CODECADEMY
CAPSTONE PROJECT
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LIFE EXPECTANCY: NO MEANINGFUL CORRELATION WITH GDP

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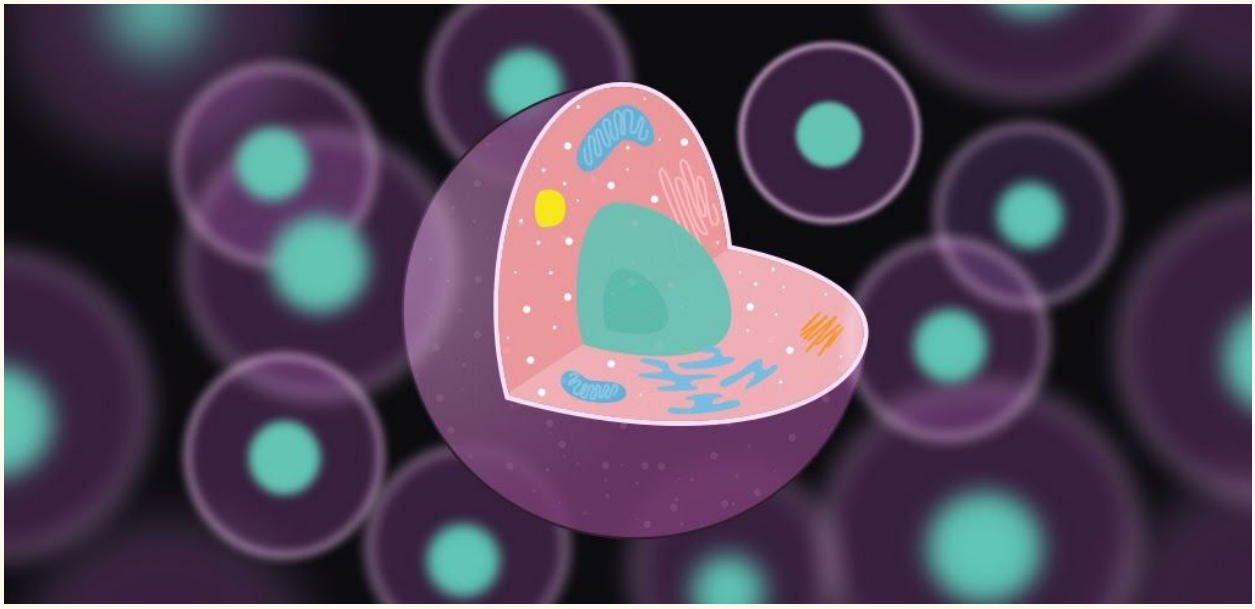
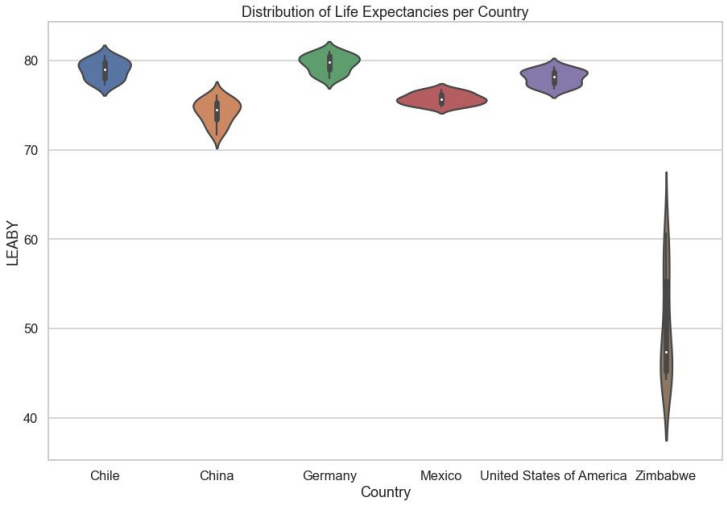


