

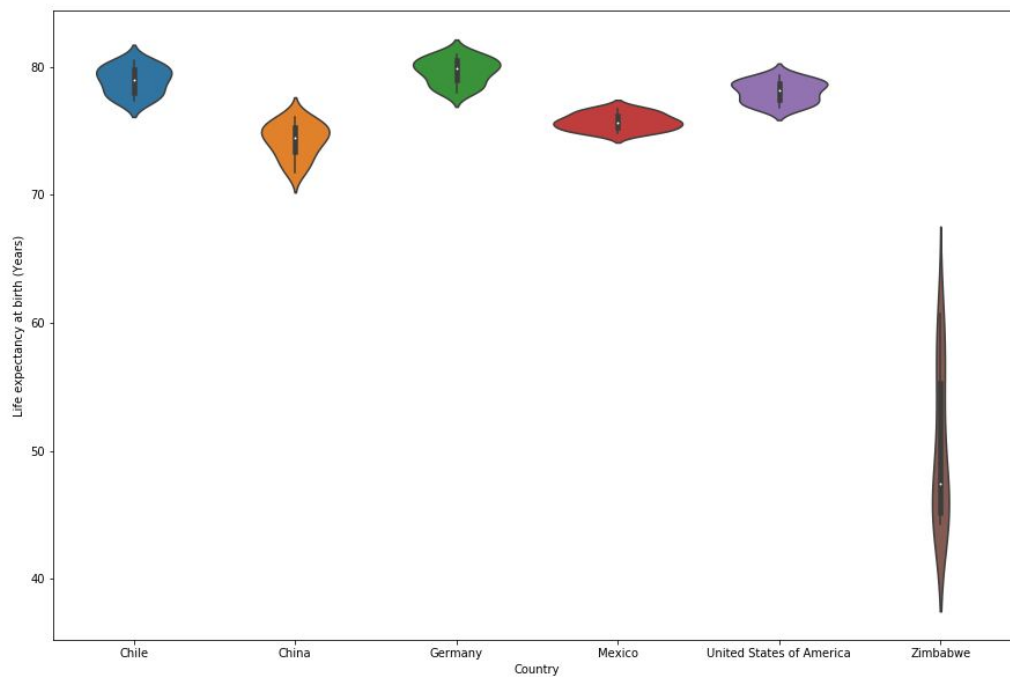
The Links Between GDP and Life Expectancy

The following study explores the correlation between Gross Domestic Product (GDP) and life expectancy at birth from 2000 through to 2015. The study includes the following six countries:

- Chile
- China
- Germany
- Mexico
- United States of America
- Zimbabwe

These countries provide a cross section of economic conditions and population size.

Figure 1 - Violin plot of Life Expectancy at birth



The violin plot above depicts the distribution of life expectancy. The plots for Chile, China, Mexico and the USA are relatively similar, however Zimbabwe's life expectancy is far lower than the others but is more widely distributed over the years.

