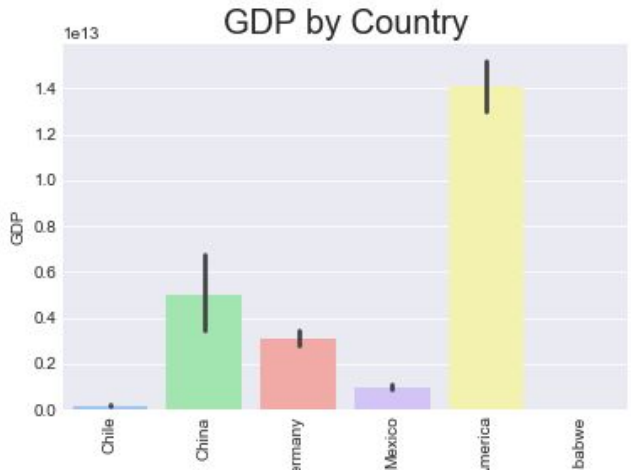
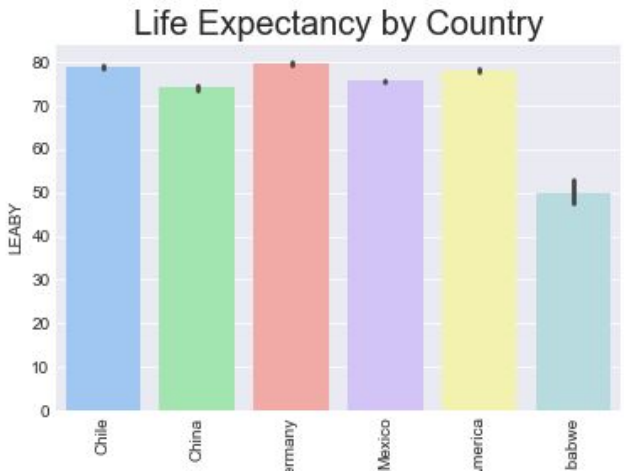
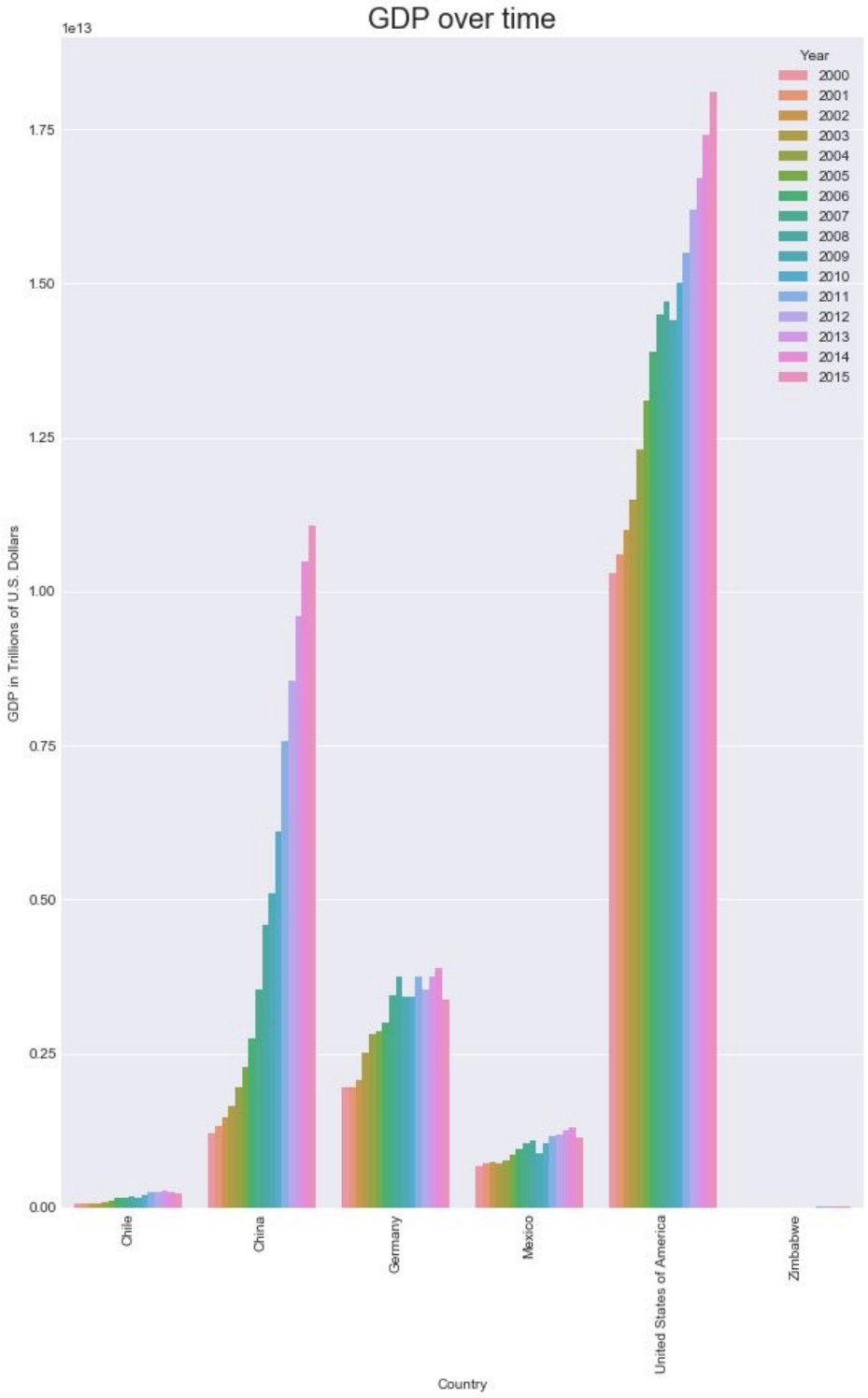
Can Life Expectancy predict GDP?

