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The Relationship Between Social Inequality and COVID-19 Morbidity and Mortality

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sponsored by Melanie Medeiros, PhD

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Abstract

Coronavirus, also known as COVID-19, has greatly impacted the world as we know it. Each country has suffered in their own ways and faced many hardships regarding the pandemic. There have been 134,957,021 confirmed cases of COVID-19 globally and 2,918,752 recorded COVID-19 deaths (World Health Organization, n.d.-b). This study will analyze World Bank and World Health Organization data to examine the relationship between inequality and COVID-19 morbidity and mortality globally. The analyzed data includes, the total number of COVID-19 cases, COVID-19 deaths, percentage of total cases per population size, and the Gini coefficient (the measure of income inequality) for each country. This study will present graphs comparing the percentage of COVID-19 cases and COVID-19 deaths per a country's population in relation to their Gini coefficient, to explore the relationship between inequality and the severity of the COVID-19 pandemic in nation-states.

The Gini coefficient is a numerical ranking of a country's income inequality. *Figure 1* shows that there is a direct correlation between the Gini coefficient and morbidity rates. *Figure 2* shows that there is a slight correlation between the Gini coefficient and mortality rates.

Countries with a lower Gini coefficient within their population had lower COVID-19 morbidity, while those with a higher Gini coefficient per population had higher COVID-19 morbidity. This means that those countries with a lower measure of income inequality also had a lower percentage of COVID-19 cases, while those with a higher measure of income inequality had a higher percentage of COVID-19 cases. The top twenty countries with the highest number of COVID-19 cases in 2020 include: The United States of America, India, Brazil, the Russian Federation, The United Kingdom, France, Spain, Italy, Turkey, Germany, Colombia, Argentina, Mexico, Poland, Iran, South Africa, Ukraine, Indonesia, Peru, and Czechia (World Health Organization, n.d.-a). Globally, about 1.47% of the population contracted COVID-19 in 2020. About 3.21% of the

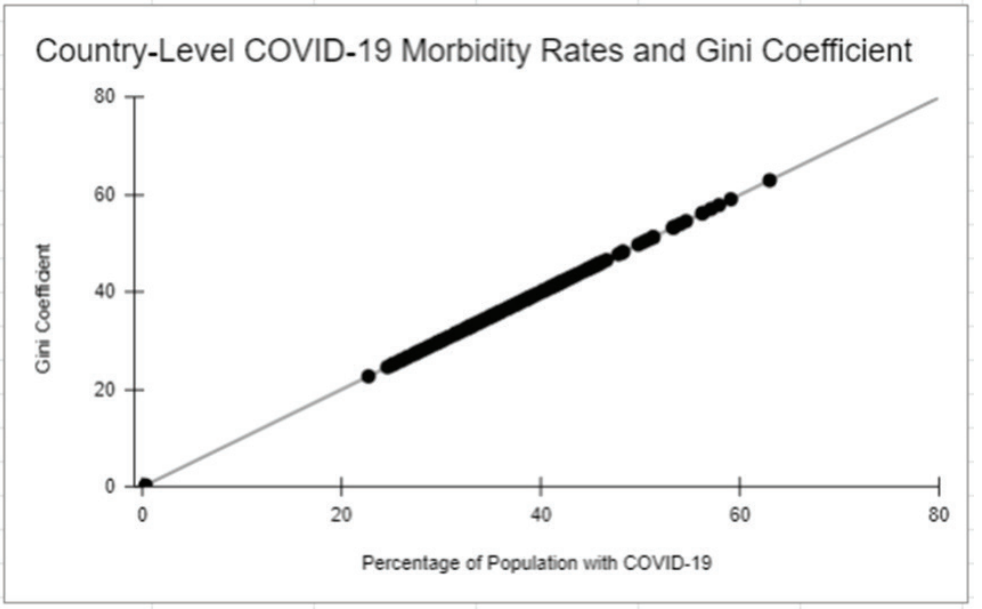

Figure 1: This figure shows the Gini coefficient as compared to the percentage of COVID-19 cases per population within each country in 2020 (Central Intelligence Agency, n.d.).

