

Q&A: Research shows costly failure to coordinate COVID-19 response

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The anecdotes are out there. A COVID-19 positive person from one state attends a wedding in a small town of another state and an outbreak occurs.

Students flock to a state and romp on beaches when most other states have closed their tourist attractions, then return home and test positive for the virus.

People frustrated that their hair salons and restaurants are not open cross state lines to get those services, risking exposure to themselves and those at home.

These illustrate the disparities in state restrictions that researchers, including one from the University of Michigan School of Information, say contribute to the cost of uncoordinated response.

Paramveer Dhillon, U-M assistant professor of information, along with collaborators from MIT and five other universities, collected data from mobile phones, social media and the census to determine how the contact behaviors of people in a given region impact people in another state or region when reopening is not coordinated.

We can tell from various news reports that states are all handling COVID-19 restrictions in different ways with differing outcomes. What does your research say the problem is with this approach?

Until now, there has been little coordination among different states in handling their pandemic response. Our research shows that this lack of coordination is suboptimal and could have devastating effects. In particular, our paper studies geographical and social "spillovers" of the states' responses to the pandemic, e.g., shelter-in-place and business closures.

We show that a state's geographic and social network neighbors have a significant impact on shaping the contact patterns in that state. This

influence materializes both physically via people traveling across state borders and digitally via people's [social media](#) connections in potentially far-off states.

Can you explain specifically what your analysis showed?

Our study combined an analytical model with empirical data analysis to gauge the cost of uncoordinated responses to the [coronavirus](#) pandemic. We found that uncoordinated policies can decrease total welfare by 69%.

This decrease in welfare is the result of significant geographic and social spillovers since people, ideas and media move across borders. However, most pandemic policies have failed to straddle state borders. Our results highlight the need for coordination among a state's geographic as well as social network neighbors.

How did you do this tracking?

We tracked people by combining daily, county-level [policy](#) data with movement from over 27 million mobile devices, social networks among 220 million Facebook users, daily weather from 62,000 weather stations and county-level census data. Safegraph Inc. provided us the county data and Facebook Inc. provided us the social connectedness index and county-level census data. State-level policy data and weather data are publicly available online.

Are there examples of where coordinated efforts have helped control transmission in a region that support your findings?

Yes, our paper advocates the type of coordination of stay-at-home and travel policies that have happened between the Northeast states in April (New York, New Jersey, Connecticut, Pennsylvania, Rhode Island, Delaware and Massachusetts) and between the Western states (Colorado, Nevada, Oregon, Washington and California).

Many people have said a national response is long overdue. Does your research support this contention?

Yes, we believe that a national-level response to this pandemic is needed. Both the geographical and social network neighbors of a state can exert significant influence on its contact patterns. Our results show that states connected geographically or socially that adopt the same stay-at-home and business closure policies see a 13% reduction in location visits and a 9% reduction in the fraction of people leaving home. In addition, when just one-third of a state's social and geographic peer states adopt shelter-in-place policies, it creates a reduction in mobility equal to the state's own policy decisions.

You say your paper gives governors a roadmap. Is it being well received by them?

We have tried to get the paper to the governors through multiple avenues. We sent letters to the governors association and reached out directly to key governors and their staffs. And yet, as of now, our correspondence has not received a reply.

Is yours the first or most comprehensive study to show this impact?

To the best of our knowledge, we are not aware of any study which

provides quantitative evidence on how pandemic policies in one region affect mobility and social distancing in other areas. We are not only the first ones to study this interdependence but also the first to separate these spillovers into geographical spillovers (based on the spatial proximity of states) and social spillovers (based on Facebook connections).

More information: David Holtz et al. Interdependence and the cost of uncoordinated responses to COVID-19, *Proceedings of the National Academy of Sciences* (2020). DOI: [10.1073/pnas.2009522117](https://doi.org/10.1073/pnas.2009522117)

Provided by University of Michigan

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