

Supplementary material:

Impacts of ambient air quality on acute asthma hospital admissions during the COVID-19 pandemic in Oxford City, UK; a time series study

Ajit Singh ^{a, b, †}, Gabriella L. Morley ^{c, †}, Cécile Coignet ^d, Felix Leach ^e, Francis D. Pope ^a, Neil Thomas ^b, Brian Stacey ^f, Tony Bush ^e, Stuart Cole ^g, George Economides ^g, Ruth Anderson ^g, Pedro Abreu ^h and Suzanne E. Bartington ^{b, *}

^a School of Geography, Earth and Environmental Sciences, University of Birmingham, Edgbaston Park Road, Birmingham, B15 2TT, UK; a.singh.2@bham.ac.uk ; f.pope@bham.ac.uk

^b Institute of Applied Health Research, University of Birmingham, Edgbaston Park Road, Birmingham, B15 2TT, UK; s.bartington@bham.ac.uk; g.n.thomas@bham.ac.uk

^c Institute of Microbiology and Infection, University of Birmingham, Edgbaston Park Road, Birmingham, B15 2TT, UK; GLM092@student.bham.ac.uk

^d NHS Oxfordshire Clinical Commissioning Group, Jubilee House, 5510 John Smith Drive, Oxford Business Park South, Oxford, OX4 2LH; cecile.coignet@nhs.net

^e Department of Engineering Science, University of Oxford, Parks Road, Oxford, OX1 3PJ, UK; felix.leach@eng.ox.ac.uk ; tony.bush@apertum.co.uk

^f Ricardo Energy & Environment, Gemini Building, Fermi Avenue, Harwell, Oxfordshire, OX11 0QR. Email: brian.stacey@ricardo.com

^g Oxfordshire County Council, County Hall, New Road, Oxford, OX1 1ND, UK; stuart.cole@oxfordshire.gov.uk; George.economides@oxfordshire.gov.uk; ruth.anderson@oxfordshire.gov.uk

^h Oxford City Council, Town Hall, St Aldate's, Oxford, OX1 1BX; pabreu@oxford.gov.uk

†Joint first authors

*Correspondence to: s.bartington@bham.ac.uk (S.E.B)

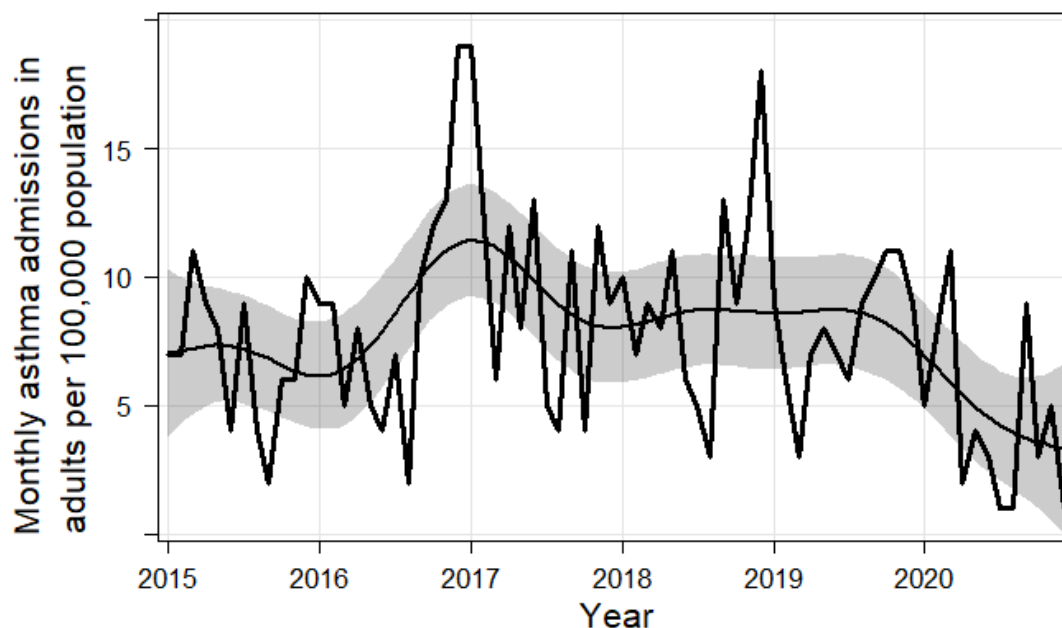


Figure S3 Time series of monthly adult asthma admissions, where the shaded lines represent the smooth fit at the 95% confidence interval.

Table S1 Incidence of adult hospital admissions for acute asthma in 2020 compared with pre-pandemic years (2015 – 2019).

Period	Incidence rate	IRR	95% CI	p value
Pre-pandemic (2015 – 2019) mean	78.29	Baseline		
2020	45.70	0.58	0.42 – 0.81	<0.001

*per 100,000 population

Table S2 Pearson correlation (r) matrix between air pollutant concentrations & meteorology and adult asthma admissions in 2020 versus 2015 – 2019.

Variables	NO ₂	PM _{2.5}	PM ₁₀	Temp	RH
Asthma admission 2015 – 2019	0.31	0.27	0.22	0.34	0.30
Asthma admission 2020	0.22	0.16	0.20	-0.38	0.14