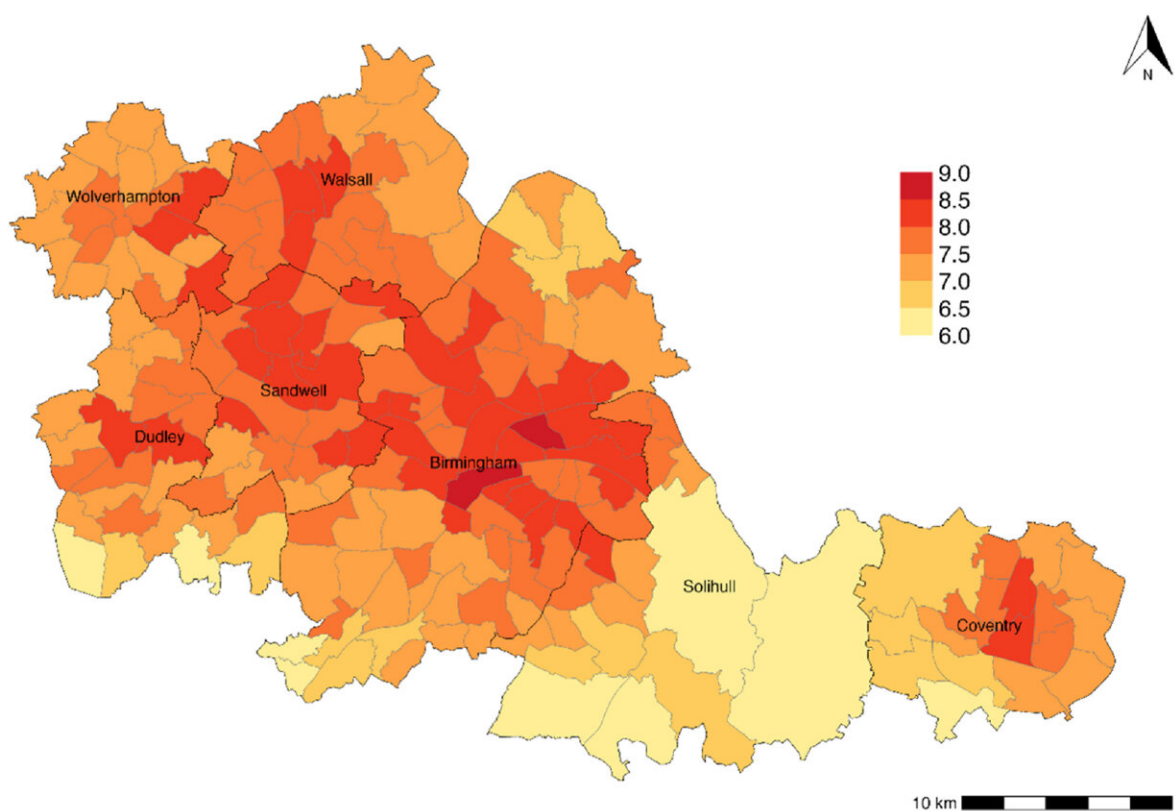


West Midlands air pollution causing up to 2,300 early deaths each year, research suggests

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Percentage of mortality attributable to air pollution in the West Midlands combined Authority. Credit: *Environmental Pollution* (2024). DOI: 10.1016/j.envpol.2024.123871

Every resident of the West Midlands lives in an area exceeding the World Health Organization's air quality guidelines, and air pollution in the region is causing up to 2,300 premature deaths each year according to new research.

The study published in [Environmental Pollution](#) conducted by researchers at the University of Birmingham in collaboration with local authority partners looked at the health economic burden of air pollution on residents in the West Midlands Combined Authority [geographical area](#).

The team from WM-Air—Clean Air Science for the West Midlands—developed a new air quality analysis tool and, using data from 2019, found that every ward in the WMCA area exceeded WHO safe levels of Nitrogen Dioxide (NO₂) and Particulate Matter (PM_{2.5}), and the annual health burden included up to:

- 2,300 deaths,
- 4,200 asthma diagnoses,
- 1,400 [coronary heart disease](#) (CHD) diagnoses,
- 300 lung cancer diagnoses, and
- 1,000 stroke cases

The economic benefit of bringing air quality in the WMCA area to WHO health-based levels was also calculated using the tool, with a potential £3.2bn of economic benefits over 20 years.

The benefits include reduced health care and social care demand, improved productivity; and the prevention of up to 12,000 deaths, 50,000 asthma, 15,000 CHD, 2,400 lung cancer, and 10,000 stroke diagnoses. These financial calculations are based on new cases potentially connected to air pollution, and do not account for existing cases of these diseases.

Dr. Suzanne Bartington, clinical associate professor in [environmental health](#) at the University of Birmingham and senior author of the study said, "Air pollution is one of the biggest challenges facing [public health](#), and our data shows that every resident in the West Midlands lives in a ward where the air quality doesn't meet WHO health-based guidelines. The impacts for the region are significant, both in poorer health outcomes for residents and the extra burden on our health services.

"Our new Air Quality Lifecourse Assessment Tool has enabled us to put stark numbers to these impacts, showing us that more than 2000 people die each year prematurely due to air pollution across the region."

Dr. James Hall, health economist in the Institute of Applied Health Research at the University of Birmingham and lead author of the paper said, "The results show some of the many benefits associated with tackling [nitrogen dioxide](#) and particulate matter in the region including a potential £3.2bn of health-related [economic benefit](#) including to the health system, the broader economy and the public via reducing the rates of asthma, lung cancer, strokes, coronary heart disease and mortality.

"We also know that there is a potential link between air pollution and increased risk of developing other major chronic diseases including COPD and types of dementia, so the impact is likely to be even higher."

Roy Harrison, professor of environmental health at the University of Birmingham and co-author of the study, said, "These data provide an important baseline for the health impacts of [air pollution](#) in the West Midlands region. Relative to 2019, we know that there have been some improvements in air quality and they will have reduced the attributable burden on the region's health.

"Initiatives such as the Clean Air Zone, introduced in 2021, have had an impact on the amount of NO₂ pollution in the city center, which is a

relatively small geographical area. Across the region as a whole, nitrogen dioxide and particulate matter pollution is still a significant problem which we need to tackle with urgency."

More information: James Hall et al, Regional impact assessment of air quality improvement: The air quality lifecourse assessment tool (AQ-LAT) for the West Midlands combined authority (WMCA), *Environmental Pollution* (2024). [DOI: 10.1016/j.envpol.2024.123871](https://doi.org/10.1016/j.envpol.2024.123871)

Provided by University of Birmingham

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