

Correlation of GDP and Life Expectancy of Major Nations

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Defining Terms

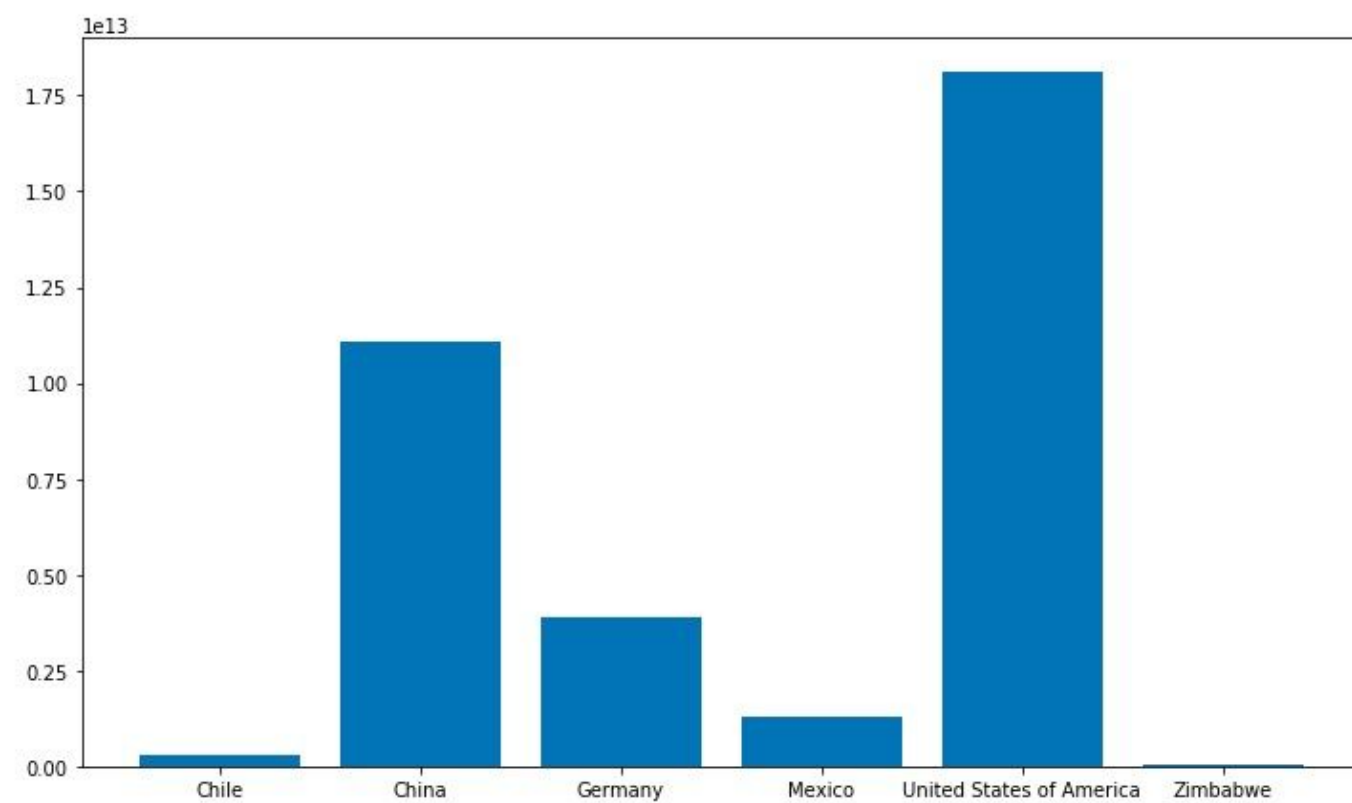
- GDP
 - monetary measure of the market value of all final goods and services produced in a time period.
 - The GDP values are in current US dollars.
- Life Expectancy
 - The average period that a person may expect to live



