Data Analysis of life expectancy and Gross Domestic Product (GDP)

Data analysis done by:

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Data provided by:

World Health Organization

Capstone Project: Life expectancy and GDP

This is a capstone project for Codecademy. It is an analysis of life expectancy and gross domestic product (GDP) for six countries (Chile, China, Germany, Mexico, United States of America, and Zimbabwe) for the years 2000 to 2015. Due to the limited nature of the data, no conclusions can be reached after final analysis. However, there are some ideas that may be worth further detailed analysis with a larger more diverse data set. The data subsets are broken down into the following columns:

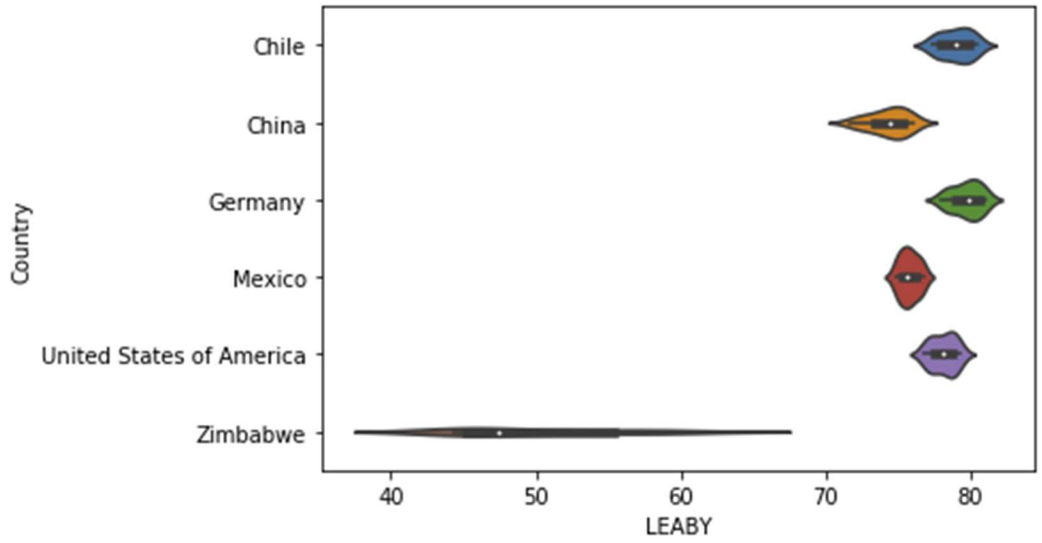
- Country
- Year
- Life expectancy at birth (years)[1]
- GDP[2]

[1] *Life expectancy at birth*, according to the WHO (2020) "reflects the overall mortality level of a population. It summarizes the mortality pattern that prevails across all age groups in a given year – children and adolescents, adults and the elderly."

[2] The *gross domestic product (GDP)* in provided in current US$. The World Bank provides the details regarding the GDP: "GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products." (The World Bank, n. d.)

