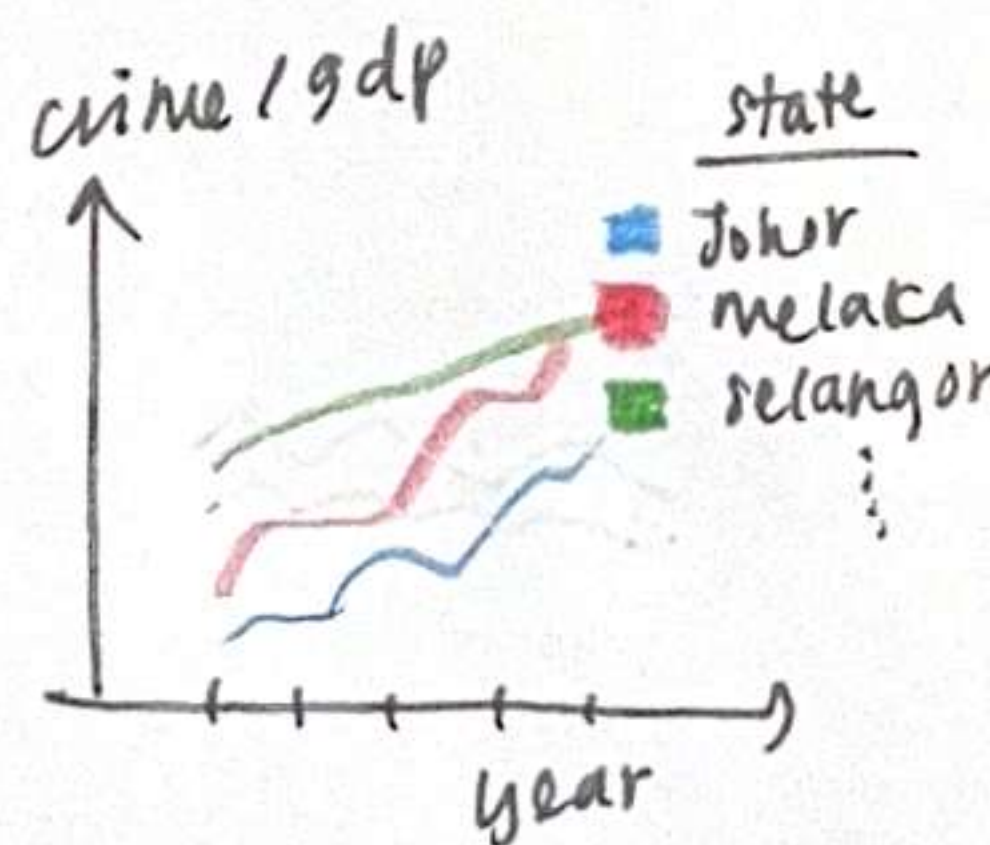
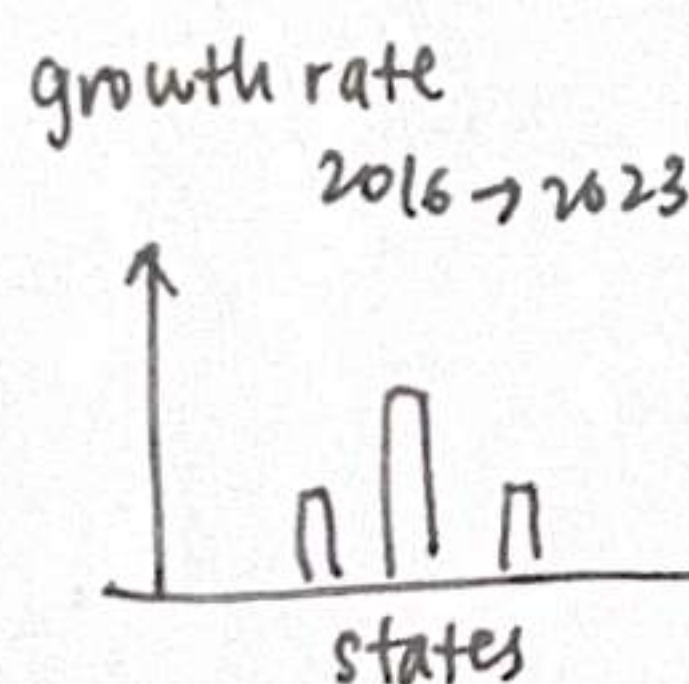
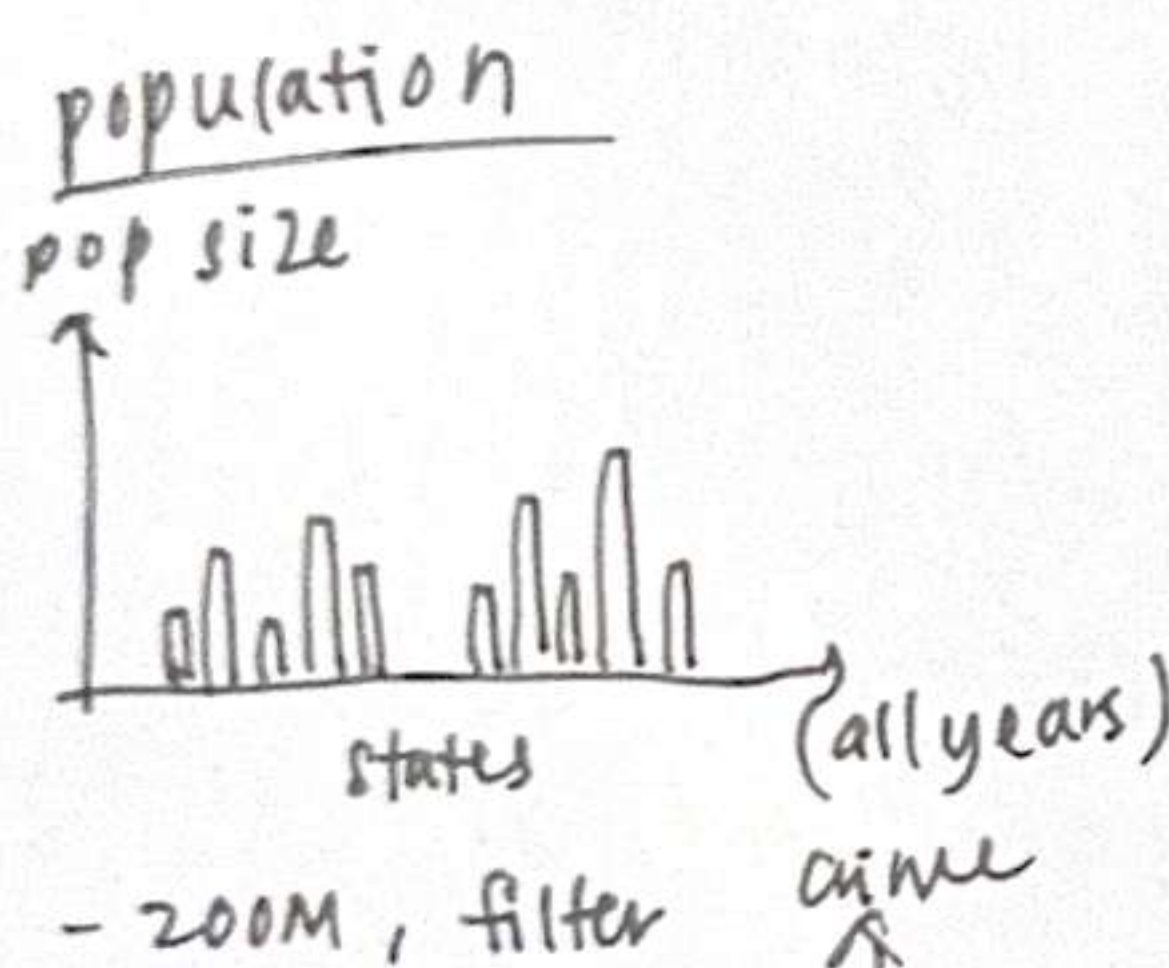
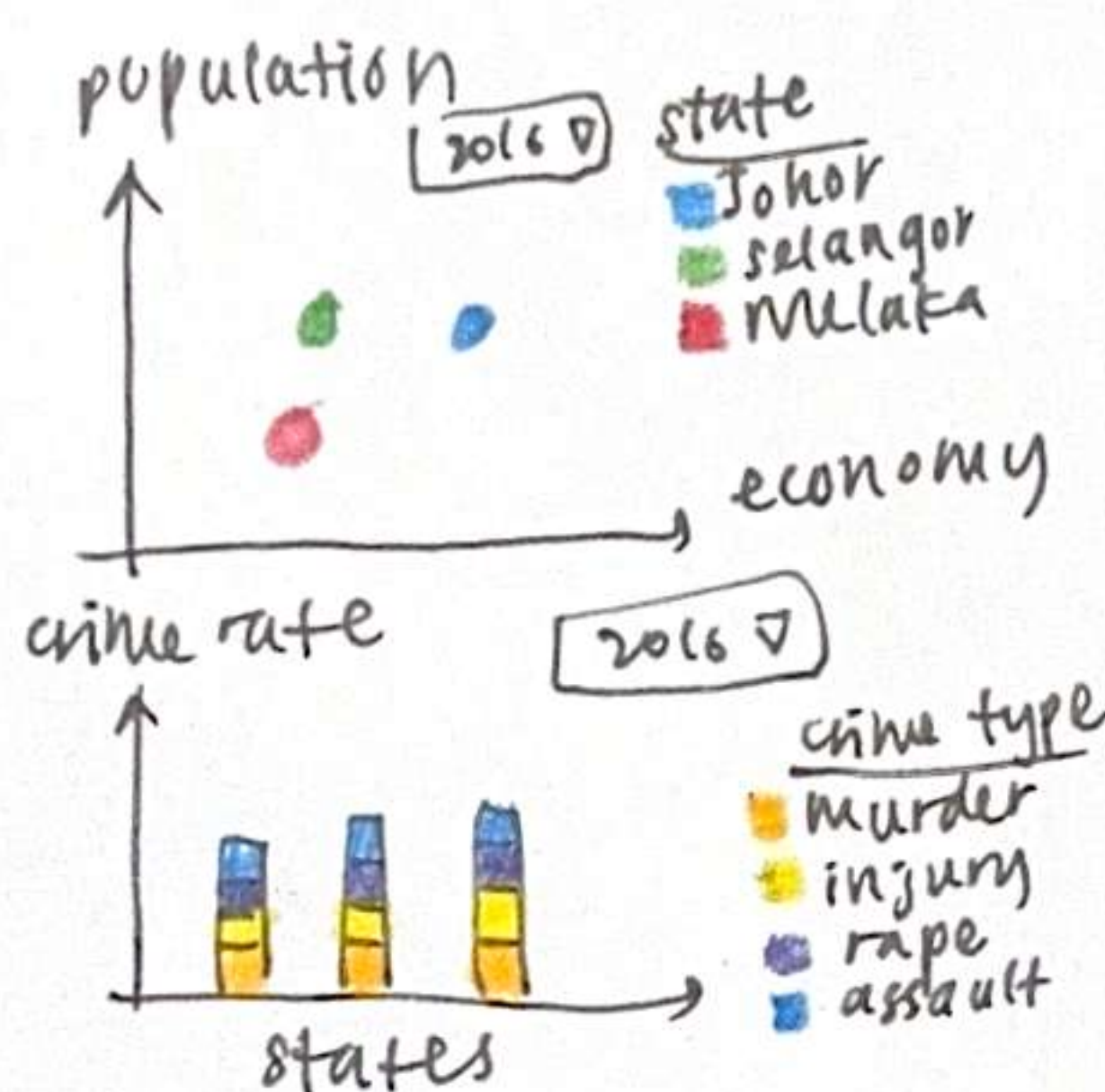
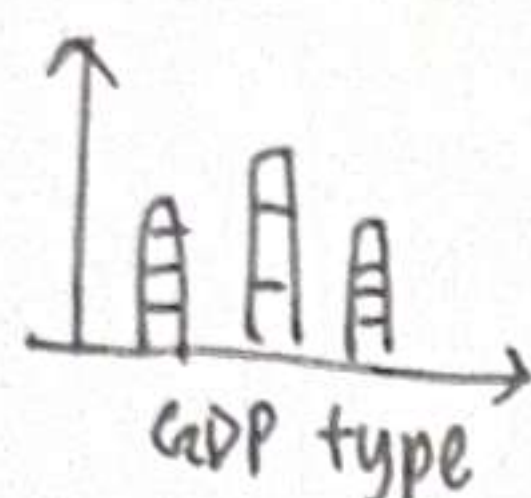
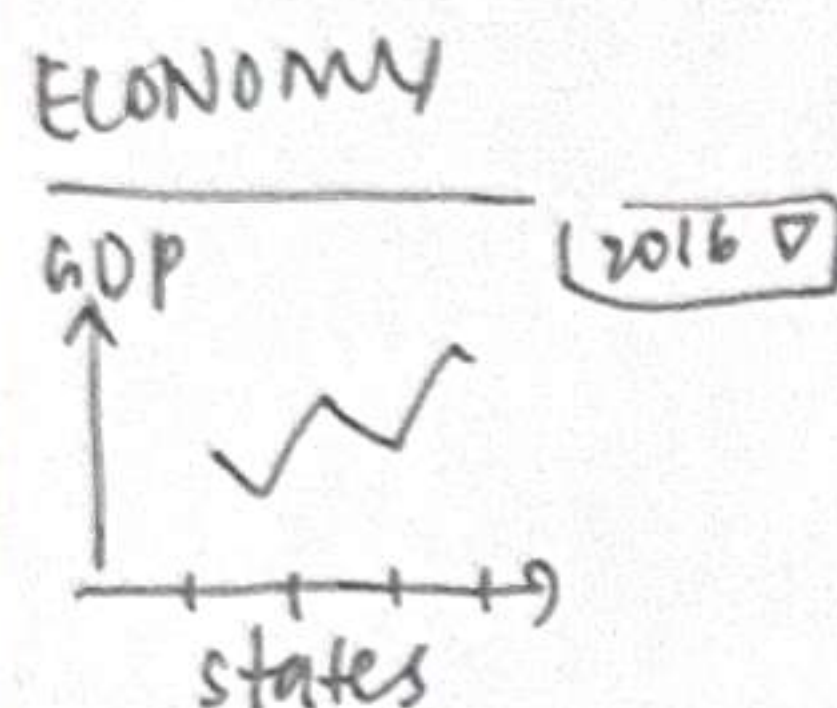
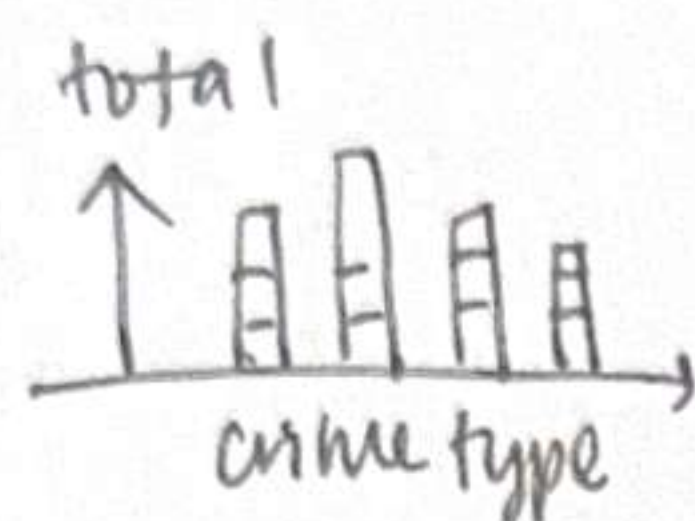


