

Assignment 1

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a)

Data was taken from 2014 in order to include all countries. It is assumed that any changes in the relation between Gdp per capita and life expectancy in the past 7 years would require a more thorough investigation than would be revealed in the scope of this assignment

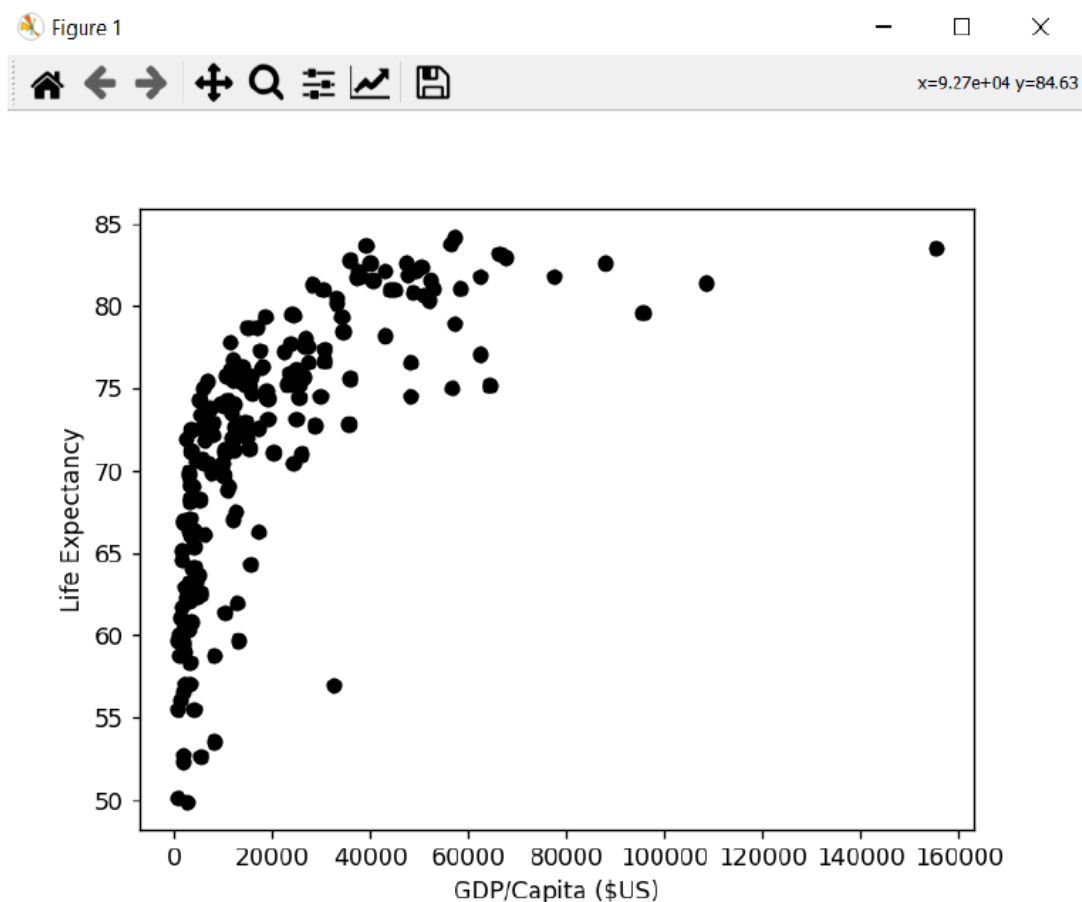


Figure 1

b)

The results shown in Figure 1 indicate a steep climb in life expectancy when increasing GDP per capita from 0 to 20000 \$US. There is then a flatter incline from 20000 \$US and up. A possible explanation is that there is a minimum GDP per capita needed for basic human needs which greatly increase life expectancies such as food, shelter, and clean water. Thereafter the correlation doesn't become linear, possible reason why it doesn't increase as linearly is that while a country might have a high GDP per capita it might still have a very small amount of resources and a small population, this position doesn't make cumulative tax incomes enough to strengthen infrastructure. A country that has 1k people with 100k GDP per capita at a 30 % tax bracket would bring in 30000000 in taxes. This whilst a country with

