JSNA Bitesize

Health and Wellbeing Facts and Figures, April 2023

Air Quality and Health

Poor air quality is a significant public health issue. There is strong evidence that air pollution causes the development of coronary heart disease, stroke, respiratory disease, and lung cancer, exacerbates asthma and has a contributory role in mortality[1].

Although air pollution can be harmful to everyone, it particularly affects people living in polluted areas, those who are exposed to higher levels of air pollution in their day to day lives, and those who are more susceptible to health problems caused by air pollution, widening health inequalities[2].

This bitesize provides the latest Public Health indicator on air pollution and the estimated mortality attributed to air pollution compared with other causes of death.

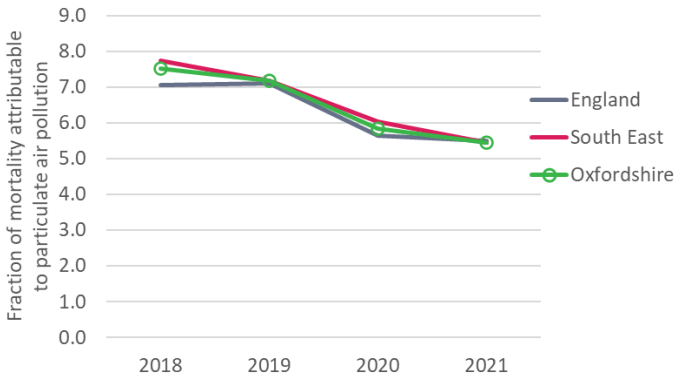
Particulate air pollution – the most dangerous pollutant

- World Health Organisations (WHO) guidelines[3] state that *PM2.5, fine particulate matter of 2.5 micrometres or less in diameter, is the most dangerous pollutant because it can penetrate the lung barrier and enter the blood system, causing cardiovascular and respiratory disease and cancers. It affects more people than other pollutants and has health impacts even at very low concentrations*. The updated WHO target is for annual average concentrations of PM2.5 not exceeding 5 µg/m^3.
- The current UK target is to achieve annual average concentrations of PM2.5 of 10 µg/m^3 by 2040. Around half of UK concentrations of PM comes from anthropogenic sources in the UK such as domestic wood burning and tyre and brake wear from vehicles[4].

Estimating the impact of air pollution on health

- The *Fraction of mortality attributable to particulate air pollution* is one of the indicators in the Public Health Outcomes Framework and uses concentrations of total PM2.5 to estimate the mortality burden attributable to particulate air pollution[5].
- As of 2021, the value for Oxfordshire was 5.5%, slightly above the South East average (5.4%) and similar to the England average (5.5%).

Fraction of mortality attributable to particulate air pollution (2018 to 2021)

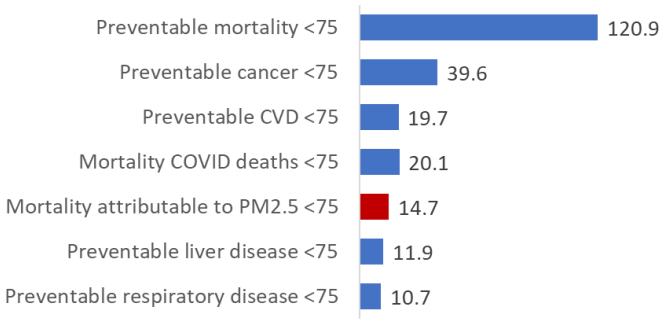


Indicator source: DEFRA & Air Quality and Public Health, UK Health Security Agency from finertips.phe.org.uk

Air pollution mortality estimate vs other causes of death

- Rates of mortality due to fine particulates is estimated to be similar to the mortality rate from preventable liver disease (aged under 75) and mortality rate from preventable respiratory diseases (aged under 75) and just below COVID deaths.
- It is estimated that fine particulate air pollution's effect on mortality in Oxfordshire was equivalent to 320 deaths at typical ages in 2021.

