

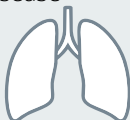
## BIB BREATHES:

HOW WE ARE TACKLING AIR  
POLLUTION - AT A GLANCE



**500** – people  
in Bradford  
die every  
year from  
respiratory  
disease

**13,000+** –  
annual cases  
of COPD in  
community



**41,000** –  
local people  
each year  
diagnosed  
with asthma

**1-in-3** –  
asthma cases  
linked to city's  
air pollution



**4th** – city in  
the UK to  
launch a CAZ

**200** – local  
primary  
school pupils  
trained  
as "citizen  
scientists"



**14+** – schools  
in the city  
fitted with  
indoor and  
outdoor  
pollution  
monitors

**£12m** –  
grants  
obtained to  
help Bradford  
taxi drivers  
upgrade cars



**20%** –  
Bradford  
population  
living in CAZ

**26/09/2022** –  
date Bradford  
CAZ went live



**530,000** –  
Bradford  
residents  
helping  
our impact  
evaluation



## EVIDENCE BRIEFING

### AIR QUALITY: POLLUTION AND HEALTH



## KEY CONTACT

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## WHAT IS THE PROBLEM?

Air pollutants, such as those from vehicle exhausts, negatively impact on the health of both children and adults <sup>[1]</sup>.

Pollution is linked to a range of health issues, including **poor birth outcomes** <sup>[2]</sup>; **cardiorespiratory disease** <sup>[3]</sup>; **lung** <sup>[4]</sup> and **non-lung cancer** <sup>[5]</sup>; and **cognitive development and neurological disorders** <sup>[6]</sup>.

The most recent figures in Bradford suggest that 500 people die from respiratory disease each year. There are over 13,000 diagnosed cases of COPD and more than 41,000 people diagnosed with asthma <sup>[7]</sup>.

**Unfortunately, Bradford has illegal levels of pollution - centred on deprived inner city areas** (see Figure 1).

It is estimated that a third of asthma cases in the city are as a result of air pollution <sup>[8]</sup>. In 2018 Bradford received a ministerial direction to quickly reduce pollution in the city by implementing a **Clean Air Zone (CAZ)**.

Figure 1.  
Concentrations of particulate matter (PM10) for the City of Bradford, at 1x1 meter resolution.  
Credit Dr Kimon Krenz, University College London.  
Contains data from the City of Bradford Metropolitan District Council, Department of Health and Well Being Environmental Health and Ordnance Survey data © Crown copyright and database right 2022.

