### **i. The Domain, the Why, and the Who**

The visualization focuses on the domain of public health, specifically the trends in life expectancy at birth in Malaysia. The aim is to provide insights into how life expectancy varies across different states, genders, and ethnic groups over years. Understanding these trends is essential for policymakers, healthcare professionals, and researchers, as it can help identify health disparities, inform targeted healthcare policies, and guide resource allocation. The visualization is designed for users interested in public health, demographic studies, and social policy, providing a data-driven approach to understanding life expectancy trends in Malaysia.

### **ii. What: The Data**

The data used in the dashboard is sourced from Malaysia’s Department of Statistics ([data source](https://newss.statistics.gov.my/newss-portalx/ep/epFreeDownloadContentSearch.seam?contentId=169759&actionMethod=ep%2FepFreeDownloadContentSearch.xhtml%3AcontentAction.doDisplayContent&cid=76041)). It includes life expectancy statistics segmented by state, gender, and ethnic group. The data covers from 2016 - 2022 , providing a longitudinal perspective on changes in life expectancy.

### **iii. How: Rationale for Choosing Specific Idioms**

The dashboard employs various visualization idioms to address different aspects of the data:

* **Choropleth Map**
  + Displays life expectancy at birth for each state in a selected year. The data type is quantitative (life expectancy values) mapped to a categorical variable (state). The visual channel used is color intensity, where different shades represent varying levels of life expectancy. Darker or lighter colors indicate higher or lower life expectancy, respectively. This approach leverages spatial positioning to convey regional disparities, helping users quickly identify states with significantly higher or lower life expectancy.
* **Heat Map**
  + Represents life expectancy across different years, segmented by sex and ethnic group. Here, the categorical variables (sex and ethnic group) form the rows, temporal (years) form the columns, while the quantitative variable (life expectancy) is mapped to color intensity. This idiom uses color as the primary visual channel to show variations in life expectancy over time, making it easy to spot patterns, such as which demographic groups have seen more improvement or stagnation.
* **Line Chart Facet**
  + Displays life expectancy trends over time, with separate facets for each gender. The quantitative variable (life expectancy) is encoded using the vertical position, while the horizontal position represents the time (years). This use of position channels allows users to detect trends, changes, or anomalies in life expectancy for different ethnic groups within each gender. Faceting by sex facilitates comparison across groups while minimizing visual clutter, thus making it easier to interpret.
* **Grouped Bar Chart Facet**
  + The grouped bar chart shows life expectancy over the years, with each group representing a different gender within each state. The quantitative variable (life expectancy) is encoded by the height of the bars, while the categorical variables (year and gender) are arranged along the horizontal axis. Faceting by state allows for a more structured comparison across regions. This idiom effectively uses both position (bar height) and grouping (gender categories) as visual channels, making it suitable for comparing variations in life expectancy within and across states.