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Does the quality of life of a country affect its crime rates?

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INTRODUCTION AND BACKGROUND

Everyday we hear about a new person who was arrested, imprisoned or fined, publicly shamed and stripped of the ability to live a normal life again. Often, we're led to believe that these people deserve it and that our world is safer this way, when their actions are actually committed by need, a lot of the time. According to the Institute of Policy Studies, poor people and ethnic minorities are becoming more and more targeted. They are punished over small misdemeanors and the little that they do have is taken away, making it harder to return to society and to avoid prison in the future. Furthermore, according to WHO, life in prison is harsh -"About 25% of prisoners are victimized by violence each year while 4–5% experience sexual violence and 1–2% are raped" (Modvig, 2014). It is hard to avoid assault, whether by other inmates or by workers, and not enough is done by the management to stop it. In this way, we sometimes make hard lives harder while trying to make average ones easier. There has to be another way. Although, we certainly can't have criminals running around doing as they please, we may all benefit from further consideration of their situations before carrying out a possibly-useless punishment.

In this study, I wish to explore the possibility of improving the quality of life of criminals as an alternative or supplement to incarceration, to keep countries secure without too much harm to convicts. My hypothesis is that as quality of life increases, crime rates will decrease. This is because most crime is blue-collar (generally committed by lower-class people) and most prisoners have a substance abuse or mental health problem which, if treated, could have prevented them from a life of crime (* more on this below). The questions on which my research will be based are:

1. Does happiness increase perceived non-corruption?
2. As happiness and food supply increase, does the murder rate decrease?

Similar studies found that happiness reduces crime and drug use, food security reduces violent crimes and access to health care reduces property and violent crimes. The first was conducted by the University of California and used data from 15,000

seventh-to ninth-grade students. It found that drug use and crime were less reported by happier adolescents and that a decrease of happiness over a one year period increased the odds of being involved with crime or drugs. Although their data was from a credible source, it is important to take into account, happiness' subjectivity, income as an extraneous variable (as it has been known to significantly influence both these things) and response bias (as drug use and lack of happiness are often sensitive issues). Next, a masters-pursuing Clemson University student found that food insecurity has a significant relationship with the violent crime rate, other big influencing variables are income and population and that the types of crime that food insecurity affects most are ones with monetary gains, like burglaries. The final study examined Medicaid expansions and how they resulted in significant decreases of annual violent and property crime by breaking down the effect on each specific type of crime. All three are American-conducted studies using American-only data, so even if their accuracy is assumed, the same results for the rest of the world can not be, as they might have different recording systems or different perceptions of the variables. For this reason, my research is necessary to find if the statistics continue to hold true everywhere else.

METHODOLOGY

In order to complete this study, I used the following data sets from Gapminder:

- "Food_supply_kilocalories_per_person_and_day.csv"
- "Corruption_perception_index_cpi.csv" (Uses a scale of 0-100 where higher values represent <u>less</u> corruption)
- "Hapiscore_whr.csv" (Uses the Cantril Life Ladder measure with values converted to 0 to 100 for clarity with higher values representing a better/happier perceived life)
- "murder_per_100000_people.csv"

Some important information to note is that for the purpose of better understanding, I refer to the CPI as <u>non</u>-corruption in all of my research, the happiness score is the only study actually conducted by gapminder (other primary sources can be found in the bibliography) and that the murder rate has been adjusted for age as if all countries had the same composition of age in their population. To keep data as accurate as possible, I used convenience sampling and chose countries with no null values for any one of the variables and used all of them (48 countries total). I picked the year 2011 for all the data as it was the most recent year (for relevance) with a good amount of data (to avoid sampling bias from having an inadequate sample size).

Important assumptions to note in my research are that high happiness and food supply numbers are indicators of good quality of life and that a low murder rate and high non-corruption rate are indicators of low crime in a country. Additionally, I assume all data was inputted in an accurate and reliable way.