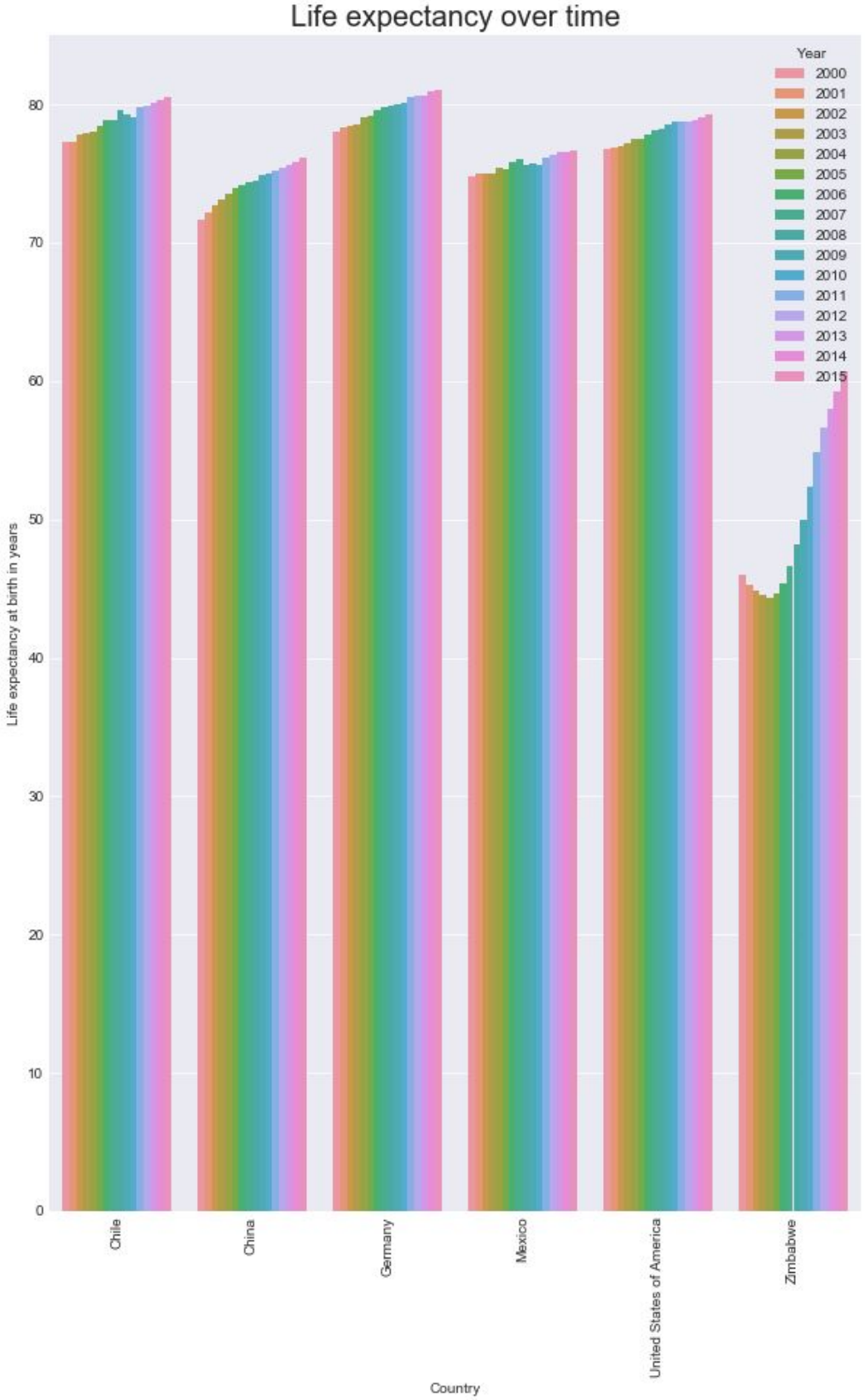
In the follow analysis, we study six countries to tell a story about the correlation between growth and life expectancy. Chile, China, Germany, Mexico, United States, Zimbabwe are subjects of interest and we compare these six countries from year 2000 to the year 2015. We use this time frame to make the case that a higher life expectancy results in a steady upward increase in GDP.





