New approach better predicts air pollution models' performance in health studies

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Nine out of 10 people in the world breathe air that exceeds the World Health Organization's guidelines for air pollution. The era of big data and machine learning has facilitated predicting air pollution

concentrations across both space and time. With approximately seven million people dying each year as a result of air pollution, leveraging these novel air pollution prediction models for studies of health is important. However, it is not always known whether these air pollution prediction models can be used in health studies.

A new study from Jenna Krall, assistant professor of the Department of Global and Community Health, develops a new approach to aid air quality modelers in determining whether their air pollution prediction models can be used in epidemiologic studies, studies that assess health effects.

"Understanding the relationship between air pollution and health often requires predicting air pollution concentrations. Our approach will be useful for determining whether an air pollution prediction model can be used in subsequent health studies. As a result, our work can help translate new prediction models to better understand air pollution health impacts," said Krall.

Existing air pollution prediction models are generally evaluated on how well they can predict air pollution levels. Using data from 17 locations in the US, Krall found that the new evaluation approach was able to better identify errors in air pollution prediction models most relevant for health studies.

"Assessing the health estimation capacity of air pollution exposure prediction models" was published in *Environmental Health* in March 2022.

More information: Jenna R. Krall et al, Assessing the health estimation capacity of air pollution exposure prediction models, *Environmental Health* (2022). DOI: 10.1186/s12940-022-00844-0

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