IDEAS

1. Trends & Temporal Change

National Economic Growth over Time ①

Sectoral GDP over Time ②

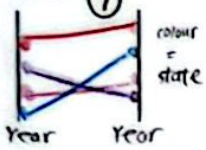
Poverty Gini ③

Education completion (%) ④

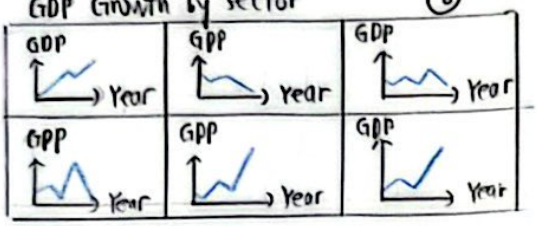
Income rank ⑤

State Gini ⑥

Change in poverty rank ⑦



GDP Growth by sector ⑧



2. Spatial Patterns & Regional Distribution

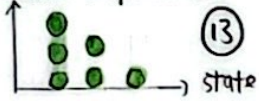
GDP per capita by state ⑨

Poverty Rate by state ⑩

Education completion rate by state ⑪

⑫

Education completion rate ⑬



3. Group Comparisons & Structural Composition

GDP composition by sector ⑭

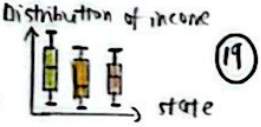
Hierarchical GDP structure ⑮

GDP by sector in Year ⑯

completion % ⑰

completion % ⑱

Distribution of income ⑲

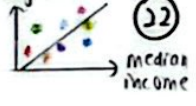


⑳

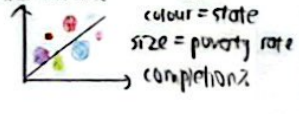
4. Relationships & Correlations

median income ㉑

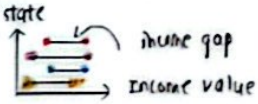
poverty rate ㉒



median income ㉓



state ㉔



FILTER

⑧ removed because it overlaps with the stacked area chart, which already shows sectoral trends over time more effectively and holistically.

⑫ removed because it shows state-level data in isolation, whereas the choropleth map offers a more comprehensive spatial overview.

⑬ removed because it focuses on ranking only, while the choropleth map provides a spatial perspective and adds more context for regional disparities.

⑯ removed because it presents a static snapshot of sector size, while treemap & sunburst provide richer hierarchical & structural context.

⑱ removed because composition is already visible in the grouped bar chart, which also conveys gender contrasts more clearly.

⑲ removed because overall income spread and inequality are already communicated through scatterplots and the dumbbell plot, which offer more interpretable insights.

