Life Expectancy & GDP for the past decade and a half for 6 countries

INTRODUCTION

I will be examining the life expectancy at birth as well as GDP for 6 countries from the period of 2000 to 2015. An analysis will be performed to determine whether there is a relationship between life expectancy at birth and GDP and hypothesizing the possible reasons for any changes. The countries we will be studying and comparing will be Chile, China, Germany, Mexico, The United States of America and Zimbabwe.

SOURCES

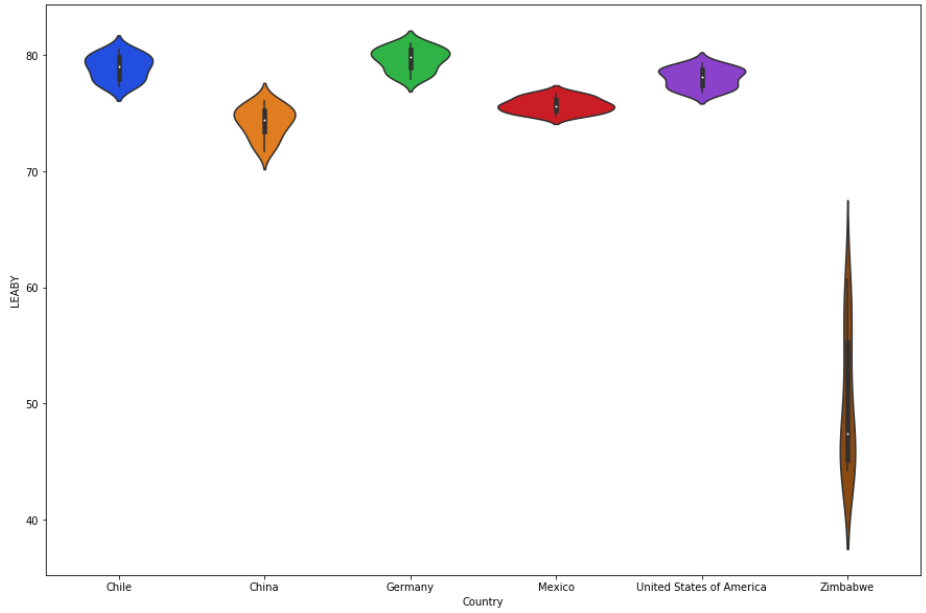
The data comes from the World Health Organization (WHO) and the World Bank. Correspondingly, it covers the life expectancy at birth in years (LEABY) as well as Gross Domestic Product (GDP) of Chile, China, Germany, Mexico, The United States of America and Zimbabwe for the the time period of 2000 to 2015.

METHODOLOGY

I will also use Data Analytic skills of Python to analyze, prepare, and plot data, to illustrate the findings that will help explain the changes in a meaningful way.

GRAPH 1

The first visualization presented is a violin plot that shows LEABY by country.

