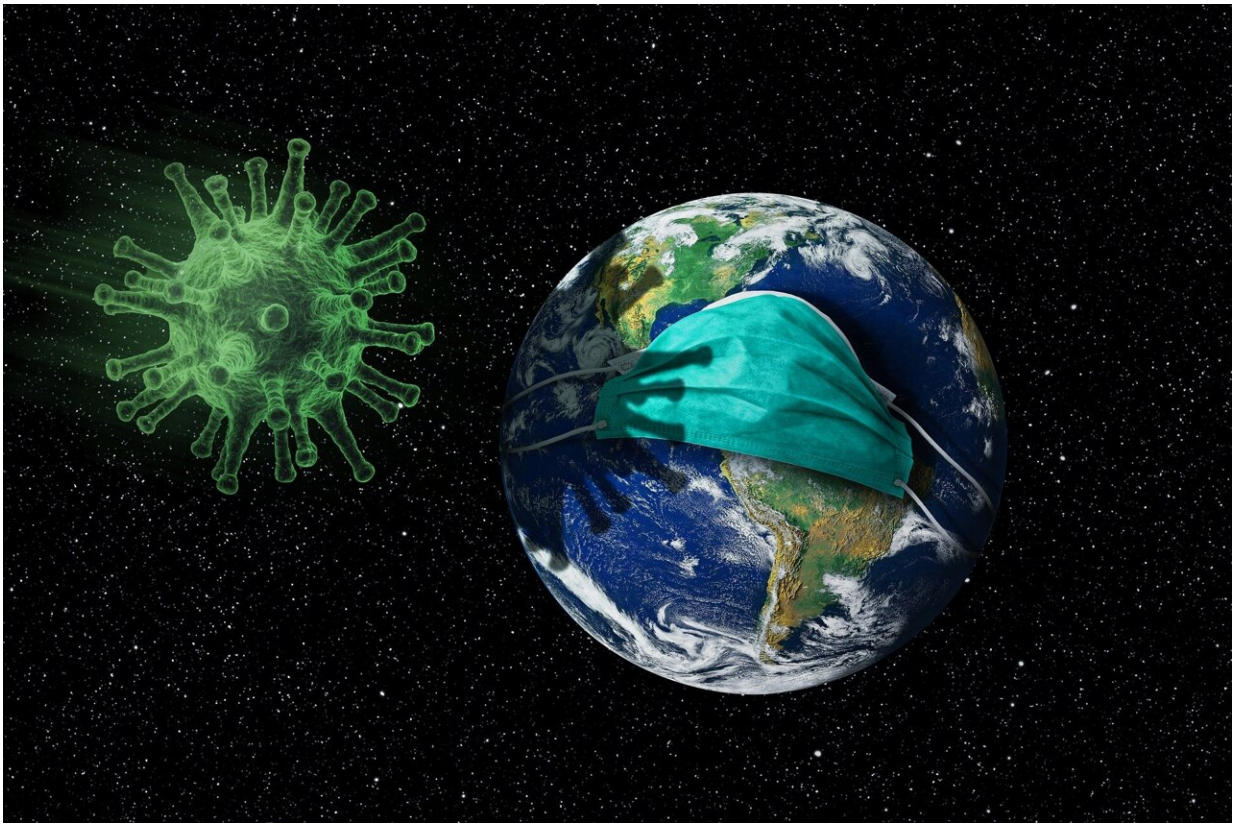
Modeling COVID-19 restrictions

November 2 2022, by David Bradley



Credit: Pixabay/CC0 Public Domain

We are still very much in the midst of the COVID-19 pandemic. However, for many parts of the world, there has been some degree of management and control thanks to vaccines, pharmaceutical interventions, and ongoing social measures. A team from Sri Lanka has modeled the impact of quarantine, isolation, and social distancing

strategies that were implemented at the height of the pandemic to help them understand what the optimal response to the disease was.

The findings could help define a more effective response to the next emerging pandemic. Details are published in the *International Journal of Mathematical Modelling and Numerical Optimization*.

L.W. Somathilake and M.C.S. Fernando of the Department of Mathematics at the University of Ruhuna in Matara, Sri Lanka, explain that forecasting the course taken by an emergent pathogen, such as the causative agent in COVID-19, the novel coronavirus SARS-CoV-2 is important in reducing the death toll and morbidity as well as the wider detrimental effects on society, the economy, trade, and travel. Understanding the impact of control measures and the costs are critical.

The team has used the Susceptible—Exposed—Infectious—Quarantined—Recovered (SEIQR) model to find retrospectively what level and type of intervention had the greatest impact on controlling the disease. Optimization at the lowest financial cost is critical in poorer nations. However, greater control and fewer infections inevitably raises costs. The team suggested at the time of writing that those costs would have to be borne regardless to preclude the rise of another wave of the disease.

More information: M. C. S. Fernando et al, Optimal Quarantine, Isolation, and Social distancing Strategies for COVID-19 based on a Mathematical Model, *International Journal of Mathematical Modelling and Numerical Optimisation* (2022). DOI: 10.1504/IJMMNO.2022.10048380

Provided by Inderscience