

Who lives longest – and why having more money doesn't necessarily influence that.

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TL; DR;

While Zimbabwe's Life expectation rose steadily, it is still very low, compared to the other five countries. On the contrary, Zimbabwe's GDP did not see that increase, it's very far left behind every other compared country. While the changes of the other countries are about the same, the South American countries (Chile and Mexico) experienced a sudden rise in 2009, which could be an effect of the Obama becoming the president of the United States of America.

About the research

We analysed data of six countries (Chile, Germany, Mexico, USA and Zimbabwe) between 2000 and 2015 to find out how their life expectation rate by years (LEABY) relates to their GDP. Some of the findings are as expected, but the data visualisations also revealed some surprises.

GDP versus Life Expectancy

For the research provided we used the **Gross Domestic Product** (GDP) as an indicator for a country's wealth. The GDP is the broadest quantitative measure of a nation's total economic activity. More specifically, GDP represents the monetary value of all goods and services produced within a nation's geographic borders over a specified period of time.

The **Life expectancy** is a statistical measure of the average time an organism is expected to live, based on the year of its birth, its current age and other demographic factors, including gender. The most commonly used measure of life expectancy is at birth (LEB), which can be defined in two ways. *Cohort* LEB is the

mean length of life of an actual birth cohort (all individuals born a given year) and can be computed only for cohorts born many decades ago, so that all their members have died. *Period* LEB is the mean length of life of a hypothetical cohort assumed to be exposed, from birth through death, to the mortality rates observed at a given year.

After cross-comparing these datasets over time for the **six different countries**, we went into further research to find out about the reasons behind specific dips and raises in the data. Why did the Life expectancy drop before the arising around 2003 in Zimbabwe? What made the Chinese population live longer between 2000 and 2002? This and more is explained after each infographic.

Data sources:

GDP: [World Bank](#), national accounts data, and OECD National Accounts data files

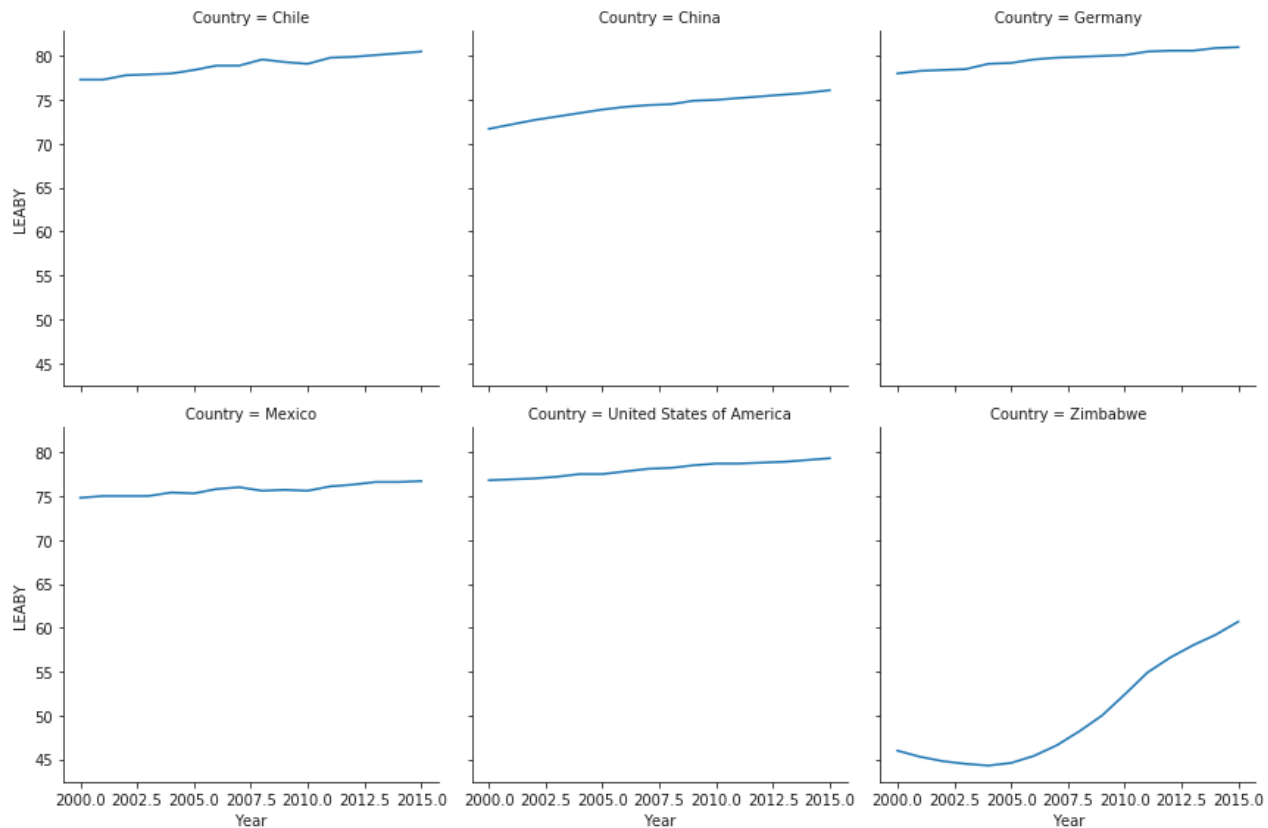
Life expectancy: [World Health Organization](#)