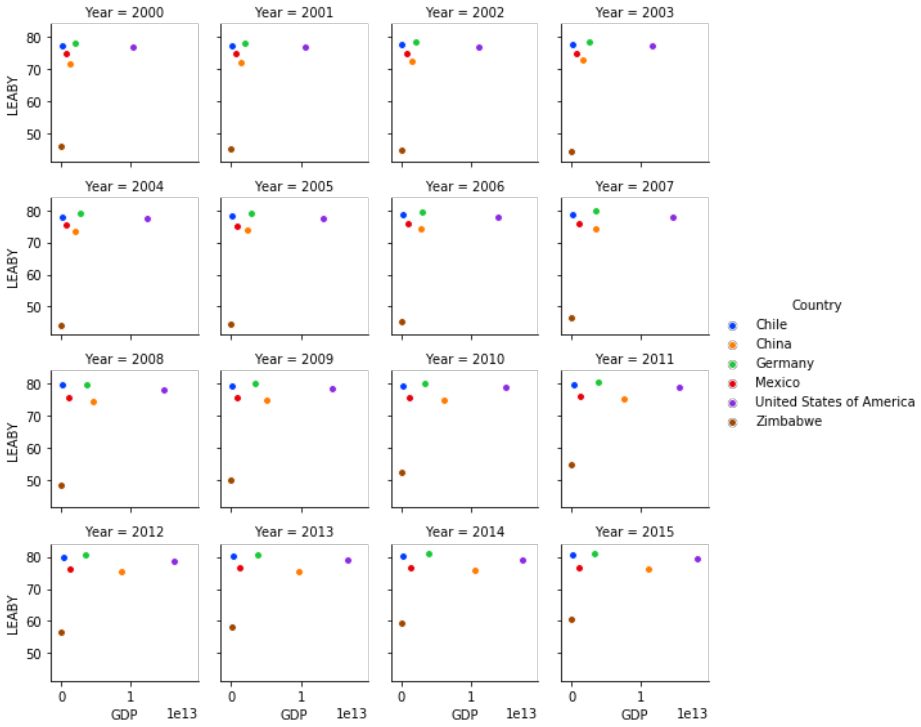


Violin plot showing life expectancy by country

This violin plot shows that most of the developed countries have a life expectancy in the range of 70 to lower 80 years of life. Zimbabwe on the other hand has a life expectancy of middle to upper 30's to mid 60's. This plot of does not take time into account and shows all the range of life expectancy for the years of 2000 to 2015.

Diagram 2

The next diagram shown is a scatter graph mapping GDP as a function of Life Expectancy by country.

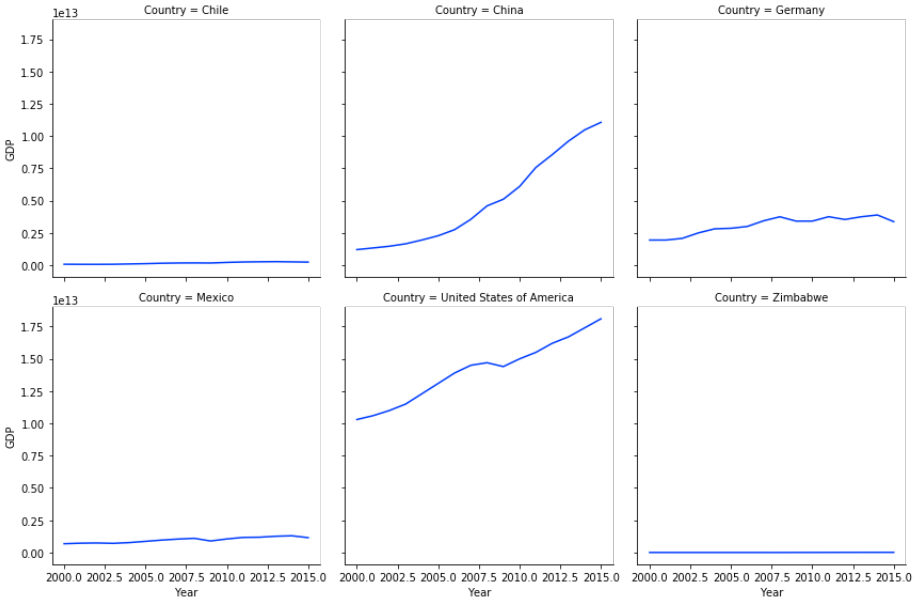


Scatter graph mapping GDP as a function of Life Expectancy by country

This diagram is not that useful in this application because it is hard to read and difficult to make and meaningful analysis much less conclusions due to the method the data is presented as individual years.

Diagram 3

Diagram 3 will be a series of line charts graphing changes in GDP by country through the time period of 2000 to 2015.