CATEGORIZE

National Trends & Macroeconomic Growth
① , ② , ⑭ , ⑮ , ⑯

Spatial Patterns & Regional Disparities
⑨ , ⑩ , ⑪ ,

Social Inequality & Distributional Outcome
③ , ⑦ , ㉒ , ㉔ , ⑳

Education & Human Capital
④ , ⑰ , ㉓ , ⑤ , ⑥

Household Outcomes & Prosperity Links
㉑

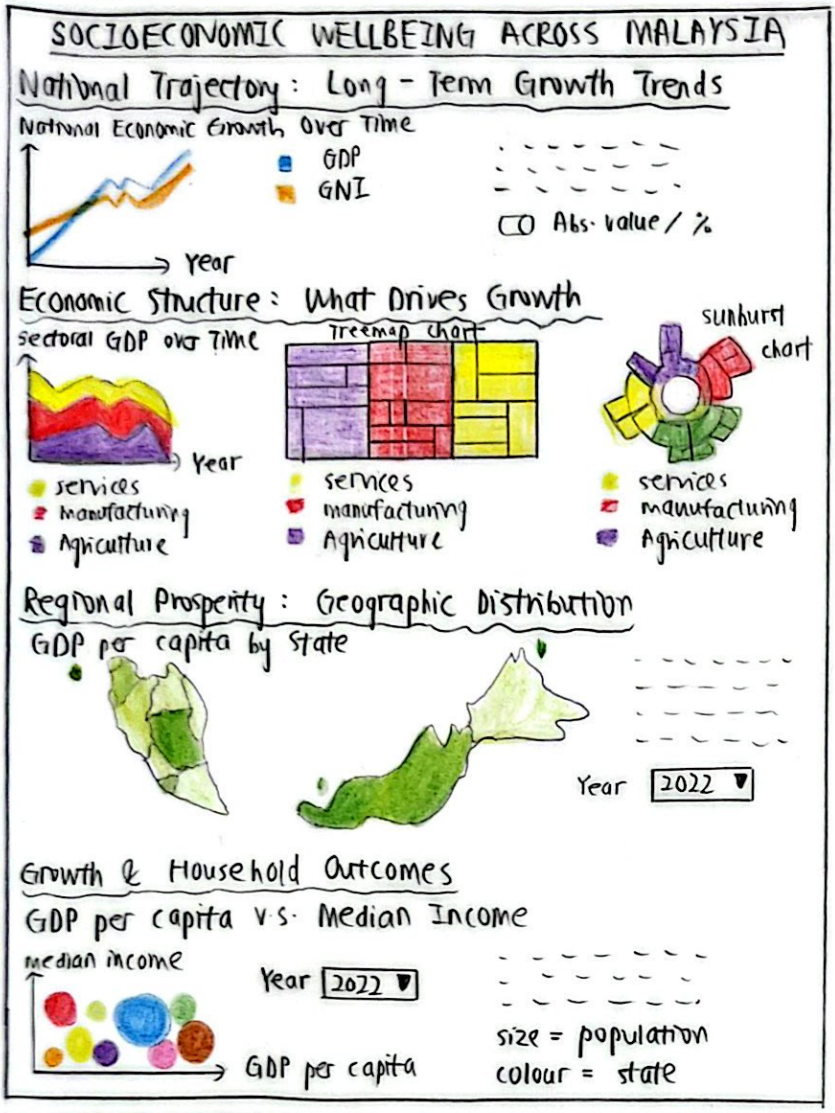
COMBINE & REFINE

- ① & ② can be paired to show overall growth & structural change together.
- ㉑ & ㉔ can be linked to highlight income-poverty relationships & inequality gaps.
- ⑥ & ⑳ can serve as integrative views to summarise multi-dimensional wellbeing.

QUESTION

- Does it tell the story of how Malaysia's prosperity & wellbeing have evolved over time?
- Does it allow users to compare across states, regions & socioeconomic groups?
- Does it reveal relationships between growth, inequality, poverty & education?

LAYOUT



Title: Dashboard View
Author: Yew Zhi Xuan
Date: 10/10/2025
Sheet: 2
Task: FIT3179 Assignment 2

OPERATION

- Dropdown filters allow users to select different years for choropleth maps & bubble plots.
- Toggle controls switch between absolute values and percentage shares in the line and area charts
- Interactive tooltips reveal detailed values on hover for all charts.
- Zoom and hover interactions in the sunburst chart allow users to drill into nested subsectors and understand finer details of the economy.
- Highlighting and selection allow users to focus on specific states or sectors across multiple charts, encouraging comparison & deeper exploration.