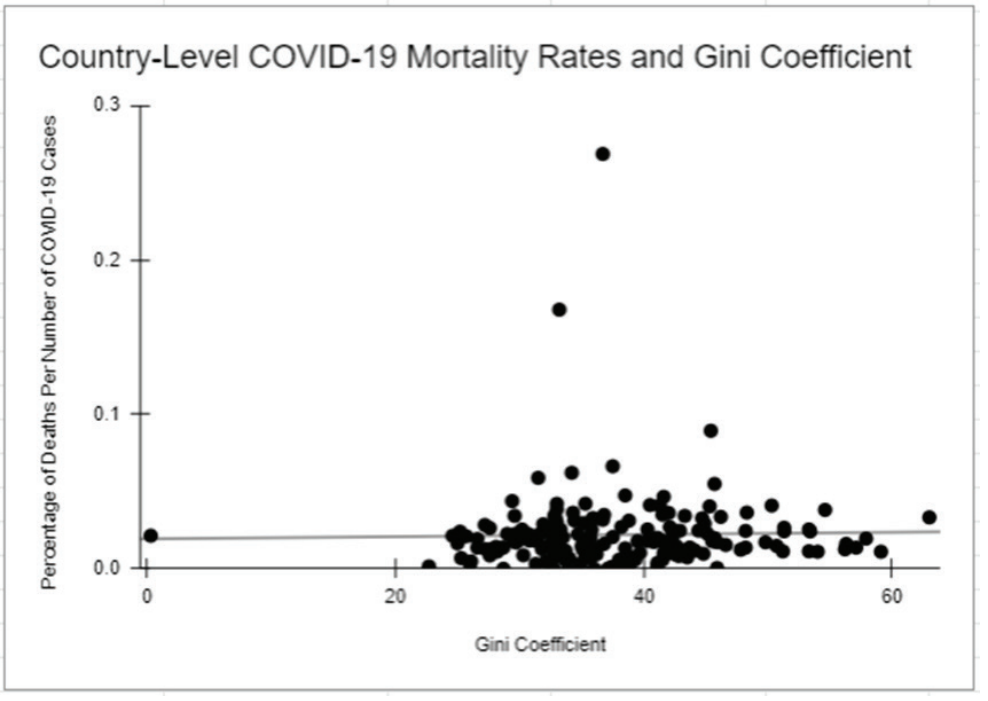

Figure 2: This figure shows the Gini coefficient as compared to the percentage of COVID-19 deaths per number of COVID-19 cases within each country in 2020 (Central Intelligence Agency, n.d.).

population of the Holy See was infected with COVID-19, which was one of the highest. Namibia had about 1.58% of their population infected with COVID-19, ranking second in the entire world (World Health Organization, n.d.-a). Brazil was included in the top 10 countries with the highest Gini Coefficients (53.4) from 1967 to 2019, meaning there is a high-income inequality within their country (World Bank Group, n.d.). Globally, Brazil was ranked 43rd in the percentage of COVID-19 cases per their population.

This is high compared to the 236 other countries, dependent areas, and disputed territories. They also had the third highest number of COVID-19 cases in the entire world (World Health Organization, n.d.-a).

Countries with a high level of income inequality will most likely have higher COVID-19 mortality rates, while countries with lower levels of income inequality are likely to have lower COVID-19 mortality rates. However, there have been some exceptions to this trend. Yemen for example, had the highest mortality rate with only a 36.7 Gini coefficient. This country did not have the highest level of income inequality even though they had the highest mortality rates. This means that the trend is neither linear nor direct. The top twenty countries with the highest number of COVID-19 deaths include: The United States, Brazil, Mexico, India, The United Kingdom, Italy, The Russian Federation, France, Germany, Spain, Iran, Colombia, Argentina, South Africa, Peru, Poland, Indonesia, Turkey, Ukraine, and Belgium (World Health Organization, n.d.-a). The United States ranked highest in COVID-19 morbidity as well as COVID-19 mortality worldwide. Of the top twenty listed for the highest number of COVID-19 cases, nineteen of these countries also hold the highest number of COVID-19 deaths.

The top twenty countries with the highest population in 2020 include: China, India, The United States, Indonesia, Pakistan, Brazil, Nigeria, Bangladesh, the Russian Federation, Mexico, Japan, Ethiopia, the Philippines, Egypt, Vietnam, the Democratic Republic of the Congo, Turkey, Iran, Germany, and Thailand (World Health Organization, n.d.-a).

Of these twenty countries, only eight ranked in the top twenty for the highest number of COVID-19 cases and COVID-19 deaths. This means that even though a country has a large population, it does not guarantee that they will have higher COVID-19 morbidity or mortality rates.

When looking at each country's ranking into low income, lower middle income, middle income, upper middle income, and high-income countries, there is a trend between countries with higher COVID-19 mortality, higher COVID-19 morbidity, and higher incomes. For example, the United States is placed into a high-income country and ranked first in total COVID-19 mortality and COVID-19 morbidity in the entire world (World Health Organization, n.d.-a). In fact, most high COVID-19 mortality and morbidity rates were seen within the middle income to high income countries. Brazil and Mexico are placed into the upper middle-income countries. They were ranked among the top 5 countries with the highest rates of COVID-19 mortality and COVID-19 morbidity globally (Central Intelligence Agency, n.d.). Argentina is placed as a middle-income country and was ranked 12th for the highest rates of COVID-19 morbidity, and 13th for

the highest rates of COVID-19 mortality worldwide. India is considered a lower middle-income country. Globally, however, they ranked 2nd for the highest rates of COVID-19 morbidity, and 4th for the highest rates of COVID-19 mortality. Ethiopia is a country who falls under the low-income category. They ranked 72nd in the highest rates of COVID-19 morbidity, and 71st in the highest rates of COVID-19 mortality (Central Intelligence Agency, n.d.). This data shows that low-income countries have lower rates of COVID-19 morbidity and mortality, while those with higher incomes suffer from greater rates of COVID-19 mortality and morbidity.

This data provides insight into the links between inequality and COVID-19 morbidity and mortality. It is likely that the direct link between inequality and morbidity is due to socioeconomic and occupational factors, poverty rates, and the quality of or access to healthcare. It is also very likely that variables such as the quality of the healthcare and sanitation infrastructure, poverty rates, and/or the existence of conflict influences the mortality-to-inequality ratio. However, more research is needed to further understand why there is a direct link between inequality and COVID-19 morbidity, but not mortality. By looking at inequality and COVID-19 rates, this study has shown that inequality must be addressed as a public health issue in order to prevent future pandemics.

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