# Rise up: Gains in Life Expectancy and GDP

## A look into the relationships between life expectancy and GDP for several countries over the years.

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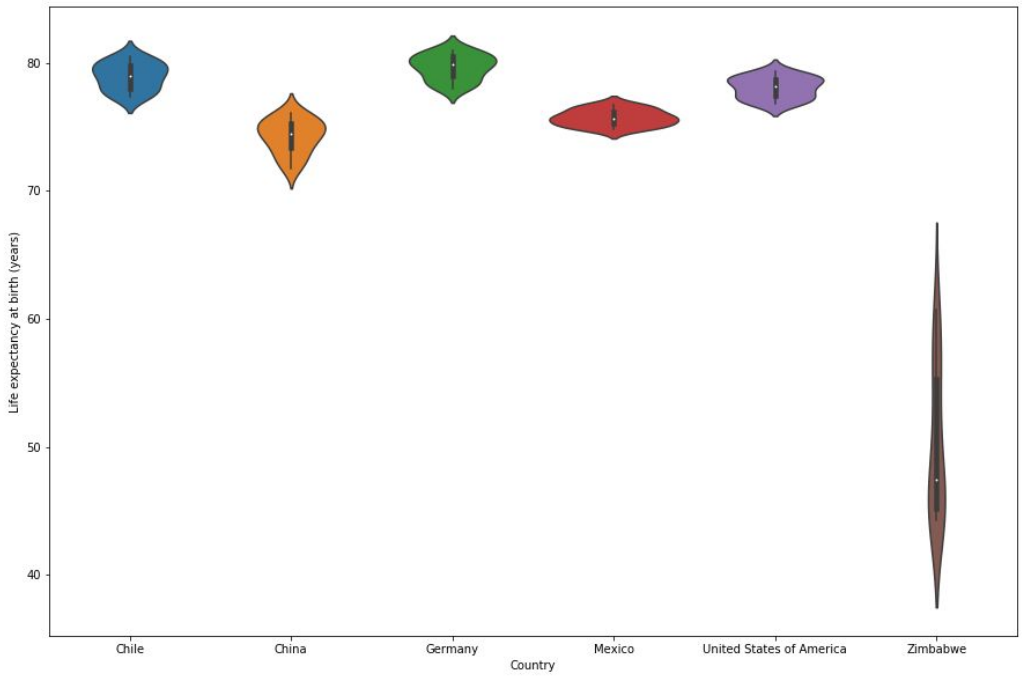
Codecademy Capstone

Six nations were analyzed in this study of life expectancy and GDP data provided by the World Health Organization. The six nations include Chile, China, Germany, Mexico, United States of America, and Zimbabwe. The data covers the years 2000-2015.

