



# AQ-LAT: Providing air quality, health and economic impact evidence for the West Midlands

The first health impact of air quality assessment for the WMCA

Up to **2,300** early deaths in West Midlands estimated due to poor air quality

Scale of potential health-related economic benefits of achieving WHO air quality guidelines up to **£3.2bn** over 20 years

Tool used to help local and regional policymakers **understanding the geographies of health burden**

Outputs used to support first West Midlands Air Quality Framework



**Effective collaboration and co-development – of AQ-LAT**



**Policy + Legislation – WM AQ Framework application**

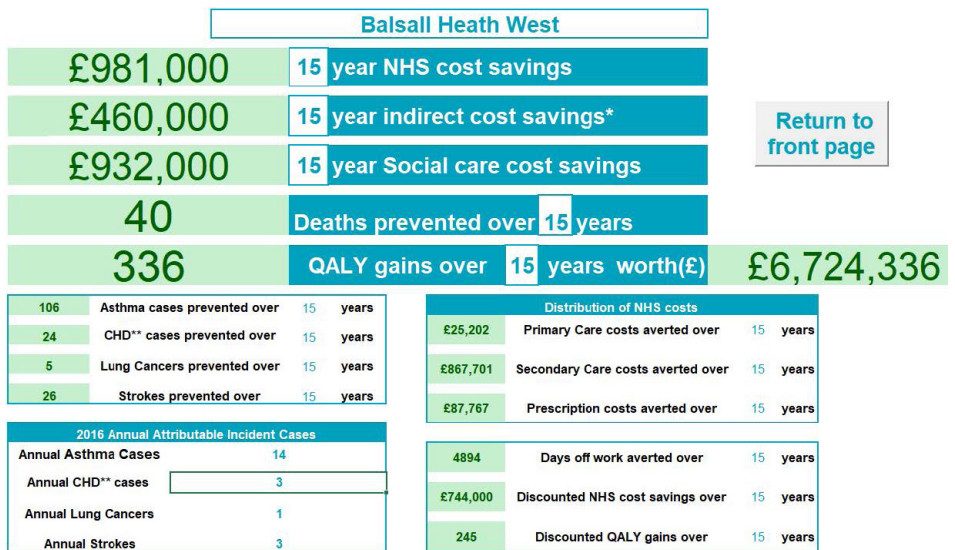


**Practice - Tool used by public health practitioners**



**Health + economics – reducing mortality and morbidity**

Our novel Air Quality Lifecourse Assessment Tool (AQ-LAT) can estimate electoral ward-level impacts of PM<sub>2.5</sub> and NO<sub>2</sub> exposure on outcomes of interest to local authorities, namely morbidity (asthma, coronary heart disease (CHD), stroke, lung cancer), mortality, and associated healthcare costs. The Tool can assess the health economic burden of air pollutant exposure and estimate benefits generated by a range of air quality policy scenarios. The AQ-LAT can be replicated across local authorities in England to inform regional investment decisions.



## Background - why does this work matter?

Air pollution is a major public health issue in England, contributing to an estimated 26,000 to 38,000 premature deaths annually. Research links both short- and long-term exposure to air pollution with increased risks of many conditions including cardiovascular disease, lung cancer, metabolic disorders, cognitive decline, and adverse birth outcomes. Key pollutants include nitrogen dioxide (NO<sub>2</sub>) and fine particulate matter (PM<sub>2.5</sub>), which can penetrate deep into the lungs enter the body pose serious health risks. The World Health Organization’s 2021 guidelines emphasize the need for stringent air quality standards to protect health. Health impact assessments are crucial for evaluating the economic and health impacts of air pollution and are required for clean air policies. Advances in air quality modelling now enable more localised assessments, and recent UK government proposals aim to reduce PM<sub>2.5</sub> levels and overall population exposure by 2040. With

responsibility for air quality primarily falling at the local level there is a need for effective tools at regional level.

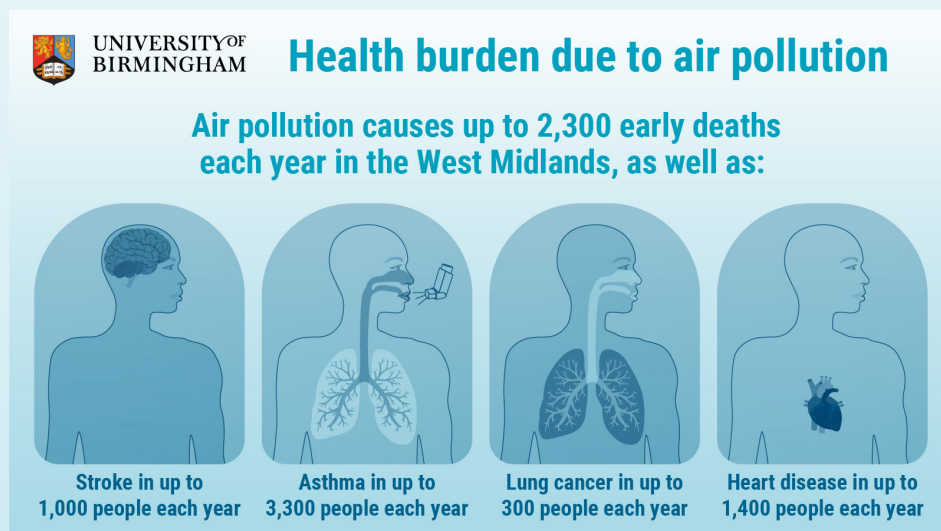
## Method – what did we do?