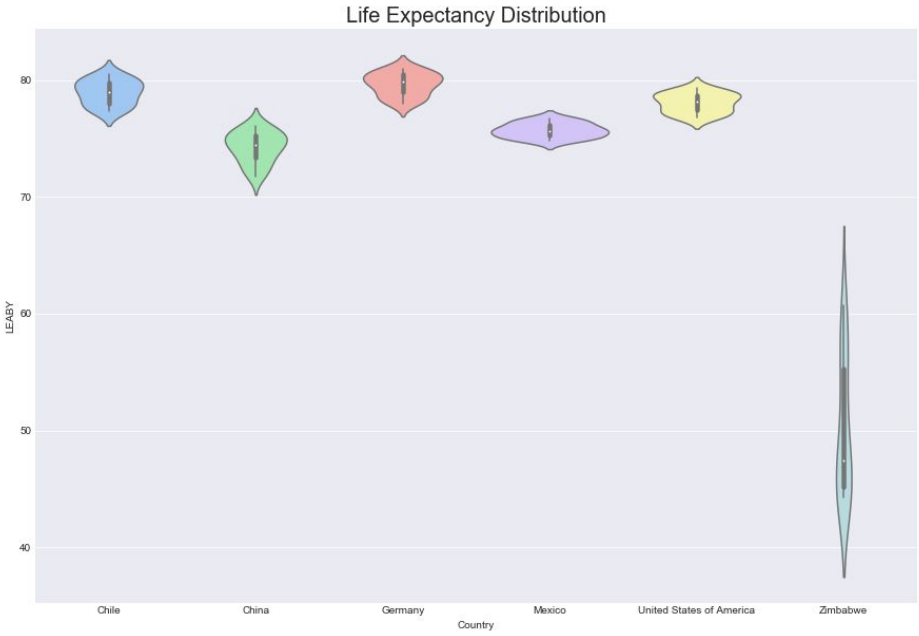
In the bar graph above, we can observe that 'Life expectancy is almost the same in all the countries with the exception of Zimbabwe. Zimbabwe has a shorter life expectancy and almost non existing GDP relative to USA. Extracting from the graph, there is no evidence that longevity is relative to a countries GDP. To get a better sense of GDPs of the countries over time, and the relationship between GDP and life expectancy, it is necessary to see the progression over the fifteen year span. Below is a bar graph representing each country's data by year.