IDEAS

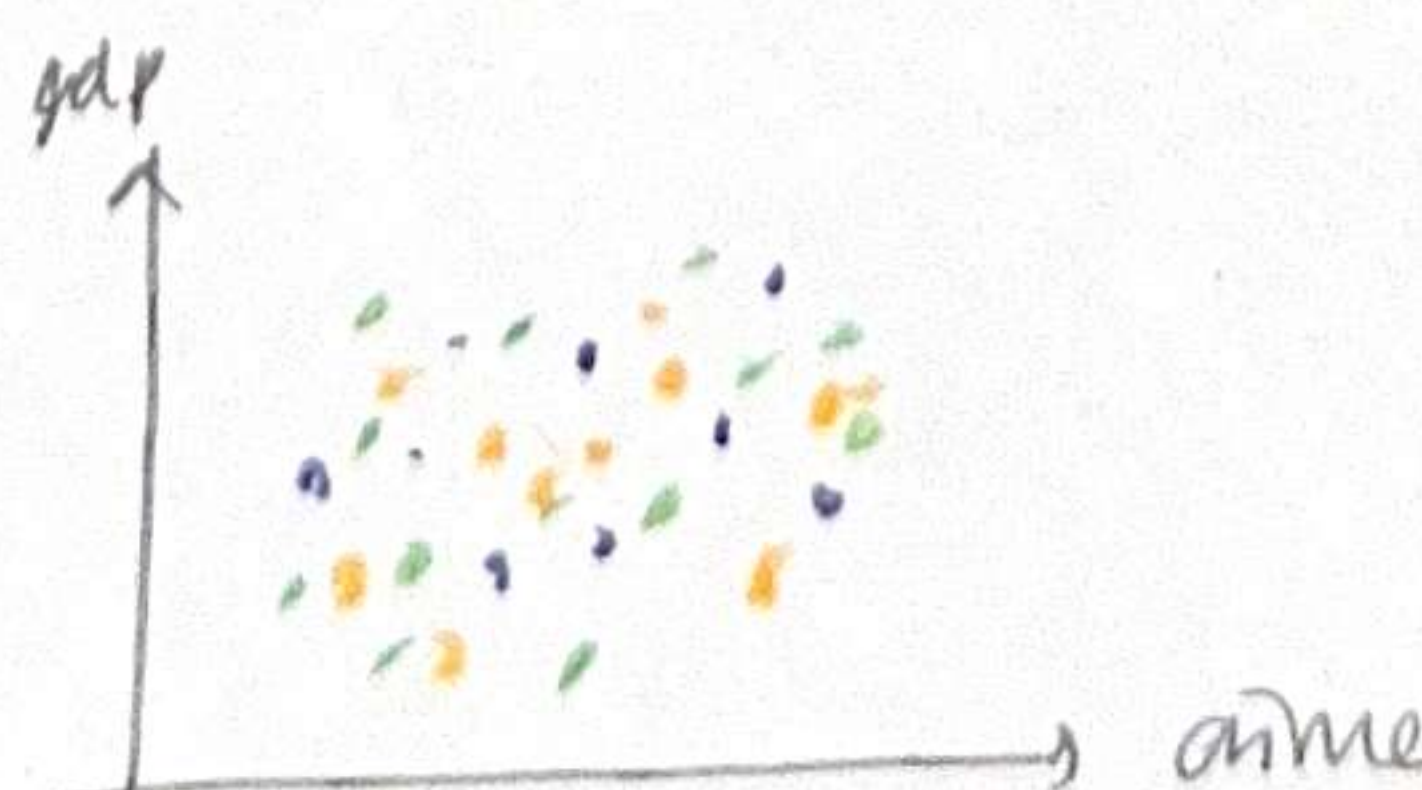
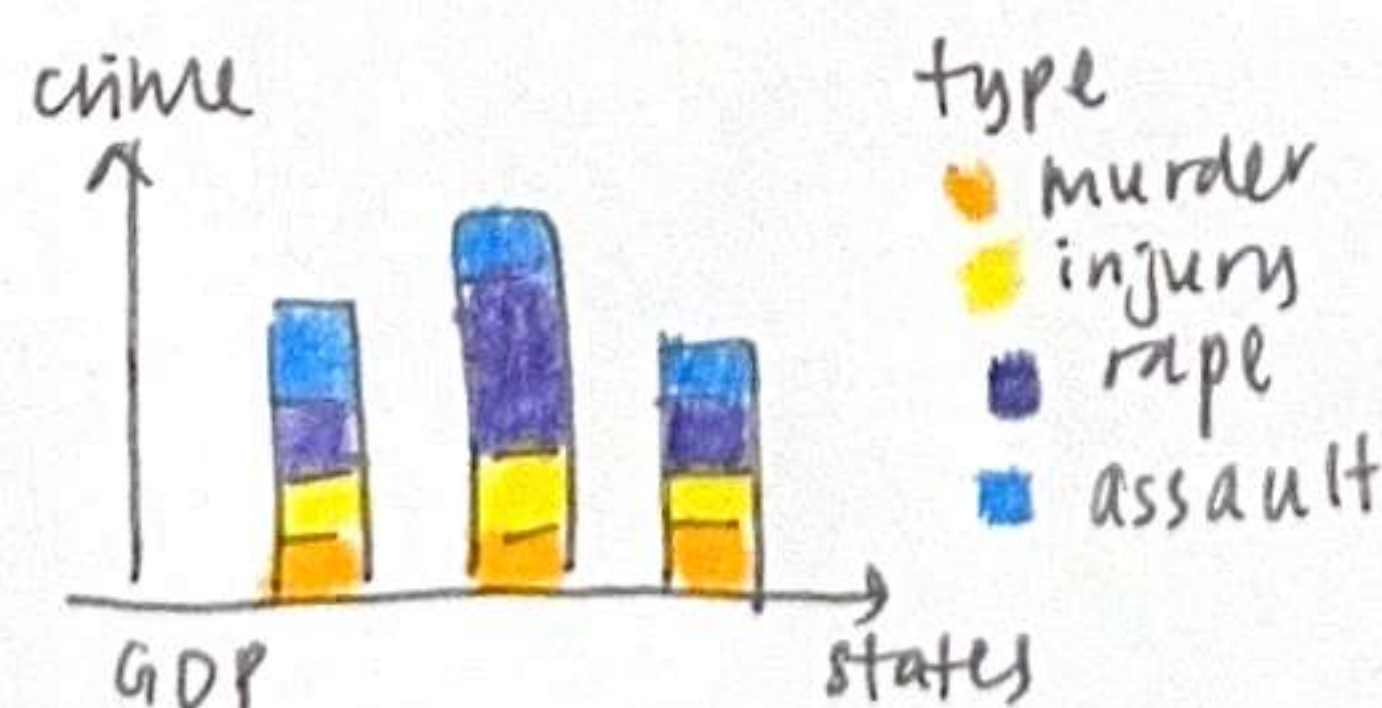
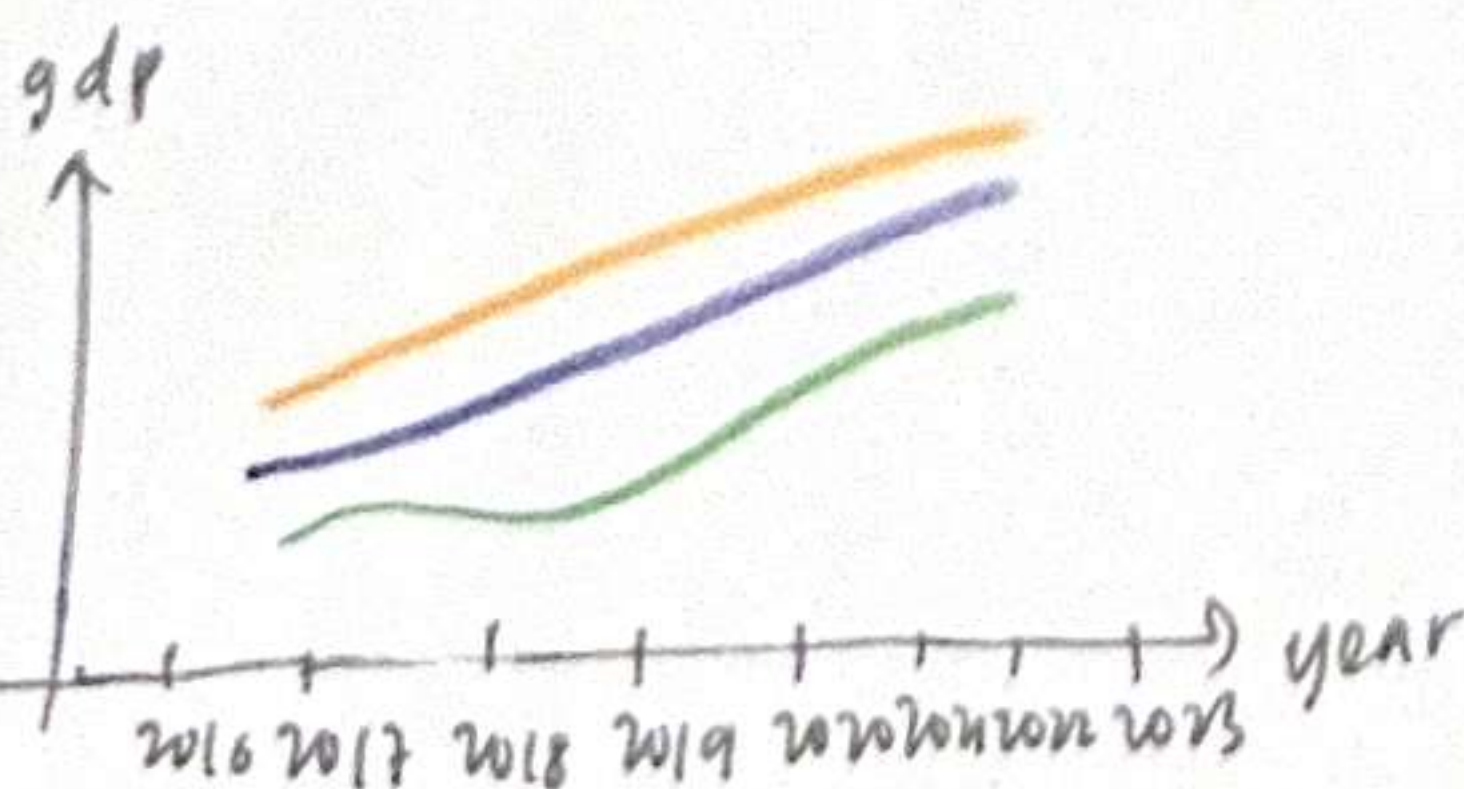
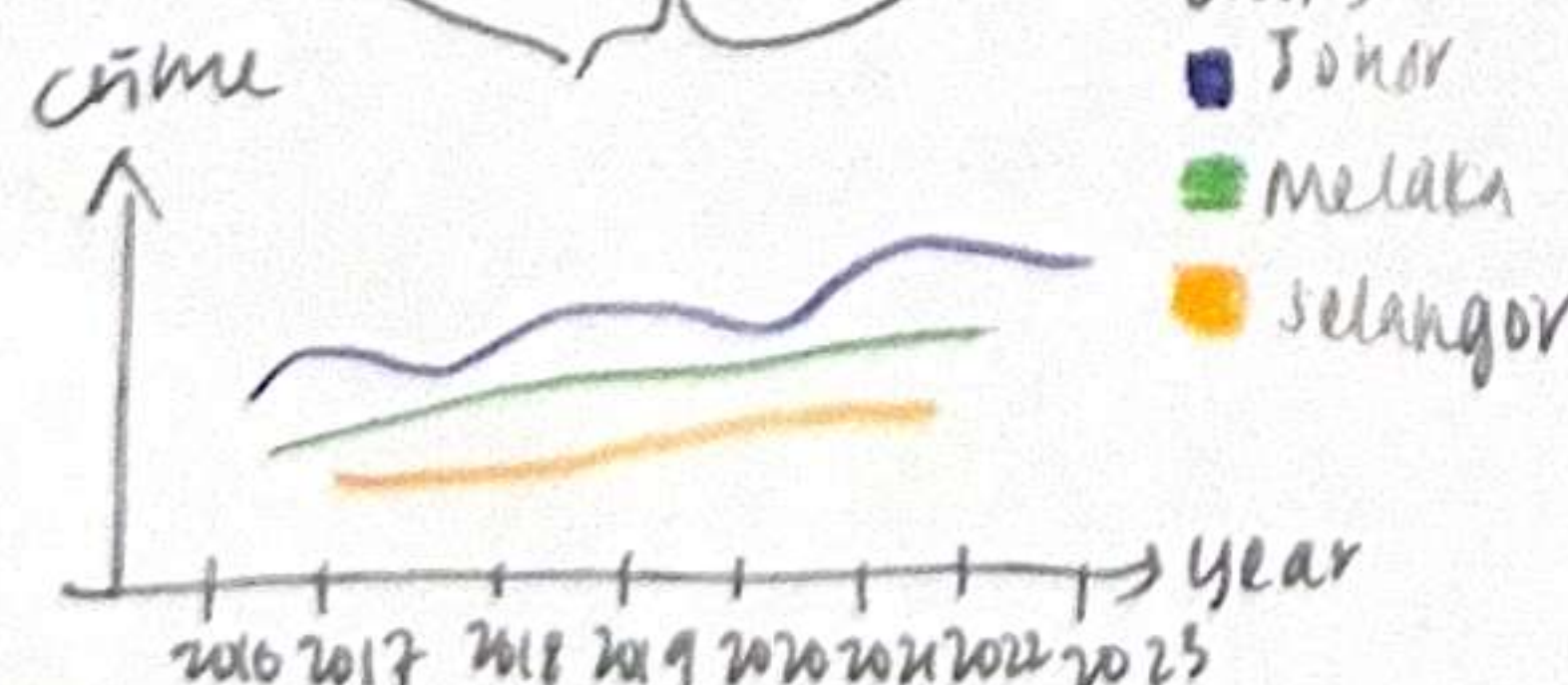
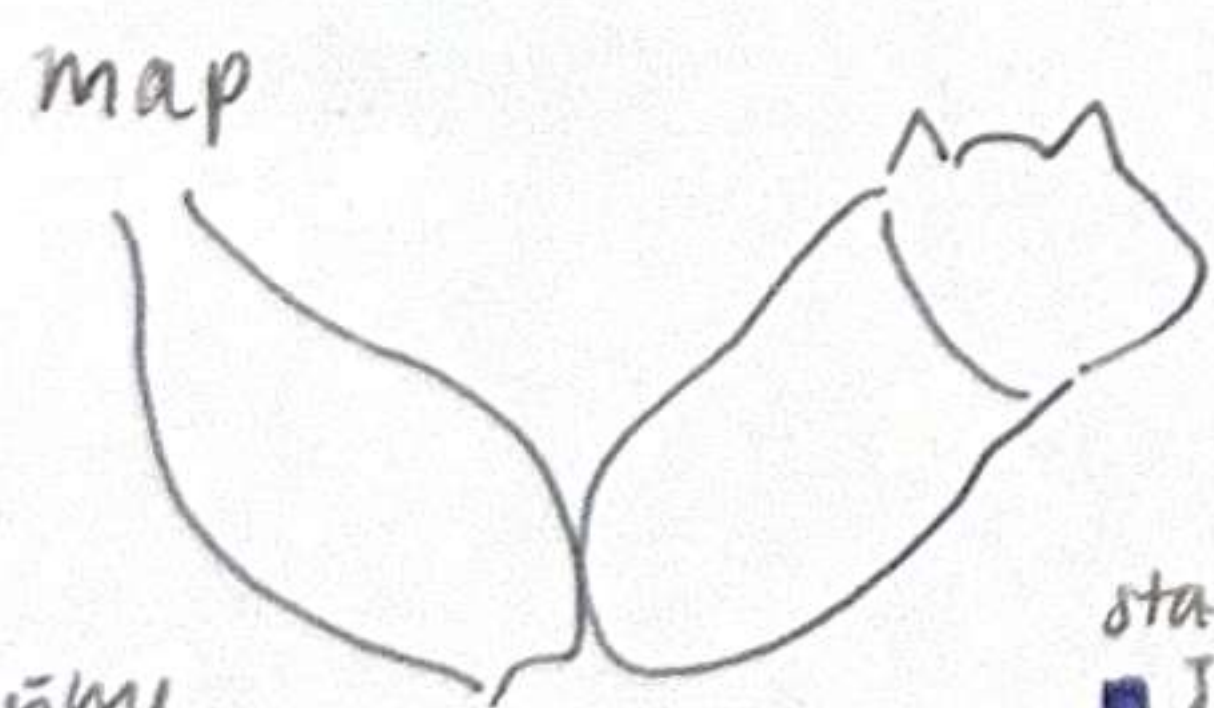
MALAYSIA
 { crime
 population
 economy (GDP)

