Growing Old vs. Growing Rich:
Examining Correlations between GDP and Life Expectancy in 6 Countries

It has long been a widely-held assumption that an individual born into a wealthier country can expect to live longer than one born in a poorer country.

Recently, data researchers from the World Health Organisation were able to put this assumption to the test. By analysing the data drawn from six countries between the years of 2000 and 2015, they were able to investigate whether the economic output of a country has any correlation with the life expectancy of its citizen.

The six countries of focus were Chile, China, Germany, Mexico, United States of America and Zimbabwe. The two key variables analysed were that of the country's Gross Domestic Product and its life expectancy rates. Gross Domestic Product (GDP) refers to the total value of goods produced and services provided in a country in a period of time, in this case a year. Put simply, it's a way to measure the size and growth of a particular country's economy. Life expectancy at birth, measured in years, refers to the average number of years a person born in a particular country can expect to live until. Data on countries' GDPs were obtained from the World Bank and data on each country's life expectancy rates were taken from the World Health Organisation.

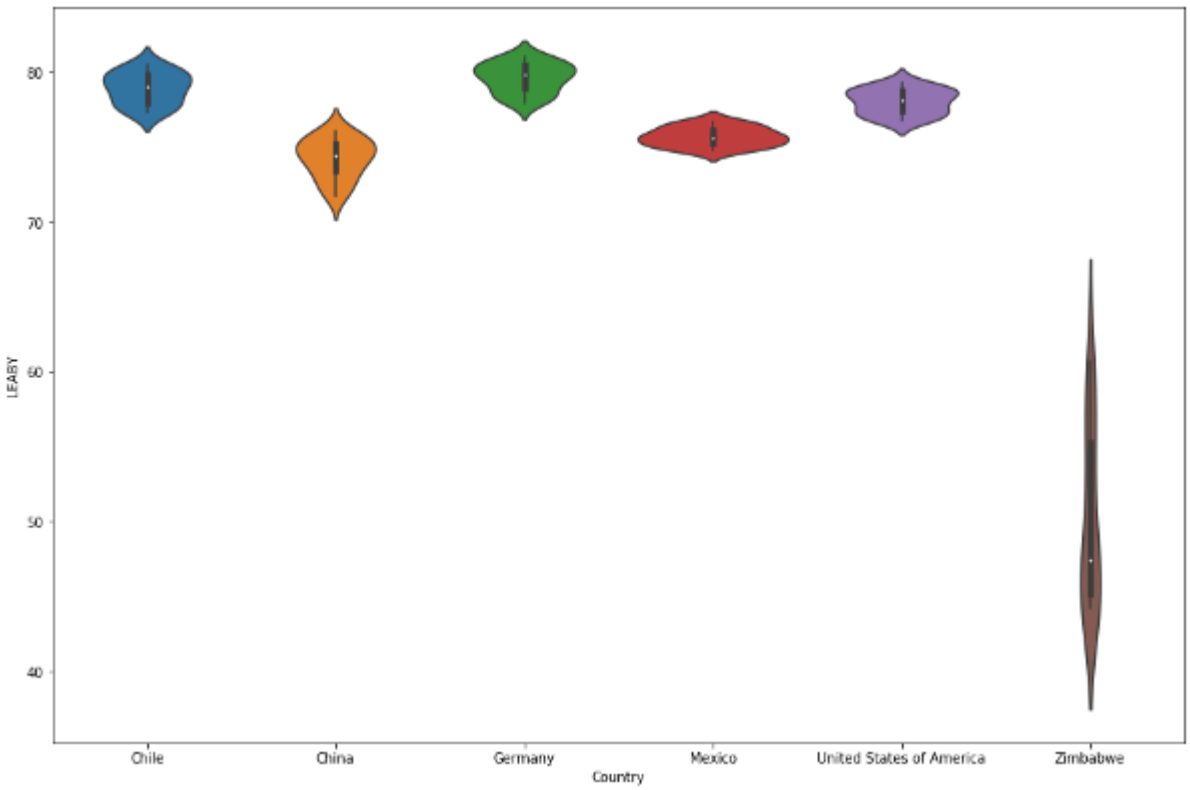

Figure 1: Violin Plot mapping Life Expectancy Distribution by Country

An initial look into life expectancies of the six countries**, reflected Figure 1,** suggests that between 2000 and 2015, all countries experienced some change in their life expectancy rates. Most notably, Zimbabwe consistently registered the lowest life expectancy rates of the 6 countries, and also experienced the widest change in its life expectancy rates.

