

Current air pollution tied to more severe COVID-19 outcomes, study finds

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Contemporaneous exposure to air pollution may influence the severity of COVID-19 illness and increase the likelihood people will die from the disease, a team of Georgia State University economists says.

The team examined daily [air pollution](#) data collected from U.S. Environmental Protection Agency (EPA) monitoring stations across the United States as well as COVID-19 mortality and caseload data from the

Johns Hopkins University Center for Systemic Science and Engineering. Their study harnesses plausibly random changes in wind direction, which lead to large fluctuations in air pollution, to assess the relationship between [air pollution exposure](#) and COVID-19 caseload and mortality. The researchers used cell phone data and state-level policies adopted to curb the spread of the virus to control for social distancing measures. They found that between Jan. 22 and Aug. 15, decreases in contemporaneous exposure to fine particle air pollution are linked to decreases in confirmed COVID-19 cases and decreases in mortality.

"Local governments are weighing the trade-offs between reopening the economy and minimizing the toll of COVID-19," said Stefano Carattini, assistant professor of economics at the Andrew Young School of Policy Studies. "Our paper shows that by keeping current air pollution low, it's possible to help offset the disease burden created by reopening."

Air pollution levels in the U.S. have not decreased significantly during the pandemic, despite the concurrent increase in remote work and decrease in travel.

"For the past few years, the U.S. has deregulated facilities that are responsible for large amounts of emissions," said Carattini. "During the pandemic, these facilities were exempt from reporting their levels of emissions to the EPA, and other research has shown that this has increased pollution levels around those facilities."

The effects of air pollution on COVID-19 mortality are relatively large, according to the study. A decrease of one microgram of particulate matter per cubic meter of air (one microgram equals one-millionth of a gram) is sufficient to almost immediately reduce the number of newly confirmed COVID-19 cases by two percent and the number of deaths by three to four percent.

The researchers suggest a number of policy changes that could help reduce levels of fine particles and improve COVID-19 outcomes. At the federal level, reinstating EPA regulations may reduce air pollution by large emissions producers. States can limit non-essential travel and encourage continued teleworking. Local governments can regulate vehicle emissions by moving forward with congestion fees or tolls to limit traffic or using their cleanest bus fleet, especially if buses are not running at full capacity.

"We know that policymakers have no room to change past exposure to pollution," said Carattini. "But they have power to change the current conditions and the future."

"The paper's findings also help to explain the fact that some socioeconomic groups have been [disproportionately impacted](#) by the COVID-19 pandemic," said John Gómez Mahecha, a Ph.D. student at the Andrew Young School and coauthor of the study. "These groups, indeed, are known to be more likely to be living in areas where exposure to [pollution](#), including fine particulate matter, is higher."

More information: COVID-19 Mortality and Contemporaneous Air Pollution: icepp.gsu.edu/files/2020/10/paper2016.pdf

Provided by Georgia State University

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