FOCUS

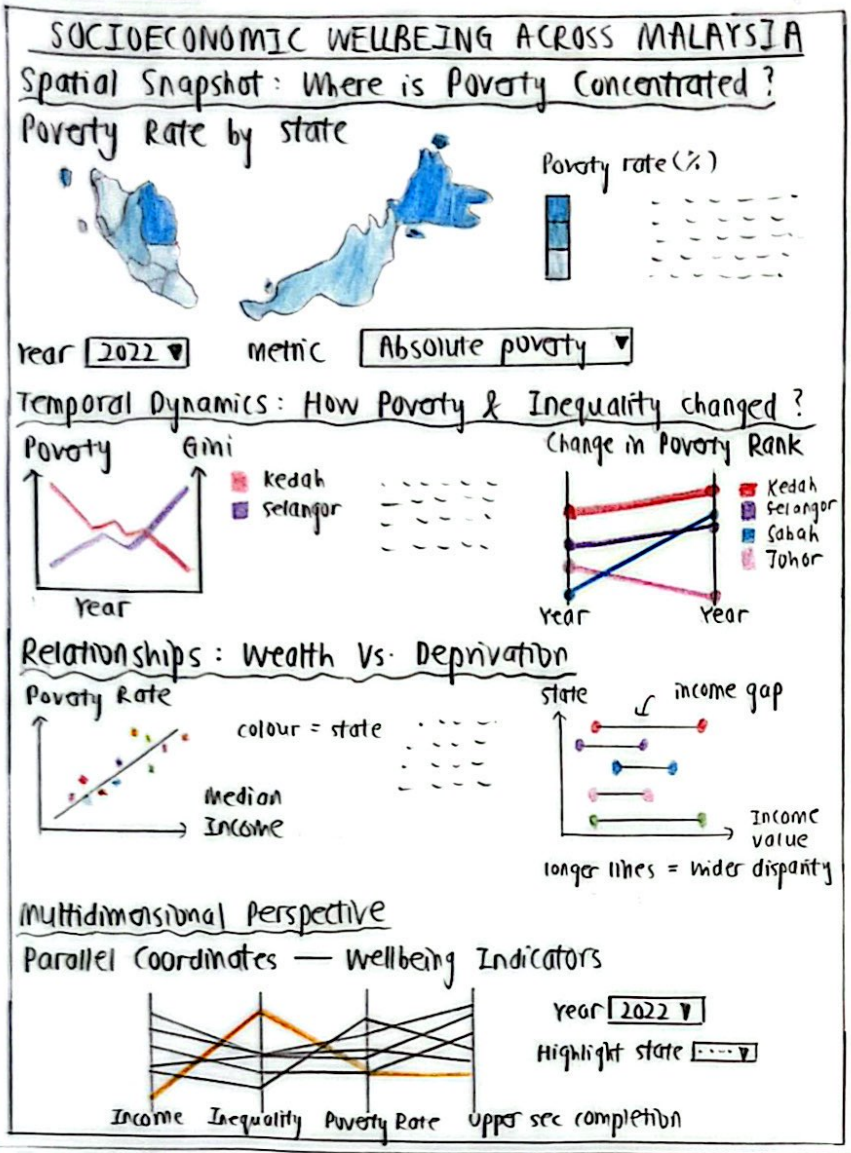
- Uses a multi-stage narrative structure, moving from macroeconomic performance (national GDP / GNI trends) to structural composition (sector breakdown) and finally to spatial & household-level outcomes.
- Combines absolute & relative encodings : the line chart shows absolute growth over time, while the stacked area chart transforms raw values into percentage share to reveal structural change.
- Integrates hierarchical visualisation (sunburst) to drill down into GDP composition across multiple levels. (Sector → subsector → Detailed Industry)
- Choropleth map highlights spatial disparities
- Bubble plot uses multivariate encoding to link growth with household prosperity.
- Blends temporal, structural, spatial & relational perspectives into one coherent flow.

DISCUSSION

Pros :
- Clear narrative from macro to micro level.
- Multiple perspectives give a holistic view of wellbeing.
- Interactive elements support deep exploration.
- Sunburst and bubble plot add depth & nuance.

Cons :
- Requires data pre-processing.
- Complex visuals may need user guidance.
- Risk of visual clutter with too many elements.

LAYOUT



Title: Dashboard View
Author: Yew Zhi Xuan
Date: 10/10/2025
Sheet: 3
Task: FIT3179 Data Visualisation 2

OPERATIONS

- Dropdown filters allow users to select different years in the choropleth and parallel coordinate charts.
- Hover tooltips display detailed state-level data across all visualisations
- Highlight / selection tools let users focus on specific states for deeper comparison.
- Interactive legends enable toggling states or regions on / off in line and scatter plots.
- Drill-down exploration across views supports moving from spatial patterns → temporal trends → inequality relationships → multidimensional comparisons.