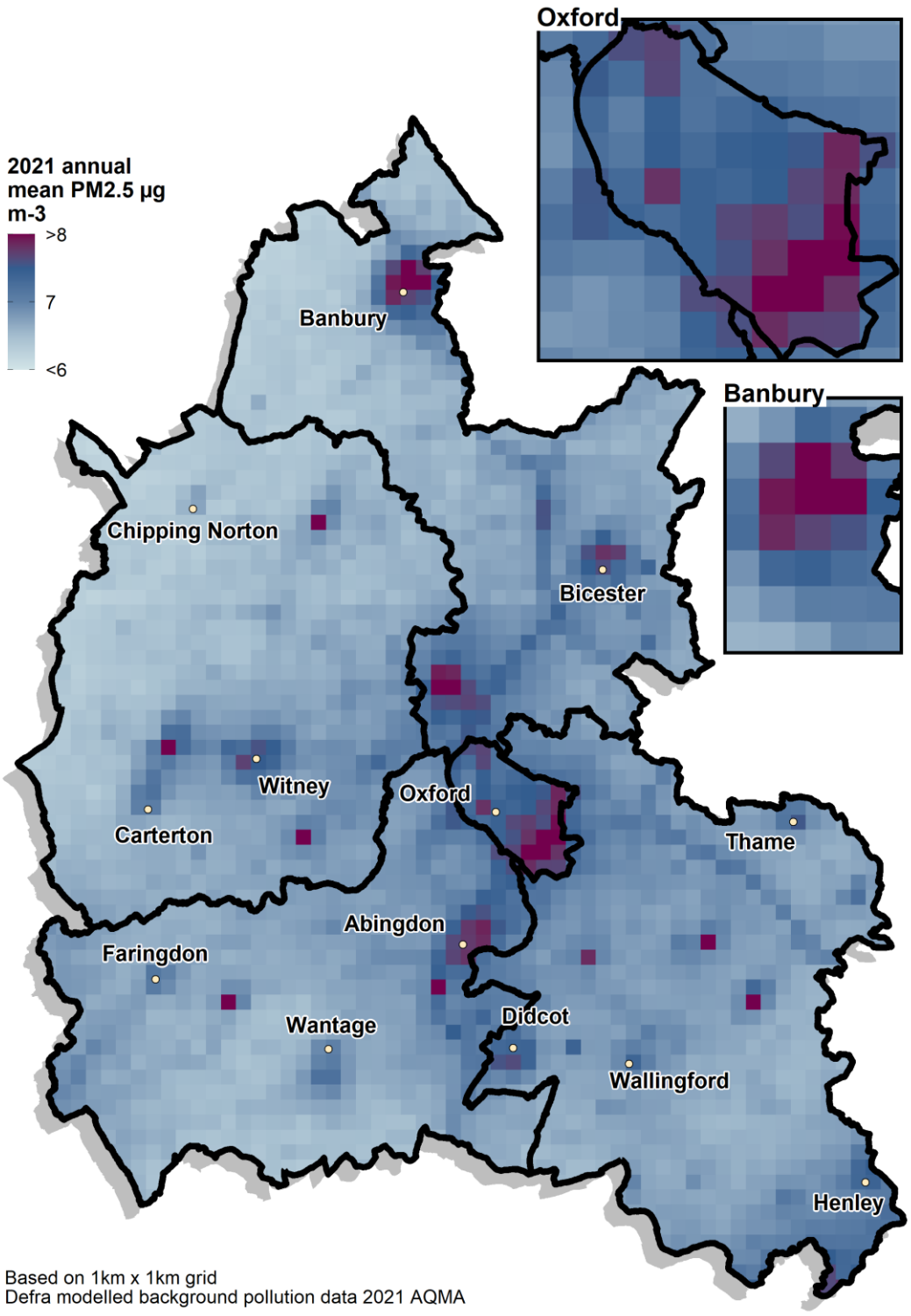
Oxfordshire age standardised mortality rates per 100,000 (2021)



Oxfordshire mortality profile from finertips.phe.org.uk

Mapping emissions of particulate matter in 2021 (annual average) shows higher concentrations for roads and urban areas of Oxfordshire. Note that this is modelled data provided Defra see method.

Emissions of Particulate Matter < 2.5µm) in 2021 (modelled data)



Mapping by Oxfordshire County Council using modelled data from UK Ambient Air Quality Interactive Map (defra.gov.uk)

[1] Improving outdoor air quality and health: review of interventions - GOV.UK (www.gov.uk) (March 2019)
[2] Health matters: air pollution - GOV.UK (www.gov.uk) 2018
[3] WHO Air Quality Guidelines (c40knowledgehub.org)
[4] Emissions of air pollutants in the UK – Particulate matter (PM10 and PM2.5)
[5] Fraction of mortality attributable to particulate air pollution

Oxfordshire Air Quality Information – Note update to new website from July 2023

We welcome your comments, please email jsna@oxfordshire.gov.uk For data on Oxfordshire see Oxfordshire Insight