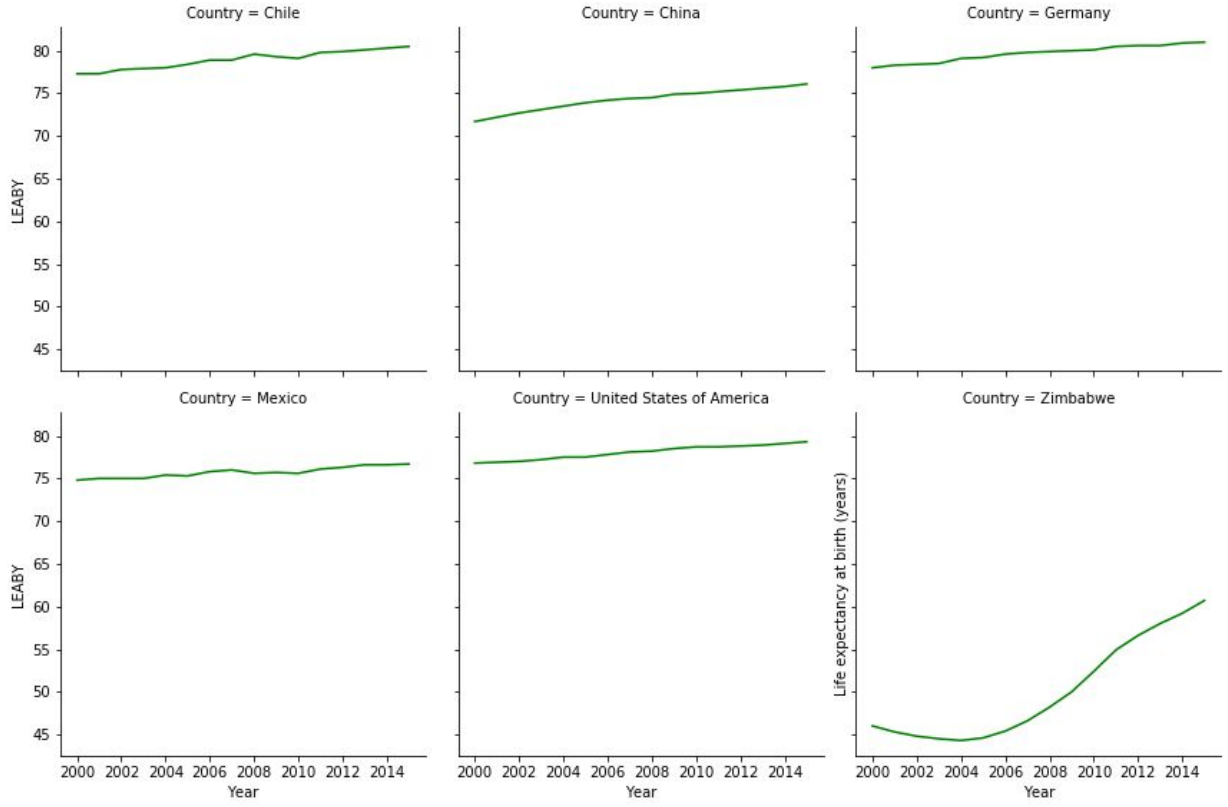
Life expectancy at birth refers to how many years a newborn can expect to live on average. It is a major indicator of the overall health of a nation's population[1]. For five out of the six nations, relative life expectancies are very similar. The violin plot below shows that for all countries but Zimbabwe, the median life expectancy over the years falls within a range of approximately 8 years.