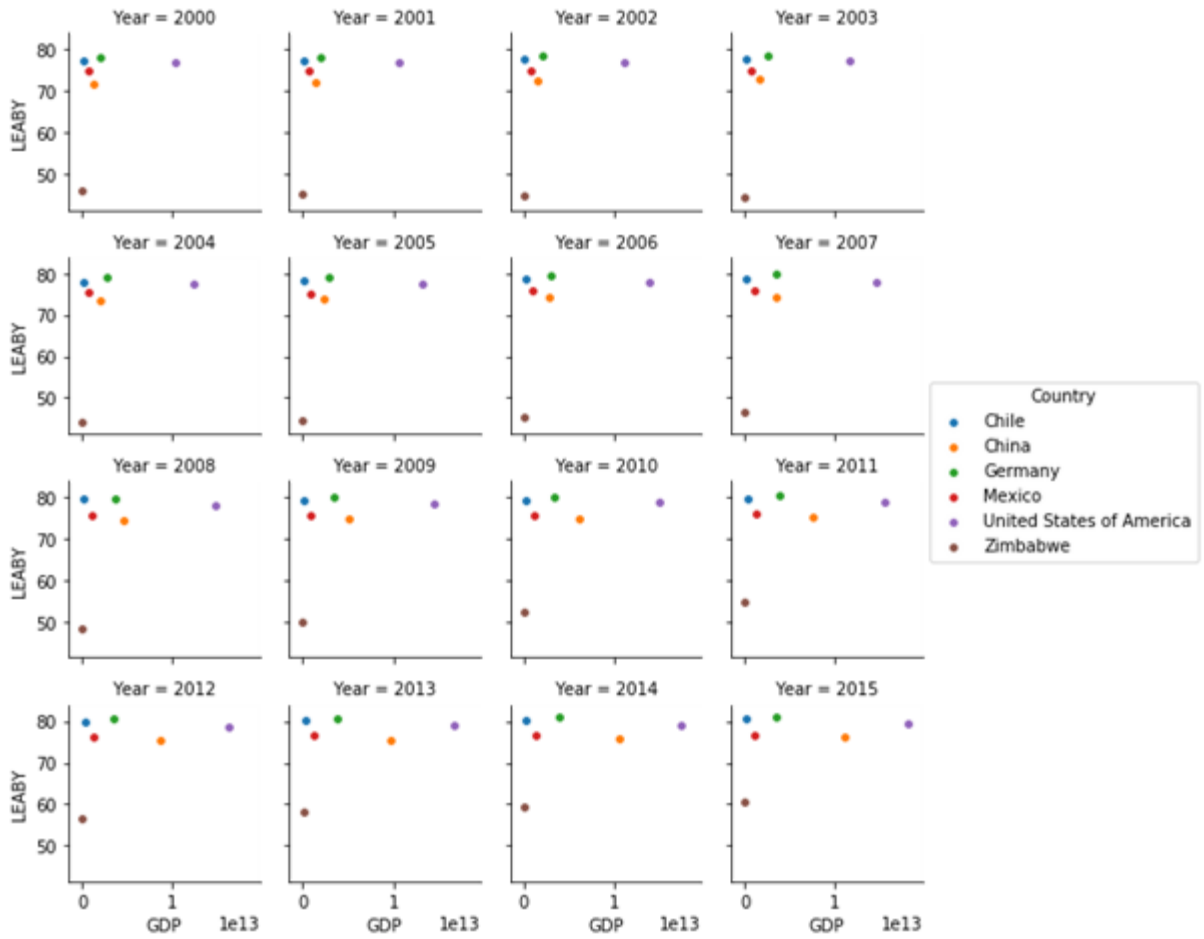

Figure 2: Scatter Plots Mapping GDP as a function of Life Expectancy by Country

Interesting, **Figure 2** indicates that while Zimbabwe had experienced the fastest rate of improvement in its life expectancy rates between 2000 and 2015, its GDP rates had remained largely stagnant during the same period of 15 years. Additionally, despite China having experienced the fastest GDP growth among the 6 countries, the average life expectancy of its citizens did not increase substantially.