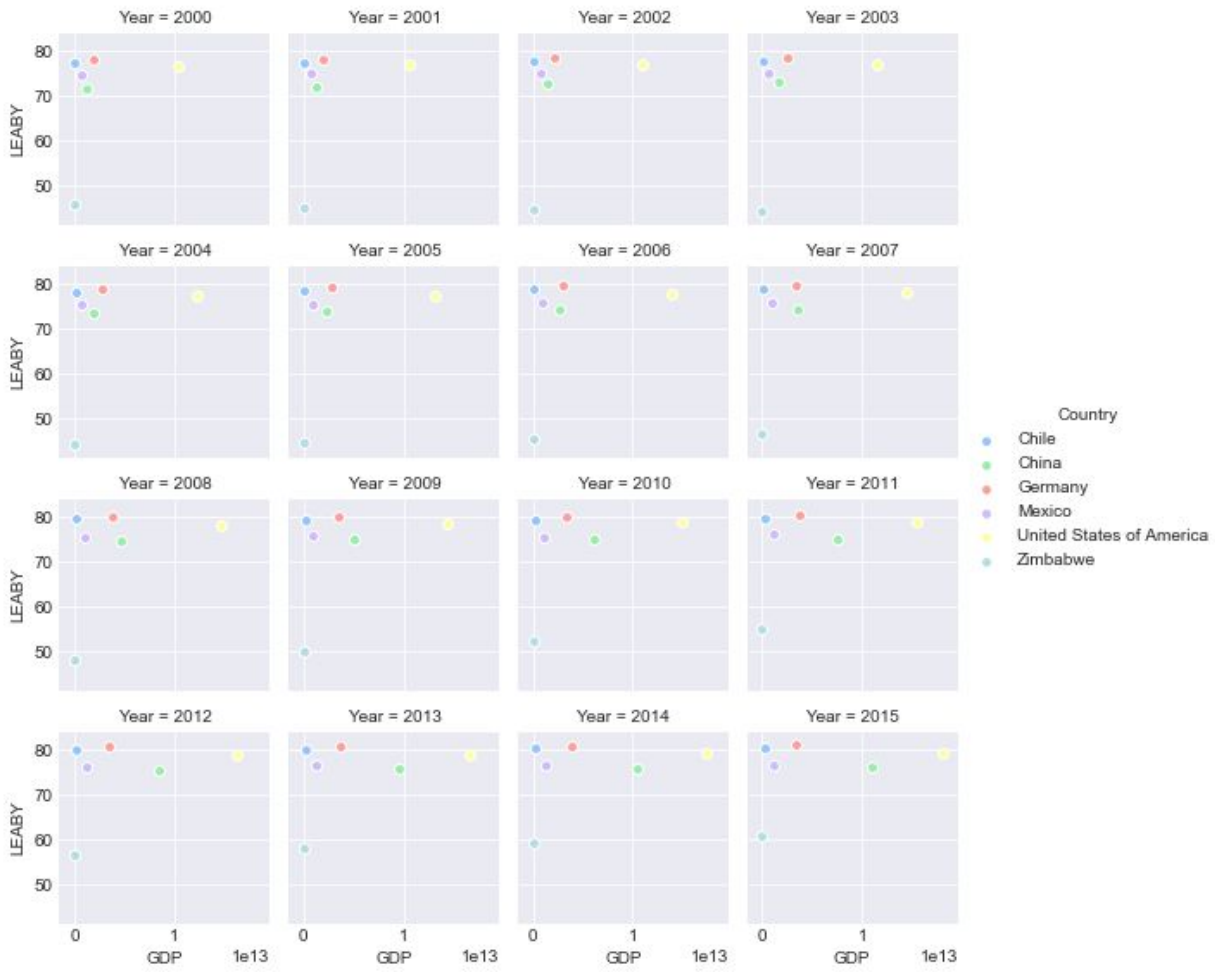

GDP over time
1e13
Year
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
GDP in Trillions of U.S. Dollars
Chile
China
Germany
Mexico
United States of America
Zimbabwe
Country