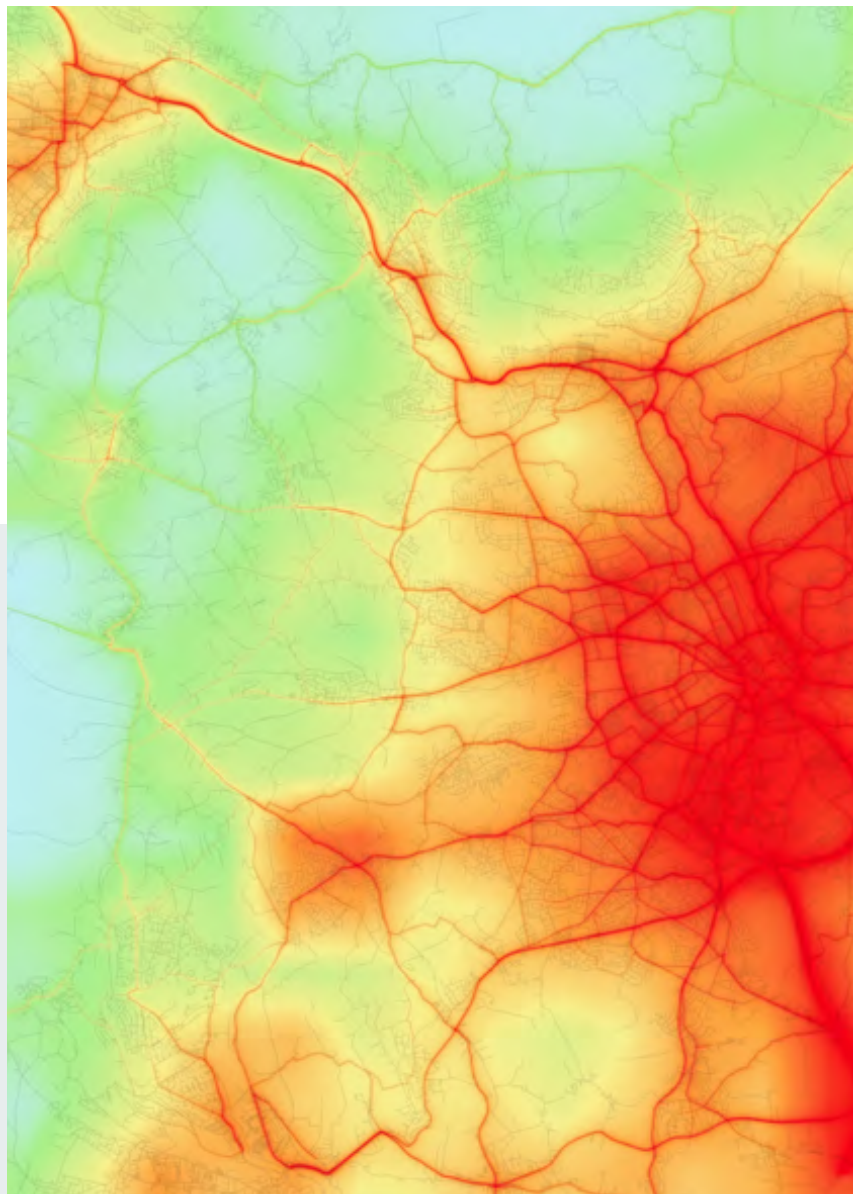
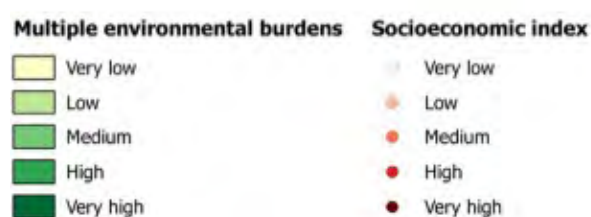




Figure 2. Multiple environmental burdens including noise, pollution and lack of green space in Bradford by socio-economic position (figure from <sup>[14]</sup>)



## WHAT HAVE WE FOUND?

Early BiB research uncovered links between pollution and low birth weight of babies in Bradford <sup>[9]</sup>.

As children grow up, BiB found exposure to air pollution during early life to be related to **higher blood pressure** <sup>[10]</sup> and **poorer cognitive development** <sup>[11]</sup> at ages 4 – 5; and indoor air quality to related to **childhood obesity** at ages 6 – 11 <sup>[12]</sup>.

At a molecular level, our BiB researchers discovered exposure to pollution relates to shorter telomere length (an indicator of biological aging) <sup>[13]</sup>.

Through health impact assessment, our team has shown that poorer communities are subject to a clustering of environmental risk factors that include **greater air**

**pollution, more noise from traffic, and less access to high quality green spaces** (Figure 2).

**These factors exacerbate health inequalities** <sup>[14]</sup>. **Poor air quality does not affect our communities in isolation.**

The *urban exposome* is a term used to refer to a whole set of environmental factors that are experienced in the outdoor urban environment and that may influence health.

In addition to pollution, these factors include **traffic noise, poor access to natural space, the built environment, public transport, facilities and “walkability”**, all of which have been linked to health outcomes <sup>[10, 12, 15]</sup>.