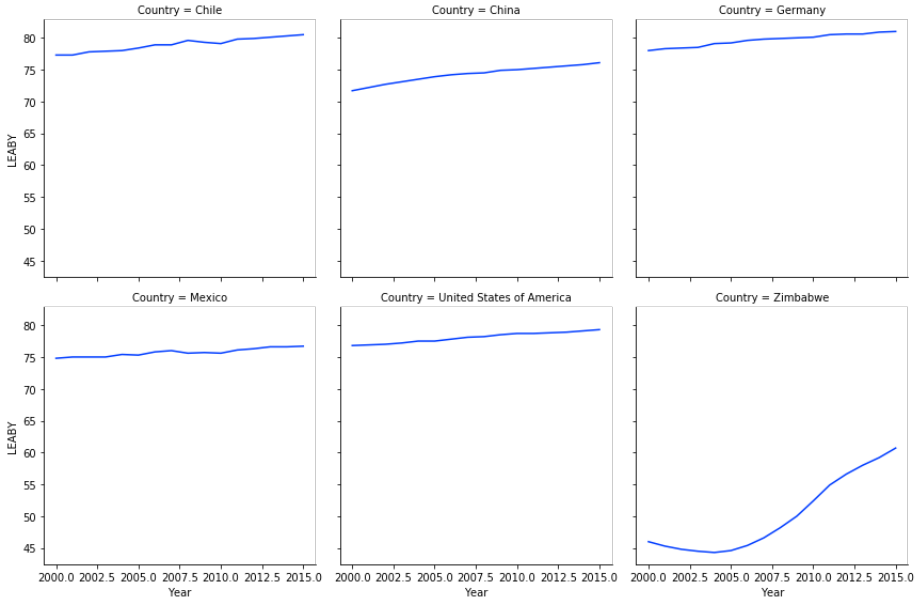


Line charts graphing changes in GDP by country from 2000 to 2015

Much more information can be gleaned from these line charts divided by countries. We can see both China and the USA have had relatively strong increases in GDP during this time period while Germany has had slight gains and the other 3 countries of Chile, Mexico and Zimbabwe have stayed fairly consistent.

Diagram 4

We will use the same methodology format for the next diagram of line charts graphing changes in life expectancy at birth in years (LEABY) by country through the time period of 2000 to 2015.