Has life expectancy increased over time in the six nations?

Five of the six compared countries experienced a similar rise over time. However, the life expectancy in the African country Zimbabwe dropped between 2000 and 2003, before it started to raise sharply afterwards.

'In 2003 the **life expectancy in Zimbabwe** increased to 44.19 years. That year, the **life expectancy for women** was 45.51 years and for men 42.82 years. Zimbabwe's position was held this year in position 189th with respect to the ranking of 191 we publish life expectancy. If we look at the change in life expectancy in Zimbabwe over the past several years, we find that it is higher than in 2002, when it was 44.11 years, which is the opposite of what happens compared to 1993, when it was 53.85 years.'

(← Source: <https://countryeconomy.com/demography/life-expectancy/zimbabwe?year=2003>)



The facet grid of line graphs mapping Life Expectancy by country

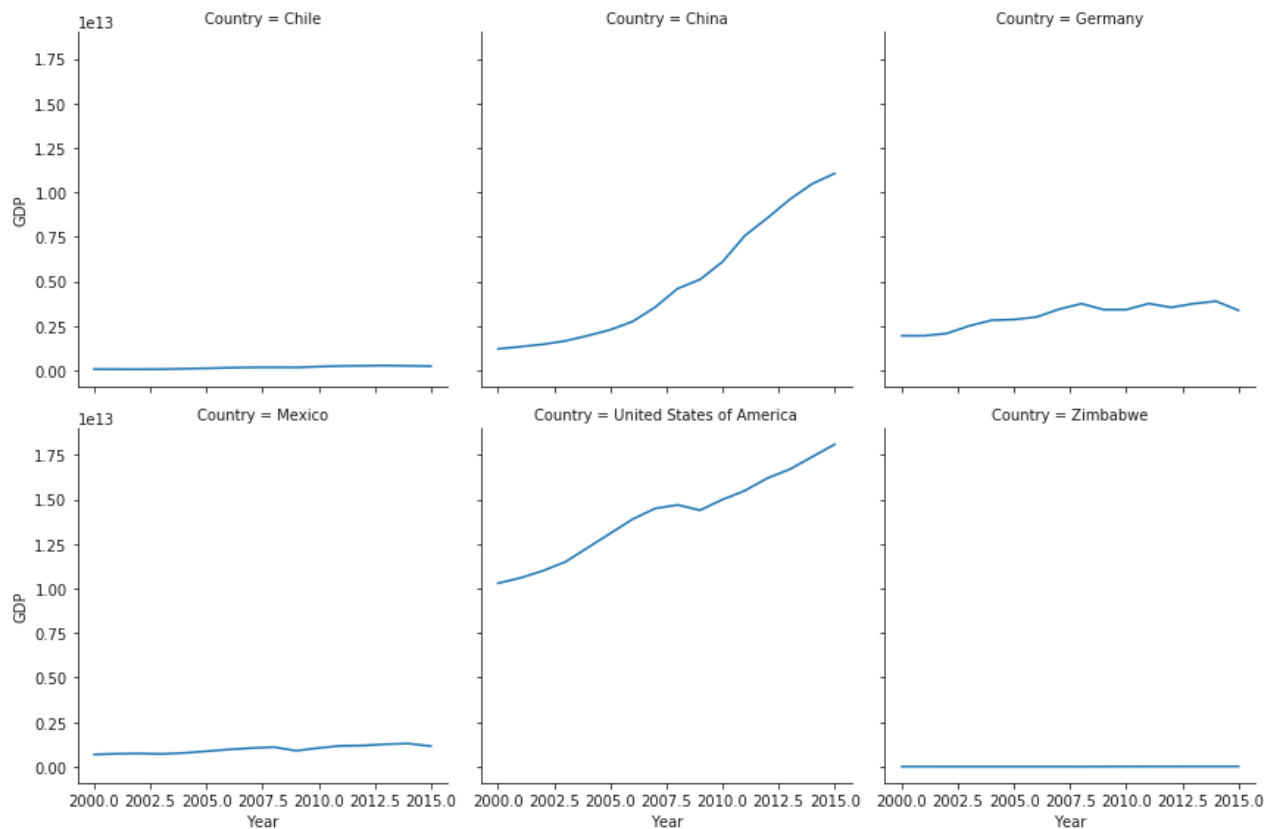
Has GDP increased over time in the six nations?

