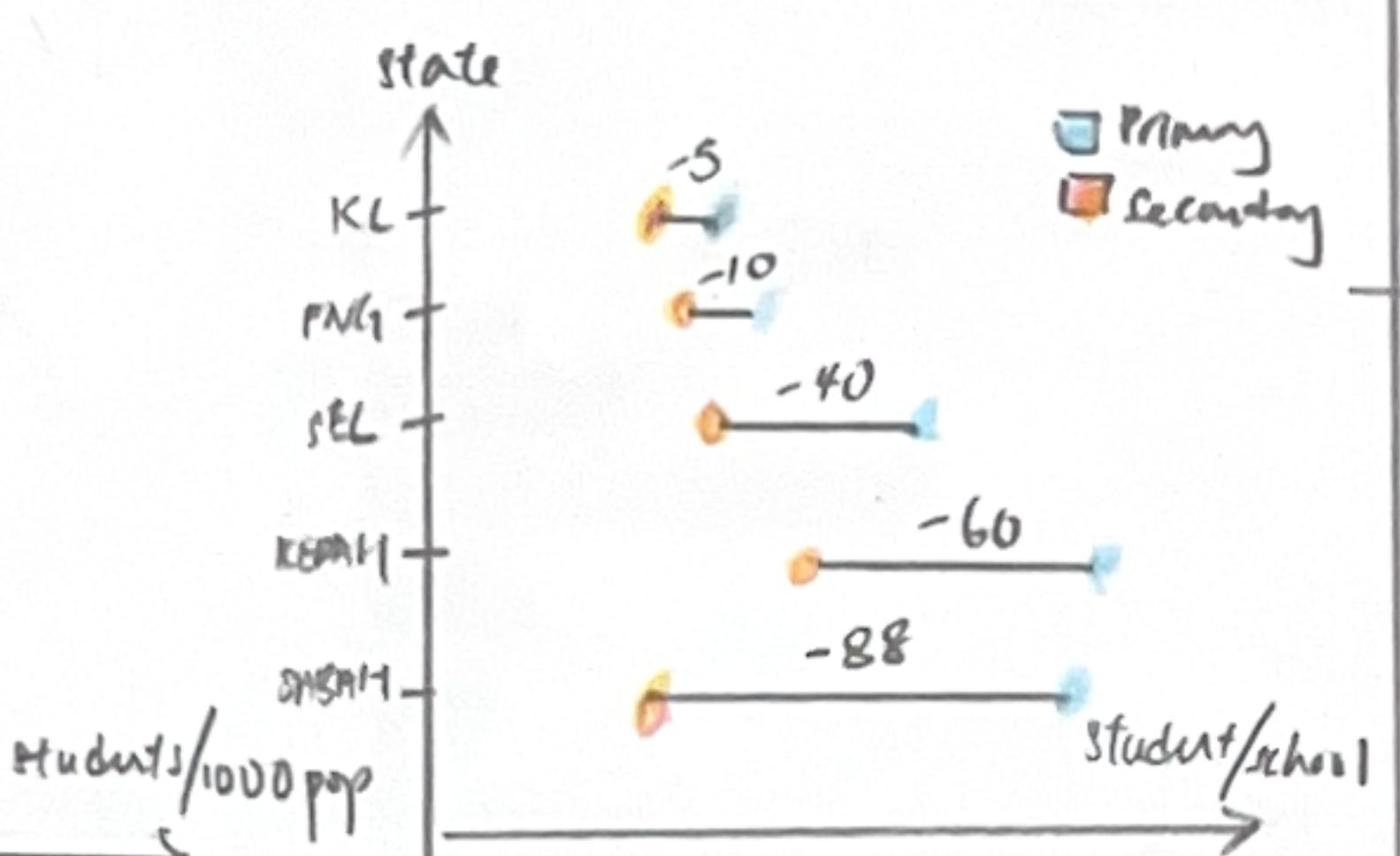
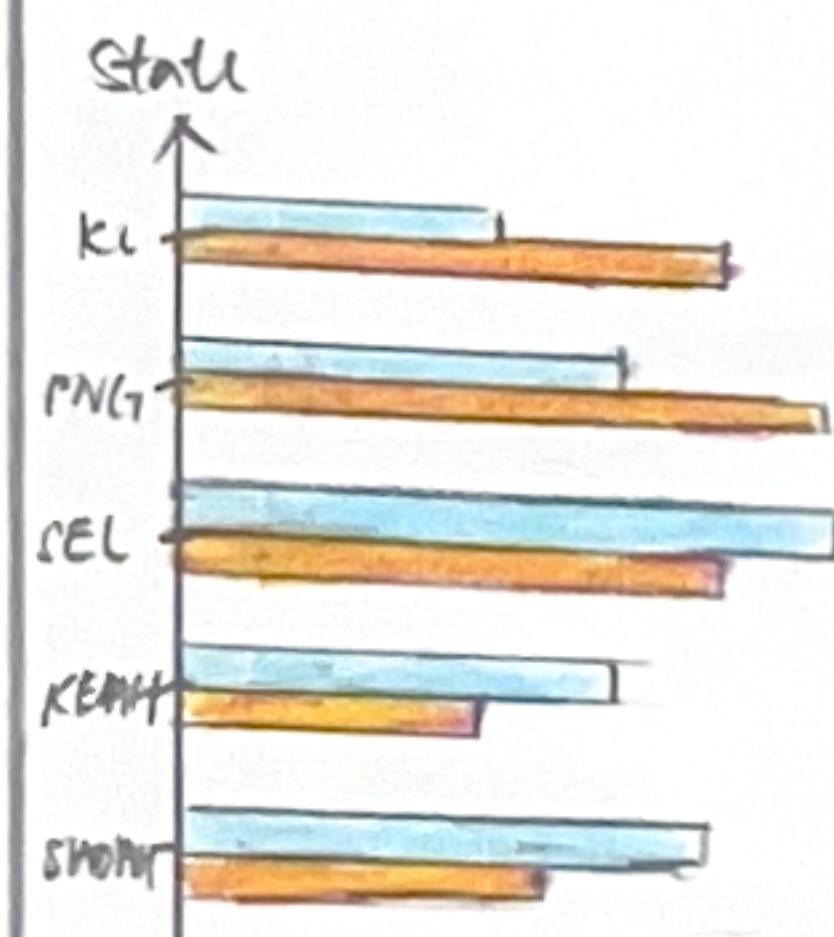
Disadvantage :- Hard to interpret precise differences, as users may struggle to judge whether one circle is "twice" larger than the other.