RESULTS

Because the happiness and non-corruption variables were based on perceptions only, I wanted to first see the distribution of responses for these using a frequency histogram.
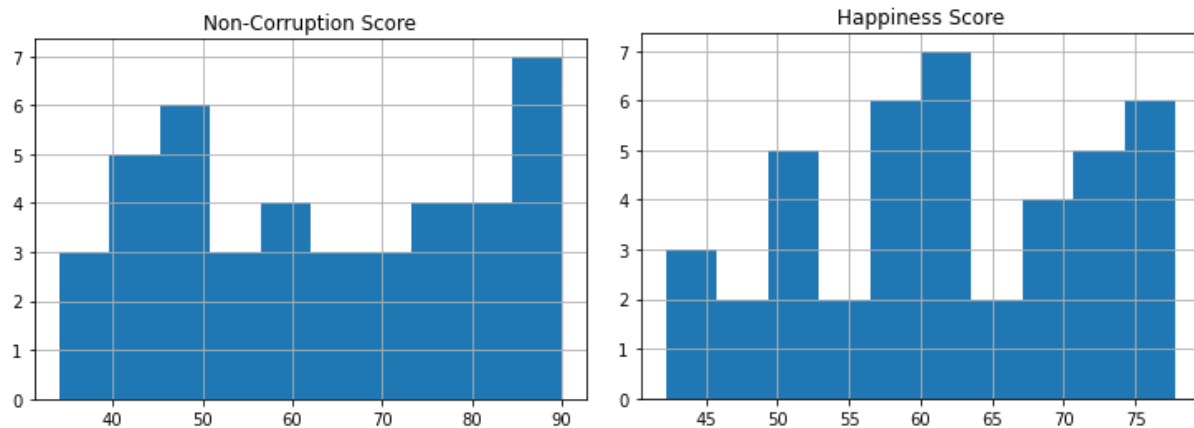
As we can see here, there seems to be a varied distribution of values with not too many extremes, in both variables (the range of frequencies is low). This is important because otherwise, with some values more likely to be picked than others, the data might have been skewed which might influence conclusions and interpretations. In this case though, it seems the variables (especially non-corruption) have had their data collected in an impartial way. This will be important to consider when revisiting the original research questions through the next few graphs.

Does happiness increase perceived non-corruption?
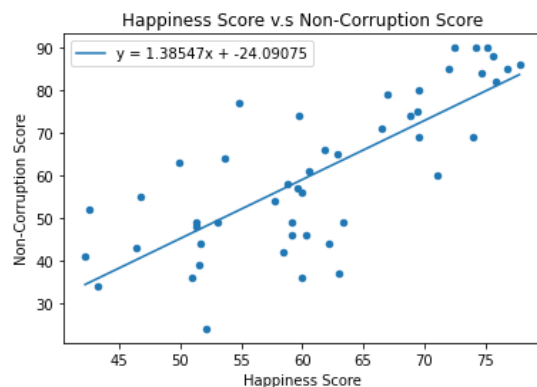
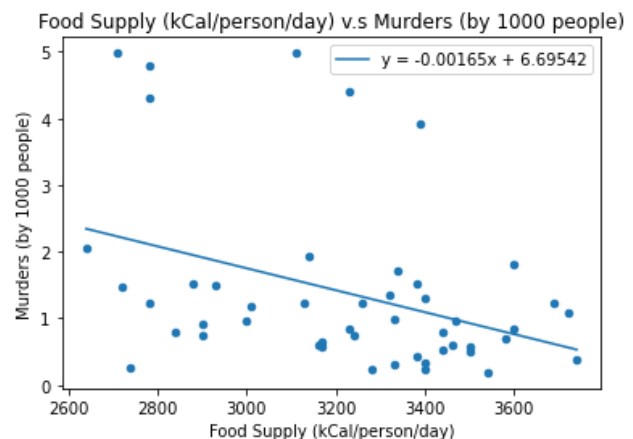correlation: [0.769468378678456, 'strong', 'positive']

The graph above shows that there is a strong correlation between happiness and lower levels of perceived corruption in a country. I think this makes sense because logically people who are already happy with their lives have no reason to spread corruption which hurts others and puts their own life in danger. Yes, there are always people with sociopathic or psychopathic tendencies whose happiness will not provide a deterrent, however according to psychologia.co, this only represents about 4% and 1% of the population respectively. It may also be argued that the wealthy and successful often cause the most corruption, however these qualities are not always related to levels of happiness. So, this is why even people who seem to have everything in the world, but feel unsatisfied in their life may turn to crime.