While Germany was kind of stagnating with decent ups and downs during the whole period, the USA and China both experienced big incrementations in their GDP. The visualisation also makes clear that the South American countries (Chile and Mexico) and the African country Zimbabwe are way under the other three countries.

China and the USA both grew bigger than Germany after 2005, which, to me, was unexpected.

'China and America have avoided a trade war, for now at least. By agreeing to increase purchases of U.S. goods in a bid to shrink its surplus with America, President Xi Jinping has avoided a growth-sapping trade spat. What's more, it appears that his plan to dominate industries of the future remains unchecked. Meantime, China's pledges to open up such long-fettered industries as finance and to reduce barriers for autos and other sectors is set to lure even closer engagement

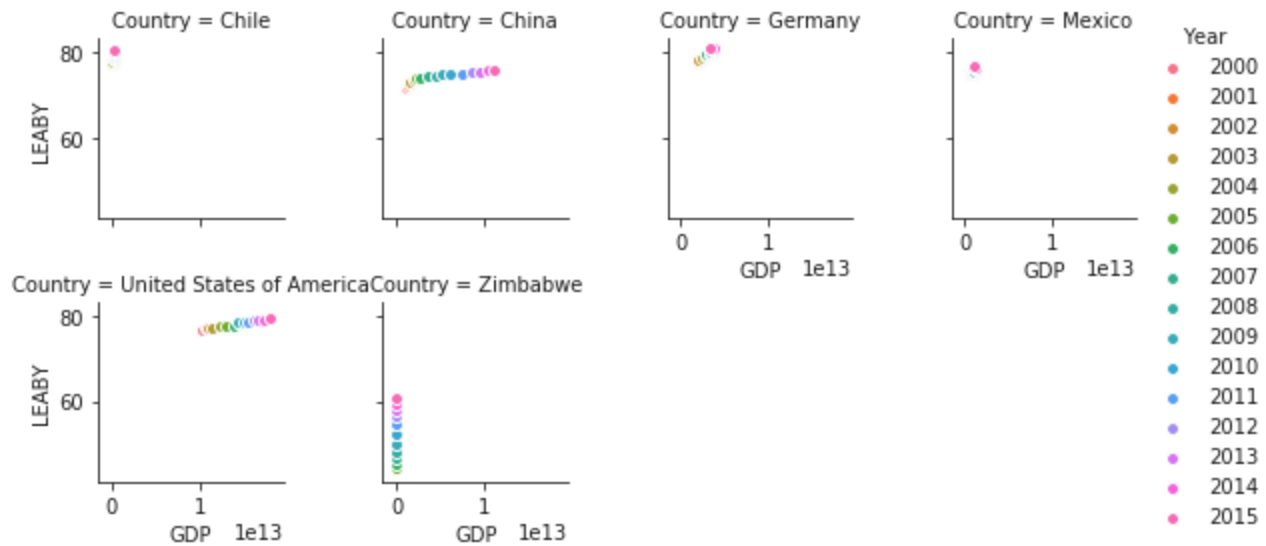
with corporate America, deepening the “Chimerica” union. [Here’s a by-the-numbers look at the relationship between the world’s two economic giants.](#)’ (← Source)



The facet grid of line graphs mapping GDP by country

Is there a correlation between GDP and life expectancy of a country?