- Overlapping circles may occur when states are small and near, causing viewers hard to distinguish

Layout

Title : Partitioned Poster
Author = Yuan Kah Mun
Date : 3 October 2025
Sheet : 3
Task : Design Scrollable Dashboard

Basic Education Access Across Malaysian States



Primary Secondary

Deviation Student/school

Toggle button :
switch between
primary or secondary

Hover on data point to
read relevant details on
each state's student & school
count etc.

Focus

Choropleth + Symbol (Pie) Map

- colour hue - encodes enrollment rate
- pie size - encodes total num of schools
- pie angles - encodes stage distribution

Other idioms :

- Focus on encoding the access rate to basic education in each state relative to population
- Highlights the imbalance to show which state has overextended in school capacity
- Reveal which state deviates most from expected capacity

DISCUSSION

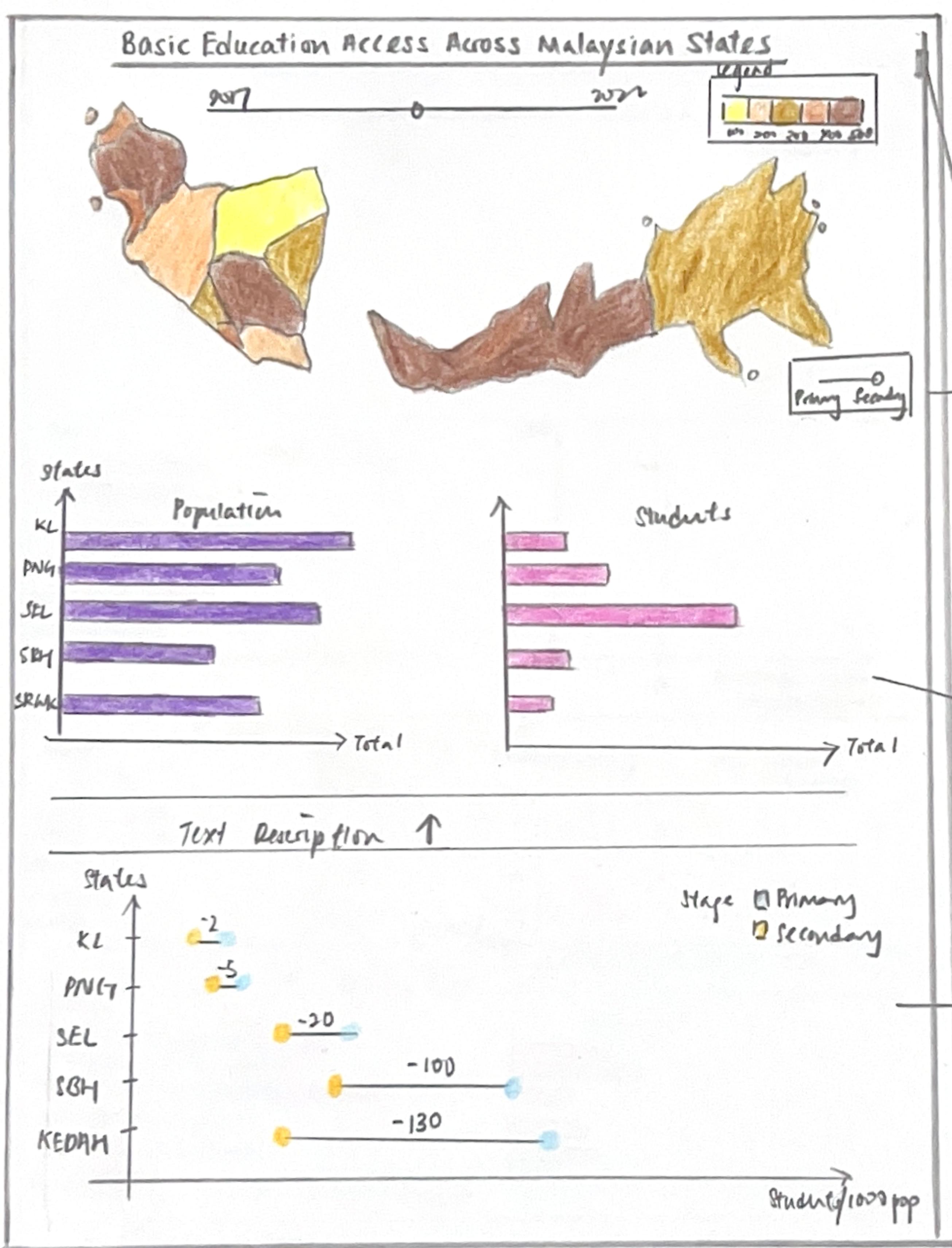
Advantage : - Allows multivariate storytelling

- Dumbbell shows difference between students per school in each state, enable direct comparison

Disadvantage : Too many visual variables in the map, hard for user to interpret at a glance.

State with smaller sizes, pie may overlap over borders, which breaks the map readability.

LAYOUT



Title : Storytelling
Author : Yuan Kah Mun
Date : 4 October 2023

Sheet : 4
Task : Design Aesthetic Dashboard

OPERATIONS

scrollable.

→ Toggle button - switch between stages (primary / secondary)

Time slider : Show data from 2017 to 2022.

Tooltip - hover over the states / data points in idioms

When one state is selected,
highlight it,
other state shows lighter color
(bring out visual hierarchy)

→ Hover, show tooltip

Focus

Choropleth Map (classeed)

- Out of 1000 people, how many of them have access to basic education (primary & secondary) in each state.