DOES ECONOMY AFFECT CRIME RATE IN MALAYSIA?



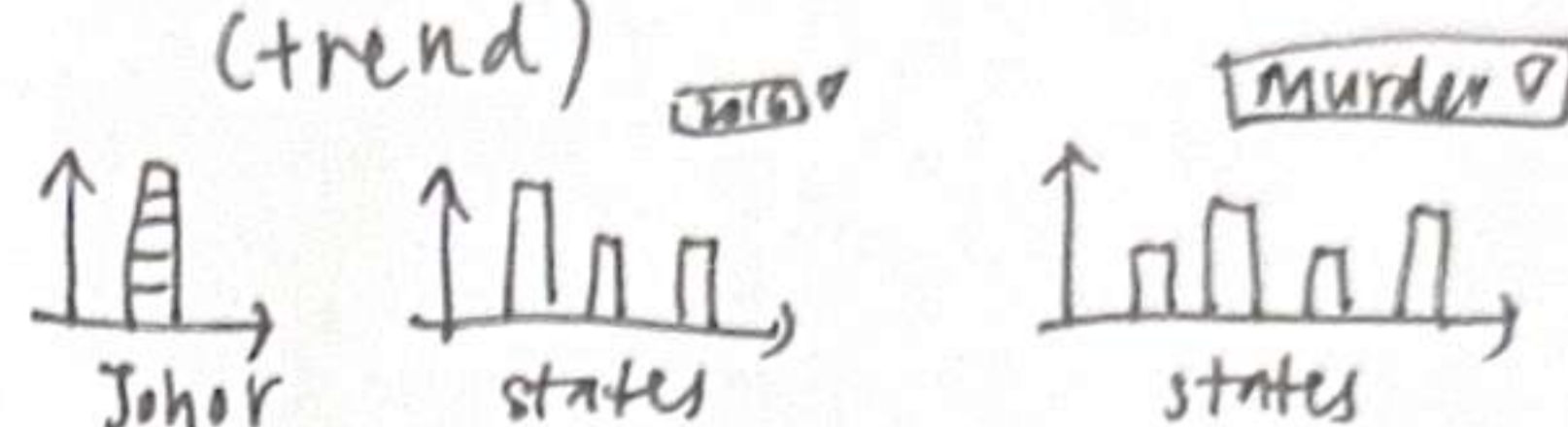
COMBINE & REFINER

Dashboard layout

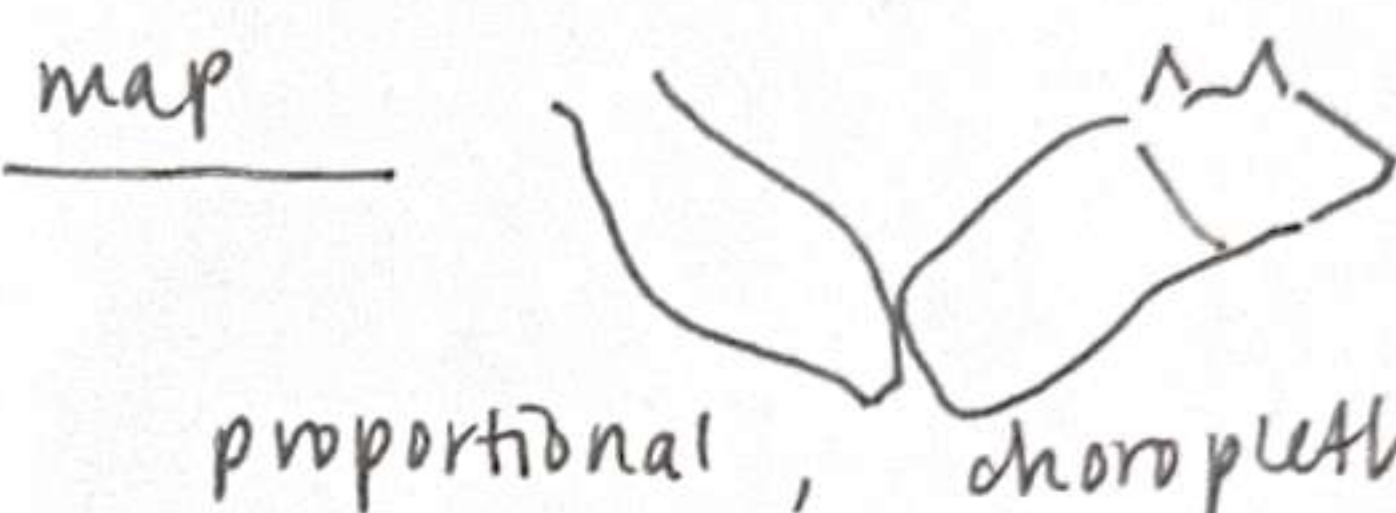


FILTER

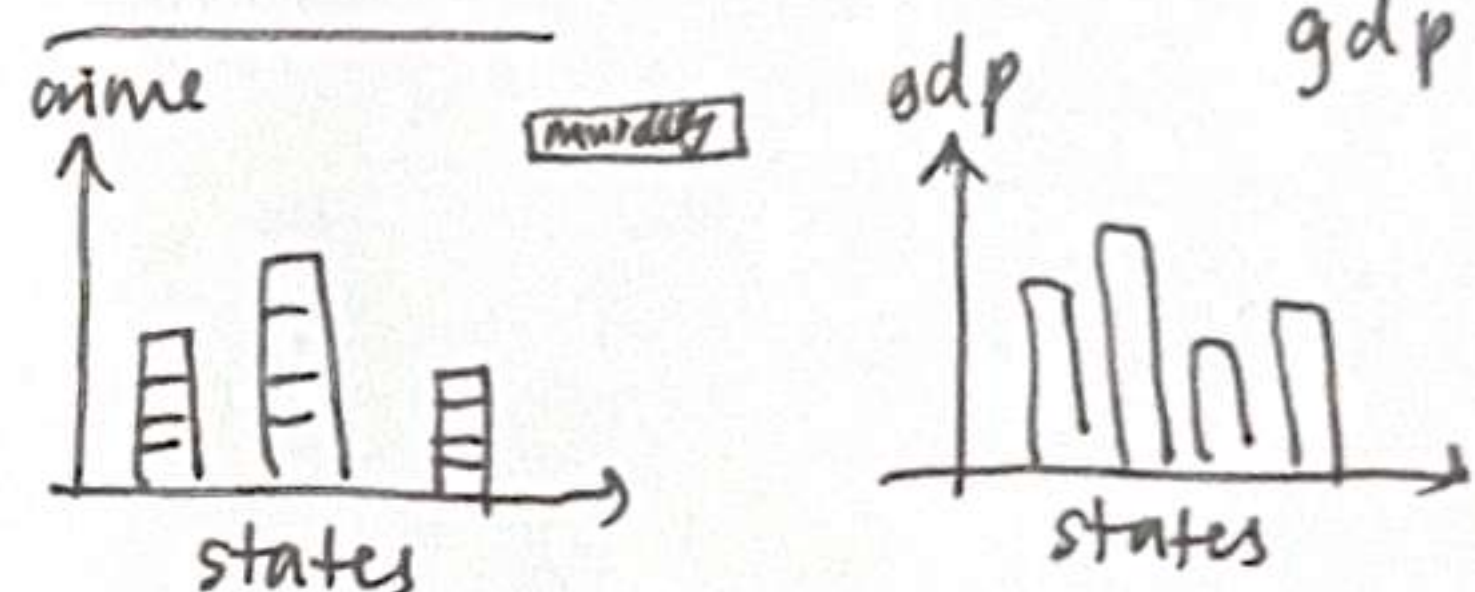
- see crime & gdp mainly, x population
- 1 prop, 1 choropleth map, dot?
- prop -> crime, gdp, chor -> gdp/pop
- breakdown -> detailed view
- filter by crime type, year, states
- overview view -> over the years
- crime vs gdp overview (trend)



CATEGORIZE



breakdown -> detailed view - bar chart, line



overview -> line, trend over years, split by states



compare -> scatter / small multiple (trend)



QUESTION?

