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Lecturers develop a method to identify when a pandemic such as COVID-19 is in remission

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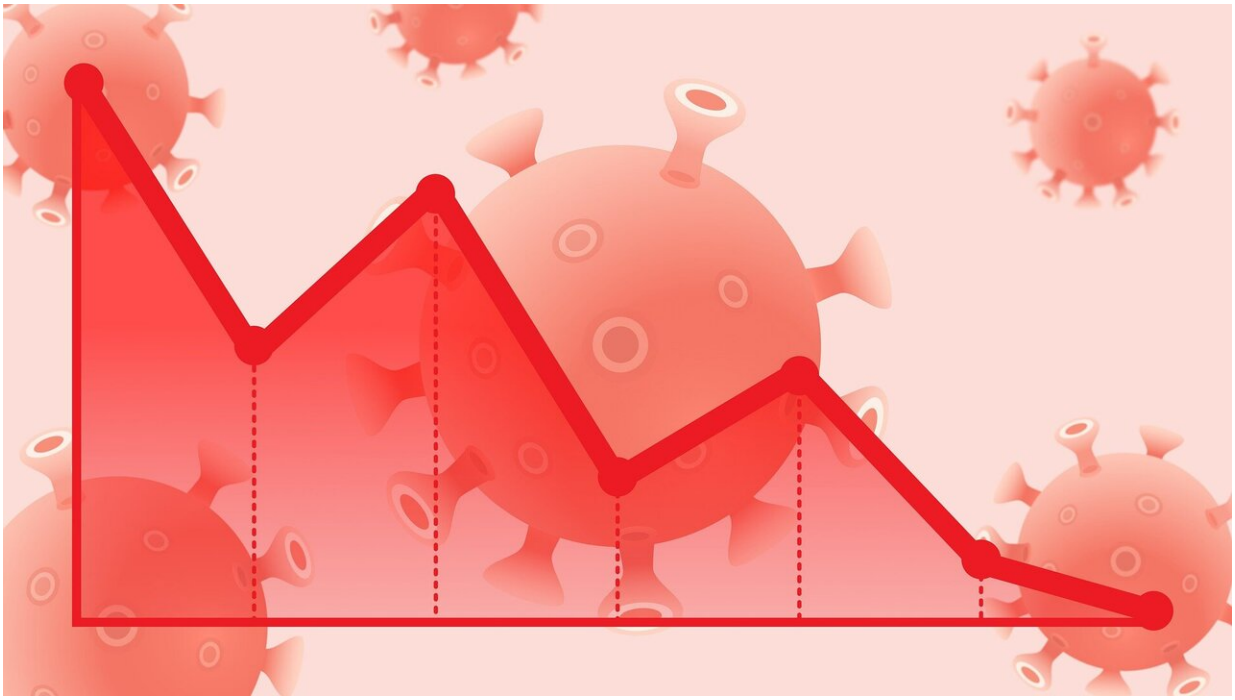

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Lecturers from the University of Valencia, Jose M. Pavía and Ernesto Veres-Ferrer, have developed a method that makes it possible to identify, in real time, when an epidemic issue such as COVID-19 is in remission. The method, explained in a research paper, has been

published in the journal *Statistics in Medicine*.

Authors propose the use of elasticity, which originates in physics but which was rapidly adopted by economics, as a tool to identify remission points of pandemics. In particular, they say that the remission will take place at the moment when the pace, measured through speed, of new cases, is lower than the average speed of accumulated cases to that point. For the authors, this provides stability and robustness to the calculation before possible remission variations, and add that "this descriptive measure, which is very easy to calculate and interpret, has shown to be informative and suitable, has the benefit of being of free distribution and can be calculated in real time, as the data is gathered." The work has taken as a model the Ebola virus epidemic from West Africa in 2014-2016 to prove this new approach, and has also included some examples that analyze data from COVID-19.

The appropriate identification of the remission of a pandemic is important, the authors explain, because it is then that the gradual relaxation of the strict control measures implemented by the health authorities can begin, and "as the current COVID-19 pandemic is showing, this can affect the social and economical wellbeing of a country."

The importance of appropriately identifying changes

The appropriate identification of the changing points during the research of outbreaks of infectious diseases is a key issue in epidemiology, with significant implications for the management of health resources, public health and, as has been proven during the COVID-19 pandemic, social and economical wellbeing. The beginnings, peaks and inflection points are not the only relevant points of change; so are the suitable identification of remission points, as the study shows.

Thus, the researchers have worked to reinterpret the mathematic meaning of the concept of elasticity as an indicator of the speed at which new cases of a contagious disease accumulate. The benefit of this model is that it can be calculated in real time, as the data is gathered. These benefits, given the ease of the formula of elasticity, are significant for their use in the case of epidemiologic outbreaks, because they provide quick and reliable information that can be of great use for people who have to make decisions. According to the authors, "after interpreting the concept of elasticity for a randomized variable in an innovative way, we propose its use as a new and simpler tool to predict the points of change in remission of epidemics."

More information: Ernesto J. Veres-Ferrer et al. Elasticity as a measure for online determination of remission points in ongoing epidemics, *Statistics in Medicine* (2020). DOI: 10.1002/sim.8807

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