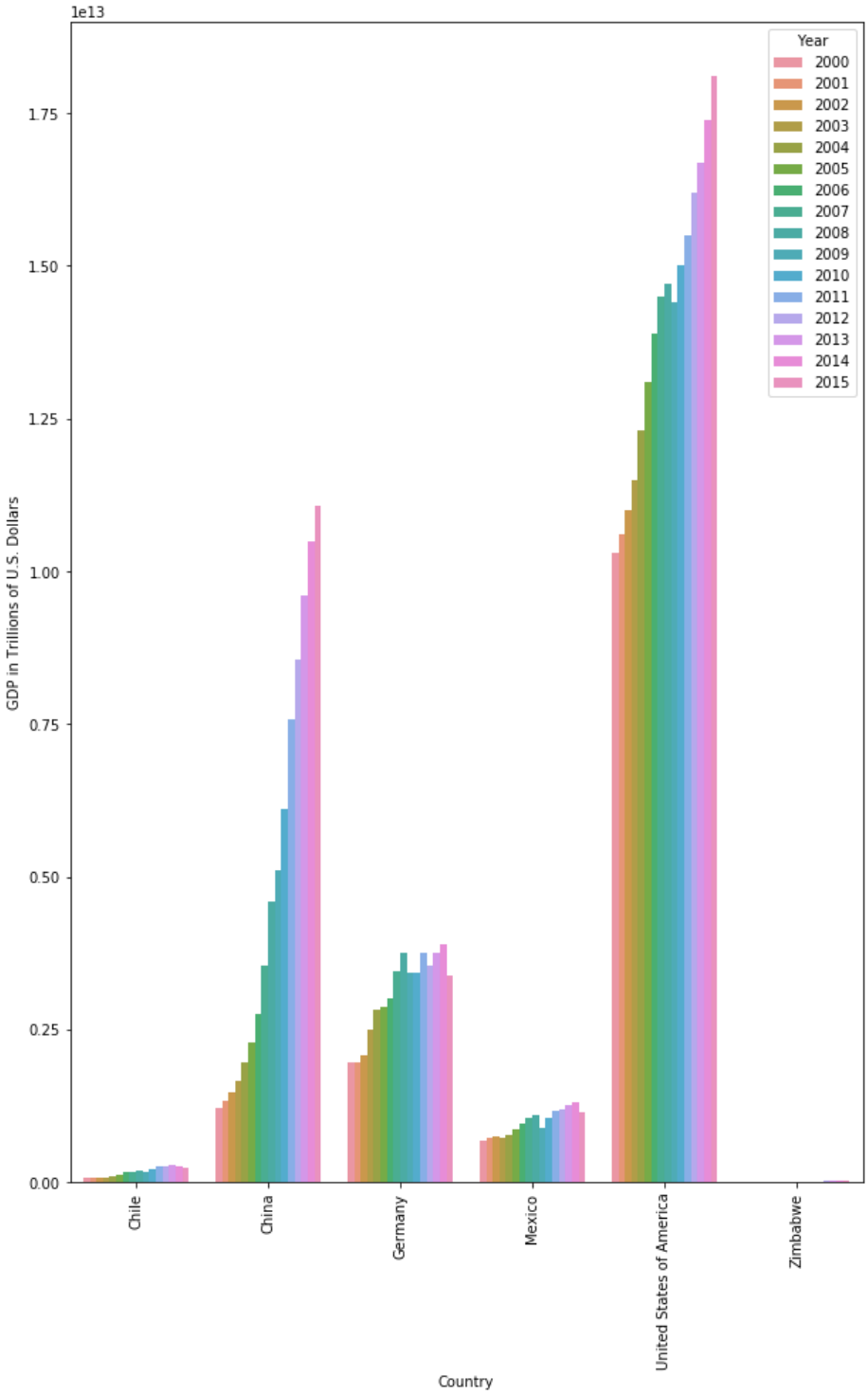


Line charts graphing changes in LEABY by country from 2000 to 2015

These charts show a dramatic improvement in life expectancy in Zimbabwe through this time period while the other countries show modest but steady increases in life expectancy.