Life expectancy over time
Year
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Life expectancy at birth in years
0
10
20
30
40
50
60
70
80
Chile
China
Germany
Mexico
United States of America
Zimbabwe
Country

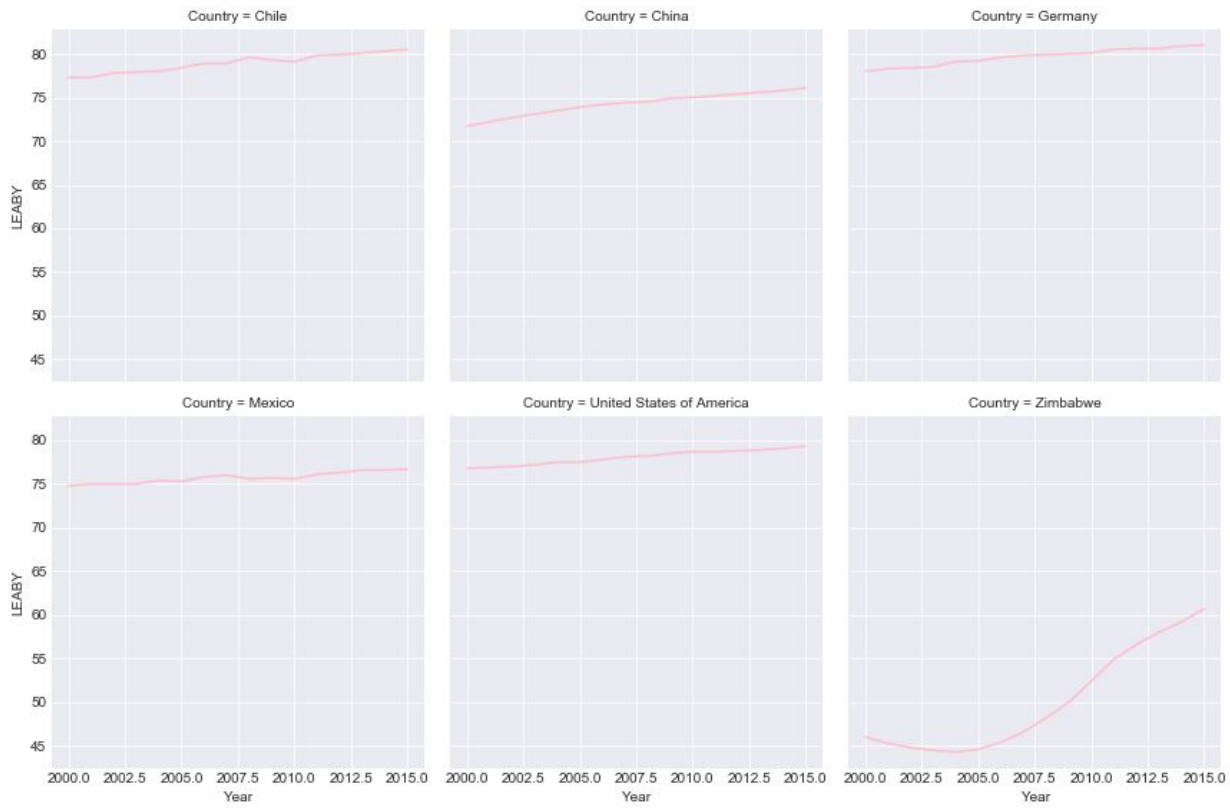
Looking at the progression throughout the years, we can observe that Zimbabwe had a decline in the years 2000 to 2005 but had an exponential growth from the year 20006 to 2015. Although minimal, we can also observe that Zimbabwe experienced GDP growth following increase in longevity. At first glance, it is safe to assume that there is a correlation between Life expectancy and GDP however, there is insufficient data to make an argument as to how much GDP life expectancy could contribute.