ABSTRACT

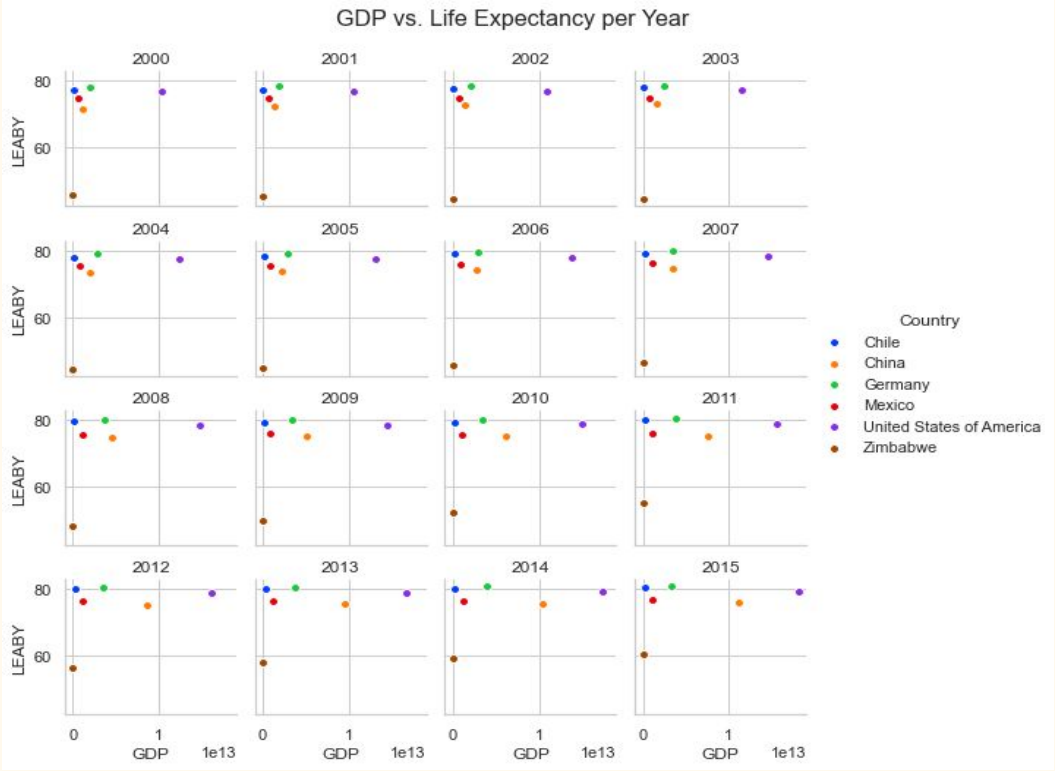
For this project, we are to act as a data researcher for the World Health Organization (WHO). We will investigate if there is a strong correlation between the economic output of a country (GDP) and the life expectancy of its citizens. In this study, we will examine six countries (Chile, China, Germany, Mexico, USA, and Zimbabwe). The dataset covers a time period of 16 years from 2000-2015. Life expectancy is represented by the number of years a person in the respective country is assumed to live. The data will be analyzed using Python script with Pandas and visuals created using Seaborn libraries.