30k GDP per capita but a population of 100k would bring in 1000000000. These infrastructure changes would be needed to provide for health care, education, and other things that are most likely important for life expectancy.

c)

- Data cleaning would require a piece of prior domain-specific knowledge about the causes underlying the studied distribution. As neither a public health researcher nor a macroeconomist we lack the knowledge required to adequately determine which data points do not accurately represent the underlying magnitude being measured. We have deliberately chosen not to remove outliers since post hoc reasoning is liable to be highly dubious and lacks any solid motivation for why the highly unlikely event is a fairly likely event that has been mismeasured and/or misrepresented.

d)

Life expectancy mean = 72,65

Life expectancy standard deviation = 7.89

Mean + 1*standard deviation = 80.54

Countries with a life expectancy greater than 80.54:

Germany, Isle of Man, Falkland Islands, Belgium, Saint Martin (French part), Tokelau, Saint Barthélemy, Guadeloupe, United Kingdom, Portugal, Finland, Ireland, Austria, Anguilla, Greece, Luxembourg, Martinique, Netherlands, New Zealand, Malta, Norway, South Korea, Bermuda, Canada, Liechtenstein, France, Sweden, Israel, Channel Island, Iceland, Australia, Italy, Singapore, Spain, Andorra, Switzerland, Cayman Island, Macao, Japan, Hong Kong, San Marino, Monaco

e)

Since the assignment was to choose but not just arbitrary we have chosen the countries with the bottom 10 % of GDP per capita and top 10 % of life expectancy. This yielded 2 results: Albania and Barbados. This was a very interesting find given that there was an expectation that the countries that would meet these strict criteria would share geographical proximity which could be an explanation for it but alas Albania and Barbados is 8187 km away according to Google maps.

f)

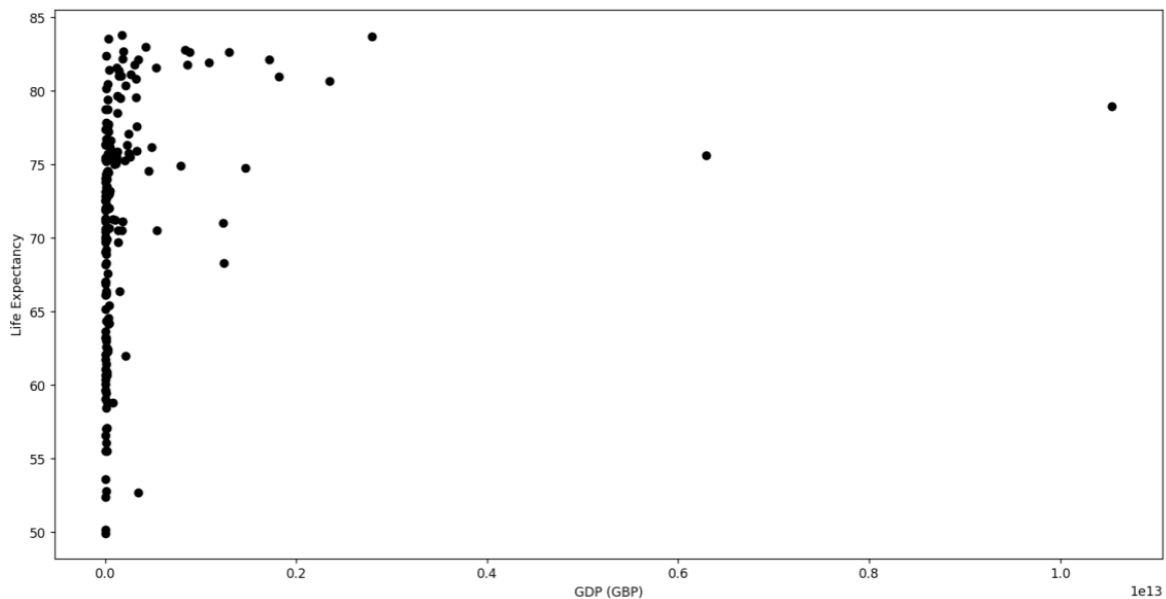


Figure 2

Great Britain pound (1e13)

