

Canadian study finds temperature, latitude not associated with COVID-19 spread

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This scanning electron microscope image shows SARS-CoV-2 (yellow)—also known as 2019-nCoV, the virus that causes COVID-19—isolated from a patient, emerging from the surface of cells (blue/pink) cultured in the lab. Credit: NIAID-RML

Temperature and latitude do not appear to be associated with the spread

of coronavirus disease 2019 (COVID-19), according to a study of many countries published in *CMAJ* (*Canadian Medical Association Journal*), but school closures and other public health measures are having a positive effect.

"Our study provides important new evidence, using global data from the COVID-19 epidemic, that these [public health interventions](#) have reduced epidemic growth," says Dr. Peter Jüni, Institute for Health Policy, Management and Evaluation, University of Toronto, and St. Michael's Hospital, Toronto, Ontario.

The Canadian study looked at 144 geopolitical areas—states and provinces in Australia, the United States and Canada as well as various countries around the world—and a total of more than 375 600 confirmed COVID-19 cases. China, Italy, Iran and South Korea were excluded because the virus was either waning in the case of China or in full disease outbreak at the time of the analysis in others. To estimate epidemic growth, researchers compared the number of cases on March 27 with cases on March 20, 2020, and determined the influence of latitude, temperature, humidity, school closures, restrictions of mass gatherings and social distancing measured during the exposure period of March 7 to 13.

They found little or no association between latitude or temperature with epidemic growth of COVID-19 and a weak association between humidity and reduced transmission. The results—that hotter weather had no effect on the pandemic's progression—surprised the authors.

"We had conducted a preliminary study that suggested both latitude and temperature could play a role," says Dr. Jüni. "But when we repeated the study under much more rigorous conditions, we got the opposite result."

The researchers did find that [public health measures](#), including [school](#)

[closures](#), social distancing and restrictions of large gatherings, have been effective.

"Our results are of immediate relevance as many countries, and some Canadian provinces and territories, are considering easing or removing some of these public health interventions," says Dr. Jüni.

"Summer is not going to make this go away," says Prof. Dionne Gesink, a coauthor and epidemiologist at Dalla Lana School of Public Health. "It's important people know that. On the other hand, the more public health interventions an area had in place, the bigger the impact on slowing the epidemic growth. These public health interventions are really important because they're the only thing working right now to slow the [epidemic](#)."

The authors note several study limitations, such as differences in testing practices, the inability to estimate actual rates of COVID-19 and compliance with [social distancing](#).

When deciding how to lift restrictions, governments and public health authorities should carefully weigh the impact of these measures against potential economic and mental health harms and benefits.

More information: *Canadian Medical Association Journal* (2020). www.cmaj.ca/lookup/doi/10.1503/cmaj.200920

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