Figure 2 - Life expectancy at birth in years (LEABY) vs GDP for each year

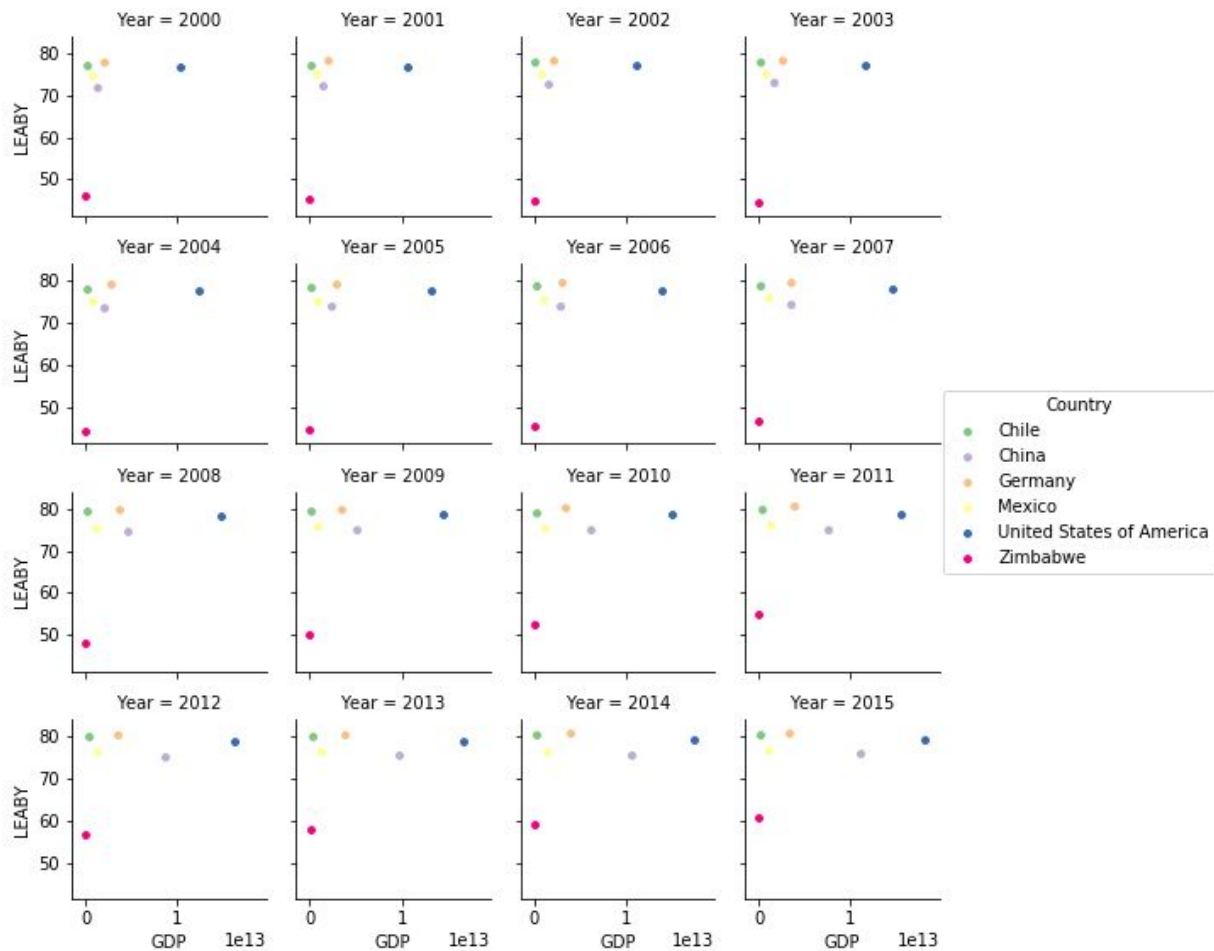


Figure 2 depicts life expectancy against GDP for each year in the dataset. If there is a correlation between GDP and life expectancy, it should be evident in this figure. Of the countries included in the dataset, China and the USA have the biggest changes in GDP. It appears however that their life expectancy does not vary considerably because of this. This is likely because their life expectancy was high to begin with, at least, as it appears in this figure.

Zimbabwe has the biggest change in life expectancy where it can be seen to be improving over time. However, it does not seem to be due to the countries GDP.

Figure 3 - GDP vs time for each country

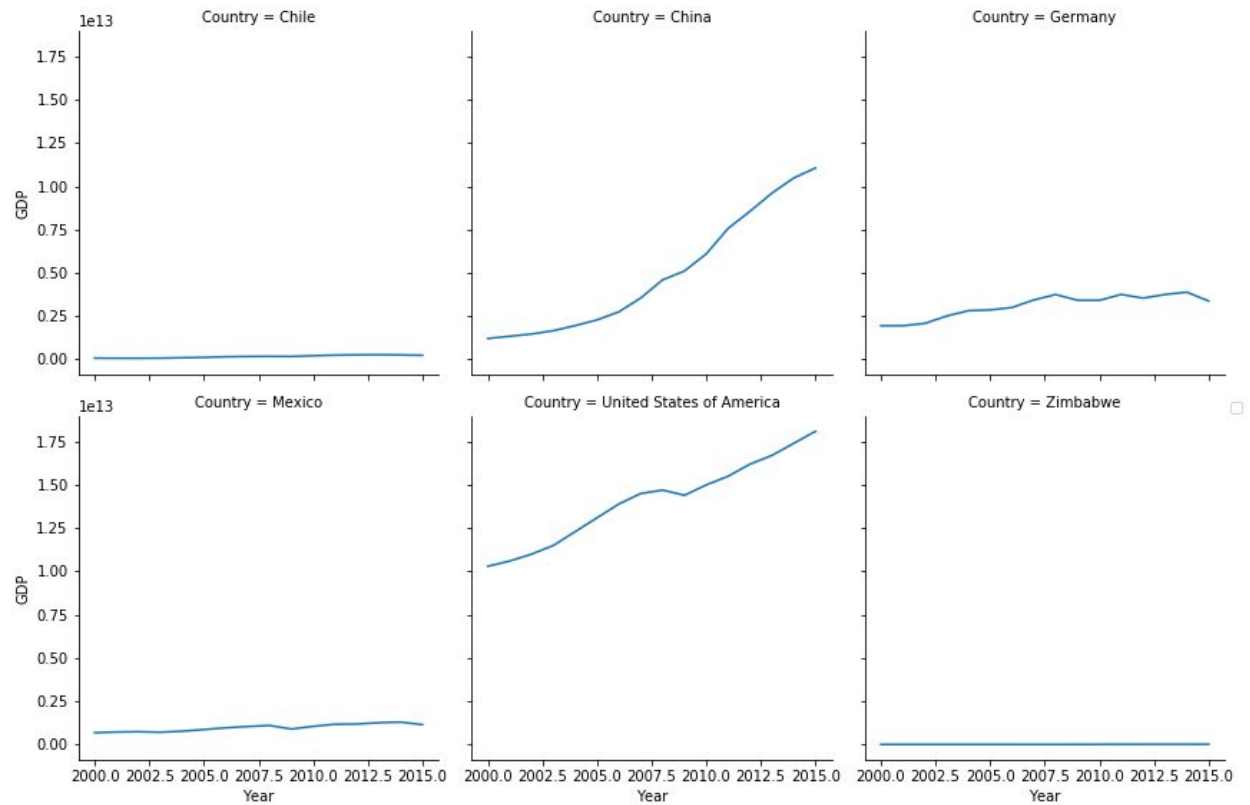


Figure 3 depicts that China had the largest growth in GDP followed by the USA. The figure also shows that the GDP's of Chile and Mexico are relatively small. From the previous discussion of Figure 2, this would indicate that life expectancy in these countries is not greatly affected by GDP.