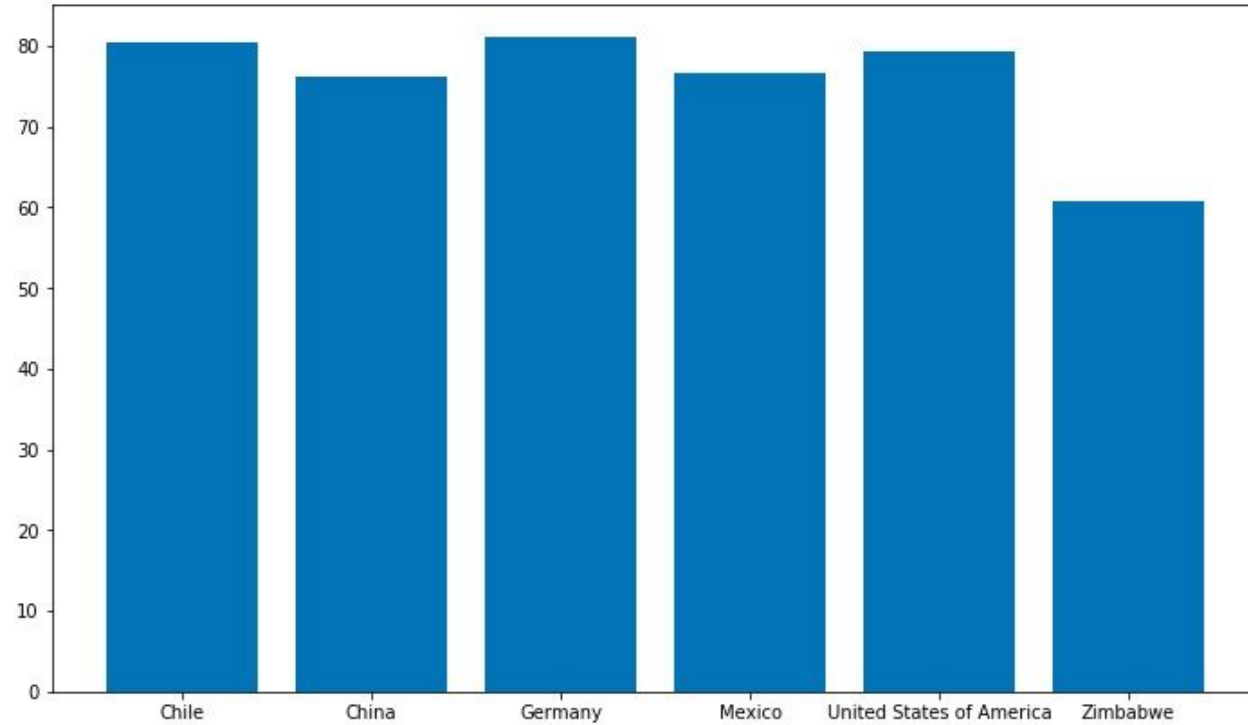
Introduction

- We studied the correlation between GDP and Life Expectancy of six Major Nations:
 - Chile, China, Germany, Mexico, United States, Zimbabwe
- Years Represented: 2000-2015

