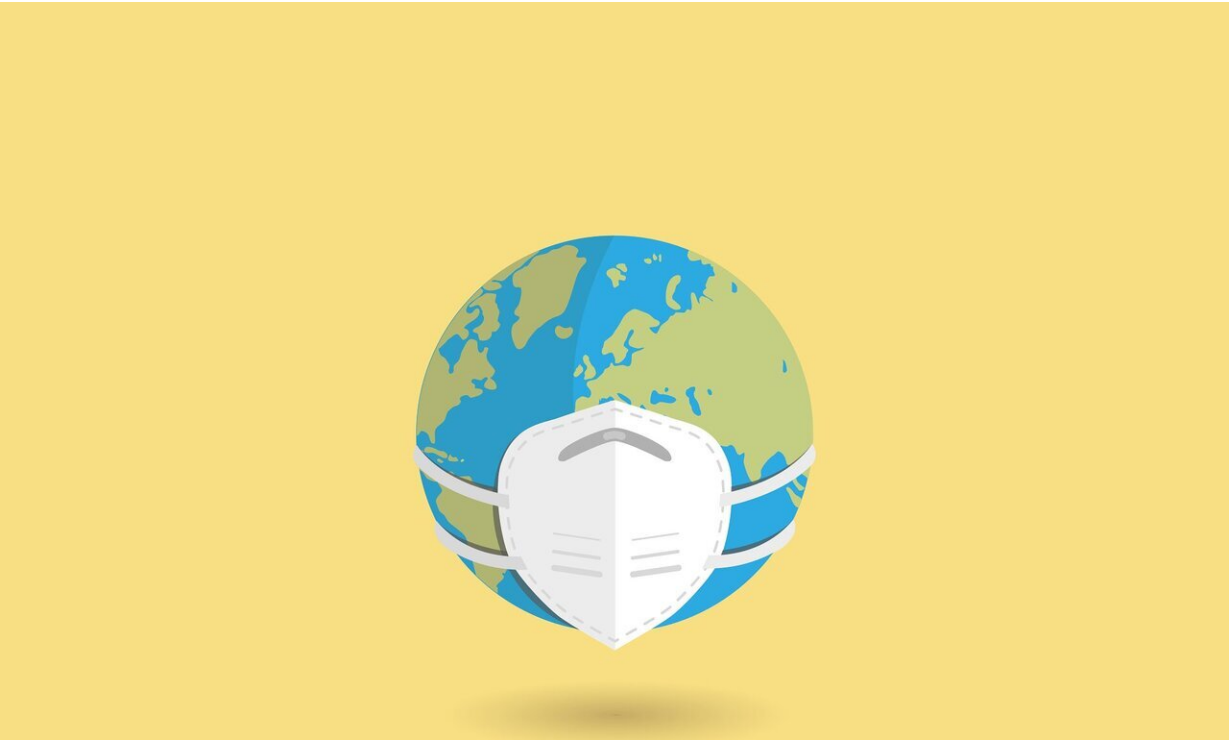
A drop of honey in a pandemic: Modeling the social and economic effects of COVID

December 17 2020, by David Bradley



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The COVID-19 pandemic has changed our lives in 2020. Measures that were adopted to preserve lives and protect health services have been more successful in some parts of the world than others. Nevertheless, millions of people have been infected and a large proportion of those have suffered terrible symptoms of this viral disease. Hundreds of

thousands of people so far have died. Medical science continues to work on treatments and the roll-out of vaccination programs.

Aside from the ongoing international medical emergency that COVID-19 represents, there are also widespread social and economic crises that are following in its wake. Work published in the *International Journal of Business and Systems Research* has looked at how attempts to "flatten the curve" of infection were aimed at not only controlling the spread of the virus but reducing the detrimental impact of the pandemic on the economy.

José António Filipe of the Department of Mathematics at ISTA—School of Technology and Architecture at the University Institute of Lisbon, Portugal, has looked at the flattening of the curve in the context of a modeling metaphor known as the "drop of honey effect." The effect invokes chaos theory and dynamic systems and shows how early decisions can have a major impact on prognosis and long-term effects. It is akin to the well-known "butterfly effect" of chaos theory but more applicable to the large-scale socioeconomic and political consequences of small changes and decisions.

The disease we would come to know as COVID-19 is due to an emergent pathogen, a novel coronavirus, SARS-CoV-2, that was first noted in Wuhan, Hubei Province, China in December 2019. How long the problem had existed and been known about prior to the news announcement from China is a moot point.

The virus is highly contagious even before symptoms appear and spread around the world over the first few weeks of 2020 leading the World Health Organization to declare a global pandemic on 11th March. Many countries began to adopt measures to tackle the virus, unfortunately with limited success in many of them. At the time of writing, vaccination programs had been started in some countries but there was also concern

about a new strain of the virus that seemed to be spreading more rapidly than the original SARS-CoV-2 although its morbidity and lethality were not entirely clear at this point.

Filipe uses the honey drop effect to look at how events may have unfolded in very different ways if decisions and actions from the very beginnings of the pandemic in Wuhan to the national decisions made before and after the WHO declared the pandemic had each flowed in different ways.

More information: José António Filipe. COVID-19, economy and the 'drop of honey effect' metaphor—a note on the Portuguese case. Situation and measures, *International Journal of Business and Systems Research* (2020). DOI: 10.1504/IJBSR.2021.111792

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