All countries experienced linear growth in GDP as the life expectancy increased. China, however, was an exception to this argument. From year 2000 to 2016, China experienced exponential growth in GDP while it's life expectancy remained constant. In retrospect, USA has dominated in GDP, however the life expectancy does not exceed other countries. To find more answers, we look for patterns in the shapes of the dataset to visualize the distributions of each country. In the Violin plot, we can see that Zimbabwe has had the most drastic change in life expectancy compared to the other countries which remained steady.

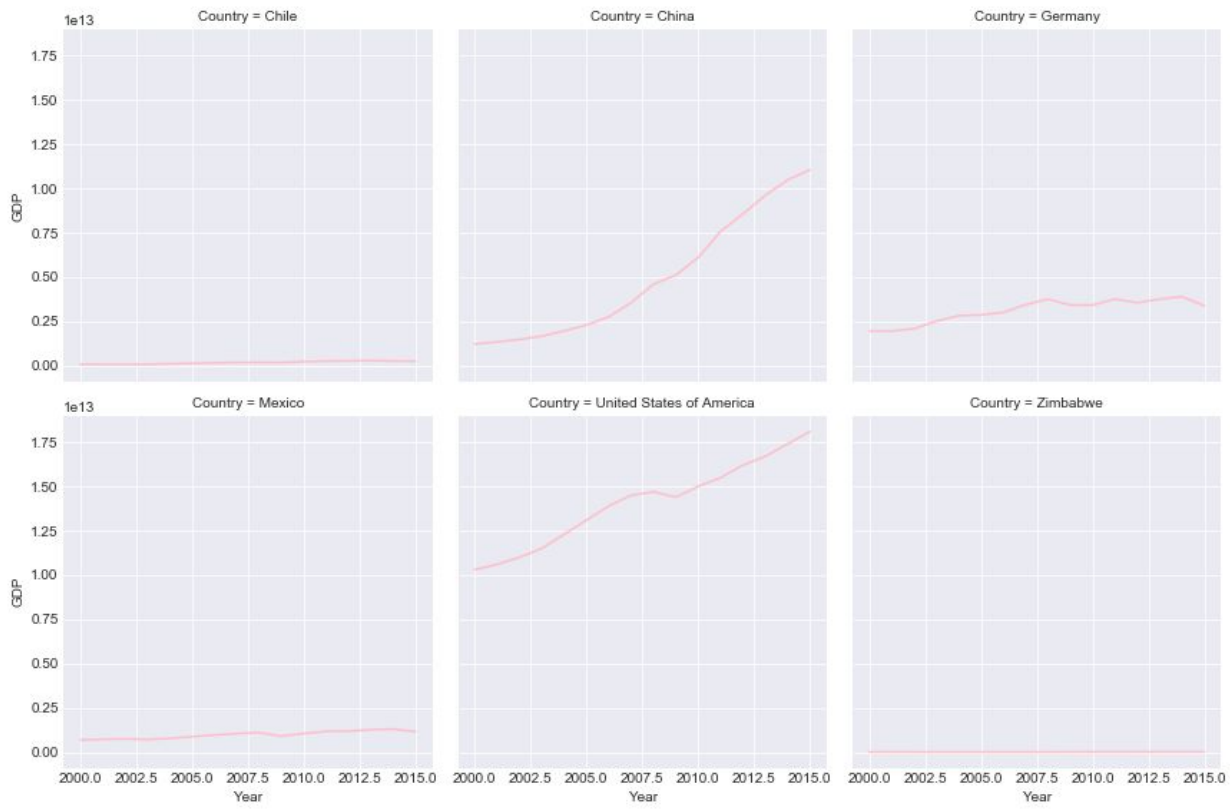




We now use a scatter plot to see the compare the relationship of GDP and Life expectancy throughout the years. China's has the most progression in GDP over the years. Zimbabwe has the greatest increase in Life expectancy between the year 2000 to 2015.The data suggest that there are two countries that experience the most drastic growth, one in Life expectancy, and another one in GDP. The data from the graph is not surprising when comparing to the previous visualizations.