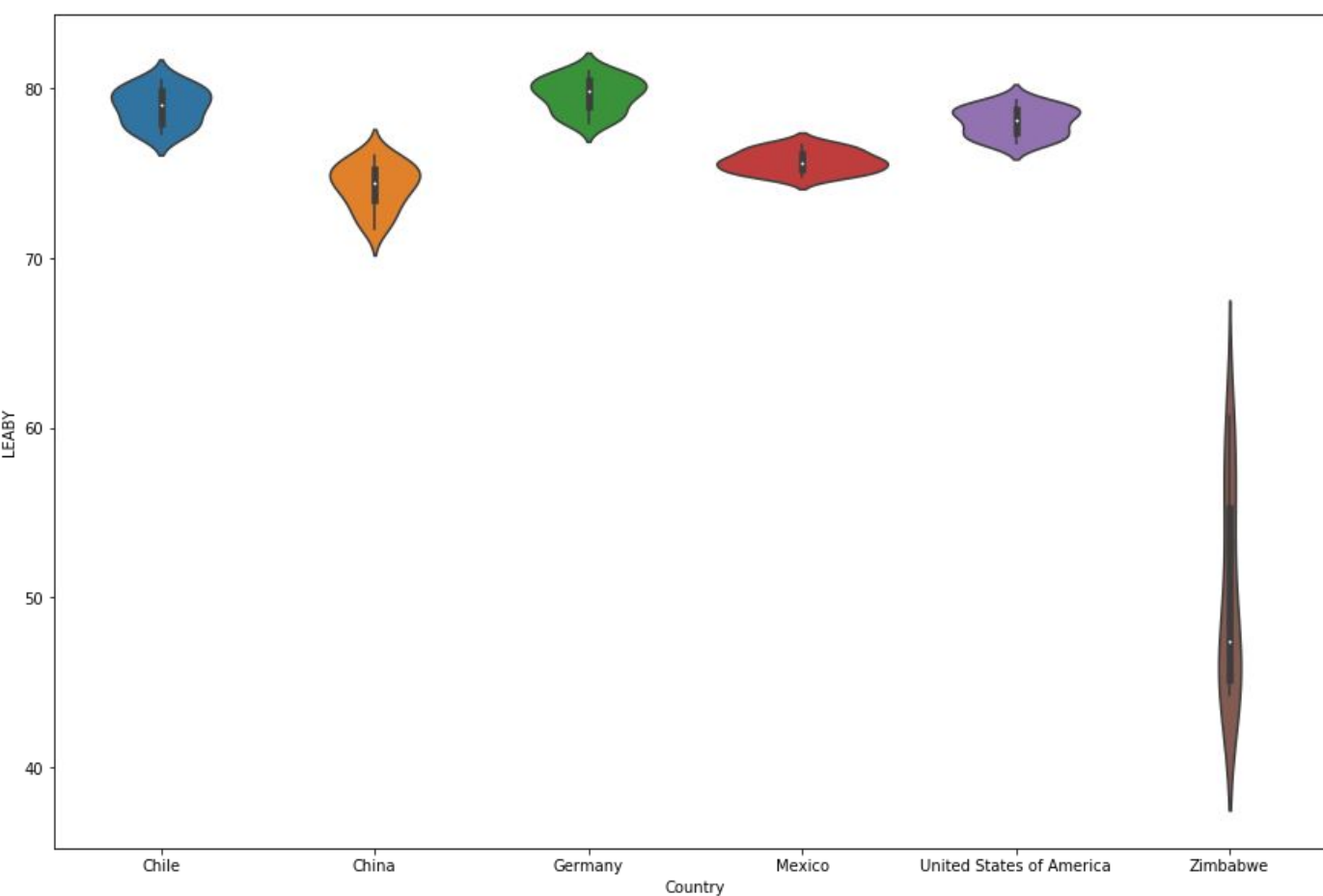
Note: GDP data taken from World Bank, Life Expectancy Data taken from World Health Organization



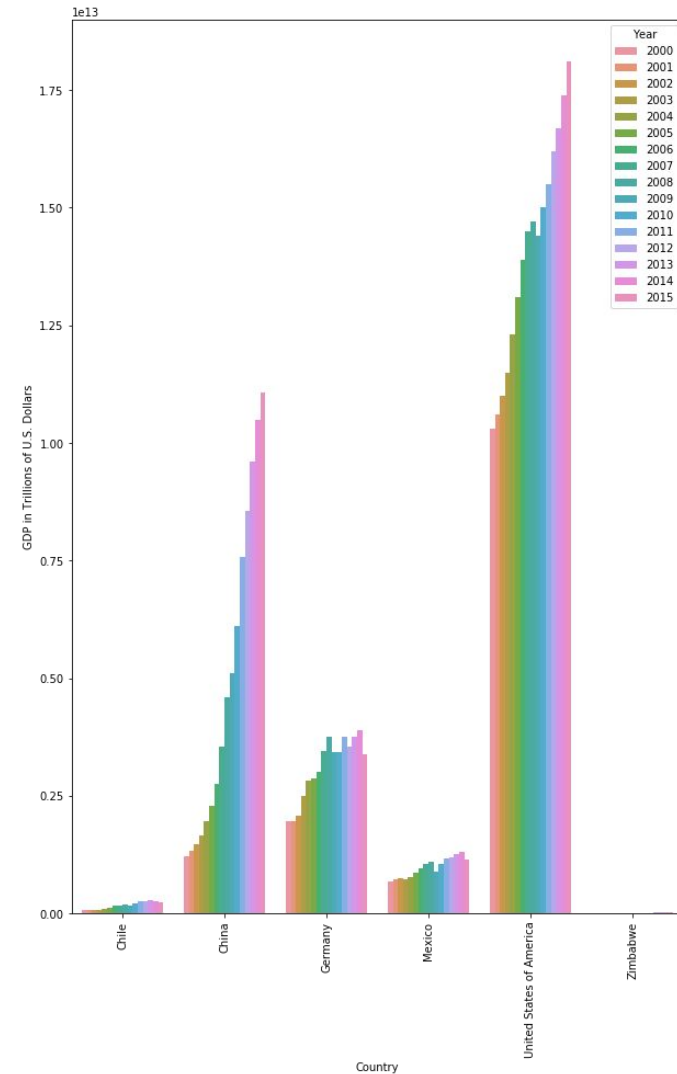
This graph shows the average GDP for each country over the 15 years. As you can see, the US has the largest average GDP and Zimbabwe has the lowest GDP.



