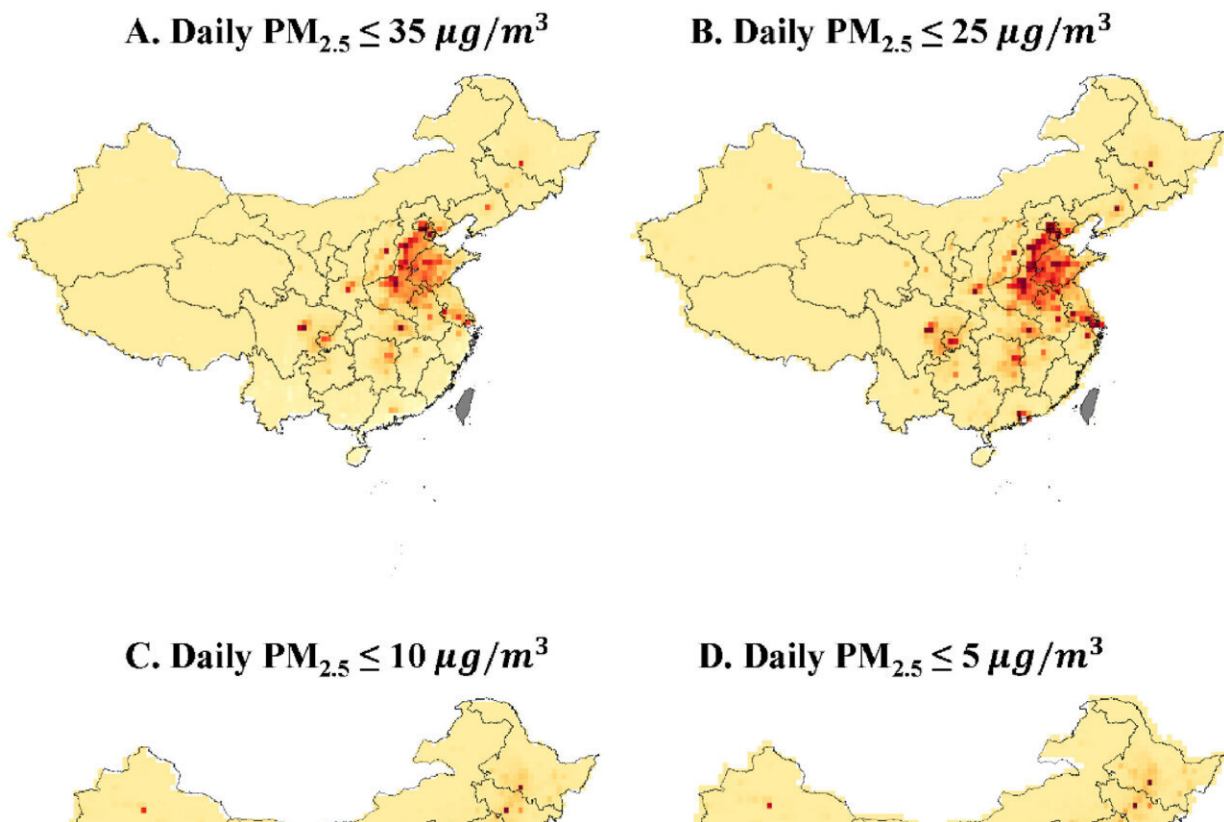


# Short-term exposure to PM<sub>2.5</sub> increases hospital admission risks and costs in China

June 21 2023



Hospitalization expense reduction under different PM<sub>2.5</sub> standards in China in 2017. Two-pollutant models were applied to estimate the reduction of hospitalization expenses under different PM<sub>2.5</sub> concentrations at the national level. (A) Daily PM<sub>2.5</sub> ≤ 35 µg/m<sup>3</sup>, (B) Daily PM<sub>2.5</sub> ≤ 25 µg/m<sup>3</sup>, (C) Daily PM<sub>2.5</sub> ≤ 10 µg/m<sup>3</sup>, (D) Daily PM<sub>2.5</sub> ≤ 5 µg/m<sup>3</sup>. Credit: *Global Transitions* (2023). DOI: 10.1016/j.glt.2023.04.003

In a worrying revelation for global health, fine particulate matter, specifically particles with an aerodynamic diameter of less than  $2.5\text{ }\mu\text{m}$ , has been flagged as a serious threat to populations around the world. A recent article authored by researchers from Tsinghua University and the China Standard Medical Information Research Center sheds light on the grave consequences of short-term exposure to  $\text{PM}_{2.5}$ , which can elevate the risks and expenses associated with hospital admissions for various major diseases. The findings, published in the journal *Global Transitions*, further accentuate the alarming implications of this issue.

"In recent years, there has been a noticeable improvement in China's air quality level," said the study's co-corresponding author Ting Chen, a professor in the Department of Computer Science and Technology at Tsinghua University. "It is nonetheless important to accurately assess the positive effects resulting from the reduction in air pollution. To quantify these benefits, we conducted a time-stratified, case-crossover study to investigate the correlation between short-term exposure to ambient air pollution and various health-related factors, including hospital admissions, length of hospital stays, and associated costs."

The team found a [positive association](#) between the risks and costs of hospital admissions and [short-term exposure](#) to [fine particulate matter](#) ( $\text{PM}_{2.5}$ ) in all major diseases. According to the study's findings, a  $10\text{ }\mu\text{g}/\text{m}^3$  rise in  $\text{PM}_{2.5}$  concentration level (adjusted for ozone) was associated with a 0.27% increase (95% confident interval (CI): 0.25%, 0.29%) in [hospital admissions](#). Additionally, this elevation was linked to a surge of CNY39 (95% CI: 36.11, 41.89) in hospitalization expenses per admission and an extended duration of hospital stays by 0.0280 days (95% CI: 0.0259, 0.0300) per admission.

"Moreover, the relative risk increases of mental disorders, [respiratory diseases](#) and circulatory diseases showed significant associations with short-term  $\text{PM}_{2.5}$  exposure," explained Qian Di, lead author of the study

and an associate professor in Vanke School of Public Health at Tsinghua University. "Based on our calculations, improved air quality since 2013 saved CNY2.28 billion in medical expenses in 2017. We anticipate that this evidence can inform governmental policies concerning environmental preservation."

**More information:** Yuze Gao et al, Association of short-term exposure to ambient fine particle matter with hospital admission risks and costs in China, a case-crossover study, *Global Transitions* (2023). DOI: [10.1016/j.glt.2023.04.003](https://doi.org/10.1016/j.glt.2023.04.003)

Provided by KeAi Communications Co.

Citation: Short-term exposure to PM2.5 increases hospital admission risks and costs in China (2023, June 21) retrieved 9 May 2024 from <https://medicalxpress.com/news/2023-06-short-term-exposure-pm25-hospital-admission.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------