[1] https://data.oecd.org/healthstat/life-expectancy-at-birth.htm

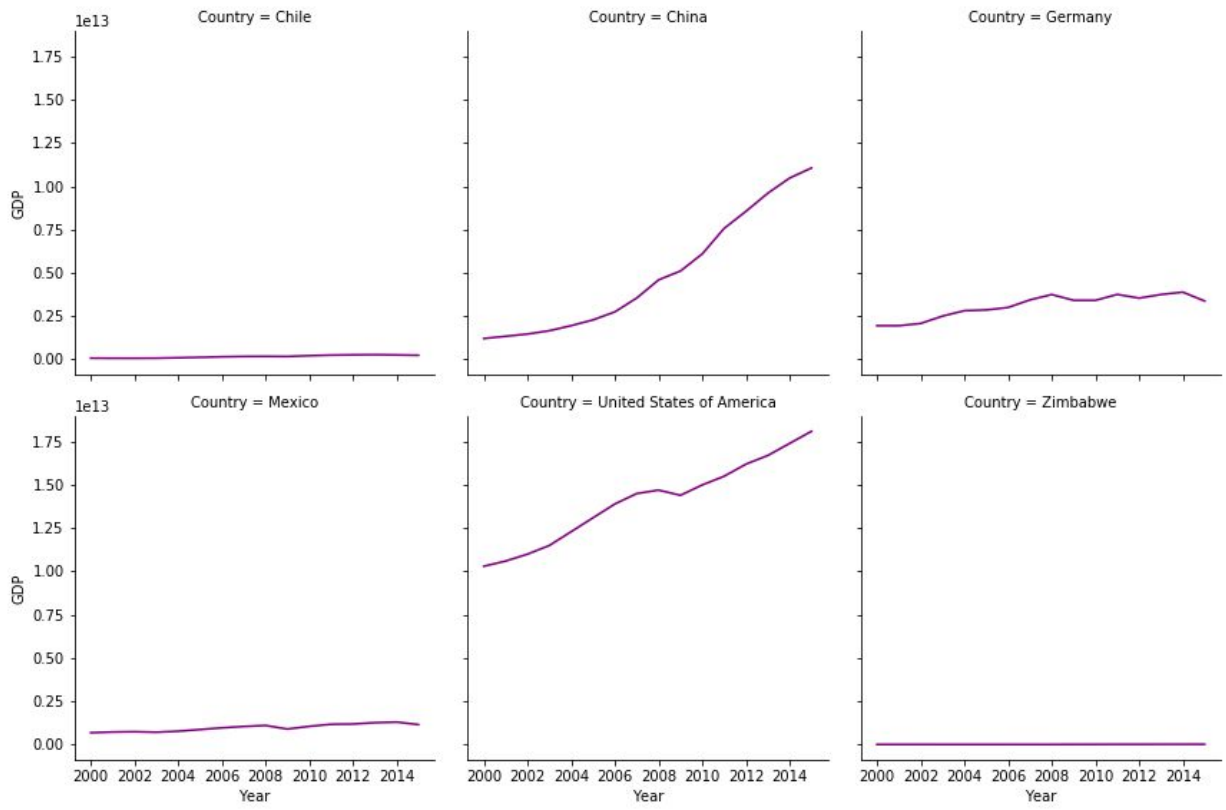
The spread of life expectancies over the years for these five nations are also all relatively close, as indicated by the lengths of the violin plots. In contrast, Zimbabwe has a significantly lower median life expectancy and has experienced a far greater spread in life expectancies over the years.

The plot below shows life expectancy at birth in years (LEABY) as a function of time. Again all countries but ZImbabwe experienced similar increases over time. Zimbabwe interestingly saw a decrease in life expectancy until about 2004, at which point their numbers started to increase rapidly. This rapid rise is due to Zimbabwe's ability to improve their healthcare standards with the help of external donors[2].