As evident by the graph there are several countries that are far ahead of the pack in their countries' GDP but yet do not have the highest life expectancy. To answer whether **every** country with a strong economy also has a high life the answer is no as some countries are in the top 10 % of GDP yet not even the mean in life expectancy.

g)

GDP per capita seems to be a better indicator than GDP, every country with a GDP per capita greater than 80000 \$US has a life expectancy over 78. However, this relation also isn't linear, to us, it suggests that a population whether through a high GDP or high GDP per capita life expectancy seems to drop off after reaching a certain threshold. This could be when a country has become heavily industrialised and jobs that are sedentary become the norm as well as the introduction of fast and processed foods.

2

a)

We chose the two data sets 'Self Reported Happiness' and 'Corruption Perception'. Unlike determining if you are alive or not as is the question at hand when dealing with life expectancy; both happiness and corruption involve a great deal of subjectivity and individual judgment. As such the data at hand can merely provide a loose indication as to whether a correlation exists and if so whether it is positive or negative. We also expect perceived happiness and corruption to be heavily dependent on compares in the environment of the subject and thus expect the data to show a stronger correlation than is reflected in reality. We have not culled any data.

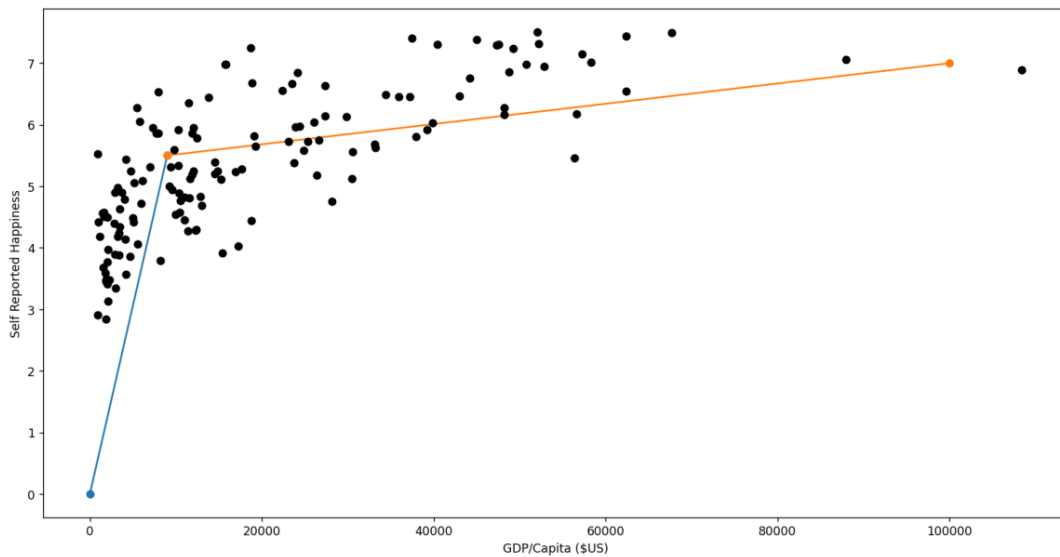


Figure 3

Self-reported happiness in the range $[0, 100]$

Data points appear to be the composite of two linear functions with a knee at $(5.5, 9000)$