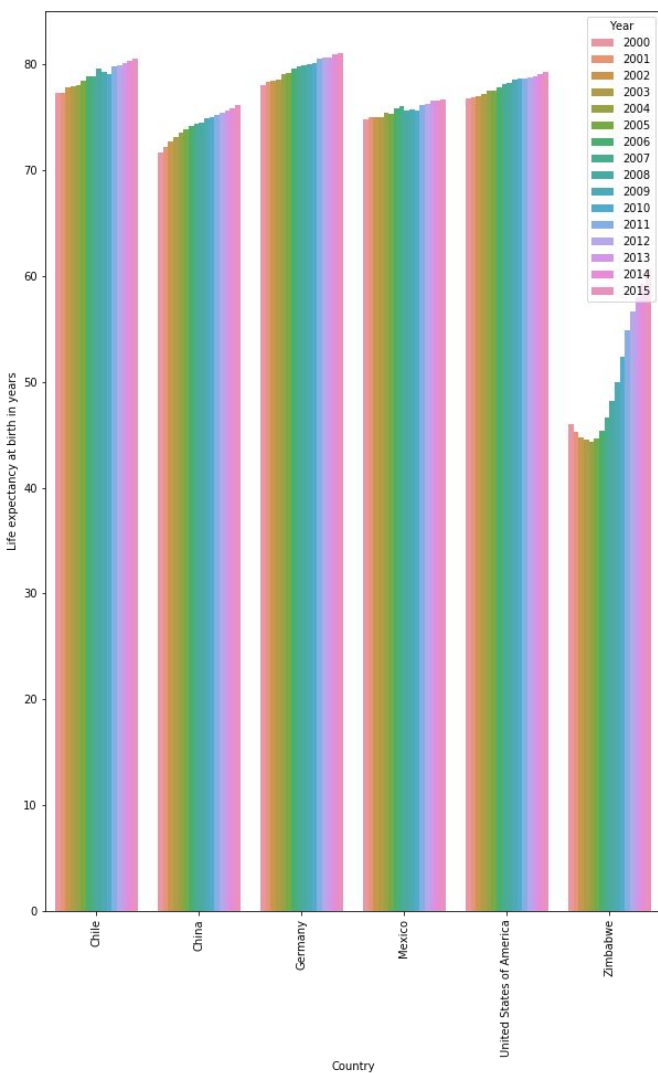
This graph shows the average life expectancy of each nation over fifteen years (2000-2015). As you can, Germany has the highest average life expectancy while Zimbabwe has the lowest average life expectancy.