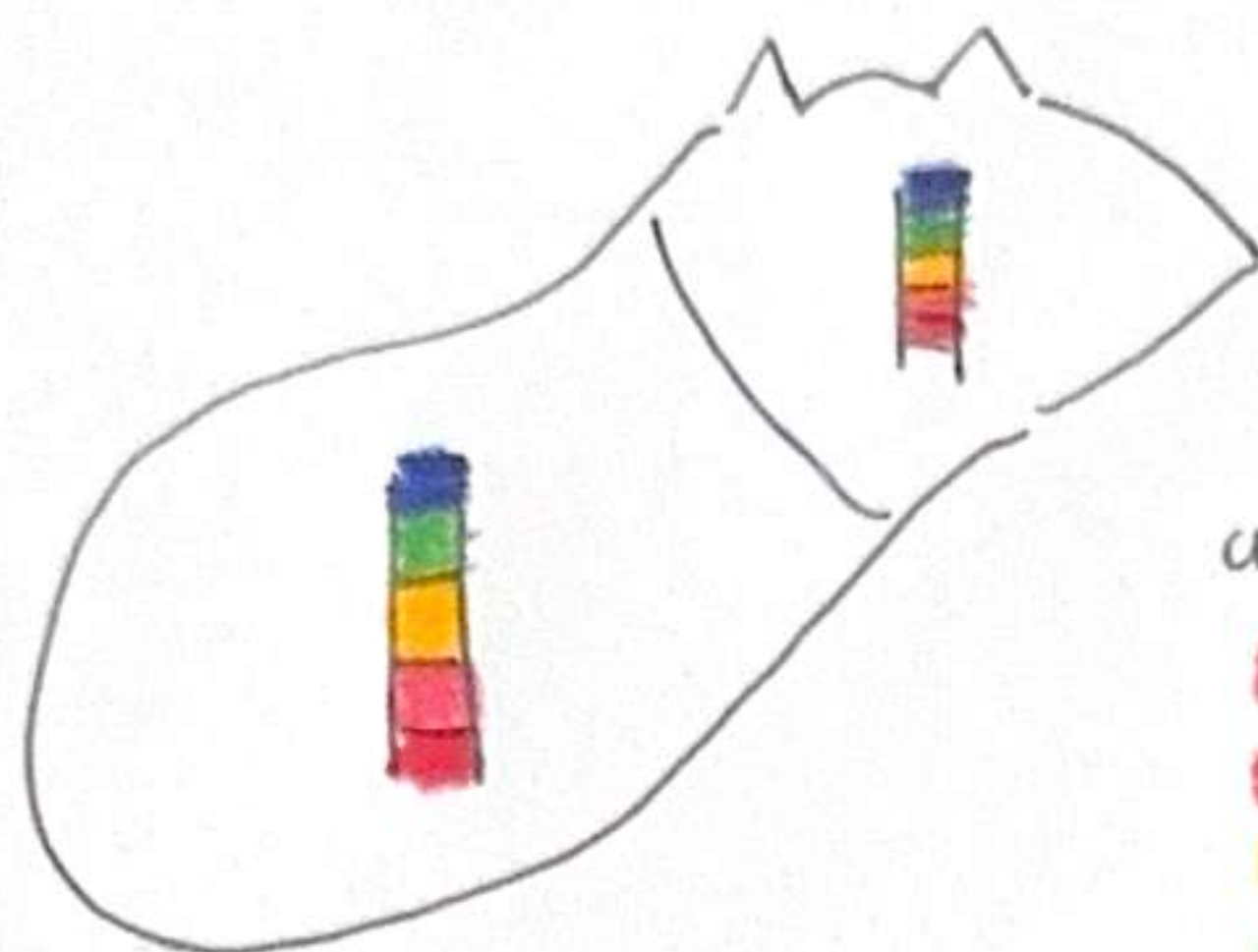
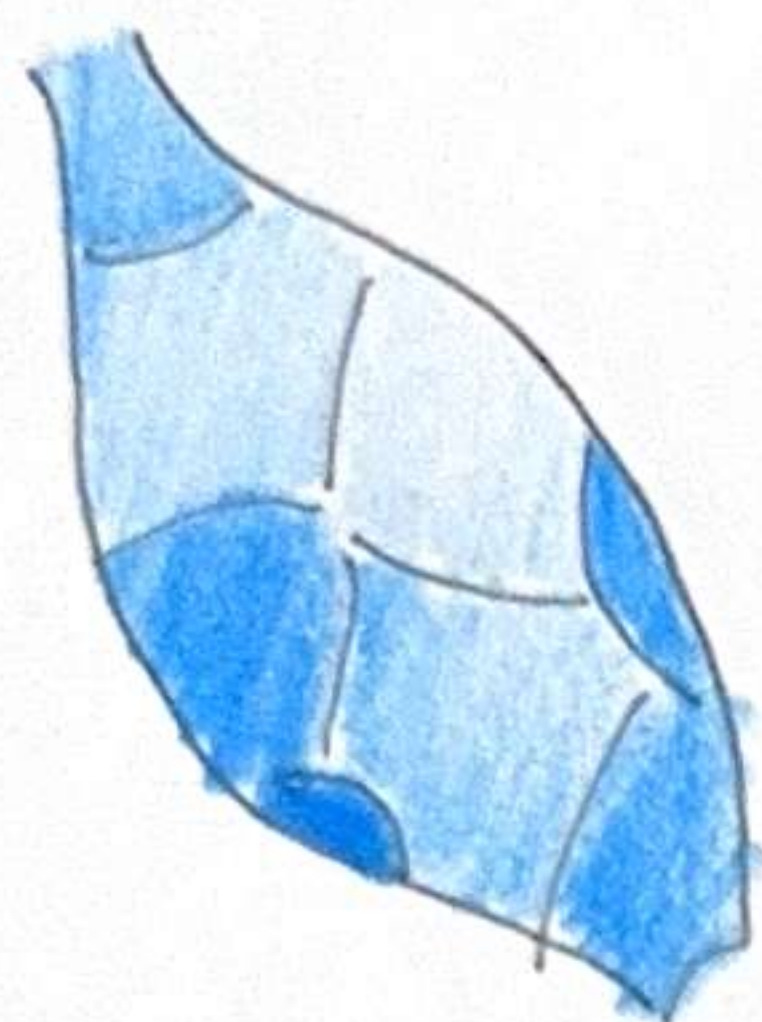
- how economy of states affect crime rate?
- how population affect crime rate
- how population affect economy
- growth rate of population?

LAYOUT

CRIME & GDP 2016 - 2023

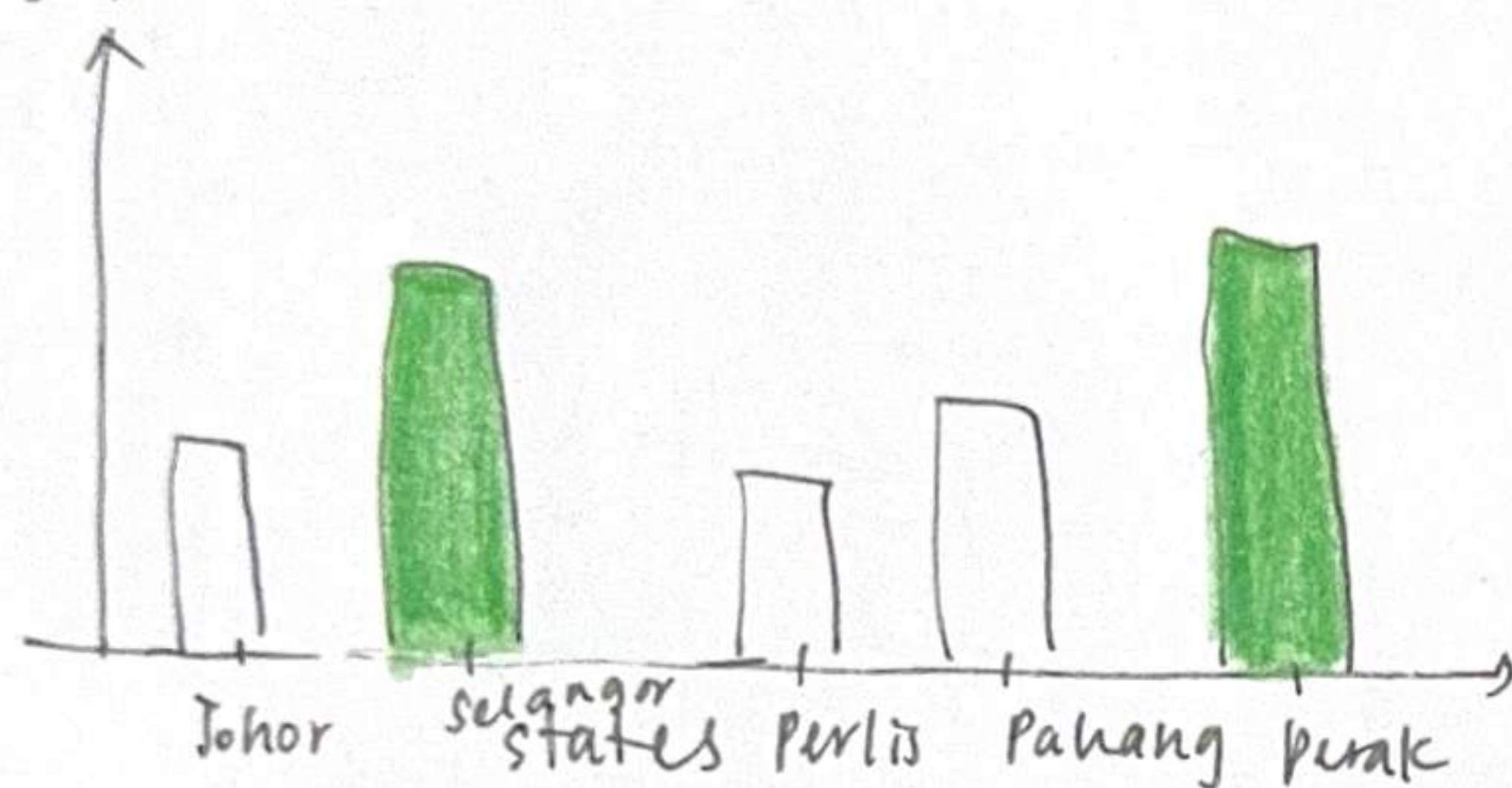
[All states]

[2016]

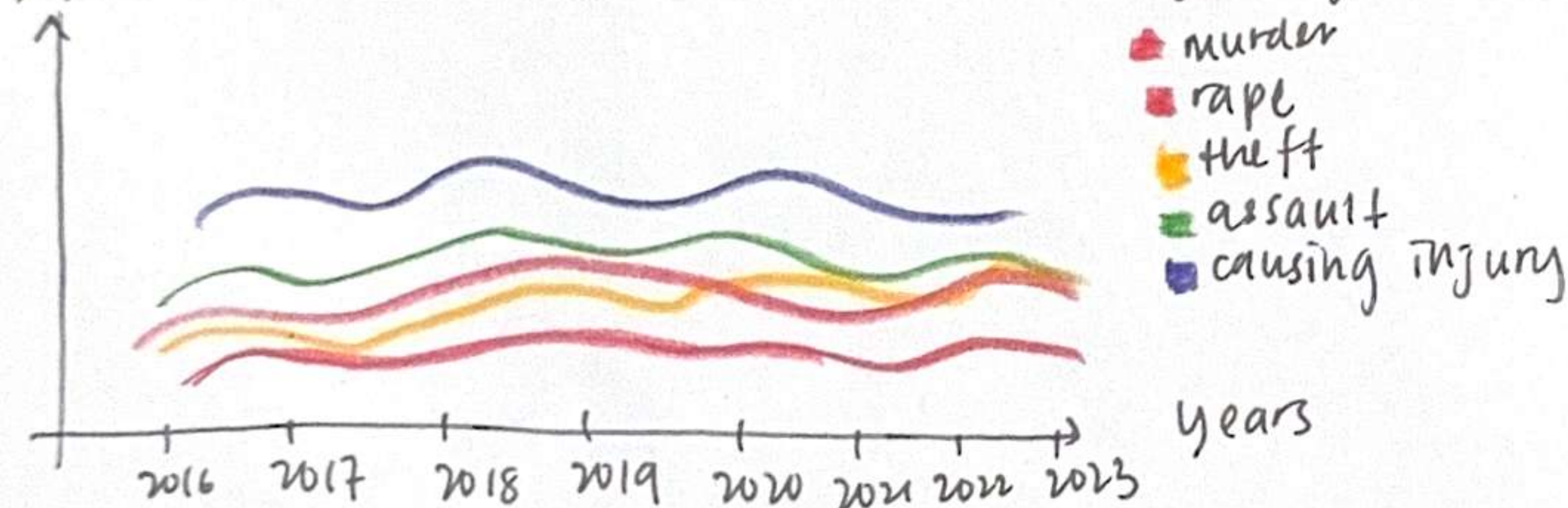


crime types
murder
rape
theft
assault
causing injury

gdp/crime



gdp/crime



TITLE : CRIME & GDP in MALAYSIA

AUTHOR : Chok Huey Yan

SHEET : 2

DATE : 18/10/2025

TASK : visualise choropleth of crime/pop or gdp/pop, breakdown crime type, over the years