Bradford won praise from England's top doctor for the way we are improving the community's health, especially among children, by reducing air pollution. Professor Sir Chris Whitty, Chief Medical Officer for England, paid a fact-finding visit to the city in the spring for a first hand insight into the way we are breaking new ground in improving air quality - and featured our work in his 2022 annual report. Click here for more details: <https://bit.ly/3YG4sGK>



## WHAT HAS HAPPENED?

We have been working with communities and schools across the district to co-produce and implement interventions to reduce exposure to air pollution.

As part of BiB Breathes project <sup>[16]</sup>, we have trained **over 200 primary school pupils to be "citizen scientists"** - monitoring their pollution exposure using mobile sensors on their journey to and from school.

We have installed **indoor and outdoor pollution monitors in over 14 schools** and have delivered **creativity labs and co-production workshops** to work with children to come up with their own ideas about how to tackle pollution.

Bradford Council developed **a clean air plan which includes the introduction of a CAZ** where older, more polluting commercial vehicles such as buses, vans and taxis will be charged a daily fee for entering the zone. Passenger cars are exempt from charges.

BiB evidence on health impacts, and research with seldom-heard communities, informed the development of the CAZ plans.

Communities told us that they were worried about the health impacts of pollution but also worried about the impact that charging the taxi-trade would have on families already on low incomes <sup>[17]</sup>.

**As a result of this, appropriate mitigation strategies were planned including over £30 million funding to support taxis, buses, lorries and vans to upgrade their vehicles to compliant standards.**

The CAZ boundary encompasses the city's inner ring road and a key corridor out to the North West of the city (*Figure 3*).

The boundary contains approximately 20% of the Bradford population and encompasses an area of 22.4 km<sup>2</sup>, comprised of the most deprived inner-city wards but also includes less deprived wards on the outskirts of the city.

The CAZ went live on September 26, 2022.

**Born in Bradford will evaluate the impact of the Clean Air Zone on health within the city using health data from over 530,000 residents as part of their BiB Breathes project.** <sup>[16]</sup>

Want to know more? Click here: <https://youtu.be/9qeQW3EAF2Q>

## RECOMMENDATIONS FOR POLICY MAKERS

- There are no safe levels of pollution. **Vulnerable communities** living in areas of high deprivation are **disproportionately exposed** to pollution, which increases health inequalities. Local authorities should use **urban and transport planning policy** to reduce exposures at an environment or community level, **targeting areas in greatest need**. The air quality impact of new planning and development applications should be **assessed by local authorities at the design stage**, and appropriate **mitigations** incorporated. **Health equality impact assessments** should be carried out to inform policy and planning decisions to identify possible adverse or unanticipated consequences for vulnerable communities and include suitable mitigations.
- Cities should invest in **affordable and sustainable public transport and active travel infrastructure** which allow communities to easily travel between work, home and leisure without using private vehicles.
- Poor air quality does not affect communities in isolation. Areas with high pollution often suffer from other environmental harms in their built environment such as noise, poor access to green space, lack of facilities and poor walkability - **all of which affect health**. Stakeholders should work with communities to **identify features (both positive and negative) of their local environments** which impact on health and wellbeing and **develop solutions together** to address these, ensuring that a holistic view of community neighbourhoods is taken.
- Young people are key advocates for action to target climate change and reduce pollution. Many schools are located in areas of high pollution and next to busy roads. Schools can act as **accelerators for change** by harnessing local community actors and assets eager for change. Stakeholders should work with schools and communities to **co-produce local action plans**. Implementation of these plans should be support by **policy or legislative change** where appropriate. For example, supporting the provision of interventions such as **school streets**, where schools can close local roads to traffic during school commute times to allow children to safely walk, bike or scoot to school.
- Policy or planning interventions which aim to tackle the sources of pollution, for example, those from vehicles, can impact on some communities more than others. It is recommended that that communities and stakeholders are **engaged at an early stage** and have an opportunity to **shape decisions**. Potential impacts need to be **identified** and plans for **mitigation** developed. **Evaluation of the impact** of these changes on air quality, health and economic outcomes is recommended to understand the **health impact** and **cost-effectiveness** of these interventions.





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