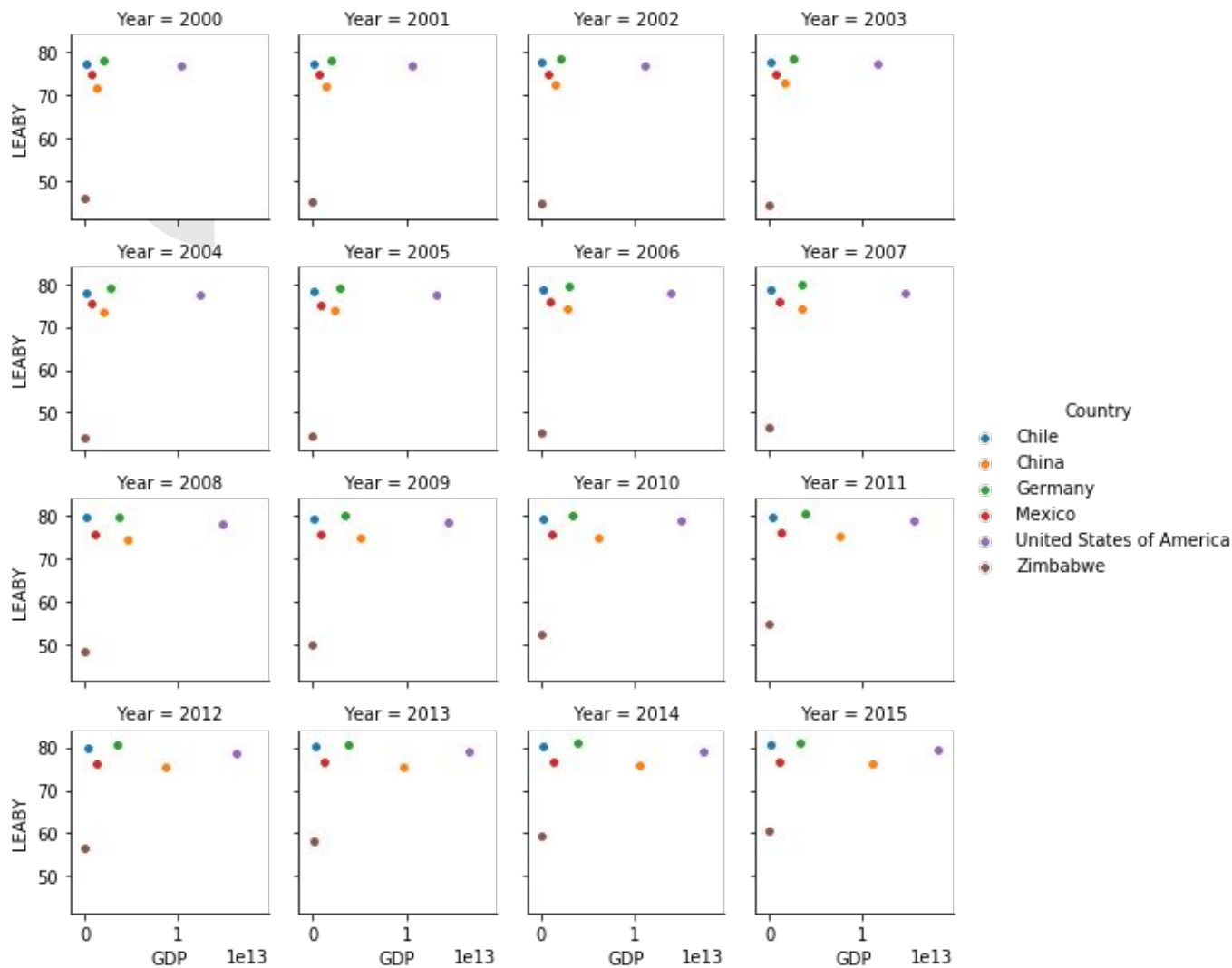
For each country represented in this graph, the length of the violin plot shows the range of life expectancy over the 15 year period. The black bar is the IQR (middle 50%), while the white dot is the average. The width of the plot is based on the number of datapoints with that value. For example, in China, the most common life expectancy at birth was roughly 74 years. Notably, the range of life expectancy in Zimbabwe varied immensely compared to the rest of the countries.