Life Expectancy Distribution by Country



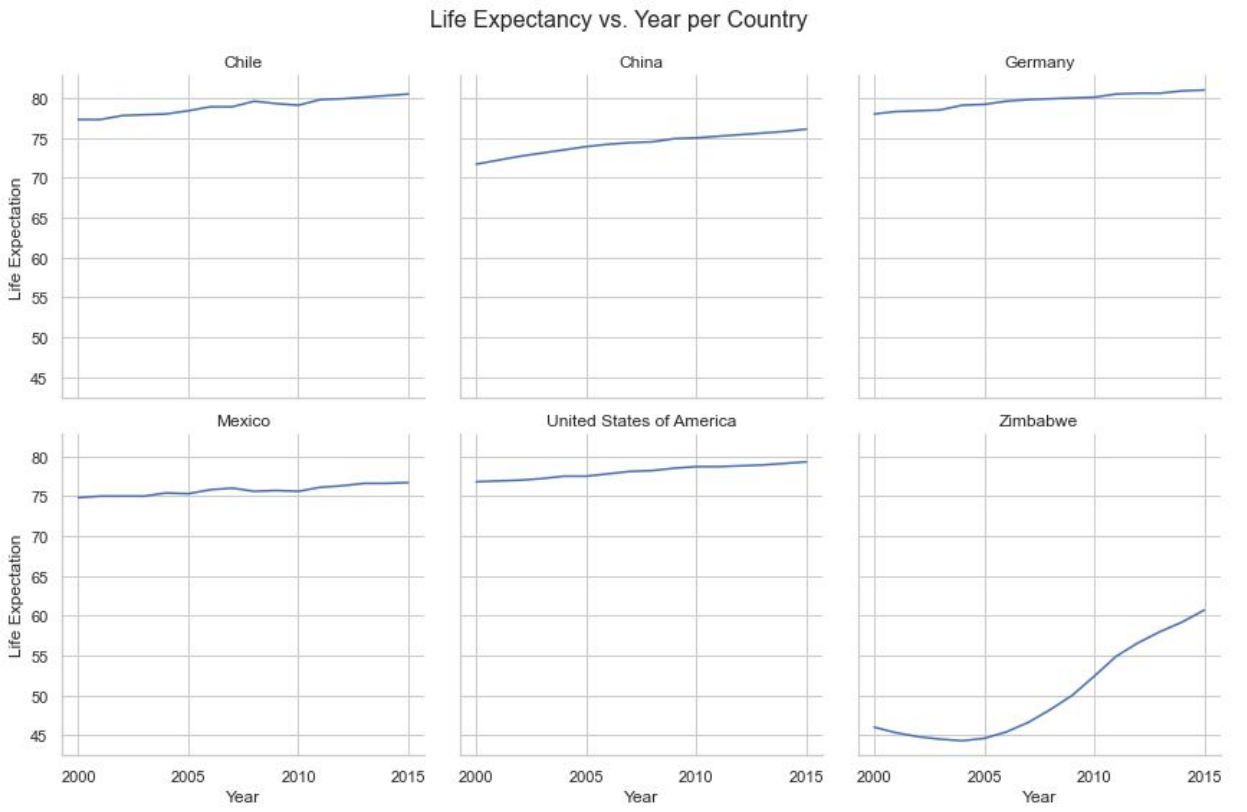
Looking at the distribution of life expectancy data plotted against their respective countries, it is clear that Zimbabwe has a much larger distribution than the other countries. Similarly, the life expectancy of Zimbabwe has changed the most as there is a greater range of life expectancy that creates the average around 50 years. For Zimbabwe, the range goes from approximately 44 years, all the way to 60 years. This represents a 16 year distribution, compared to what seems to be roughly a 1-5 year distribution for the other comparison countries. The range area for the countries Chile, China, Germany, Mexico, USA also fall relatively close to each other around 70 to 82 years. Whereas, the distribution for Zimbabwe is much lower on the scale, separate from the others.

GDP Correlation With Life Expectancy



Looking at the scatter plot above comparing countries GDP versus the average life expectancy, we can see over time shift(s) meaningfully across the X axis and Y axis. For the X axis, we can China move from the far left in 2000, all the way to around the middle in 2015. For the Y axis, we can see Zimbabwe move from the bottom left in 2008, all the way to around the middle in 2015. The issue with comparing Zimbabwe data to the datasets of far more advanced countries like the USA, Germany, China is the magnitude of the changes are vastly deafened. It is very hard to see the actual changes, if any, to Zimbabwe's GDP.