As happiness and food supply increase, does the murder rate decrease?

To answer this question, I was able to create the following graphs -one comparing happiness to the murder rate and the other comparing food supply to it.

correlation: [-0.3241805420794089, 'weak', 'negative']   correlation: [-0.37670169784785795, 'moderate', 'negative']

At first glance, it seems both are pretty similar -gradual slopes and negative correlations on the border between weak and moderate. Although it is true that the graphs demonstrate a high correlation between happiness and food supply as they affect the murder rate the same, something else does not look right. Upon closer inspection, it becomes apparent that most of the points on both graphs are indeed very close at

forming a line and there are just six points that do not follow the trend, thereby distorting the overall correlation.

I wanted to know more about these six points and it turns out they are represented by the countries Estonia, Kyrgyz Republic, Latvia, Lithuania, Moldova and Thailand. I checked values of previous years to see if there was a data entry error, however these countries have had consistently high murder rates in other years too. As we now know they are actually real values, this type of shape on a scatter plot could indicate a hidden variable. From a google map, I found that these are all countries located in the East side of Europe with the exception of Kyrgyz Republic (Central Asia) and Thailand (Southeast Asia) -this didn't help much at trying to find out that hidden variable, so I think some more in-depth research will be necessary to do so.

Next, I wanted to see if the correlation became stronger if I were to remove these points and if it's strong enough for a relevant correlation.

correlation: [-0.41646422443577436, 'moderate', 'negative']
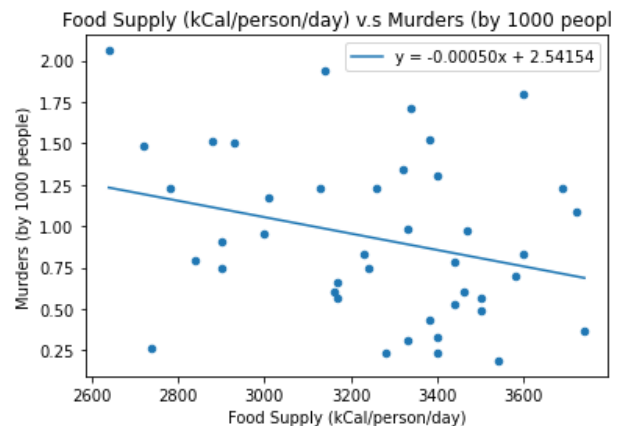
correlation: [-0.2907537525126506, 'weak', 'negative']

It turns out removing the murder rate data's outliers actually did the opposite of what was expected for the food supply variable -the relationship got worse. This means, that whether or not the outliers are used, there can be no concluded causal relationship between the indicators of quality of life and the murder rate and that the outliers are not actually very significant.

FUTURE STUDIES

Although the results seem to support the hypothesis, there are some limitations that are necessary to consider first. Crime in general can be hard to analyze because data is never exact. It often goes unreported, especially in lower-income or less developed countries. For example, in the research for the International Statistics on Crime and Justice, it says "...the highest homicide levels are found in the Americas and Africa region" and "...in Africa, where criminal justice data on intentional homicide is presently very limited" (Malby 2010). Because of this, the data for may actually underestimating murder rates and corruption for several countries. Additionally, as briefly mentioned earlier, sometimes crime is committed despite a high quality of life.

Specifically though, our understanding of the corruption of a country may be far from reality. This is first, because it could be that *only the perception* of corruption is affected by the overall happiness of people. Second, the data could easily be skewed by people with extreme patriotism or skepticism. Third, corruption is often hidden, especially in countries with better quality of life. For example, it is harder to hear about a political leader's irresponsible and self-advantageous spending in America than in a country like Pakistan, where that has become the expectation and there is no need to put up a facade of being the best country in the world.

Future studies should take my research and strengthen it by firstly, targeting the limitations. This could be done for example, by finding if perception is truly an adequate indicator for actual corruption and by separating developed countries from non-developed ones before completing the analysis to see if the same results hold true. Furthermore, they could examine other indicators of good quality of life like income, life expectancy, living environment and mental health facility availability. These indicators could all then be compared to find which affects crime rates the most. In the future, crimes might also be broken down by type to see how quality of life affects them and if the conclusions match the ones from the food supply and violent crime study from the United States.