OPERATIONS

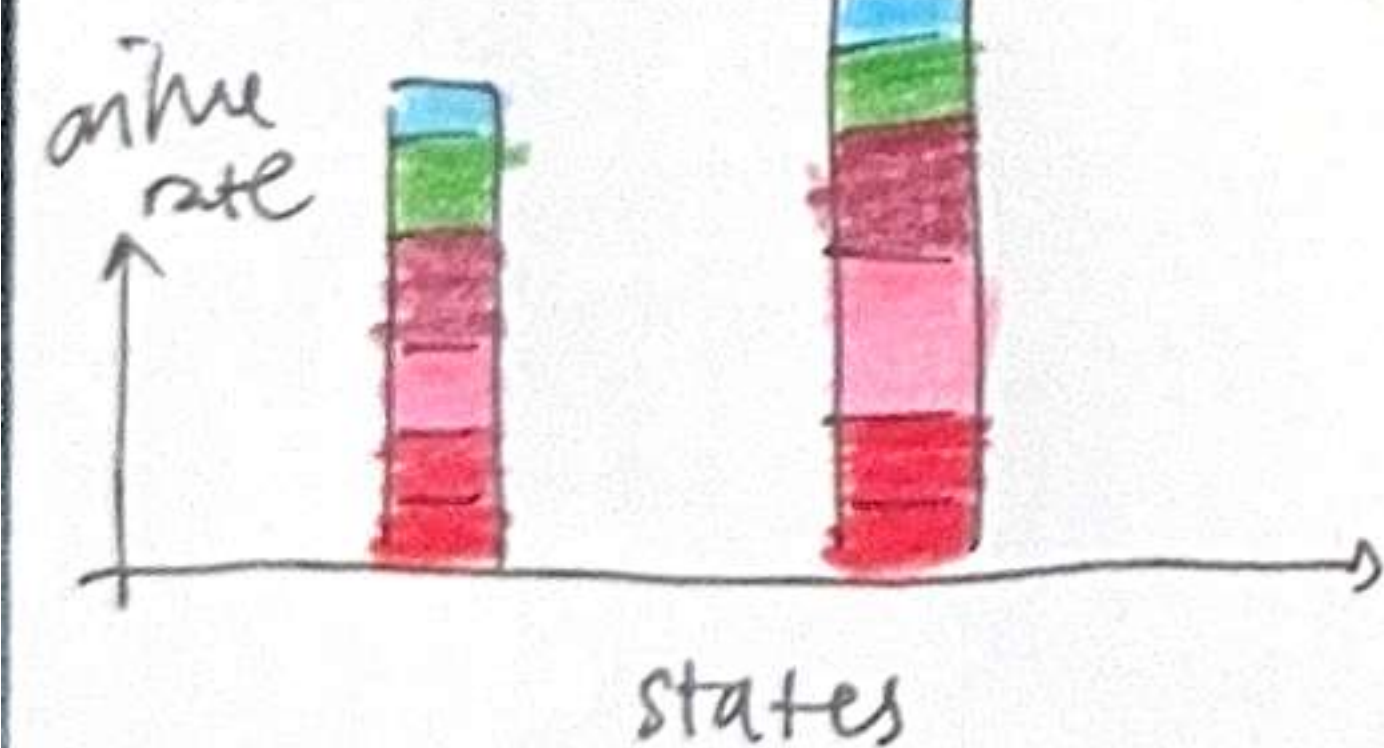
- choropleth map visualising crime or gdp, within each state of the map, have a stacked bar chart categorising crime types (if visualise crime)
- gdp - bar chart of gdp value for each states, can filter years
- crime - stacked bar chart (no need if map already have), choose GDP
- line chart of overview
 - ↳ gdp → categorise by states
 - crime → categorise by crime types, and states

FOCUS

[2016]

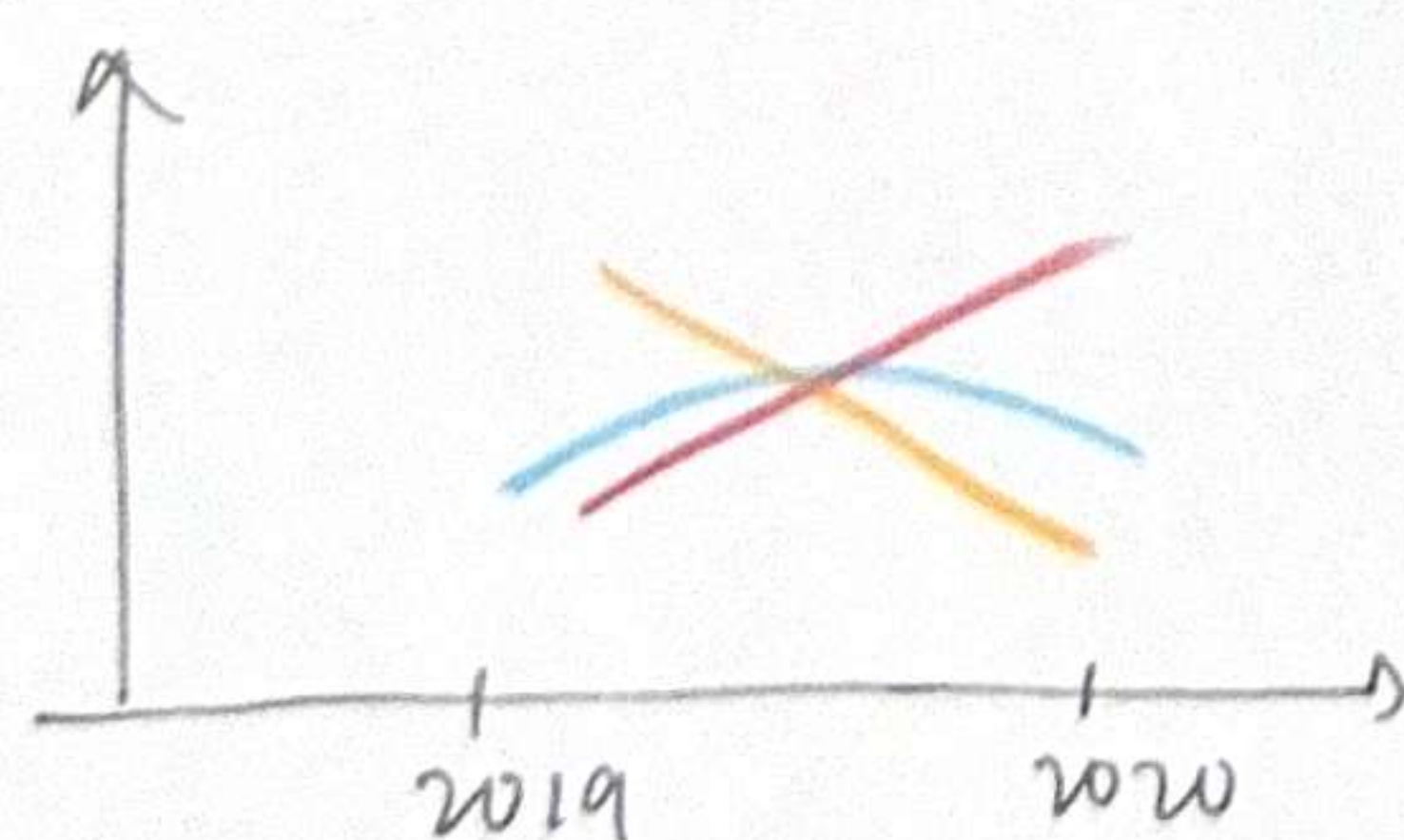
crime type

breakdown of crime types & ~~rates~~ rates of each states

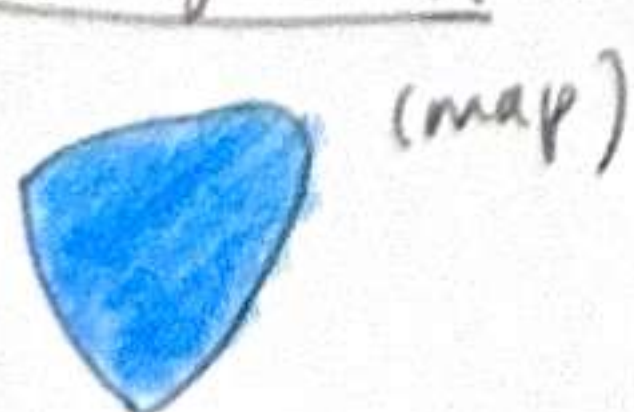


year 2019 - 2020

crime rate



[Selangor]



gdp



gdp/crime



DISCUSSION

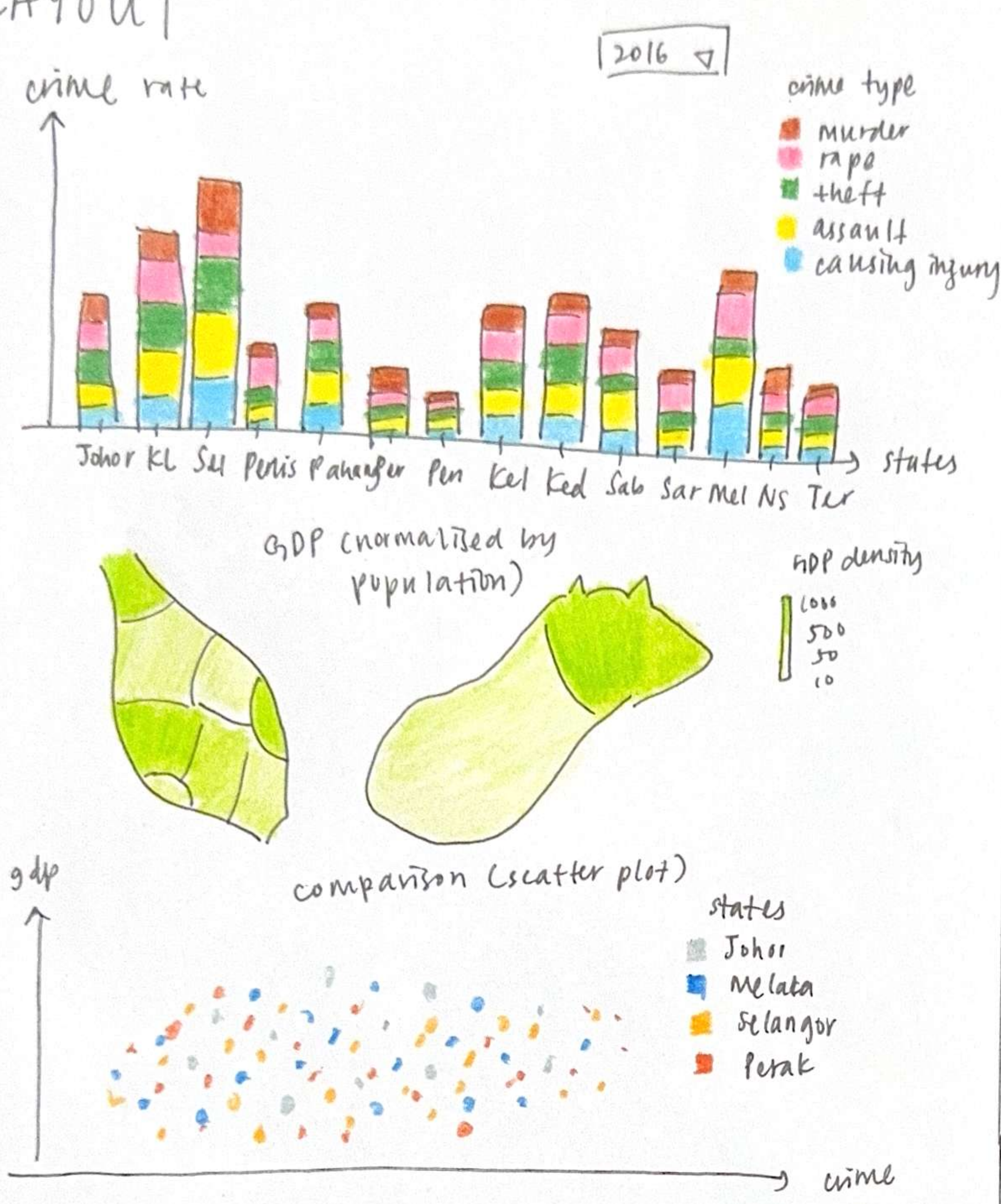
advantage :

- visualise choropleth of crime (normalized) by population along with crime types and rates in each states
- breakdown of each states of the gdp/crime values - detailed view, can filter state & year
- have overview gdp/crime value over the years to observe trend

disadvantage :

- lack comparison view of gdp vs crime, cannot see correlation between these two attributes
- hard to implement bar chart within each state on a map?