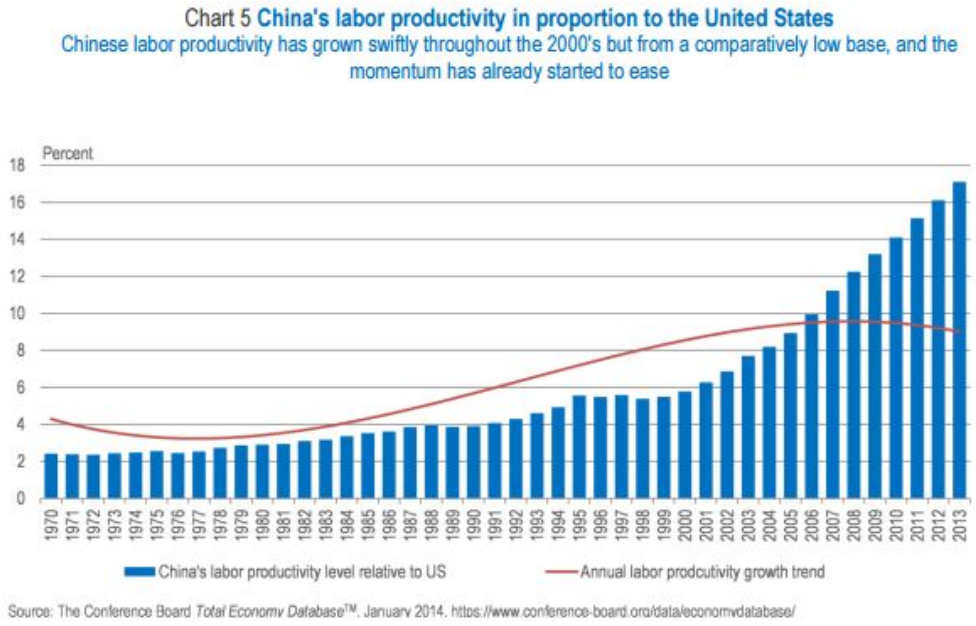
Using a line graph, it is evident to see that Zimbabwe has experience the most increase to life expectancy. The biggest change in data was between 2005 to 2010. Mexico, Chile, and US have experienced the least change in the life expectancy. However, Chile has a higher life expectancy. Politics, income, housing etc can influence the economic growth of a country.



From a GDP analysis, US was the highest GDP and Zimbabwe has the lowest. To understand the factors that can contribute to both life expectancy and GDP, we take a closer look at the Chinese economy.

According to the World Economic Forum, there are at least 10 ways in which Chinese economy has changed over the last decade contributing to its GDP. Below, I mention only three:

One: China has steadily become more self-sufficient and less reliant on revenue from export goods. China went from 35% of its GDP from exports in 2016, to 23% export revenue goods in 2014. Likewise, importation experience a decrease in the same years from 29% to 19%.
Two: Health and access to education are improving. A decrease in child mortality 2.19 in 2006 to 1.07 in 2015, and increase in enrollment to secondary school went from 68% in 2006 to 96% prior to 2013. Likewise, retention in education increase from 20% to 30% in the same years.
Three: Access to web. China went from approximately 10% of their population having access to web, to nearly everyone owning a mobile device. '



The World Economic Forum provided the graph above depicting China's labor productivity increasing rapidly for the years 2000 to 2013. From the three economic changes mentioned above for China, we can deduce that health and access to education gives promotes longevity and increases production resulting in higher GDP for a country. These factors, and others, in combination of participation in the global market promote wealth for a country.