FOCUS

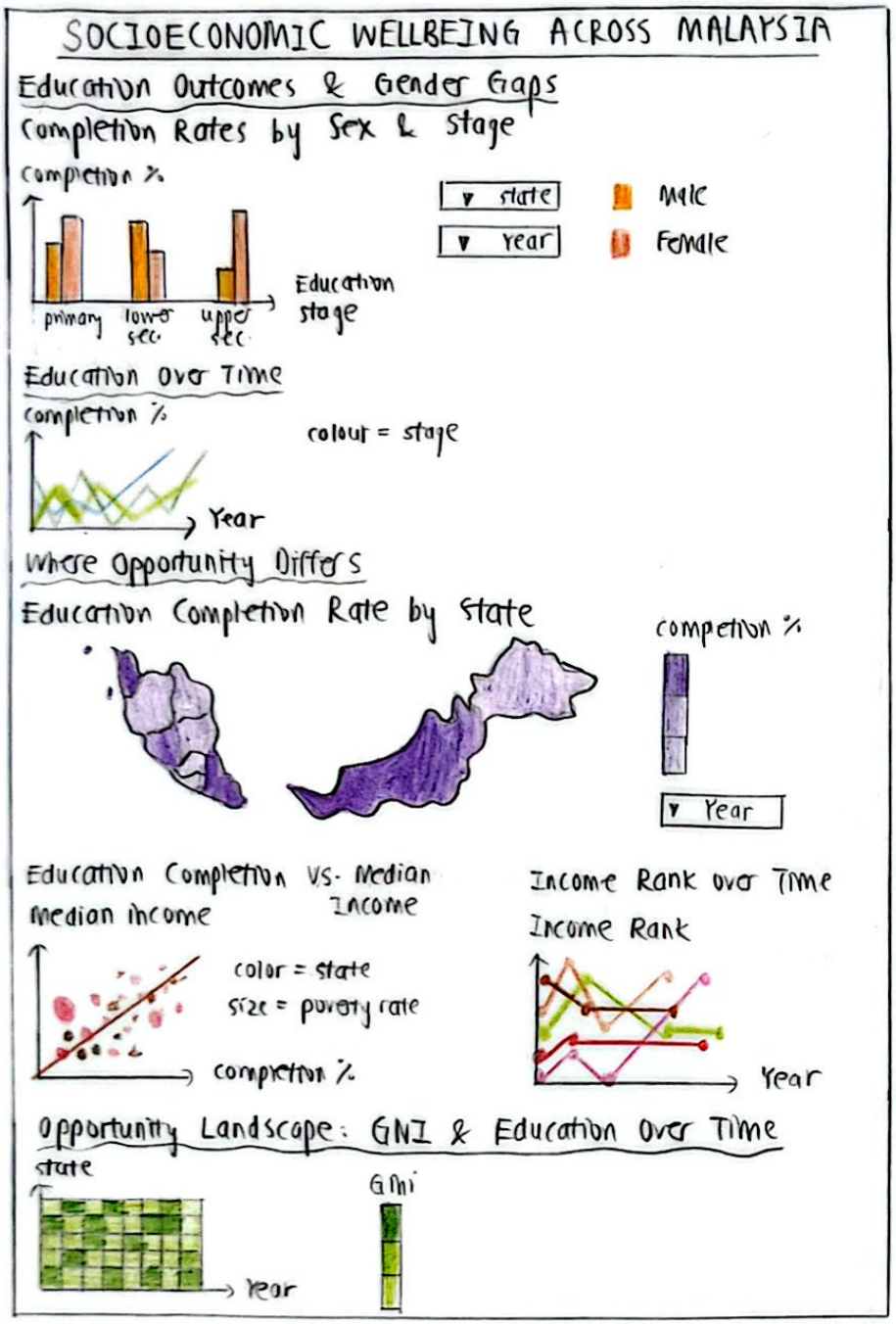
- Combines multiple perspectives — spatial, temporal, relational and multidimensional — to reveal inequality and poverty patterns.
- Choropleth map highlights spatial disparities in poverty across states.
- Dual-axis line chart tracks trends in poverty & Gini over time, showing how inequality & deprivation evolve
- Slope chart offers a simple before-after comparison of poverty ranking changes
- Scatterplot visualises the relationship between income and poverty, highlighting outliers.
- Dumbbell plot quantifies income gaps across states, making inequality magnitude clear.
- Parallel coordinates integrate multiple wellbeing indicators (income, Gini, poverty, education) into one view.

