

# The business cycle drives the spread of viral diseases

October 4 2016

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A study by Bocconi's Jérôme Adda shows that epidemics spread faster during economic booms because more people are traveling and finds that school shutdowns and transportation network closures are seldom efficient measures

Next time a [flu epidemic](#) hits your area, putting everyone in bed, rejoice: it may mean that the recession is over. A new paper by Jérôme Adda, a scholar at Bocconi's Department of Economics (Economic Activity and the Spread of Viral Diseases: Evidence from High Frequency Data, in the *Quarterly Journal of Economics*, highlights the connection between the business cycle and the spread of viruses: "We find that epidemics spread faster during economic booms", he writes. "During booms more people are traveling, which increases inter-personal contacts and the spread of diseases".

The paper underlines the role of transportation in the expansion of epidemics and rates not only the impact of policies that limit interpersonal contacts, but also their cost-effectiveness, through a cost-benefit analysis. "Shutting down schools", Adda says, "proves to be effective in curbing the spread of viral diseases, provided that the incubation period is short enough, but is not an efficient measure, unless it is offset by a corresponding number of extra school days in other periods of the year". Closing transportation networks turns out to be cost-effective only in very extreme cases. "In general, such measures are efficient only when [epidemics](#) are more deadly than the typical flu", Adda says, "as in the 2009 swine flu outbreak".

Adda has reached his conclusions thanks to a unique dataset of high frequency data collected by French authorities since the '80s, detailing the weekly evolution of the incidence of three major [viral diseases](#) (the flu, gastro-enteritis and chickenpox) across geographical locations and age groups. He uses quasi-experiments to determine the effects of school shutdowns and transportation network closures, observing how spreading patterns change during vacations (mandated school shutdowns) and transportation strikes. "Furthermore, data confirm that the opening of new high-speed train lines makes viruses spread faster", Adda says.

The most striking result of the study is the strength of the transportation effect, but its results may also help authorities shape effective measures in case of an outbreak. Longer school vacations in the winter, when viruses are more likely to spread, and shorter in the summer definitely make sense.

"We've seen that the effectiveness of some policies depends on the characteristics of different diseases", Adda says, "and this is valuable information in an environment exposed to the emergence of new viruses and the resurgence of old ones, due to lack of vaccinations in immigrant populations and anti-vaxxers or to global warming that, as probably happened last August in Siberia, can cause the melting of permafrost and the release of frozen, extinct pathogens."

**More information:** Jérôme Adda. Economic Activity and the Spread of Viral Diseases: Evidence from High Frequency Data, *The Quarterly Journal of Economics* (2016). [DOI: 10.1093/qje/qjw005](https://doi.org/10.1093/qje/qjw005)

Provided by Bocconi University

Citation: The business cycle drives the spread of viral diseases (2016, October 4) retrieved 23

June 2024 from <https://medicalxpress.com/news/2016-10-business-viral-diseases.html>

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