WM-Air worked with local authority partners to develop the Tool. The Coventry & Warwickshire Air Quality Alliance were particularly involved, especially Steve Dewar. A series of workshops identified potential applications and useful outputs. Nadia Inglis (Walsall Council) and Mark Wolstencroft (Birmingham City Council, BCC) also had input into the design of the Tool and co-authored the paper.

The Tool was presented at WM-Air events where guidance on the Tool was provided by numerous partners inc. John Grant (Walsall Council), Emily Stewart (Coventry City Council), Sophie Morris (Sandwell Council), Danni Bharj (Clean Air Justice Network, CAJN). Wider input was sought user questionnaires and opportunities for feedback. WM-Air also worked with LAs to support the application of the tool.

## What tools/outputs were developed?

- The AQ-LAT tool is available to download via the [WM-Air website](#)
- [Birmingham health impacts of air pollution briefing note](#)
- [Health statistics and infographics](#)



## Outcomes, Impacts and Benefits delivered

The AQ-LAT has helped policymakers within the WMCA to understand the scale and regional areas that suffer the harshest impacts of poor air quality. We have provided an estimate of the scale of the problem (up to 2300 early deaths from poor air quality), as well as estimates of potential benefits from improving the quality of the air. These estimates were included within the [WMCA AQ framework](#), our findings of the need to address PM<sub>2.5</sub> were particularly influential.

At a more local level, we are working with local policymakers to help understand their geographies of health burden. We've been working with West Midlands Local Authorities, e.g.:

- [Birmingham health impacts of air pollution briefing note](#) for BCC and CAJN.
- Walsall Council have adapted the Tool using their own air quality data.
- A health impacts report was provided for Coventry City Council, detailing the ward level impacts in that local authority to direct policy, and in planning application process to highlight the potential damage arising from new development.
- Sandwell Council utilise the Tool to help obtain support from senior management and elected members by clarifying the co-benefits to health

**"AQ-LAT...enables local authorities to assess the potential health and economic impacts of air quality policy choices. This tool is included within WMCA's air quality policy agenda and will also be used in Sandwell as we update our Air Quality Action Plan. The tool will help us to gain buy-in from senior management and elected members by clarifying the co-benefits to health and the economy from cleaner air."**

**Sophie Morris – (Public Health Specialist: (Air Quality and Climate Change); Elizabeth Stephens (Air Quality Team Manager); Lina Martino (Consultant in Public Health), Sandwell Council**

**"AQ-LAT is an example of where the knowledge and skills of the WM-Air Team have been translated into an actionable tool for ward-level insight into the health impacts of different AQ scenarios over time. Such intelligence is vital for planning and policymaking."**

**Stever Arnold (Head of CAZ), Birmingham City Council**

**"Its design has been Local Authority/Health practitioner driven allowing councils to use ward-based criteria or recognised statutory reporting geographical areas (e.g. district/ward boundaries) for outputting of data."**

**Amanda Clover MCIEH CEnvH MIOA (Senior Development Officer (Air Quality) – Enforcement, Monitoring and Compliance), Solihull Council**

### About WM-Air: Clean Air Science for the West Midlands

WM-Air ("Clean Air Science for the West Midlands") is a NERC-funded initiative, led by the University of Birmingham, working in collaboration with over 20 cross sector partners, to apply environmental science research expertise to improve air quality in the West Midlands, delivering health, economic and environmental benefits.

[wm-air.org.uk](http://wm-air.org.uk)



**Natural Environment Research Council**

and the economy from cleaner air.

- Solihull Council have used the Tool in health and strategic/planning disciplines to estimate costs and benefits that may occur in the future.
- Dudley Council have used information from the toolkit has been used to raise awareness amongst staff including consultants and service leads, such as the Dudley attributed cases for 2021 and the future costs of reducing air pollution

### Looking to the Future/Legacy

The Tool now has a number of adaptations being undertaken, including for Oxfordshire County Council, through an expansion of AQ-LAT (OCC funded). Other LAs outside the West Midlands (e.g. Cheltenham Borough Council) have also used the Tool and demonstrated its capability to colleagues, other LAs and the NHS.

At a national level the team have been invited to present the tool to National Highways, Defra and UKHSA to understand wider potential applications.

Research projects including CLEETS will see adaptations for Wales and The USA, whilst WM-Net Zero is expanding the Tool to broader climate impacts through the development of CLIMATE-LAT.

### Underpinning Science

- Regional impact assessment of air quality improvement: The air quality lifecycle assessment tool (AQ-LAT) for the West Midlands combined authority (WMCA) area - ScienceDirect

### Partners



**More info and URLs:**