LAYOUT

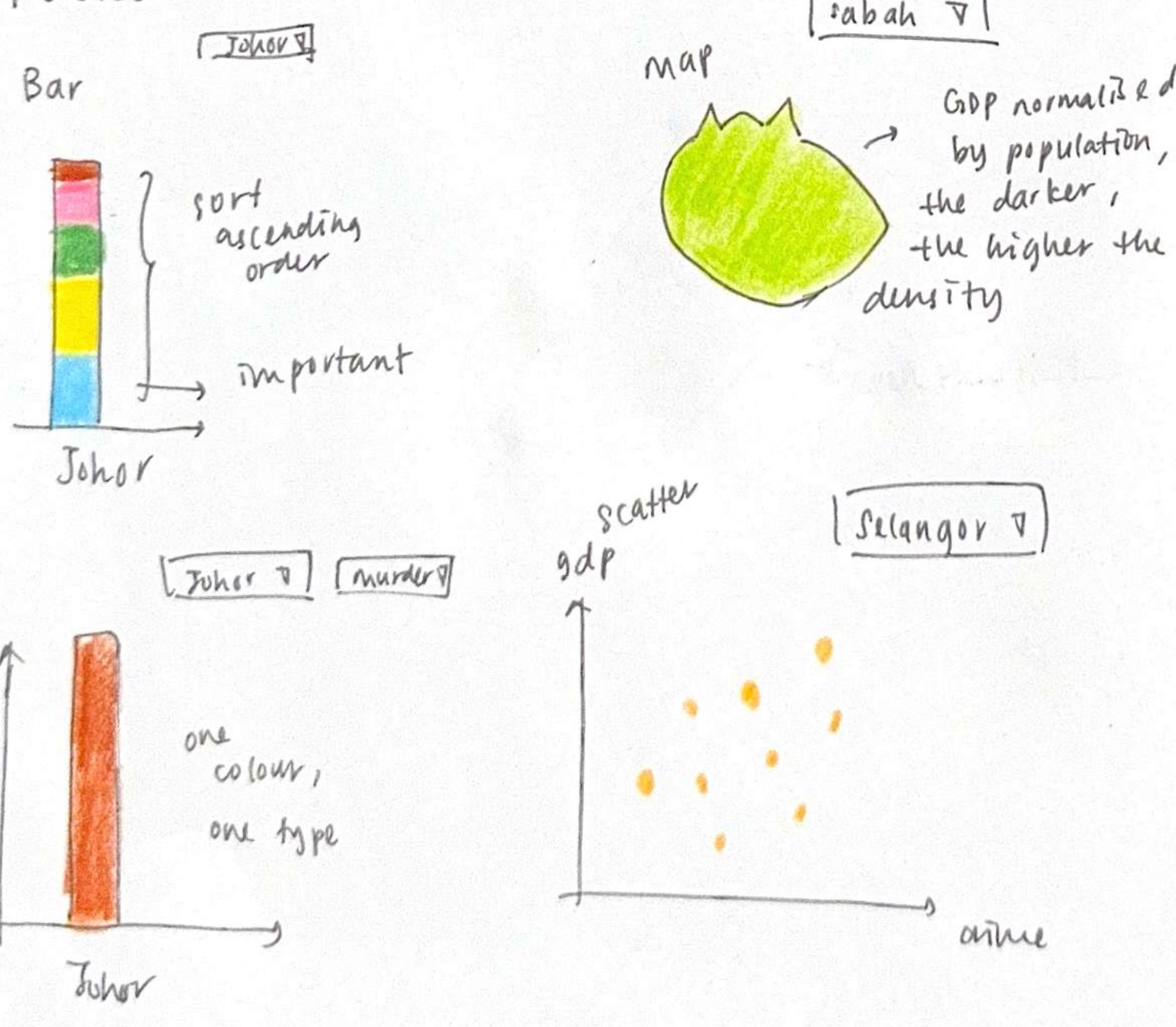


TITLE : CRIME & GDP in MALAYSIA
AUTHOR : Chok Huey Yan
SHEET : 3
DATE : 18/10/2025
TASK : understand crime rates & types in Malaysia, GDP of states, comparison

OPERATIONS

- stacked bar chart → break down by crime types, show both ~~rate~~ crime rate and categories in a single chart by state
- map - choropleth, GDP normalised by population, sequential colour channel to visualise density, the darker the colour, the higher the density
- scatter plot → each plot represent a value of a state in a year, so each state will have 2016-2023 plots, plotted to find trend or correlation of GDP with crime, can filter by state

FOCUS



DISCUSSION

advantage :

- break down view of crime types along with crime rates in stacked bar chart
- covers crime rate, gdp and comparison

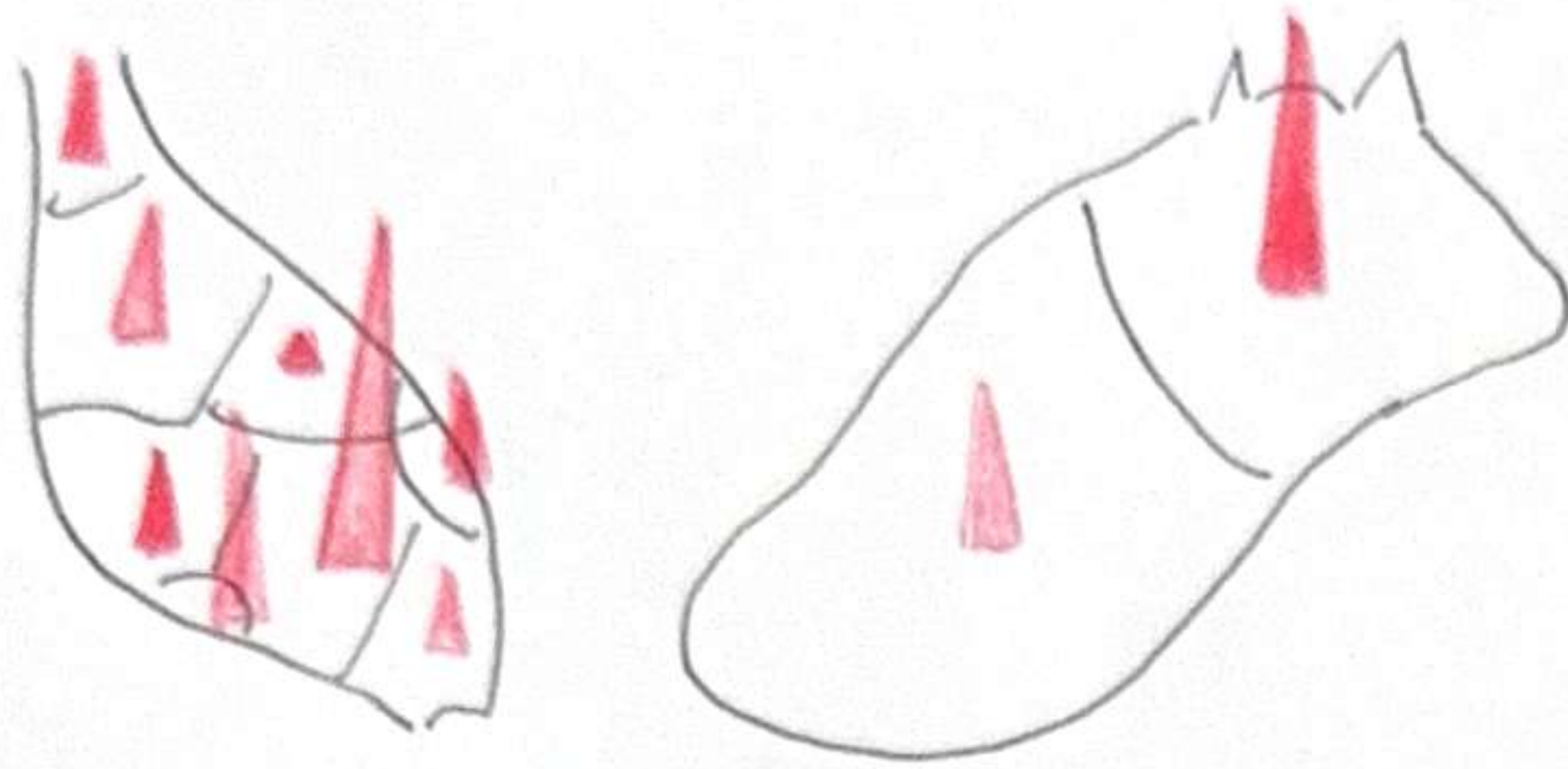
disadvantage :

- no overview by years, cannot capture trend over the years

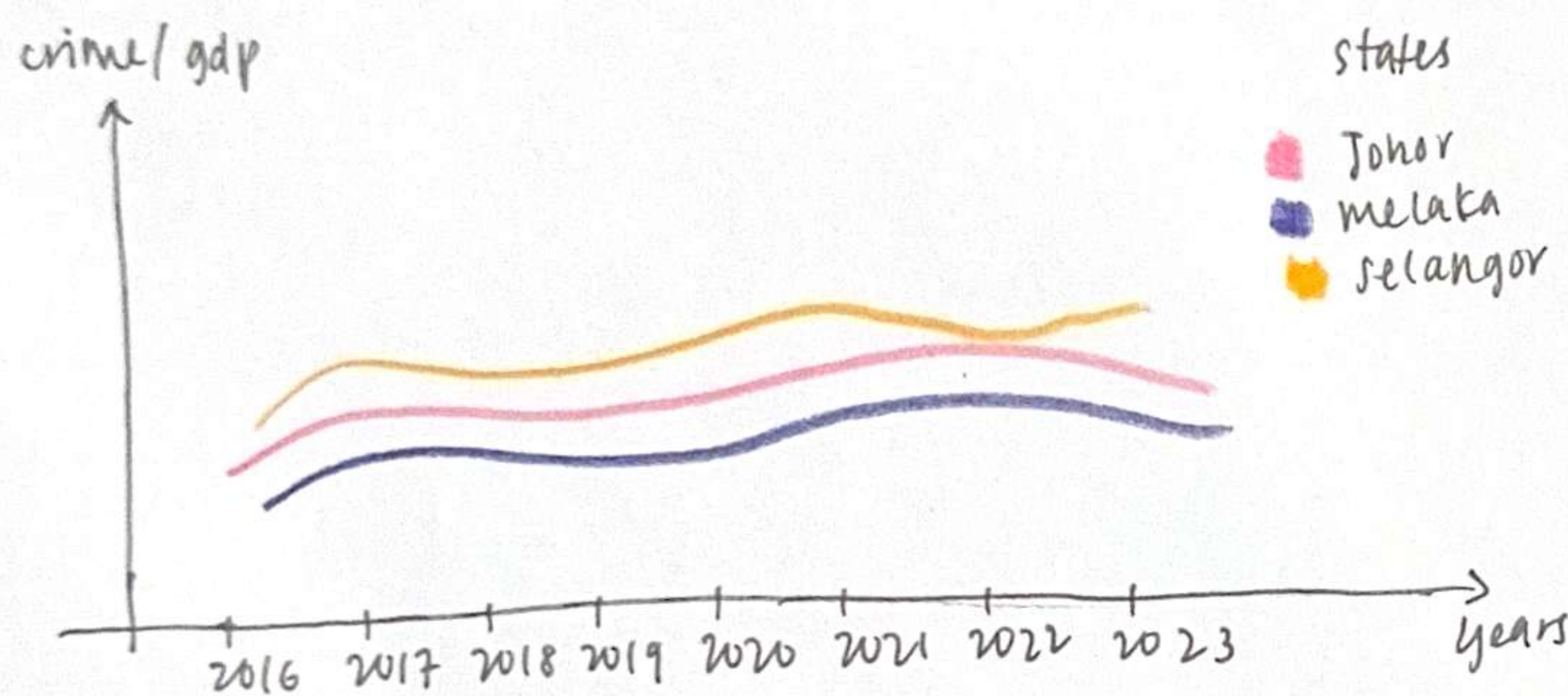
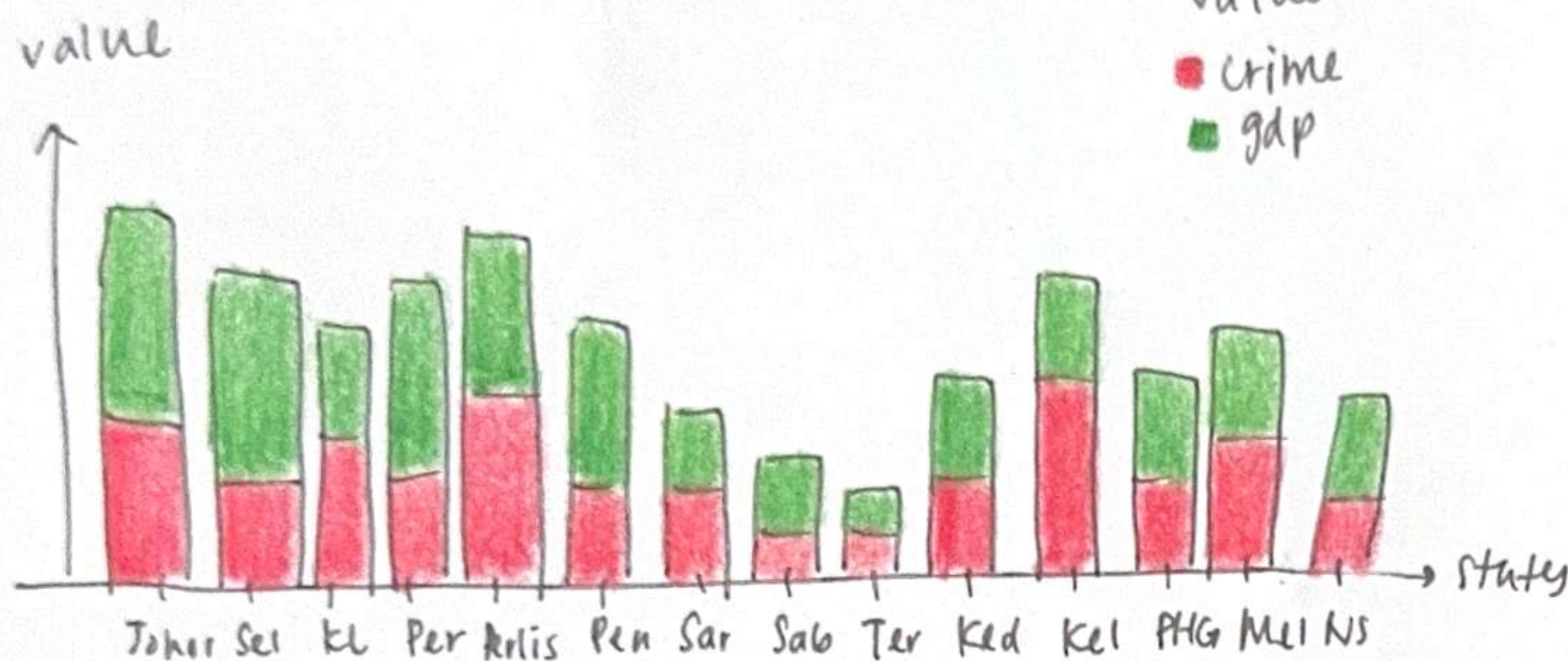
LAYOUT

