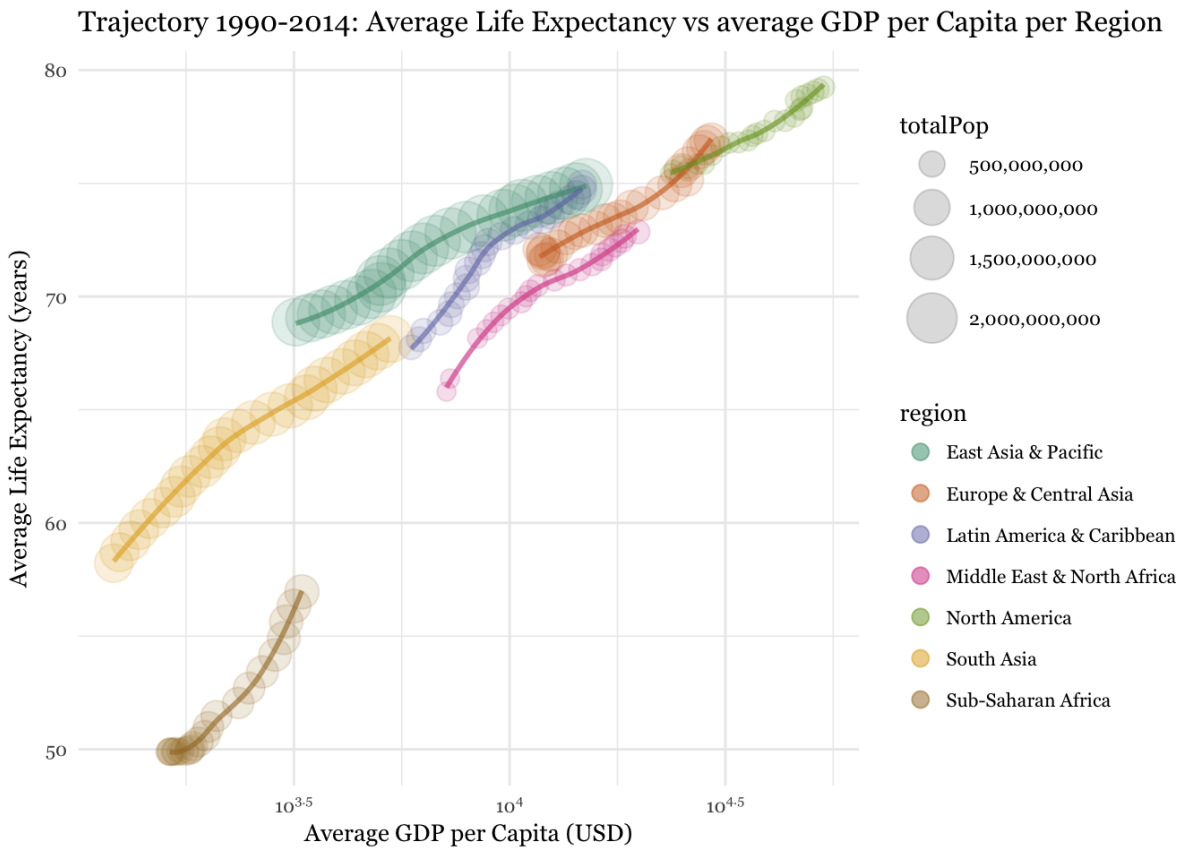
CT5100 Data Visualisation : Assignment 2

Our final visualisation from this week's lecture suggests that all regions of the world are heading in the direction of higher GDP per Capita and higher Life Expectancy. While this must be viewed in a positive light, there is also the concern that the world has finite environmental resources to sustain such a trend.



In the book *The Rational Optimist: How Prosperity Evolve* Mat Ridley argues that there are two countervailing trends

1. Fertility rates in richer countries are low
2. 'Developing' countries are showing a decrease in average fertility

Ridley suggests that due to these trends, *fertility rates everywhere will converge to 2.1 in a few decades, and the world population will stabilise at 9 billion people*.
Fertility rate is typically measured as the average number of children born per women. 2.1 (children per woman) is a known as the *replacement rate* . If the replacement rate in a country falls below 2.1, its population will shrink over time.

Using data available from

- http://data.un.org/
- https://data.worldbank.org/

You are required to write a report that illustrates through appropriate visualisations the evidence that might support Matt Ridley's hypothesis.

Your report should contain visualisations of the following

1. **Percentage increase in world population** : a plot showing how much the world population increased from 1950 to the present. For one year, the plot should show the percentage increase compared to the previous year. You should show a regression line fitted to the data.

2. **Changing fertility rates from 1950 to the present for selected countries of the world**. Use the GDP data from this week's data set to decide which countries to show. The countries should illustrate 'rich' counties, 'poor' countries, countries that are considered newly 'developed' such as Brazil, and countries that are deemed to be 'developing', e.g. India.

   Your plot should contain a line to indicate the 2.1 replacement level AND a plot of the world fertility average (calculated yearly)

3. **the regional view of the data plotted above** , using the same regions designated in this week's dataset.

Do the visualised trends in the data support Ridley's hypothesis? Your report should discuss this and present any contrary evidence or trends that might challenge this hypothesis.

Your report should also visualise and describe the observed relationship between fertility and

a) per capita income
b) education

The indicator for education might be percentage of women finishing school or attending university – for example. However, it is up to you to find an appropriate indicator in the data repositories indicated.

Assignment

This assignment may be attempted in a groups of two or three (at most). You may do it on your own however. If you do this in a group – I expect a fairly complete and professional piece of work. I also want an account of what each group member contributed.

You are expected to use ggplot2 to create your plots.

Submission

- A RMarkdown script
- A HTML page rendered from the script