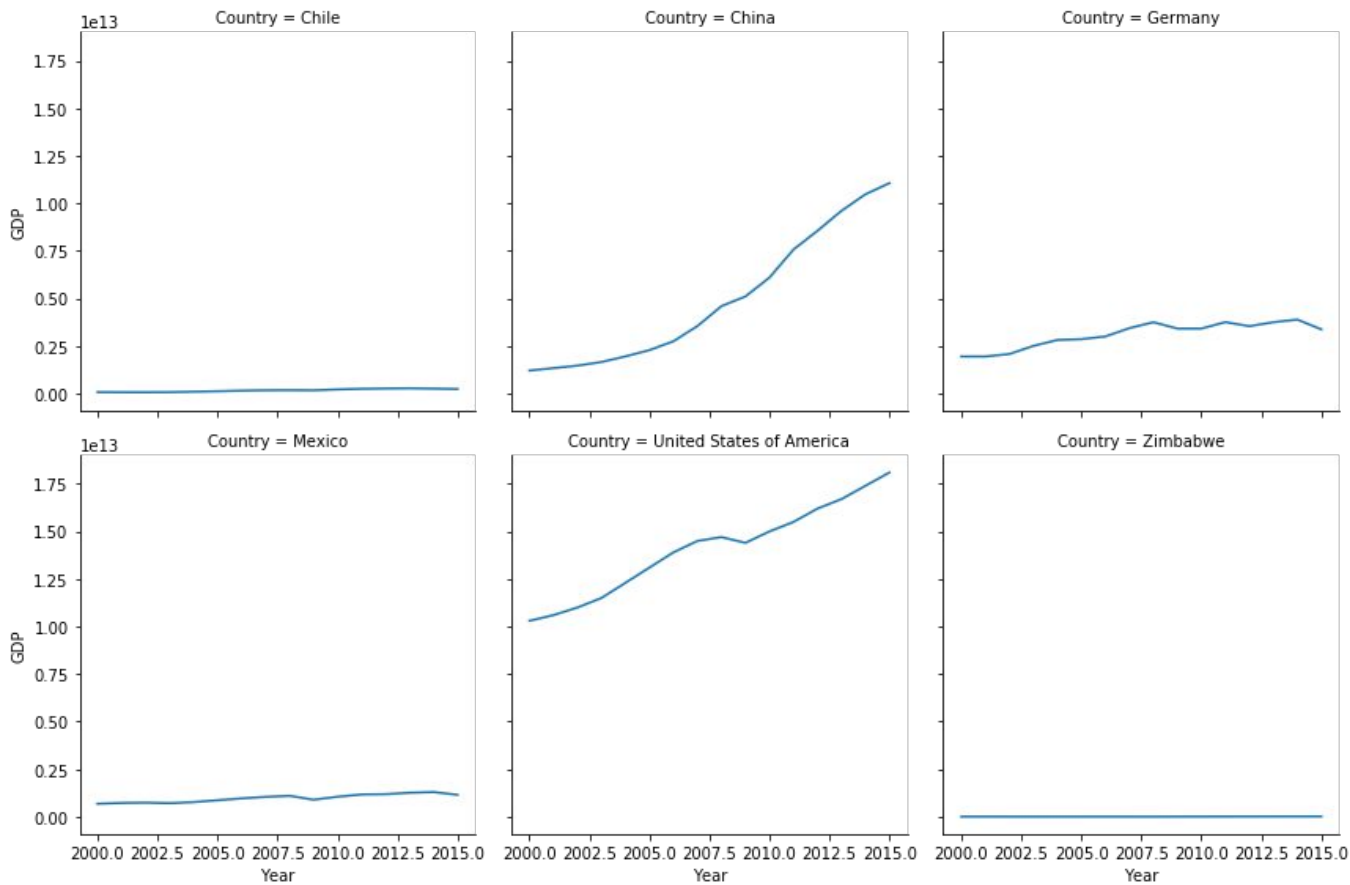
In this histogram, the fluctuation in GDP over the years can be determined. As you can see, every countries' total GDP increased over the period from 2000-2015. China had the largest increase while Mexico had the lowest increase in GDP.