[All states ▾] [All Years ▾]

CRIME RATE



GDP
value
crime
gdp



TITLE : CRIME & GDP in MALAYSIA
AUTHOR : Chok Huey Yan
SHEET : 4
DATE : 19/10/2025
TASK : proportional map of crimes in Malaysia, in relation to GDP

OPERATIONS

- proportional map visualises both crime rate & gdp of each states in one go.
- stacked bar chart gives a breakdown of clearer comparison of crime rates and gdp value of each states, can filter state and year
- line chart of overview of crime or gdp over the years, can select year range and states

FOCUS

map



[PAHANG ▾]

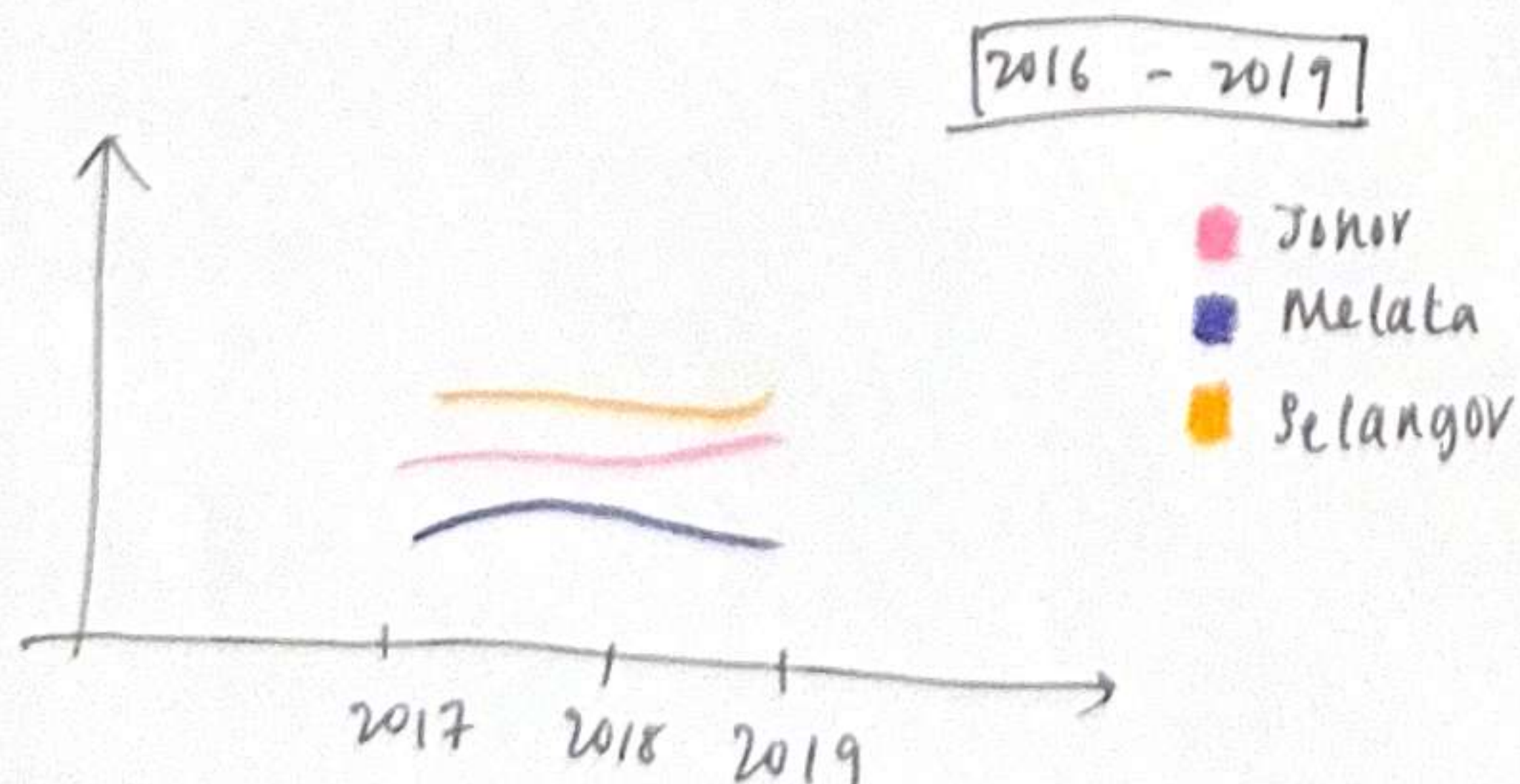
year: [2016 ▾]

tooltip:
state : Pahang
GDP : 1,200,000
crime : 2,700
year : 2016



[Johor]

[2016]



DISCUSSION

advantage :

- can visualise crime rate and gdp together in one map projection, use ^{both} sequential ^{colour} and ~~size~~ size channel
- have clearer view of breakdown of crime rates & gdp by states
- have overview of crime & gdp over the years for each states to see trend, growth / decline

disadvantage :

- may look repeated on the bar chart, low data ink ratio due to many states, consider highlighting
- the lines may look messy on a line chart
- may not capture trend

REALISATION

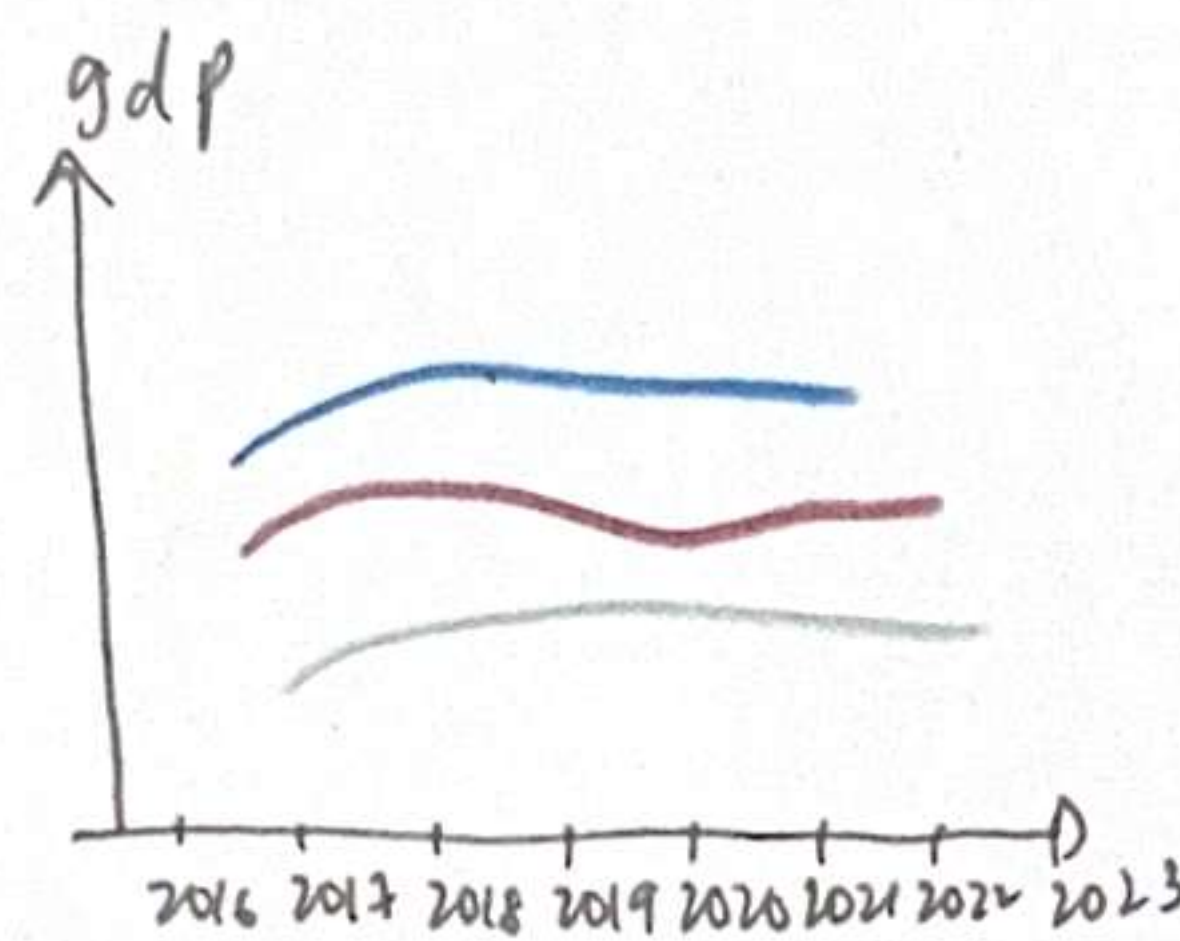
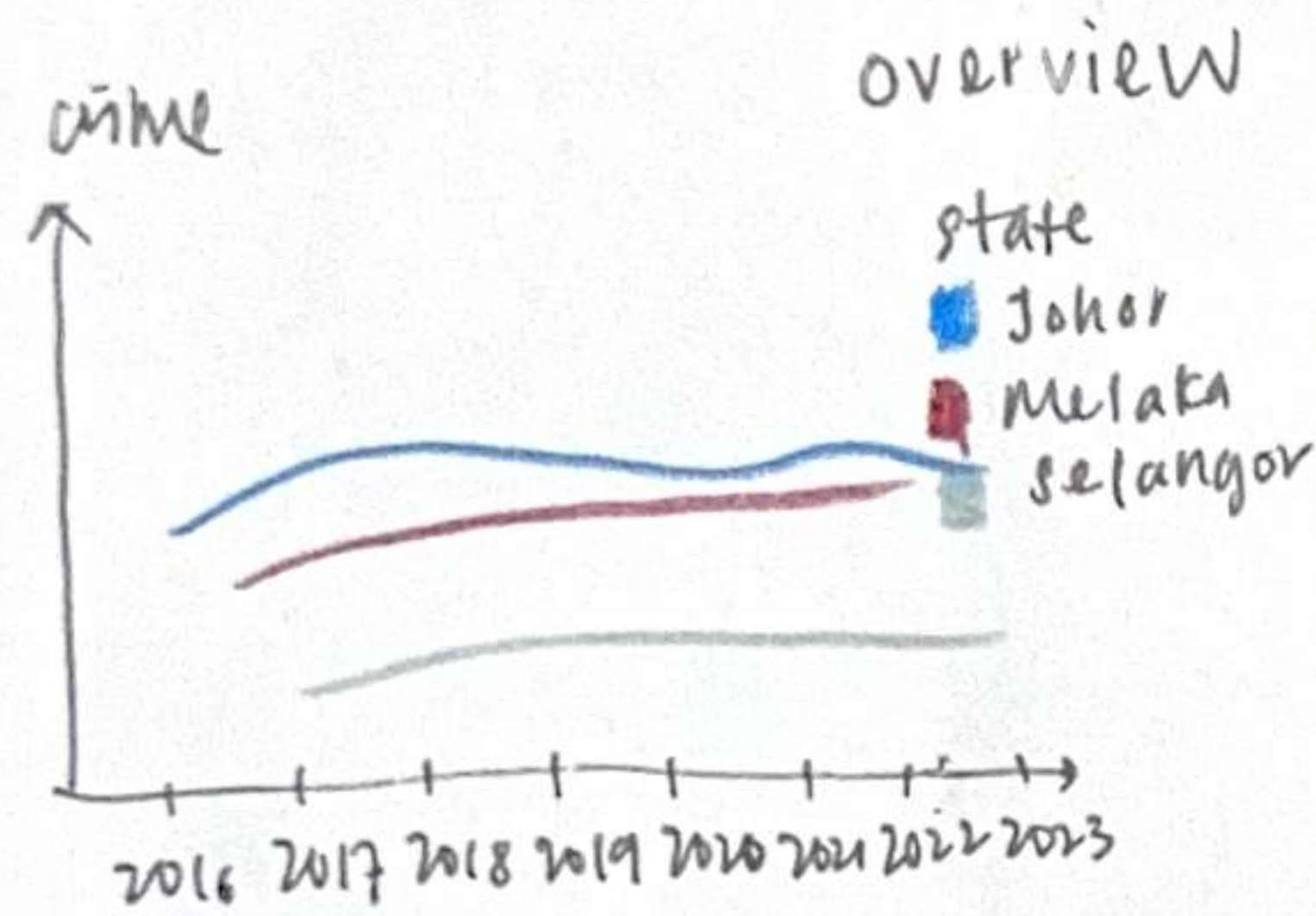
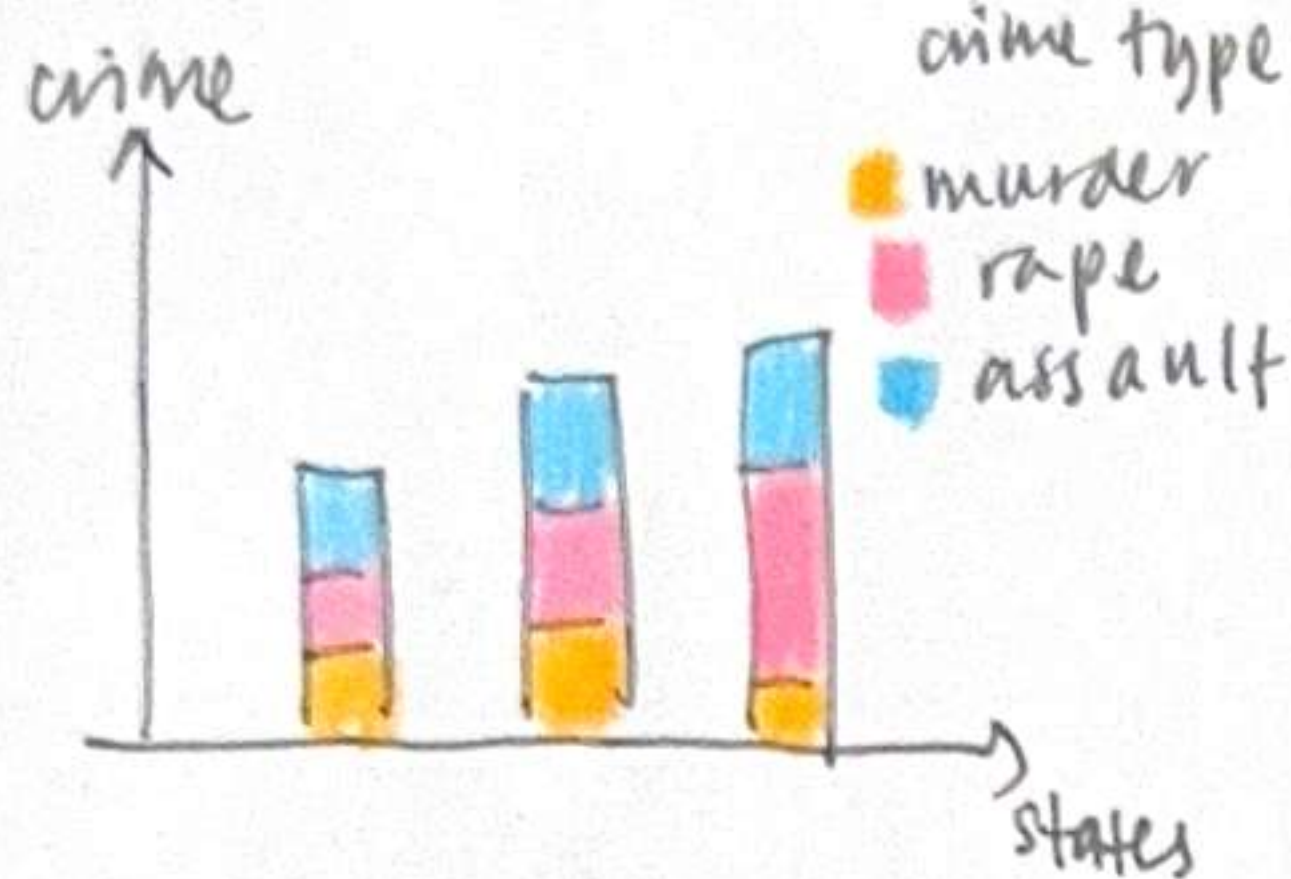
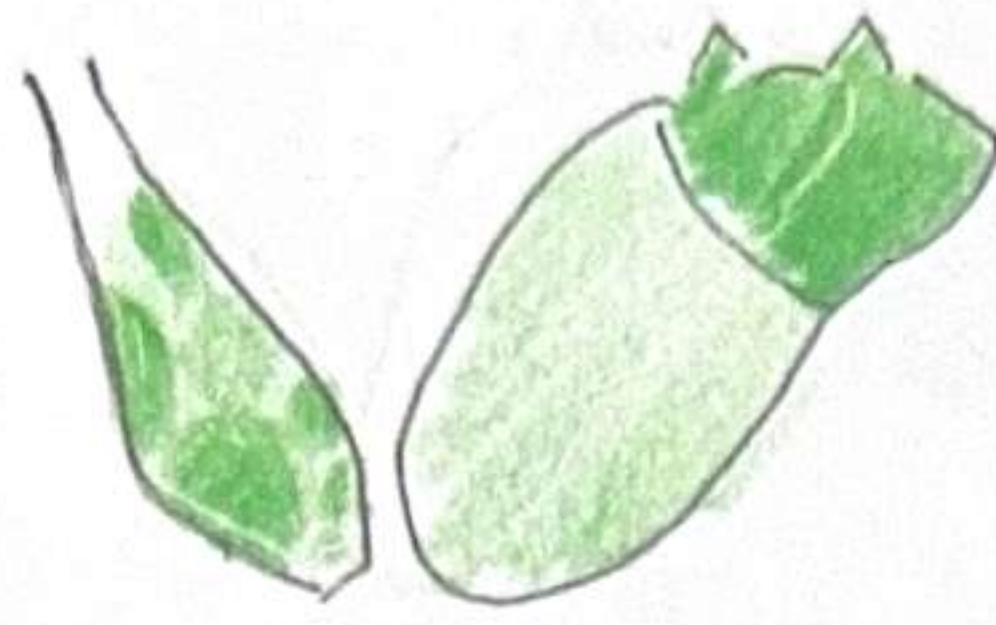
CRIMES & GDP in MALAYSIA 2016-2023