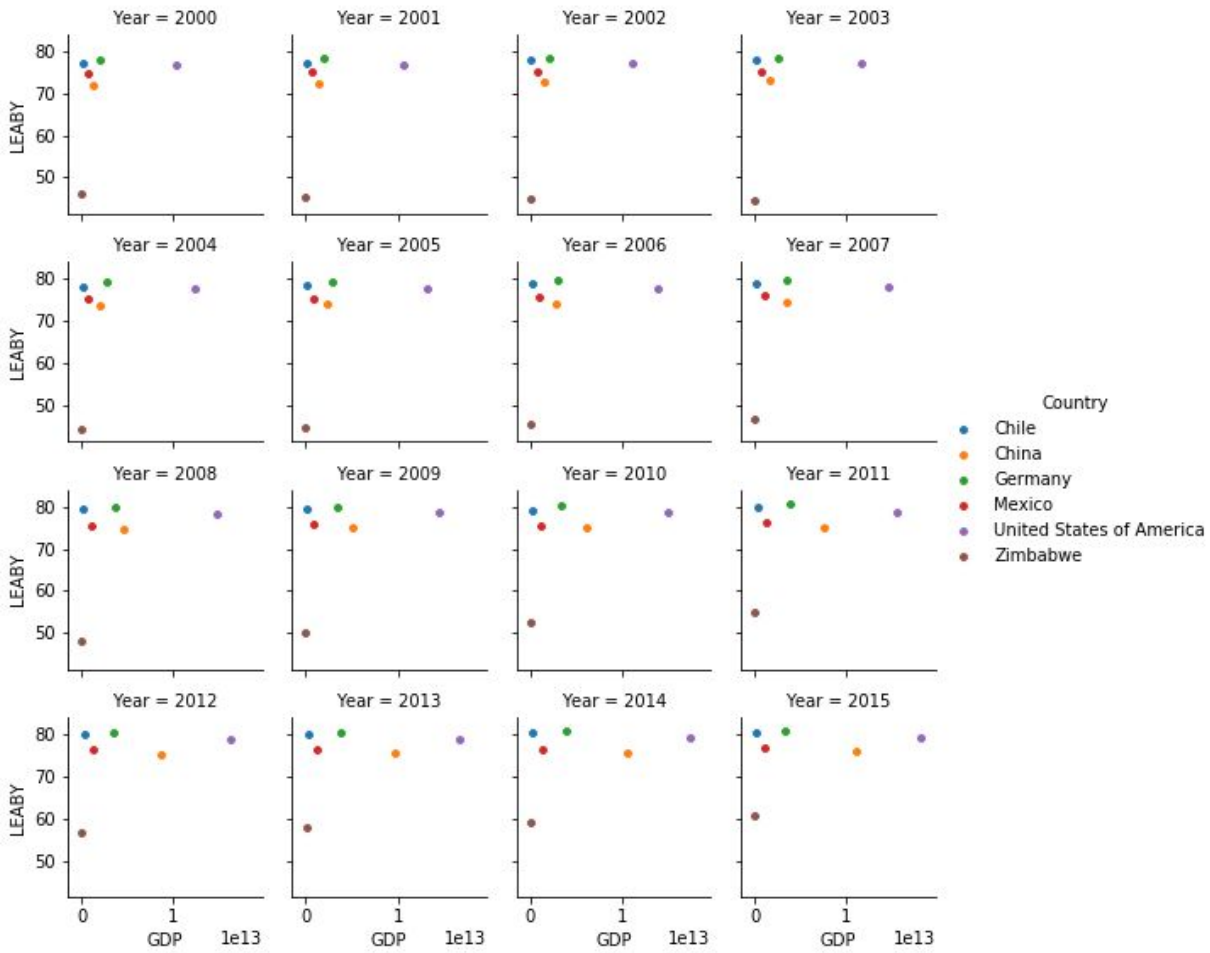



GDP stands for gross domestic product and is a measure of the market value of all goods and services generated by a country in a specific time period, generally one year. It is one of the main indicators used to assess the overall health of a nation's economy[3]. The plot below shows GDP as a function of time for countries studied. Zimbabwe experienced the lowest GDP growth, staying relatively unchanged over the time period. China experienced the greatest growth, followed by the USA. One reason for China's massive GDP increase is its switch from an agriculture focused economy to one centered on manufacturing and the service sector[4].

[2] https://www.ft.com/content/38c2ad3e-0874-11e6-b6d3-746f8e9cdd33
[3] https://www.investopedia.com/ask/answers/what-is-gdp-why-its-important-to-economists-investors/
[4] https://www.investopedia.com/articles/investing/103114/chinas-gdp-examined-servicesector-surge.asp




The plot below shows the relationship between GDP and life expectancy at birth. Here Zimbabwe can be seen to rapidly increase its life expectancy over the years, without noticeable increase in its GDP. Likewise, China can be seen to rapidly increase its GDP without a noticeable increase in life expectancy. As a result, it appears that there is very little correlation between life expectancy at birth and GDP.




There are several limitations in analyzing this data for correlations. First, it only covers six nations of the world. It is possible that the data from this subset of nations studied is not representative of the rest of the nations. Second, the data only covers a fifteen year time period. The fifteen year time period preceding the one studied here could depict different trends and correlations. Furthermore life expectancy and GDP are not the only measures of population and economic health, respectively. Future work would involve looking at other measures of population and economic health in order to get a more comprehensive look into each country.