DISCUSSION

Pros:
- Provides a comprehensive, layered analysis of inequality & poverty
- Uses diverse visual forms to address spatial, temporal & relational questions
- Highly interactive, supporting state-level comparisons & deeper exploration.
- Parallel coordinates give a holistic view across multiple indicators.

Cons:
- Parallel-coordinates & dual-axis line may require more interpretation
- Visual clutter possible
- Focuses on quantitative patterns, underlying causes may need further context.

LAYOUT



Title: Dashboard View
Author: Yew Zhi Xuan
Date: 10 / 10 / 2025
Sheet: 4
Task: FIT3179 Data Visualisation 2

OPERATIONS

Users can explore & customise the visualisations through interactive controls:

- Dropdown selectors allow filtering by state, year, stage or sex.
- Hover tooltips provide exact values and contextual details for each visual element.
- Legend interaction lets users highlight or isolate specific series or categories.
- Linked comparisons between charts support deeper exploration (eg. switching state or year updates multiple views simultaneously.)

FOCUS

This sheet uses a mix of standard & advanced visualisation techniques to examine education outcomes and their links to socioeconomic wellbeing

- Grouped bar charts highlight gender gaps across education stages clearly
- Line charts show long-term trends in completion rates, revealing progress or stagnation over time
- Choropleth map expose spatial inequalities in education across states
- Scatterplots explore how education correlates with income and poverty, revealing relationships & outliers.
- Bump charts track income rank changes
- Heatmaps combine spatial & temporal patterns of GNI

