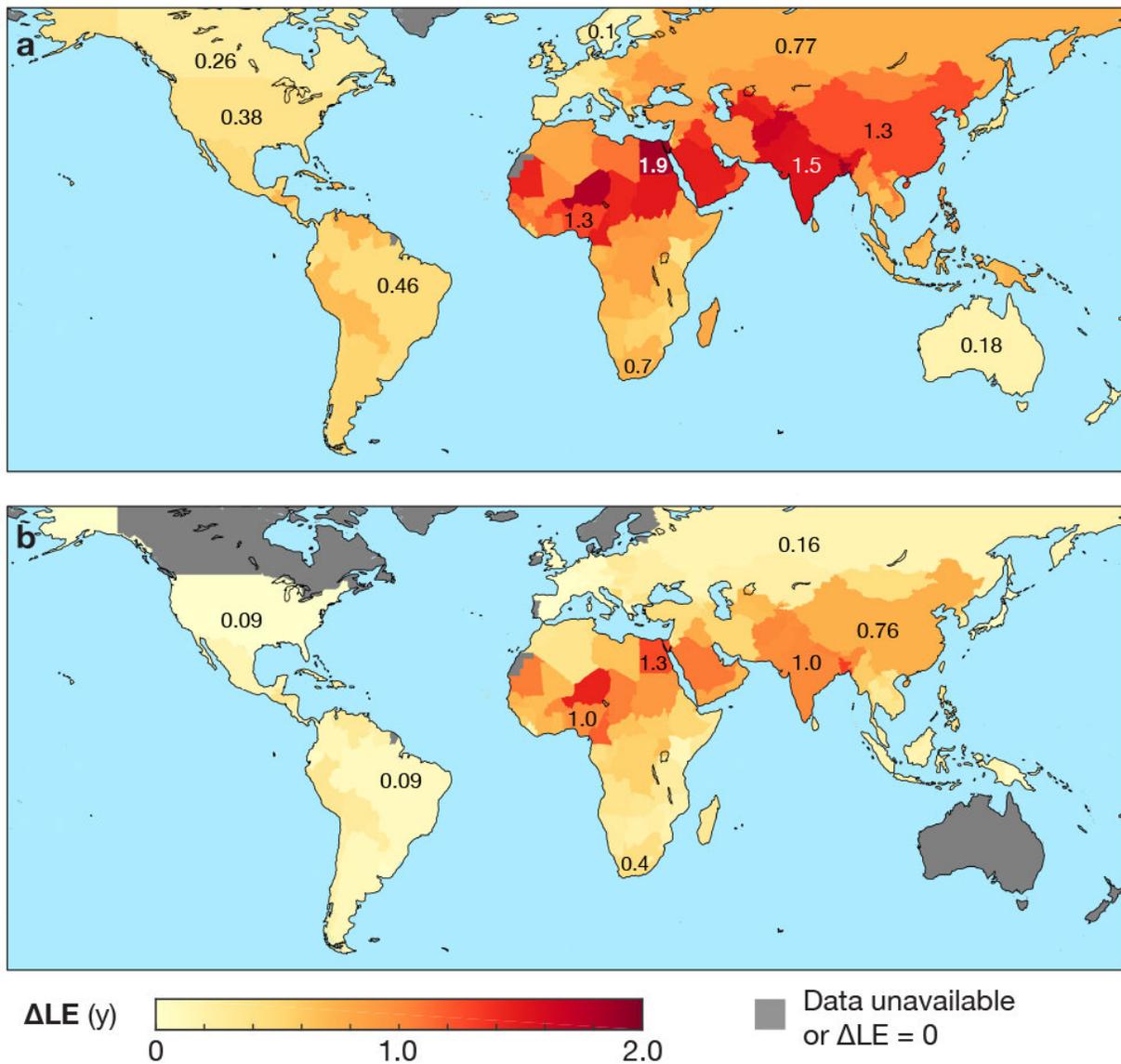


Air pollution reduces global life expectancy by more than one year, study finds

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Upper panel a: How air pollution shortens human life expectancy around the

world. Lower panel b: Gains in life expectancy that could be reached by meeting World Health Organization guidelines for air quality around the world. Credit: Cockrell School of Engineering, The University of Texas at Austin

Air pollution shortens human lives by more than a year, according to a new study from a team of leading environmental engineers and public health researchers. Better air quality could lead to a significant extension of lifespans around the world.

This is the first time that data on [air pollution](#) and lifespan has been studied together in order to examine the global variations in how they affect overall life expectancy.

The researchers looked at [outdoor air pollution](#) from particulate matter (PM) smaller than 2.5 microns. These fine particles can enter deep into the lungs, and breathing PM2.5 is associated with increased risk of heart attacks, strokes, respiratory diseases and cancer. PM2.5 [pollution](#) comes from power plants, cars and trucks, fires, agriculture and industrial emissions.

Led by Joshua Apte in the Cockrell School of Engineering at The University of Texas at Austin, the team used data from the Global Burden of Disease Study to measure PM2.5 air pollution exposure and its consequences in 185 countries. They then quantified the national impact on life expectancy for each individual country as well as on a global scale.

The findings were published Aug. 22 in *Environmental Science & Technology Letters*.

"The fact that fine particle air pollution is a major global killer is already

well known," said Apte, who is an assistant professor in the Cockrell School's Department of Civil, Architectural and Environmental Engineering and in the Dell Medical School's Department of Population Health. "And we all care about how long we live. Here, we were able to systematically identify how air pollution also substantially shortens lives around the world. What we found is that air pollution has a very large effect on survival—on average about a year globally."

In the context of other significant phenomena negatively affecting human survival rates, Apte said this is a big number.

"For example, it's considerably larger than the benefit in survival we might see if we found cures for both lung and breast cancer combined," he said. "In countries like India and China, the benefit for elderly people of improving air quality would be especially large. For much of Asia, if air pollution were removed as a risk for death, 60-year-olds would have a 15 percent to 20 percent higher chance of living to age 85 or older."

Apte believes this discovery is especially important for the context it provides.

"A body count saying 90,000 Americans or 1.1 million Indians die per year from air pollution is large but faceless," he said. "Saying that, on average, a population lives a year less than they would have otherwise—that is something relatable."

More information: Joshua S. Apte et al. Ambient PM_{2.5} Reduces Global and Regional Life Expectancy, *Environmental Science & Technology Letters* (2018). [DOI: 10.1021/acs.estlett.8b00360](https://doi.org/10.1021/acs.estlett.8b00360)

Provided by University of Texas at Austin

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