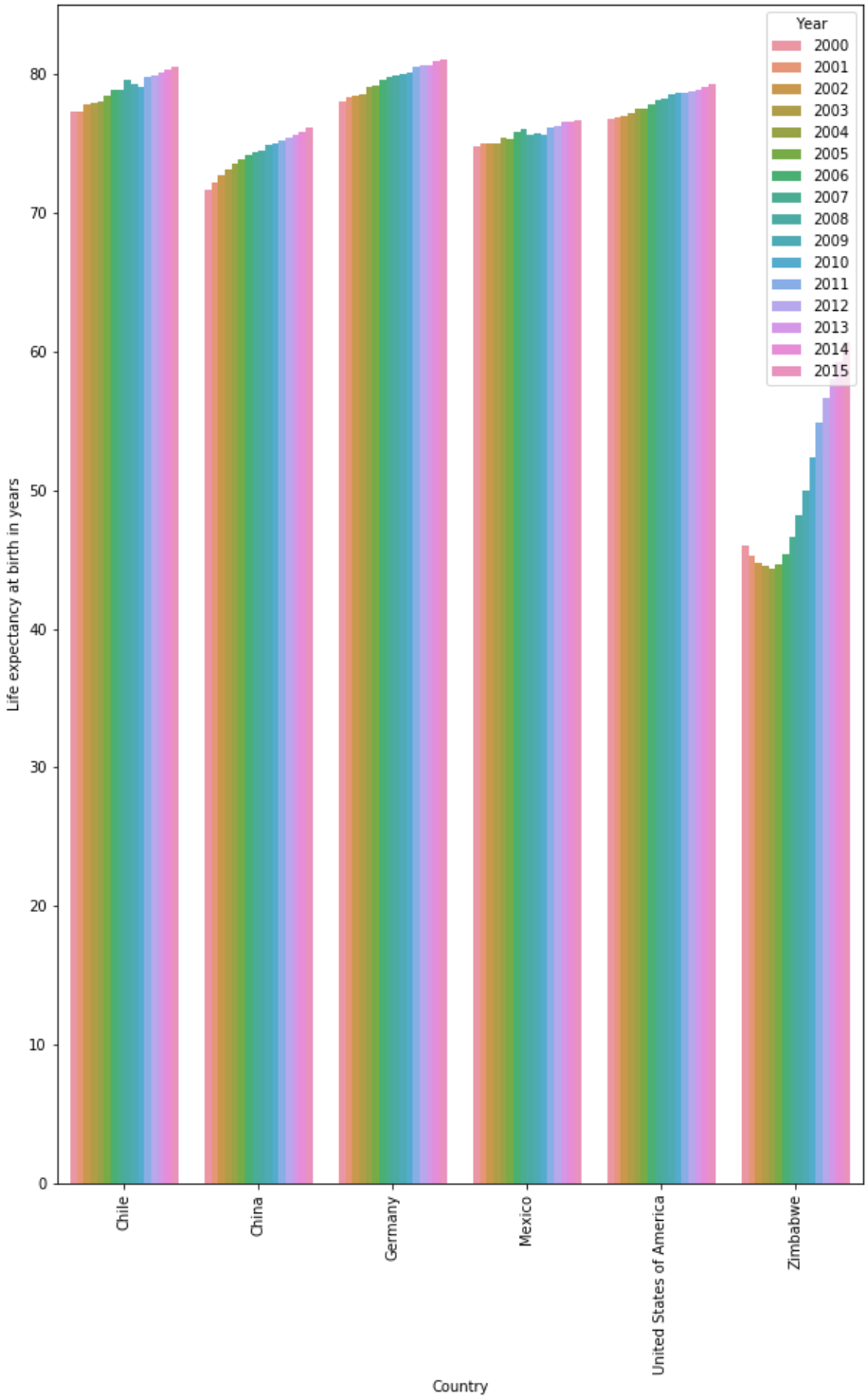
Other Diagrams

A couple of other diagrams to help flesh out the data. Both of them are bar plots showing changes in GDP and life expectancy per country for the years 2000 to 2015.



Bar Plots showing changes in GDP per country for the years 2000 to 2015

This graph show minimal but modest increase in GDP for Chile and Mexico from 2000 to 2015. Zimbabwe's GDP barely registers. Germany has more moderate increase in GDP and the USA has strong gains. China on the other hand has incredible gains in GDP for the time period.



bar Plots showing changes life expectancy per country for the years 2000 to 2015

The first 5 countries show slow but steady improvements in life expectancy with China doing the best of these 5. Zimbabwe on the other hand first shows a slight dip and then remarkable improvement after life expectancy bottoms out in 2004.

Analysis, Conclusions and Next Steps

Analysis

China has had the most dramatic improvement in terms of GDP with the United States following close behind although the United State's GDP is still quite a bit above China's. Germany has had moderate improvements while Chile and Mexico's improvements have been more modest. Zimbabwe's GDP is insignificant at these scales and especially compared to the USA, China and even Germany. In addition, China opened up their economy a decade before the time period I am studying and if I analyze the data the decade before, I'm sure I'll start to see increase in GDP that precipitated the sudden rise show in the current period.

Life expectancy for Chile, Mexico, Germany, USA and too a lesser extent China have shown steady growth. Zimbabwe's life expectancy has shown remarkable improvement after a few years of declining life expectancy.

Conclusions

I believe there is a small correlation between life expectancy and GDP. For the countries of Chile, Mexico, Germany and the United States, I see slight increases in life expectancy as the GDP rises. The reason why I believe it is only a slight correlation is because there's many more factors that go into life expectancy. For example in China, I'd expect to see higher increases in life expectancy with the incredible increase in GDP but I believe it's one of the side effects of the remarkable increase in GDP that while there's better increase in life expectancy vs. the other countries (barring Zimbabwe), they may have gained the increase in GDP at the cost of polluting their country and hindering the health of their populace. Zimbabwe on the other hand had quite a long period of civil strife that initially participated in decreasing their life expectancy but after the the country settled down, life expectancy began to rise precipitously.

Next Steps

In order to further determine whether there is a stronger correlation between GDP and life expectancy, I'd like to expand the data set to more

countries and a longer time period. In addition, a historical record of major events for each country could be added to help explain why there are outliers or anomalies.