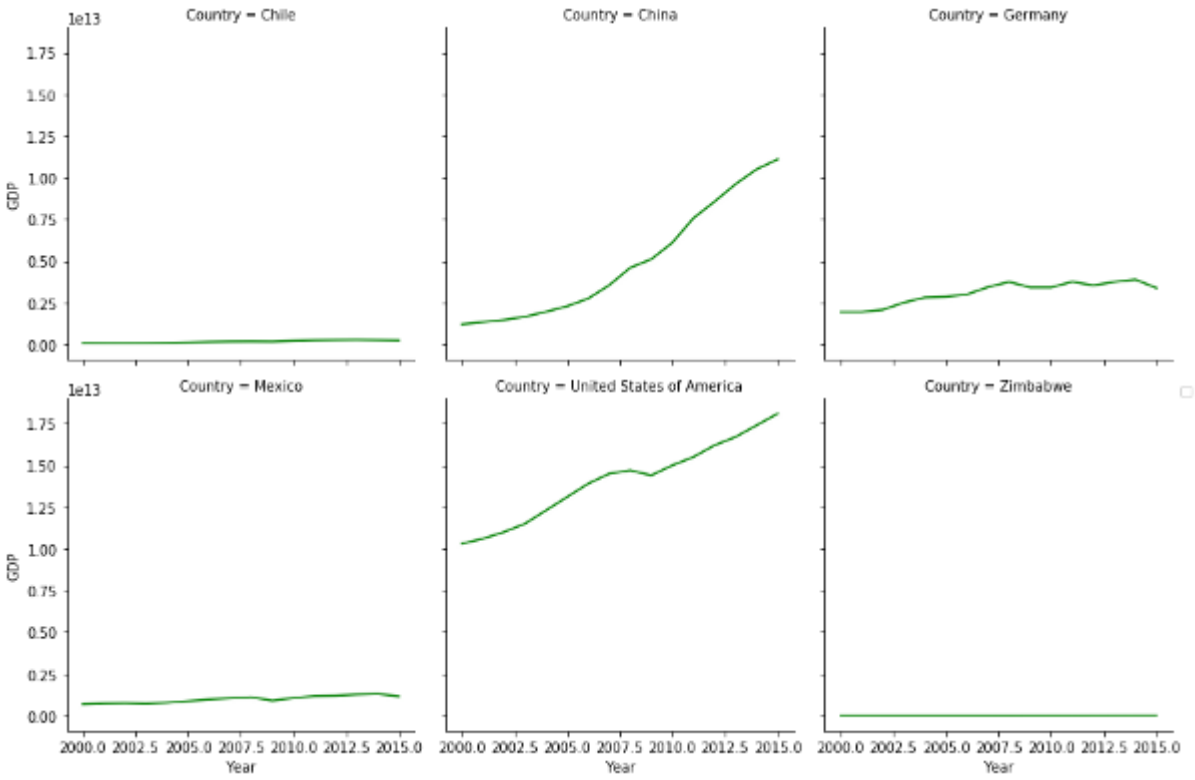

Figure 3: Line Graphs mapping GDP by Country

A closer look into the **Figure 3**would further validate the fact that China experienced the most rapid growth in its GDP rates between 2000 and 2015, whereas Zimbabwe's GDP rates did not see much improvement during the same period.