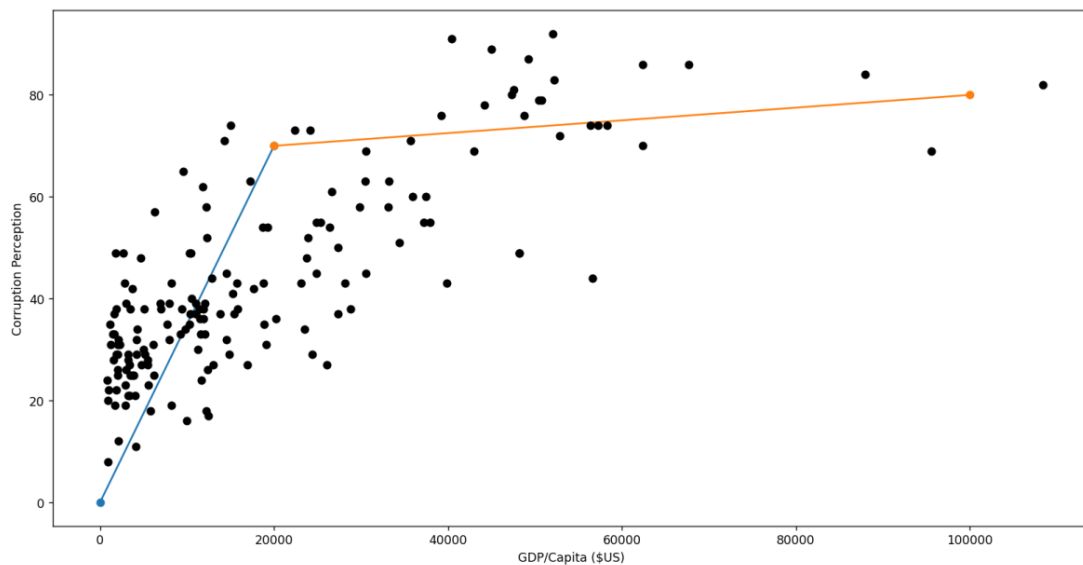


Figure 4

Self-reported perceived corruption in the range $[0, 100]$

Data points appear to be the composite of two linear functions with a knee at $(70, 20000)$

b)

In both cases, there is a loose correlation between GDP per capita and both self-reported happiness and perceived levels of corruption.

In the case of self-reported happiness, it is somewhat surprising as it seems to logically follow that in a materialistic world having a higher level of GDP would be an indicator of

happiness but there are multiple variables that contribute to why this isn't necessarily the case. Whilst a country might have high GDP per capita that doesn't mean that the average population has a lot of wealth due to high levels of inequality, or the fact that the country might have a high GDP per capita but that doesn't mean that the consumer purchasing power is great. A country might have 2x the GDP per capita but 3x the cost of goods making the population "poorer" within the borders of their own country although richer viewed on an international scale. The mechanisms of the hedonic treadmill also propose that whilst a group might have a higher standard of living that doesn't mean they will be happier. There are also unknown mechanisms such as in richer communities and countries suicide rates are a lot higher. Based on these factors it is evident that a lot of further research and data would have to be examined and conducted to draw conclusions with any meaningful level of confidence.

In the case of corruption, it is not as surprising as we did not expect to find a very linear correlation however the vagueness of the result is still somewhat surprising. The reason why it is surprising is because of the mechanisms of wealthier people being more able to affect the political discourse through donation and alike, therefore, drive out corruption and that poorer more exploited populations would be more likely to experience the corruption. It is however important to note that whilst your own perceived level of happiness is your own to judge and no one else's there are clearer indicators and ways to measure corruption in countries. Therefore as it is subjective people who might be used to a large amount of corruption might answer it's not so bad if it doesn't get worse whilst someone who lives in a society with moderate levels might answer this same because this is what these individuals are used to. It is still an important metric to measure to track population attitudes but has to be weighed against objective markers such as freedom of the press, freedom of speech, etc.