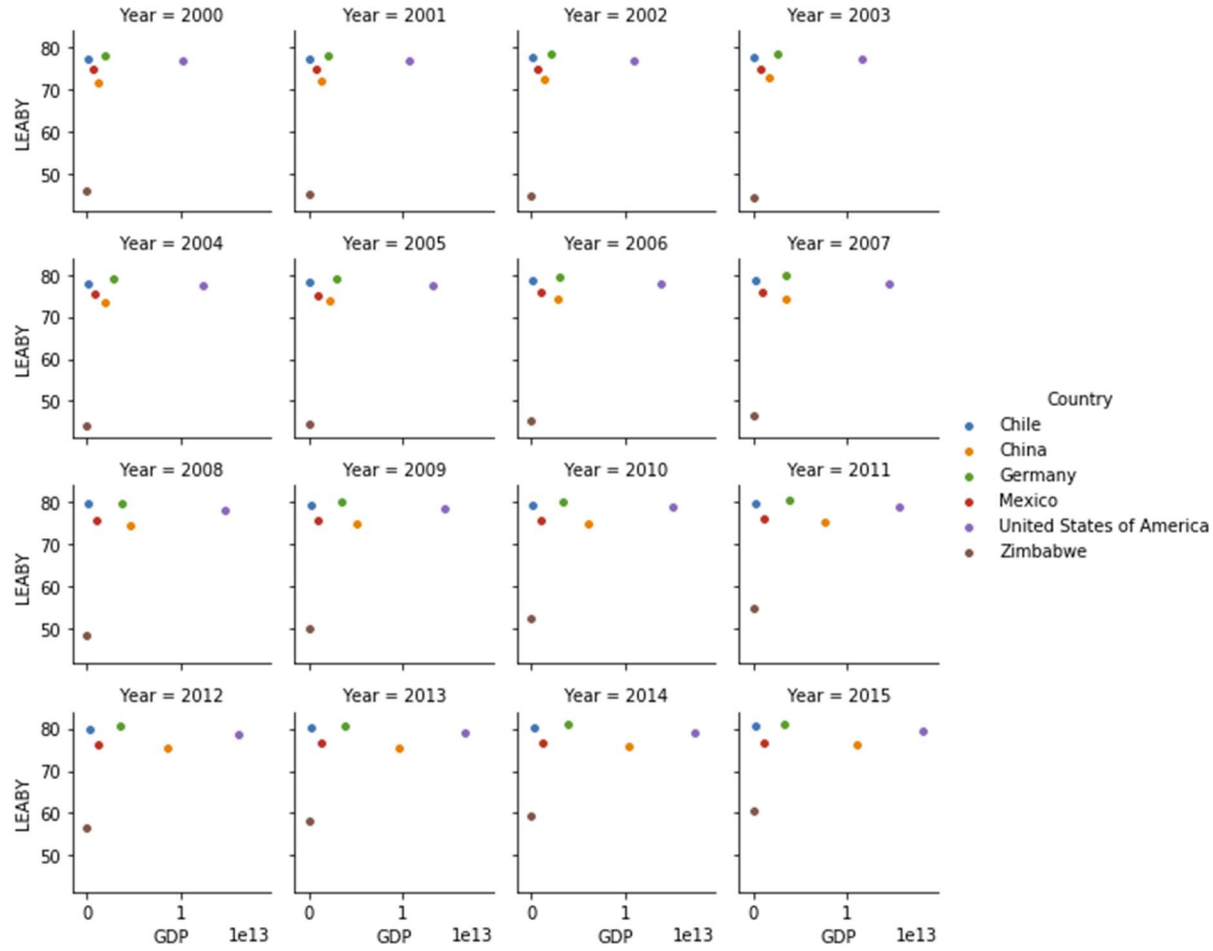
Distribution of Life Expectancy

To begin with we have a violin plot of the Life expectancy at birth by year (LEABY) on the X-axis and the countries on the Y-axis. A quick glance at this shows the large difference at the starting point of the data between Zimbabwe and the other five countries. The violin plots give us a view of the individual interquartile range (IQR). Demonstrating that in five of the six countries the means age is above 70. Note the large change in Zimbabwe's life expectancy over the fifteen-year span.



GPD Compared to Life Expectancy

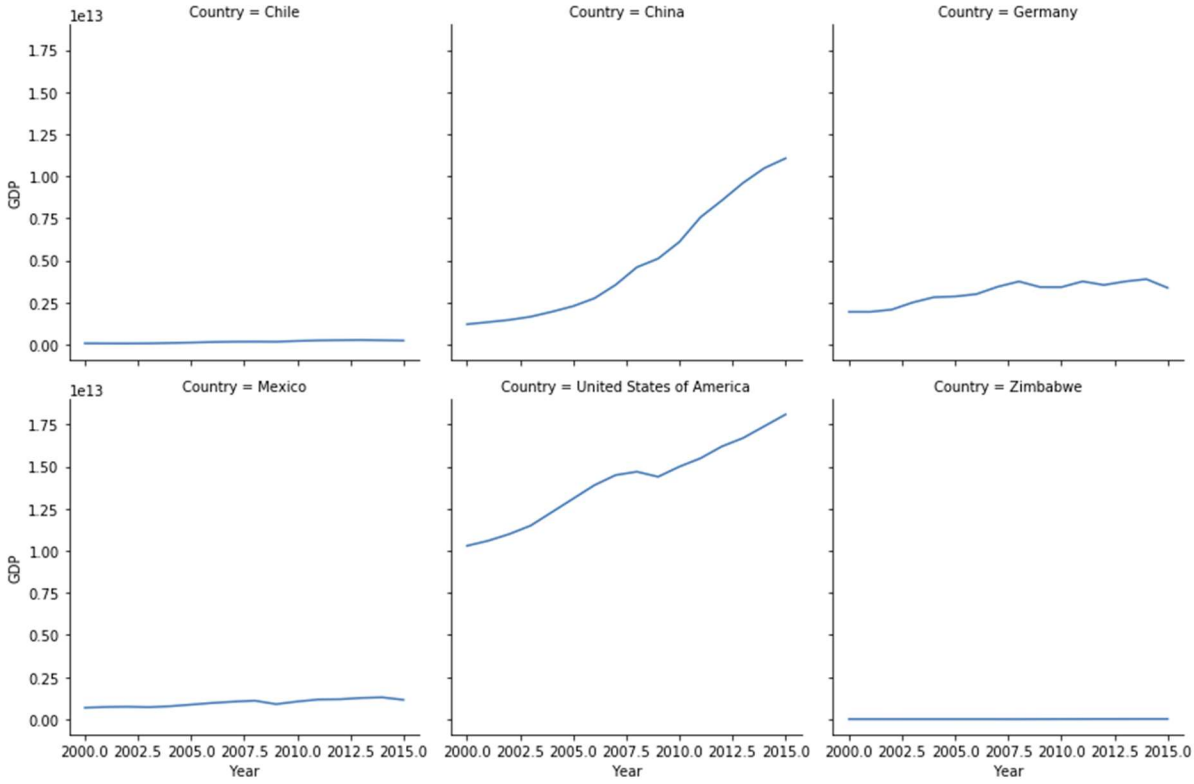
Below is a grid of scatter plots for each year. This allows us to view the data closely for each year, and where the countries are in comparison of LEABY and GDP. Once again, the first thing that jumps out is the cluster of countries along the top of the scatter chart showing the LEABY above 70 years of age. This cluster of countries stays close except for China's rather swift rise along the GDP axis as the years go by. Zimbabwe's low life expectancy begins to rise around 2012. This is four years after the country worked a power sharing deal between Robert Mugabe and Morgan Tsvangirai. This power sharing deal help to stabilize the country and the currency.[3]