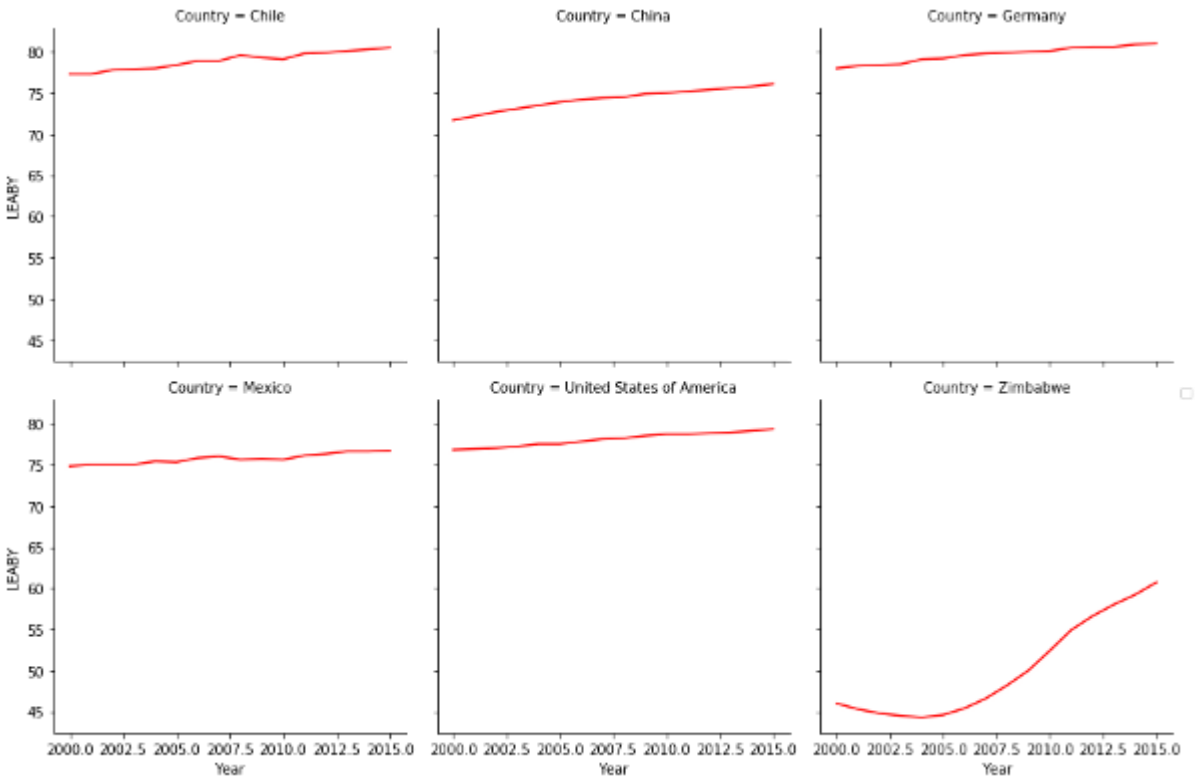

Figure 4: Line Graphs Mapping Life Expectancy by Country

Figure 4 further evidences the fact that Zimbabwe experienced the fastest growth in its life expectancy rates in despite its GDP rates being consistently low. Similarly, China did not experience a growth in its life expectancy rates to match the growth its experienced in terms of GDP.

When taken together, the data visualisations would indicate that **there is no strong correlation between GDP and the average life expectancy of a country**. While countries with higher average GDPs will tend to have higher average life expectancy rates, the rate at which a country's life expectancy increases is not correlated with that rate at which a country's GDP increase.

Consequently, further research should be done to account for what might have happened in China to cause such as drastic increase in its GDP. It is likely that this rapid increase in China's GDP can be attributed to the shift to export-led industrialisation that the country had undergone in recent years.

Another potential area of inquiry would concern how despite stagnancies in its GDP rate, Zimbabwe was ultimately able to increase life expectancy rates so drastically. One hypothesis is that Zimbabwe had more scope to raise life expectancy, given that is was starting from a lower base than typically found elsewhere in the world, hence it is not surprising that its life expectancy rates were able to increase at a much faster pace than the other 5 countries.