Figure 4 - Life expectancy at birth in years (LEABY) vs GDP for each year

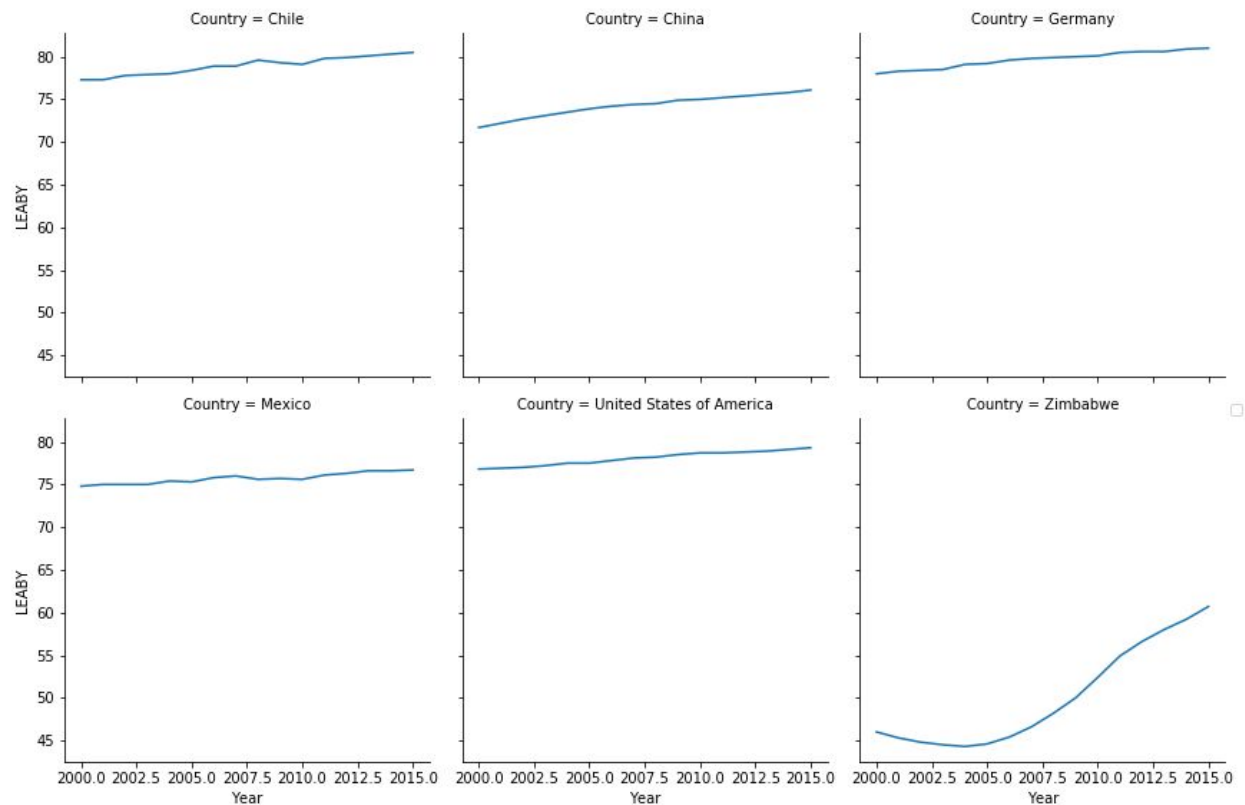


Figure 4 depicts the life expectancy of each country. The further details provided here appear to show that as China's GDP rose, so did their life expectancy. This may simply be a correlation and not necessarily causation as in the other countries, life expectancy appears to increase at the same rate regardless of GDP performance.

Life expectancy in Zimbabwe decreases until approximately 2004 after which it increases. The drop in life expectancy from 2000 through to 2004 is a continuation of a drop in life expectancy that started in the 1990's.¹ The drop in life expectancy is attributed to the deteriorating economic conditions and a HIV epidemic.² The improvement in life expectancy is due to the improved treatment of HIV and AIDS, especially in the prevention of transmission in childbirth.³

¹https://www.researchgate.net/publication/297750732_Life_Expectancy_In_Zimbabwe_An_Analysis_Of_Five_Decades

² <https://www.medicalnewstoday.com/articles/41339.php>

³ <http://www.chronicle.co.zw/zim-life-expectancy-shoots-up/>

The data provided does not suggest that GDP has an influence on life expectancy. However, there are not enough countries in sample to provide evidence. Ideally, including several countries where GDP has grown would allow for an improved analysis. Other factors to consider include:

- GDP per capita
- Median income
- Healthcare spend
- Doctors per capita