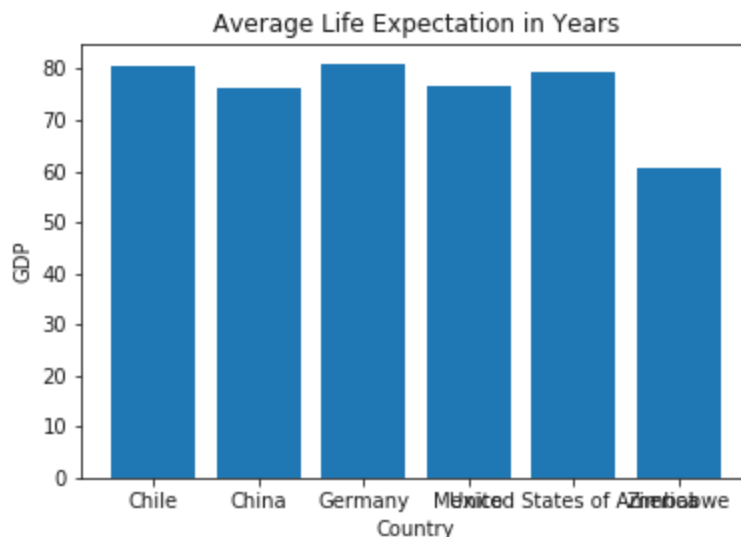
Yes and no. There’s definitely a correlation in some countries, but in others, it seems that the two figures are completely independent. The data shows clearly, that the LEABY rose steadily in Zimbabwe, while the GDP stayed at a very low level without really growing. In Chile, for example, both, the GDP and the LEABY stagnated of the years, which is visible in the first block of this graphic:



The facet grid of scatter graphs mapping GDP as a function Life Expectancy by country

What is the average life expectancy in these nations?

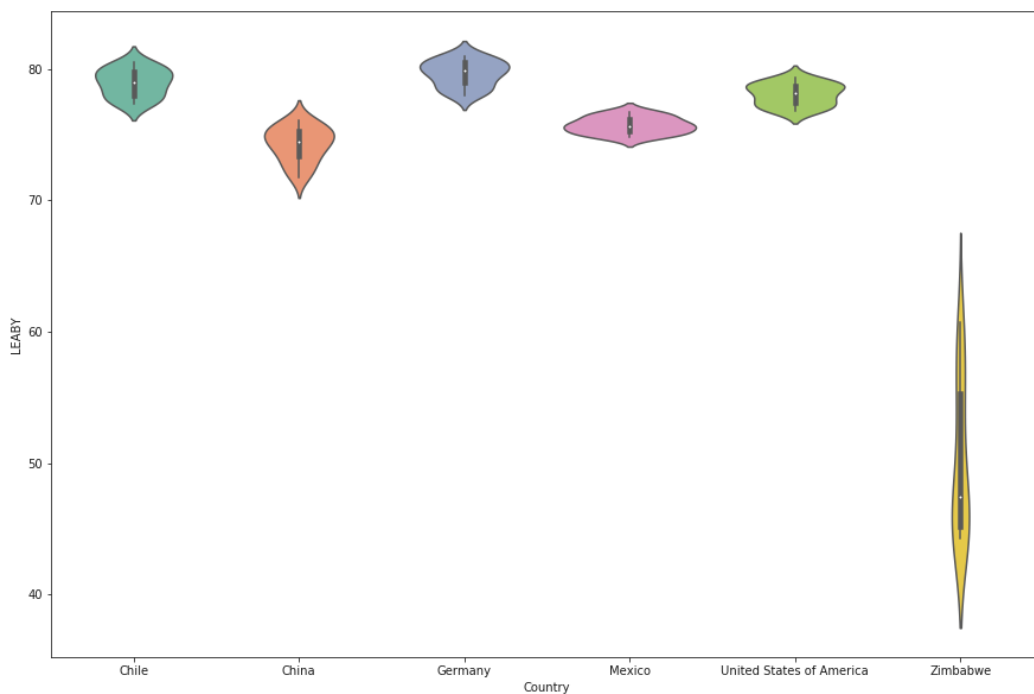
The average life expectancy tells us more about the whole dataset, which is visualised in this simple barchart. Even if Chile has a very low GDP, the life expectancy is rather high. Lowest, by far, the Zimbabwean population, who's live expectancy is at around 60 years. People in Chile, Germany and the USA almost get 80 years to live, while China and Mexico are slightly underneath.



Average Life Expectation in Years by Country

What is the distribution of that life expectancy?

Looking at the distribution of the data, we see a very clear picture of the Zimbabwean Life expectancy, that shows that the data spreads over a large spectrum. While the Mexican GDP is spreading more than any other country, the other four countries (Chile, China, Germany and the USA) have a smaller GDP change over the time given.



The violin plot of the life expectancy distribution by country

A conclusion touching on the limitations of the data and further research

It's probably hard to compare an African country such as Zimbabwe to countries like the USA or China. To get a closer look into the why's behind Zimbabwe's low life expectancy and the correlation between their LEABY and GDP, we'd probably have

to compare it to other African countries, such as South Africa, Malawi or the Democratic Republic of Congo.

Nonetheless, the data show us the correlation between GDP and LEABY in a nice and easy to understand way. The research as well as the data visualisation part was fun and I've actually learned a lot about Python while doing it on my own.