# [Namya Kathuria] – Literature Review

As COVID-19 is a relatively new virus, having only broken out approximately two years ago, knowledge on its cause and prevention is still limited, as is research in its field. In terms of ranking countries based on their COVID-19 responses, there have been some notable attempts, though each varies in methodology, and the majority lack access to current data.

Jamison DT, Lau LJ, Wu KB, et al. discuss ranking 35 countries based on their COVID-19 response, but limited the research to only those countries with upwards of 5,500 cases by 16 April 2020, and did not include any African countries. Thus, the research produces some useful statistics, but the analysis behind the rankings then allows for little comparison between responses within regions, or even continents. This is reasonable given that this research was conducted in 2020, where access to data was restricted and much was unknown about the virus, but then produces rankings which may not be relevant to the situation today. A metric used to measure spread of the virus was doubling time of cases, as noted in the paper, one that may have been reliable when cases were rising globally, but as the numbers now fluctuate, this metric may not be a valid one to compare the COVID-19 status between countries. In fact, the only form of ranking provided in the paper is based on this metric, as well as the time taken in doubling of deaths, both of which produce vastly different rankings; using the former method ranks Saudi Arabia 23rd, and Austria 21st, while the latter ranks Saudi Arabia 32nd and Austria 6th. The aim of this research, comparatively, is to produce an overall ranking of countries within a specific region, based on multiple factors, in order to gain some form of insight as to the aspects that make a country’s COVID-19 response more effective. One notable aspect of the research that we can carry forward is the country metrics this research accounted for, including population density and age distribution, which have shown to have correlation to the spread of the virus within countries, and therefore may impact country rankings. This paper was one of the earlier forms of research conducted in the area of COVID-19, especially in the field of ranking, and so may act as a preliminary for further research. While it provides some foundational aspects that can be used in more focused research – and in that using more recent and accurate data – it does not account for factors in terms of response, such as testing rates and vaccination rates, which we can consider in our research and analyze the impact as such.

Haug N., Geyrhofer L., Londei A. et al. conducted similar research later in the year, analyzing the impact of governmental intervention across 79 countries. The most crucial aspect of this research is the consideration of, specifically, the actions taken to prevent the spread of the virus – an example provided is the implementation of national lockdowns. These are the factors we aim to link to the final ranking we will produce, working to understand the dependency between such implementations and the outcome in terms of case numbers, death rates, and such. However, as stated in this paper, November 2020 was a time when COVID-19 vaccines were not available and so were not a factor considered within governmental response; as of August 2021, this has changed, with large percentages of the population receiving at least one dose of the vaccine in the majority of developed countries. Then, vaccination rate is a factor we can account for in our research that will differentiate it from much of past research carried out. Overall, the factors we will account for will vary with those used in most similar research: Haug, Geyrhofer, and Londei et al. also include responses such as social distancing measures and travel restrictions. These are factors we do not consider so as to be able to carry out a more in-depth analysis given the restricted timeframe, and the lack of complete, accurate, and recent data regarding these two areas. Further, the metric of social distancing may be very subjective and difficult to quantify, as it may vary between, and even within, countries. The greatest difference, of course, is that we aim to achieve a singular, numerical ranking of countries, based on their COVID-19 response, and from there, conduct an analysis to deduce correlations between the top and bottom countries, whereas this research simply analyzes relations between factors and COVID-19 statistics between countries. We can model our analysis based on this, commending the multivariable consideration of several factors and the links drawn between those such as quarantine and national lockdown. A similarity, though, is the long-term goal of the research, that being conclusions drawn about the most and least effective preventative measures against the virus which can then be replicated in countries faring worse against it.

Desmond C., Lieberman E., Alban A., Ekström AM., et al. authored similar research on the HIV and AIDS epidemic, ranking countries’ relative responses in order to produce an analysis of the most effective preventative measures. Having been prevalent for longer, there is, naturally, more data available on the effects of HIV and AIDS, and therefore it is reasonable that this research is more valid as of today, given the lesser fluctuation of cases and the lesser discovery of new information daily. This research, again, considers metrics like case and death rates, as well as country statistics like population density and age distribution. We can model our research based on this paper, given its striking similarity to our aim, but targeting a previous epidemic.

Bibliography

Jamison, D. T., Lau, L. J., Wu, K. B., & Xiong, Y. (2020). Country performance against COVID-19: Rankings for 35 countries. *BMJ Global Health*, *5*(12). <https://doi.org/10.1136/bmjgh-2020-003047>

Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V., … Klimek, P. (2020). Ranking the effectiveness of worldwide COVID-19 government interventions. *Nature Human Behaviour*, *4*(12), 1303–1312. <https://doi.org/10.1038/s41562-020-01009-0>

Desmond, C., Lieberman, E., Alban, A., & Ekström, A. M. (2009). Relative response: Ranking country responses to HIV and AIDS. *Health and Human Rights*, *10*(2), 105–119. <https://doi.org/10.2307/20460106>