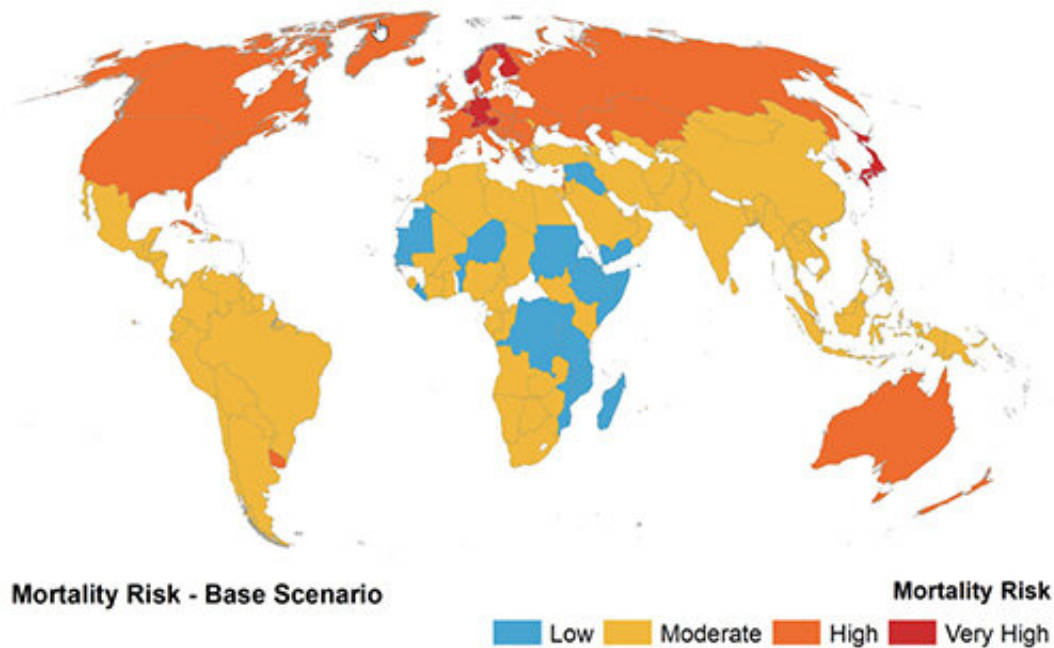


Statistical analysis weighs the risks in the fight against COVID-19

September 21 2020, by Danielle Roddick



Researchers generated a map to demonstrate the mortality risk of each country. Credit: Western Sydney University

Western Sydney University researchers have used advanced statistical analysis to better understand how countries are impacted by COVID-19.

A funded collaboration with United Arab Emirates University (UAEU) allowed researchers from the University's School of Computer, Data and Mathematical Sciences to access a range of global datasets—to

determine which countries were well-equipped to fight a global pandemic.

A UAEU task force—comprised of experts in Data Science, Epidemiology, Viral Pathology/Infections and Econometrics—also collaborated on the project.

Dr. Omar Mubin, alongside Ph.D. students Mudassar Arsalan and Belal Alsinglawi, accessed global socio-economic and COVID-19 data from World Bank, NASA, Johns Hopkins University, and Environmental Systems Research Institute (ESRI).

Using the range of data-sets, the researchers assessed countries on the basis of:

- Population—including total size of population, and median age;
- Economy—including Gross Domestic Product (GDP) per capita, and current health expenditure;
- Health capacity—including the number of hospital beds, physicians and nurses available per 1000 people; and
- Density in urban areas.

COVID-19 data as of 13 May 2020 was also used as a means of assessing countries on the basis of their number of active cases; [mortality rates](#); and the size of their 'susceptible population' not yet infected by COVID-19.

The results of the analysis, published in the *International Journal of Environmental Research and Public Health*, indicate that the countries with the highest mortality risk—due to their large ratio (and living patterns) of [elderly population](#)—include Japan, Norway, Germany, Switzerland, Austria, Belgium, Denmark, Sweden, Netherlands, and Finland.

"On 13 May 2020, most countries were at a similar or lower risk level than what would have been expected pre-COVID, with only 44 out of 153 countries experiencing a more than 20 percent increase in mortality risk," said Dr. Mubin.

"In this study, the strongest predictor of a country's mortality risk was its ratio of elderly people—which surpassed all other socio-economic and demographic indicators."

Dr. Mubin said the study shows the benefit of taking a multi-factor, weighted approach to determining a country's preparedness for future pandemics.

More information: Mudassar Arsalan et al. COVID-19 Global Risk: Expectation vs. Reality, *International Journal of Environmental Research and Public Health* (2020). [DOI: 10.3390/ijerph17155592](https://doi.org/10.3390/ijerph17155592)

Provided by Western Sydney University

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