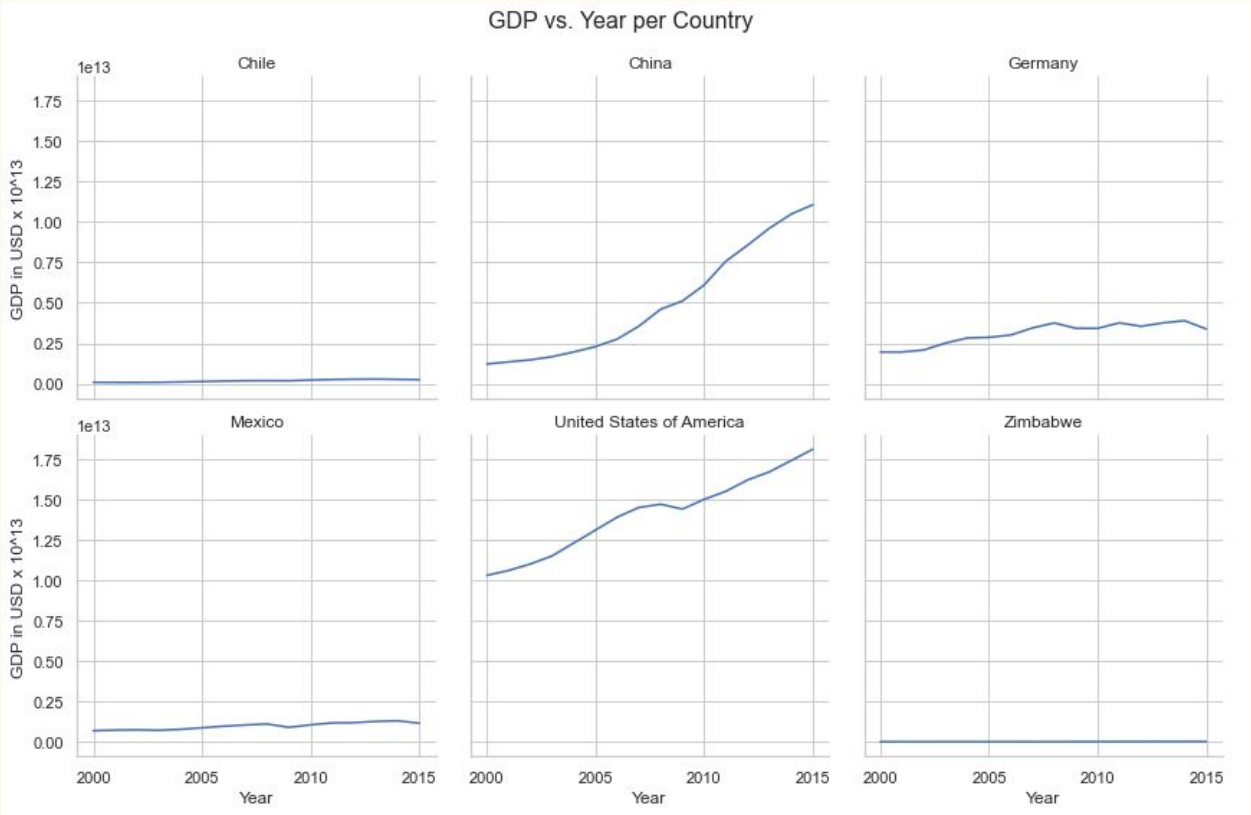
Life Expectancy Across Countries Per Year



Let’s look at the first line figure, comparing life expectancy across countries per year. We can see that Zimbabwe had the most change across the years, starting from 44 in 2000 to 60 in 2015. The shape of the curve is much more steep than the others. We can also see that the other countries all have relatively high life expectancies, which might be explained by their economic development stage. Most developed countries exhibit long life expectancies, while developing countries often exhibit low life expectancies. Chile and Germany have the highest life

expectancies around 80 years as of 2015, whereas Zimbabwe has the lowest life expectancy at around 60 years in 2015.

GDP Across Countries Per Year



For the second line figure, comparing GDP across countries per year, we can see the countries are not on the same level. The United States of America, China, and even Germany have GDP levels that are significantly higher than the rest, so big that they dwarf the magnitude of any increases for the other countries. For example, we hardly see any change in Chile, Mexico, or Zimbabwe, despite there may (or may not) be significant changes on a % basis. The highest GDP country is the United States of America, followed by China. The lowest GDP country is Zimbabwe followed by Chile.

CONCLUSION

Interestingly, while all countries except Zimbabwe had similar average life expectancies, they all do not have similar GDP. Thus, we cannot confirm that countries with higher GDP will have higher life expectancies.

Sources:

(1) https://en.wikipedia.org/wiki/Economic_history_of_China_(1949%E2%80%93present)#:~:text=Gross%20domestic%20product%20in%202000,the%20world%20after%20the%20U S.