Ranked bar chart

- Observe population & student distributions in each state

Dumbbell chart

- Observe Stage Access gap

DISCUSSION

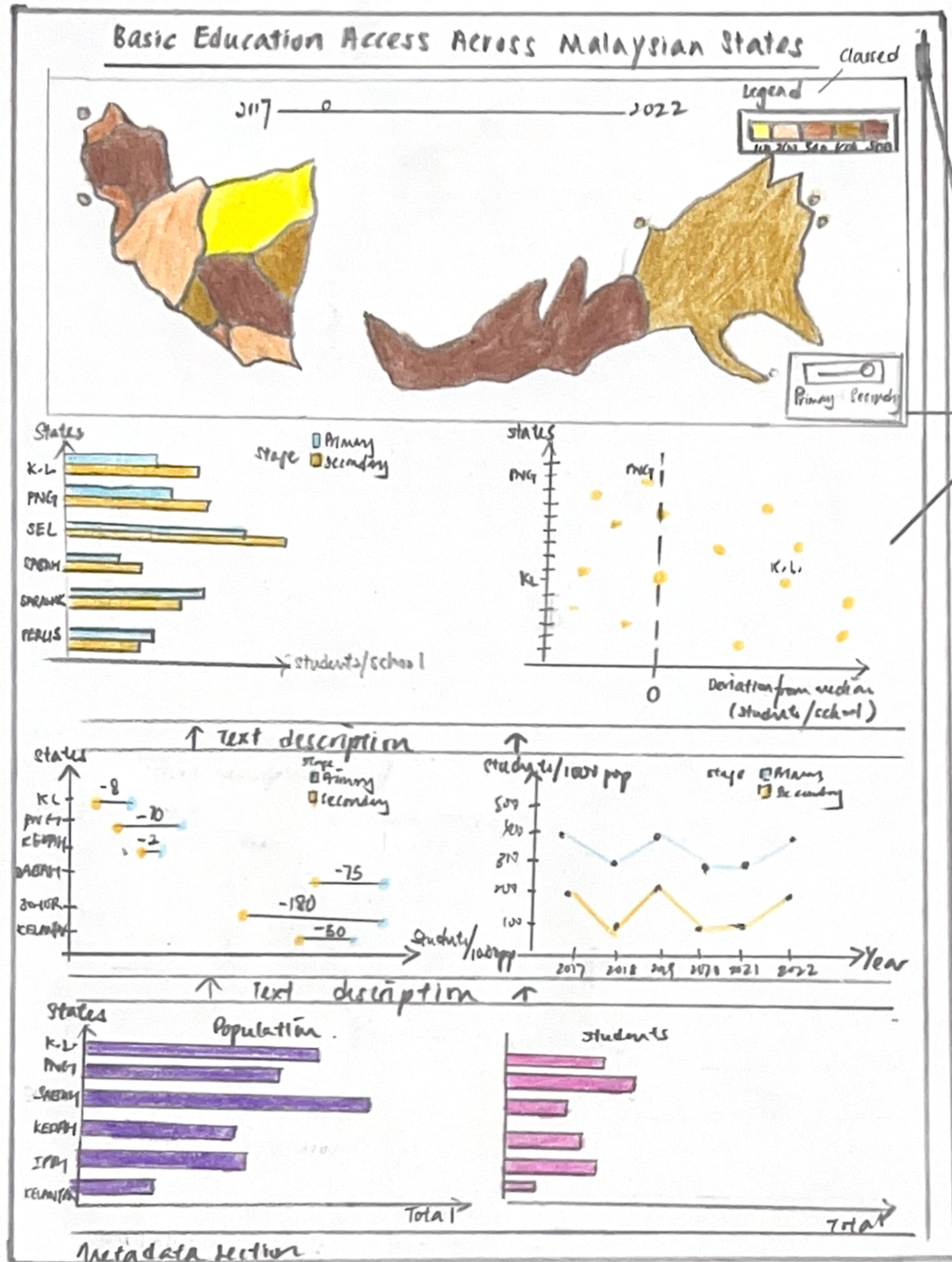
Advantage :- Easy to observe where educational access is high or low across Malaysia by shading states

- Use normalized data allows fairer cross-state comparison than raw counts.

Disadvantage:

- Data may be misleading if class intervals are poorly chosen.

AYOUT



Title: Final Design Sheet
Author: Yuan Kah Mun
Date: 5 October 2025
Sheet: 5
Task: Design the final layout

OPERATIONS

scrollable

Map

- Toggle button = switch between "primary" & "secondary"
- Time slider: show data by states year by year from 2017 to 2022

Other Idioms

- Add Filter Dropdowns
 - stage: Primary & Secondary
 - Year: 2017 - 2022
 - State & F.T. (16)
- Tooltip included when hover to data points
- Annotations included for extremes
- Visual hierarchy brought out at ranked bar chart, by color difference in shade.

Algorithm: Wiring + filter
[Brushing]

FOCUS

- All idioms are equally important
- (i) Choropleth map - spatial overview on one of 1000 people in that state, how many people have access to basic education
- (ii) Grouped Bar Chart & Deviation Dot Plot
 - How many students per school does each state have
 - To identify potential overcrowding (high negative deviation) or infrastructure crises (high positive deviation)
- (iii) Dumbbell - reveal stage access gap, to identify which state has widest disparities between 2 fundamental stages of basic education
- (iv) Multi Line Chart - reveal temporal trend in basic education access in selected states.
- (v) Ranked bar chart - To observe the r/s between state population & student enrolment

DETAILS

- Dependencies = - Built in HTML, CSS, Vega Lite
- Data Pre-processing in R
- Upload to GitHub
- Estimated Time & Effort = Around 11 days till completion
- Data Cleaning & preparation ~1 day
 - Idioms building ~ 7 days
 - Research ~ 1 day
 - Dashboard design ~ 2 days
- Specific requirements = Choice of colours, friendly to color blind viewers
- Interactive features & mark interesting annotations.