Year : State :

GDP Density
1000
500
100
10



crime rate
1000
500
100
10
population
100
1000
10000



state :

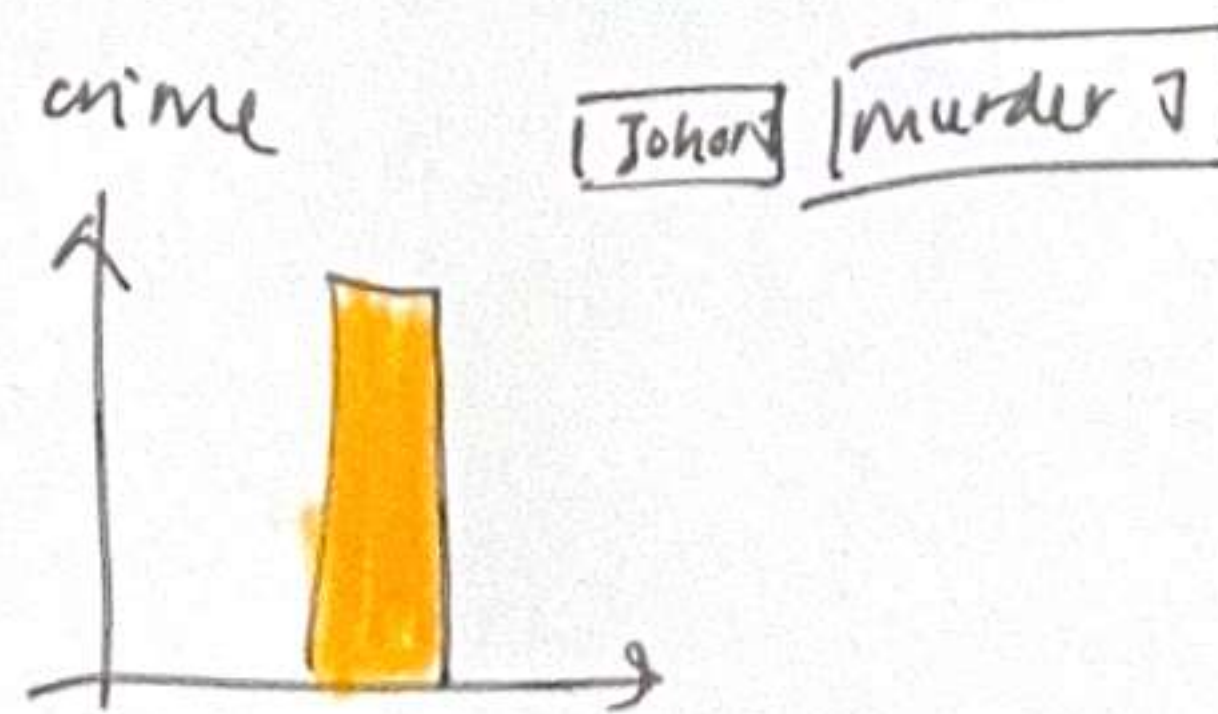
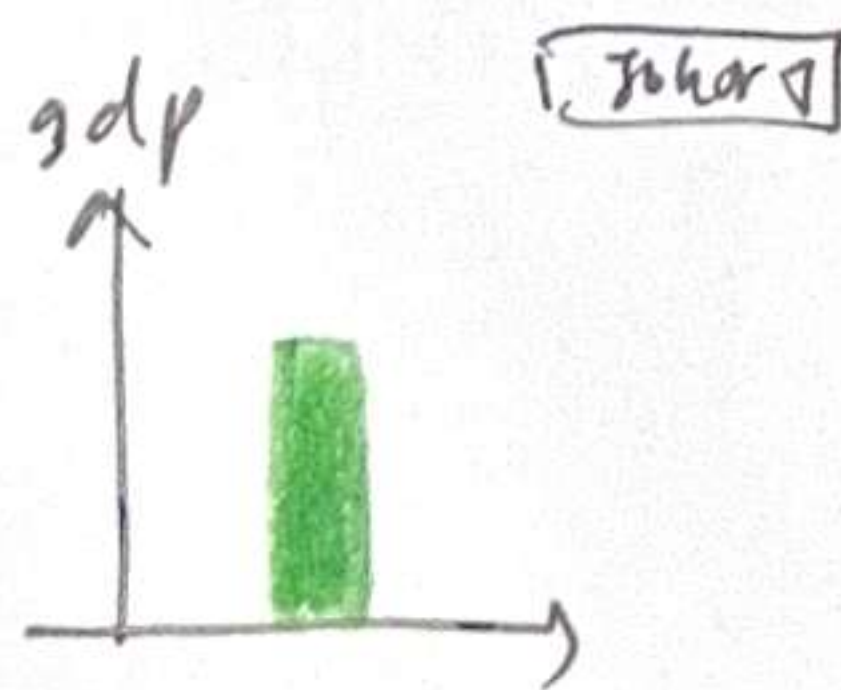
Year range :



state :

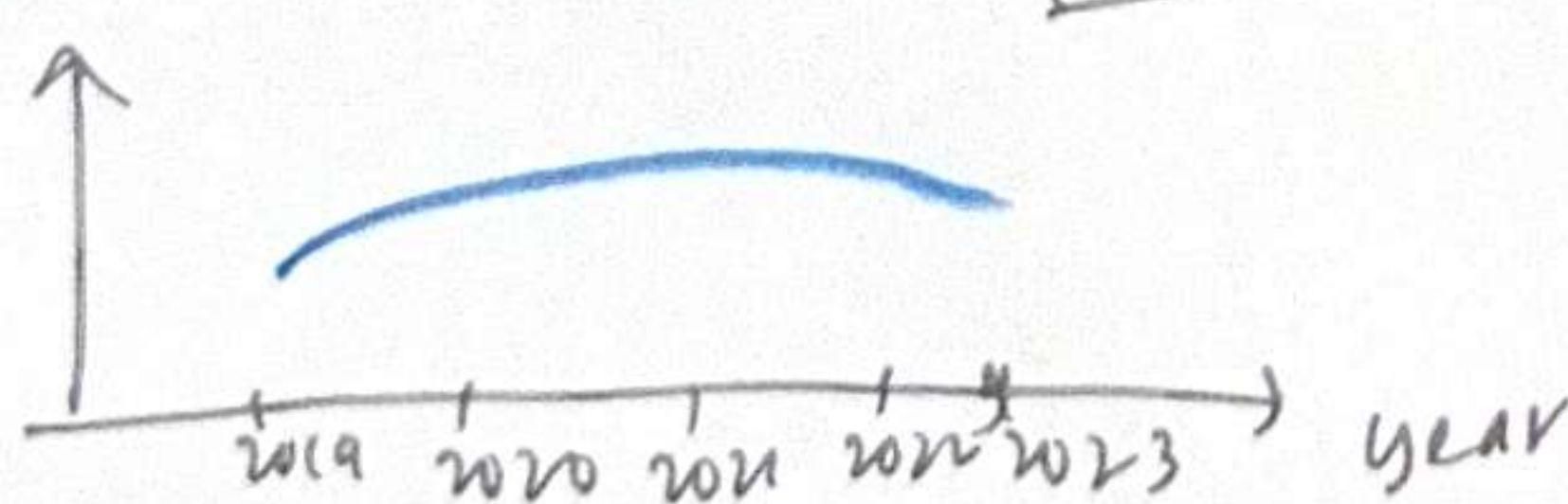
Year range :

FOCUS



overview

Johor year



comparison

Johor



TITLE : CRIME & GDP in MALAYSIA

AUTHOR : Chok Huey Yan

SHEET : 5

DATE : 21/10/2025

TASK : proportional & choropleth map of crime & GDP in Malaysia, overview, comparison

OPERATIONS

- combines individual view, crime & GDP) from map to bar chart (detailed breakdown), and overview for trend analysis, and also a comparison view of correlation analysis
- proportional map - crime rate, size = population
- choropleth - GDP density
- stacked bar chart - crime types & rates by states
- bar chart - breakdown GDP of each states, top 3
- line charts - growth/decline over 2016-2023, each line = 1 state
- scatter plot - gdp vs crime view to capture relationship, each plot = each year value of 1 state
- can filter year, state, type (legend), select year range.

DISCUSSION

advantage :

- have breakdown detailed view, comparison view, individual general view, map view,
- can visualise two different aspects together
- clear flow, layout

disadvantage :

- may have repeated charts
- looks boring, be mindful of colours, many states
- may not have trend lines
- may be messy (crime types)