

Global data study on COVID-19 finds new ways to simplify information and help fight future pandemics

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(L-R) Kerrie Mengersen, Abhishek Varghese, Antonietta Mira, Edgar Santos-Fernandez. Credit: Queensland University of Technology

New research that analyzed complex global COVID-19 datasets has found new ways to simplify information to aid health authorities to tackle future outbreaks.

Researchers from QUT Center for Data Science in collaboration with scientists from Italy and Switzerland used advanced statistical and data science models to extract information on a global scale.

The study, published in *Scientific Reports*, provided fresh insights into the COVID-19 pandemic that related to the daily number of cases, deaths and government-based stringency measures. The data spanned 454 days of the pandemic from March 1, 2020 to May 29, 2021 and included 115 countries.

Senior Research Fellow in Data Science, Dr. Edgar Santos-Fernandez, said the research involved mapping the evolution of the pandemic.

"We were surprised to find that we could simplify a complex dataset with more than 1,300 dimensions and classify it into just two groups characterized by a handful of relevant features," he said.

"Despite the complex nature of aggregated statistics by country we were able to disentangle and extract valuable insights to help inform decision making."

Researchers discovered two clusters globally, with countries within each cluster exhibiting similar patterns in their response to the [pandemic](#).

For instance, countries within the clusters reacted with similar timing and strategies regarding stringency measures, such as the closure of schools, workplaces, and borders.

Dr. Santos-Fernandez said the patterns identified in the data can help predict the evolution of future outbreaks.

"This information can be used to help governments and [healthcare providers](#) to prepare and identify more effective strategies in terms of

non- pharmaceutical interventions and responses."

Distinguished Professor Kerrie Mengersen said the research highlighted the immense potential of [data science](#) to uncover deeper insights hidden within complex datasets.

"What is just as exciting is that the methods developed here don't just apply to COVID-19 research," she said.

"Scientists in numerous other fields can use them to explore and make informed decisions about problems they face."

The data used in the research was obtained from Our World in Data's "Data Explorer" and the COVID-19 Stringency Index (CSI) from the Oxford Coronavirus Government Response Tracker (OxCGRT).

More information: Abhishek Varghese et al, A global perspective on the intrinsic dimensionality of COVID-19 data, *Scientific Reports* (2023). [DOI: 10.1038/s41598-023-36116-1](https://doi.org/10.1038/s41598-023-36116-1)

Provided by Queensland University of Technology

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