CONCLUSION

To conclude, it is clear that there are correlations between quality of life and crime. From my first research question, I found that happiness and non-corruption do have a strong, positive linear relationship, so I think it is possible to say that their relationship is causal. From the second, I found that both happiness and food supply have weak-moderate relationships with murder rate, partly due to the fact that there are six unusually high values in the murder rate. Because the correlations are not strong here and there is not yet much information found about the hidden variable, it is not possible to declare causation until further research proves it. Overall, it seems that quality of life is linked to the reduction of crime, just as the previous studies mentioned. Nevertheless, I would not say better quality of life reduces crime rates at this point, as more research is still needed. Likewise, there is not currently enough supporting data to provide an alternative to current law enforcement methods -just enough to be helpful in combination to them. Therefore, country governments should invest more into improving citizens' quality of life, especially in areas with high crime rates.

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APPENDIX

	Country	Food Supply	Non-Corruption	Happiness	Murder Rate
0	Armenia	2880	34	43.2	1.51
1	Australia	3260	85	72	1.23
2	Austria	3740	69	74	0.369
3	Belgium	3720	75	69.4	1.09
4	Bulgaria	2780	41	42.2	1.23
5	Switzerland	3380	86	77.8	0.437
6	Cyprus	2640	66	61.8	2.06
7	Czech Republic	3240	49	63.3	0.746
8	Germany	3500	79	67	0.493
9	Denmark	3330	90	75.2	0.312
10	Spain	3170	65	62.9	0.568
11	Estonia	3230	64	53.6	4.41
12	Finland	3320	90	74.2	1.34
13	France	3460	71	66.5	0.607
14	United Kingdom	3400	74	68.8	0.233
15	Georgia	2840	52	42.5	0.789
16	Greece	3400	36	51	1.3
17	Hong Kong, China	3280	77	54.8	0.231
18	Croatia	3000	46	60.3	0.952
19	Hungary	3010	55	46.8	1.17
20	Ireland	3600	69	69.6	0.83
21	Iceland	3400	82	75.9	0.332
22	Israel	3600	60	71.1	1.8
23	Italy	3580	42	58.4	0.698
24	Jordan	3140	48	51.3	1.94
25	Japan	2740	74	59.7	0.262
26	Kyrgyz Republic	2780	24	52.1	4.79
27	South Korea	3330	56	60	0.983

28	Kuwait	3440	44	62.2	0.531
29	Lithuania	3390	54	57.7	3.93
30	Luxembourg	3540	80	69.6	0.188
31	Latvia	3110	49	51.3	4.98
32	Moldova	2710	36	60	4.98
33	North Macedonia	2930	43	46.4	1.5
34	Malta	3380	57	59.6	1.52
35	Malaysia	2900	49	59.1	0.747
36	Netherlands	3230	84	74.7	0.83
37	Norway	3500	85	76.8	0.566
38	New Zealand	3130	90	72.5	1.23
39	Poland	3440	58	58.8	0.788
40	Portugal	3470	63	49.9	0.97
41	Romania	3340	44	51.7	1.71
42	Serbia	2720	39	51.5	1.48
43	Slovak Republic	2900	46	59.1	0.909
44	Slovenia	3160	61	60.6	0.608
45	Sweden	3170	88	75.6	0.657
46	Thailand	2780	37	63	4.31
47	Turkey	3690	49	53.1	1.23

	Mean	Variance	Standard Dev.	Quartiles	Outliers
Food Supply (kCal/ person/ day)	2835.459770	188748.631320	434.452105	(2500.0, 2810.0, 3185.0)	[]
Non-Corruption Score	43.267045	387.076851	19.674269	(28.5, 37.0, 56.5)	[]
Happiness Score	54.418571	126.544545	11.249202	(45.85, 52.650000000 000006, 62.45)	[]
Murders (by 1000 people)	1.377745	1.653155	1.285751	(0.568, 0.97, 1.51)	[3.93, 4.31, 4.41, 4.79, 4.98, 4.98]