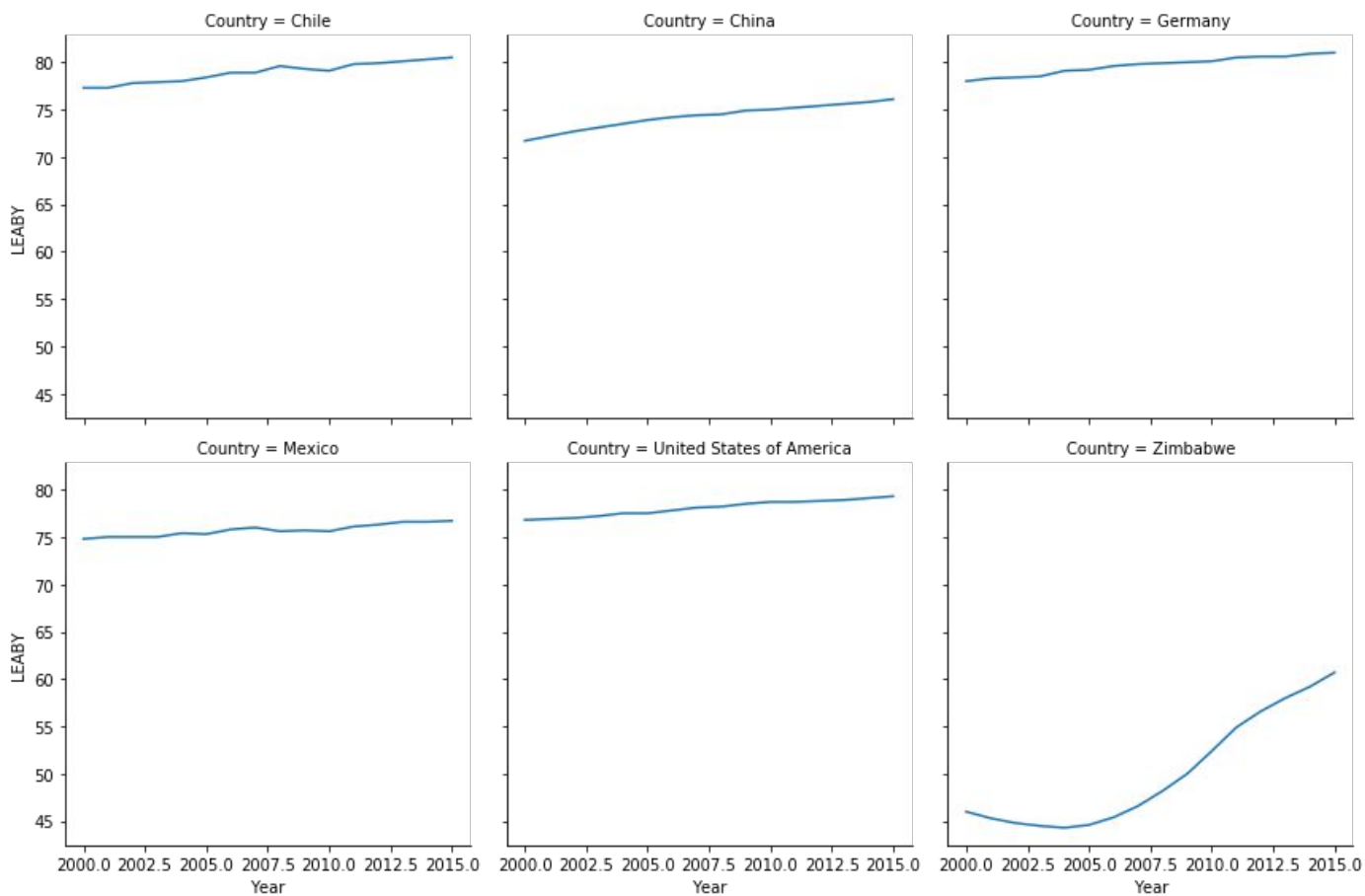
In this histogram, the fluctuation in life expectancy over the years can be determined. As you can see, not every country's life expectancy increased year to year. Notably, from 200-2005, Zimbabwe's life expectancy decreased, however, it increased immensely towards the end of the decade and the beginning of the next decade. Every other nation remained relatively stable. Mexico had the least change over time.



This facet grid of scatter plots depicts GDP as a function of life expectancy by year. This graph is not very informative, as you are not able to read the trends very easily. However, it can be said that China had the greatest change in GDP, while Zimbabwe had the largest change in life expectancy.



For each country represented in this graph, we get the change in GDP over time. The US and China have the greatest change (both increases), while Zimbabwe, Chile and Mexico remain relatively stable.



For each country represented in this graph, we get the life expectancy over time. As you can see, more clearly, Zimbabwe changed the most over time.



Conclusions

By visual inspection, it seems that there is a very limited relationship between GDP and life expectancy.



Real-world Explanations

According to Wikipedia, Chile has a strong healthcare system which could account for their high life expectancy despite their relatively low GDP.



Limitations

Unfortunately, we were given the total GDP of the country. In order to fully understand the relationship between GDP and life expectancy, it would be helpful to know the GDP per capita as well.

Also, it would have been helpful to compare the trend lines of GDP and Life expectancy on the same graph in order to more accurately visually inspect the correlation. More sophisticatedly, we could have quantified the two independent variables using statistical tests for correlation.