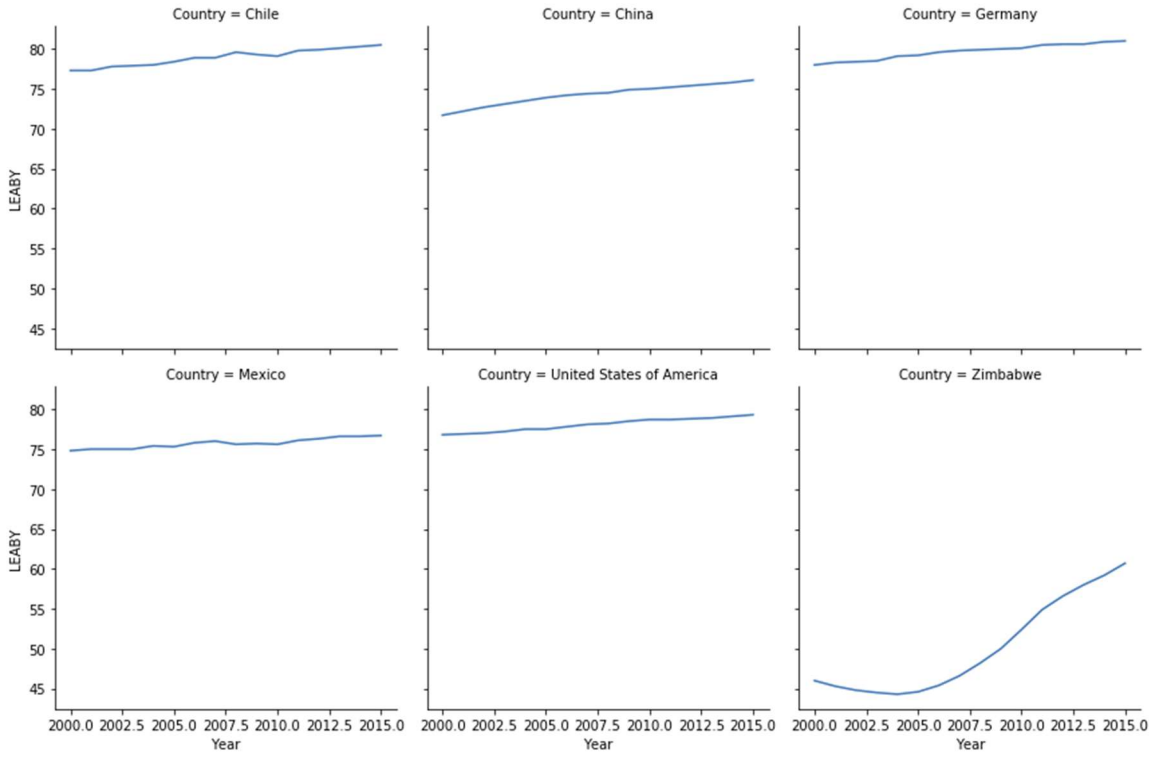


[3] https://www.bbc.com/news/world-africa-14113618

GDP by Country compared to LEABY from 2000 to 2015

The below line graphs better display the individual GDP and LEABY growth the time period. China's economic gains are clear to see in the line graph below showing GDP per country over time. Also note that the LEABY for China during this time show the same growth. I believe that this helps to demonstrate that more than economic growth is needed for life expectancy to increase. The stability of LEABY in Germany, Chile, Mexico, and the US imply once GDP reaches a certain level life expectancy stabilizes. To me this implies that there is more to the life expectancy rate increase beyond GDP growth. A closer look at how this GDP was spread across the citizen may provide more insight on life expectancy increasing.




Country = Chile
Country = China
Country = Germany
Country = Mexico
Country = United States of America
Country = Zimbabwe
LEABY
Year
80
75
70
65
60
55
50
45
2000.0
2002.5
2005.0
2007.5
2010.0
2012.5
2015.0