DISCUSSION

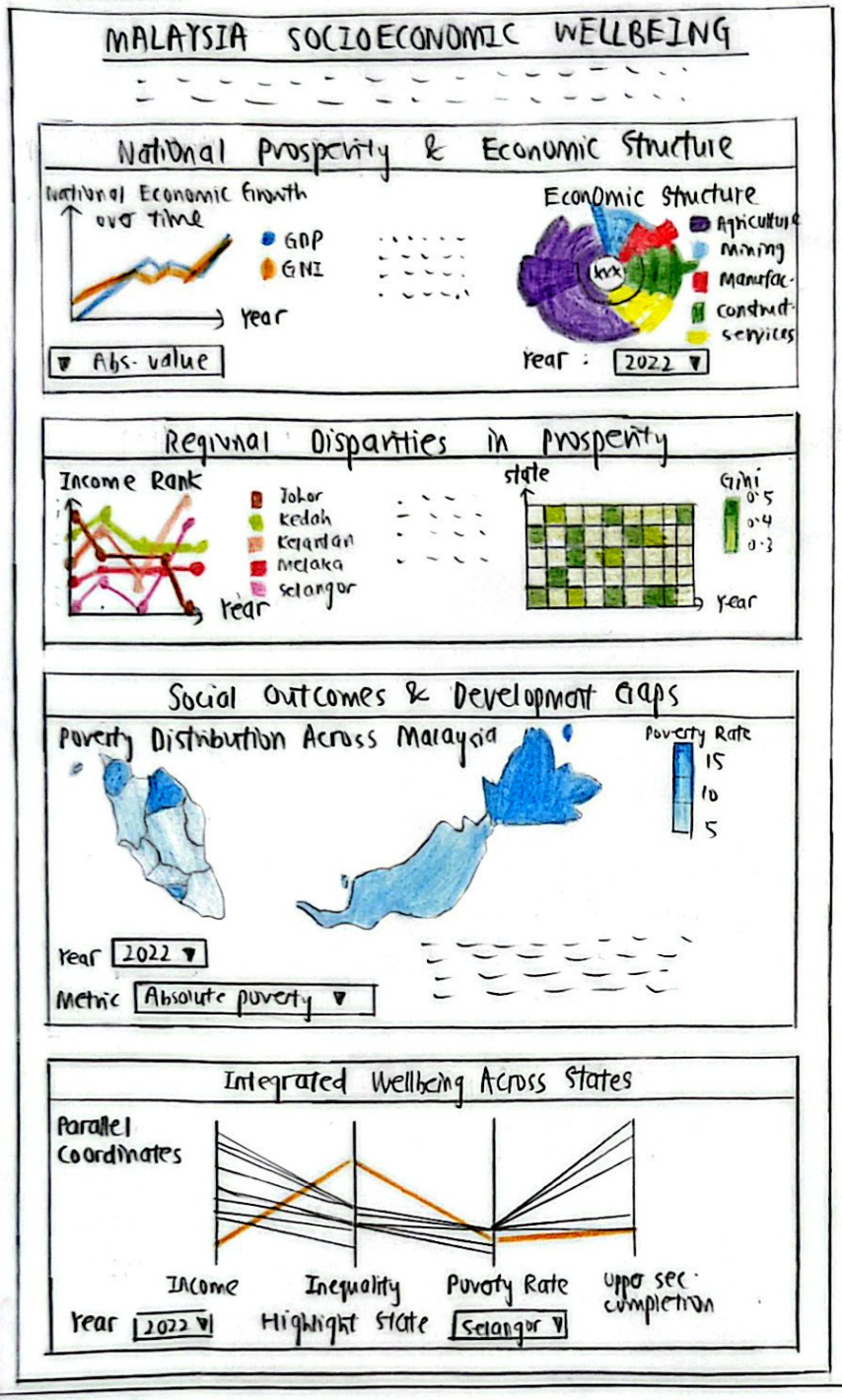
Pros

- Multiple perspectives (temporal, spatial, relational) give a holistic view
- Interactive elements make exploration intuitive and enable detailed comparisons across states & indicators
- Combining diverse chart types helps uncover different dimensions of the data

Cons

- Dense visuals may be harder for casual users to interpret.
- Correlation in scatterplot does not imply causation

LAYOUT



FOCUS

- Story arc: National Growth → Regional Disparities → overall wellbeing
- Key questions explored:
  - How has Malaysia's economy grown over time?
  - Which states are richest / poorest?
  - Has inequality reduced with growth?
  - Where does poverty persist?
  - Which states perform best across multiple wellbeing indicators?
- Hierarchical flow: National → state → Comparison
- Audience: policymakers, students & the public

Title: Final Design Sheet
Author: Yew Zhi Xuan
Date: 10/10/2025
Sheet: 5
Task: Final Implementation Design

OPERATION

- Scroll-based dashboard (HTML layout)
- Each chart introduced with short text summary
- Interactivity:
  - Dropdowns
  → Year / Metric / State
  - Hover tooltips
  → show exact values
  - Highlight selection
  → emphasize focus state
- charts built independently (no heavy linking)
- colour schemes
→ sequential for quantitative, Tableau 10 for Categorical
- Integrated flow:

GDP trends → structure → Income rank → Inequality → Poverty → Wellbeing

DETAIL

- Dependencies: Vega-Lite, Vega-Embed, HTML, Pure.css, CSV datasets
- Techniques: JSON encoding (declarative grammar), Filters, parameters, dropdown bindings, Normalisation (0-1) for wellbeing dimensions
- Estimated time & effort:
  Data cleaning — 3 hours
  Chart design & testing — 15 hours
  Integration & styling — 3 hours
  ≈ 21 hours total
- Requirements: works best on desktop
- Risks: Mobile scaling limited due to chart density