



Taking a **deep** breath: air quality, health and the Bradford Clean Air Plan

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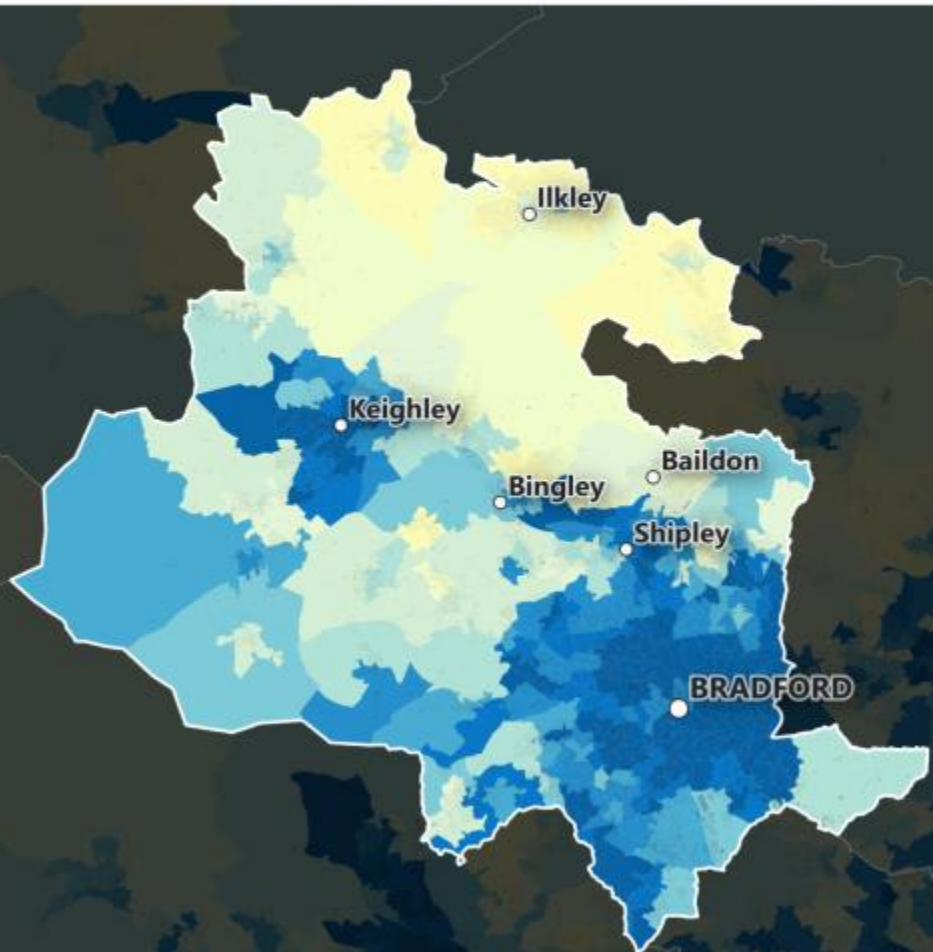


Born in Bradford



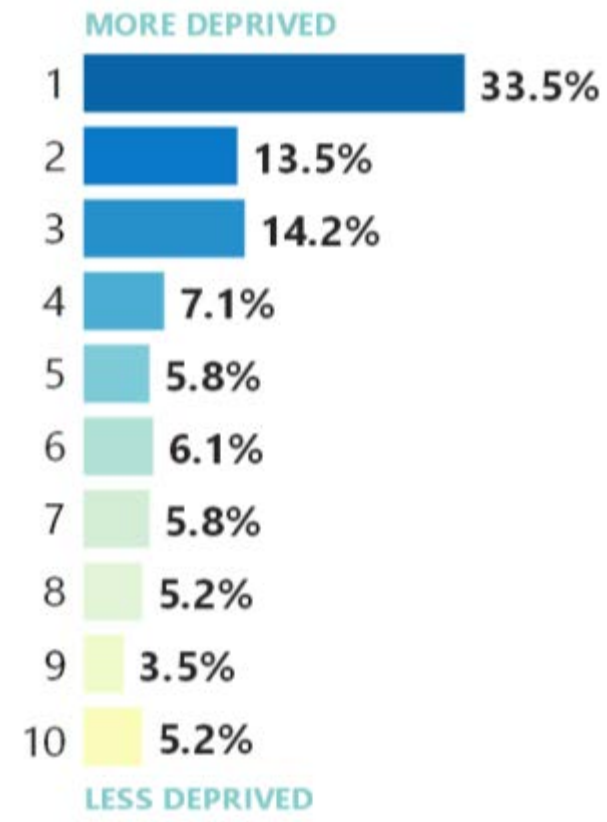
English Indices of Deprivation 2019

BRADFORD



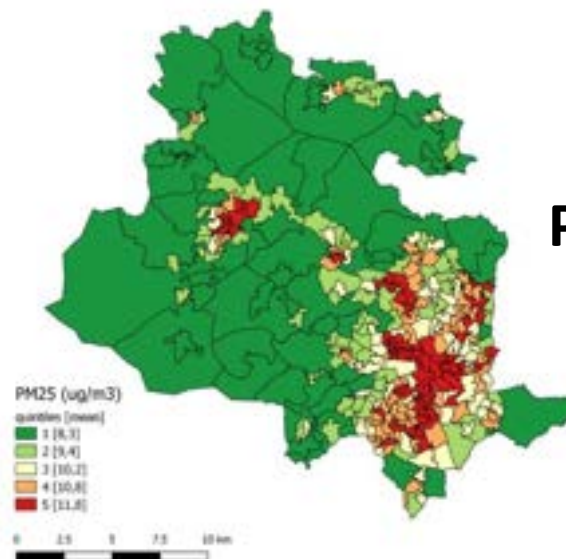
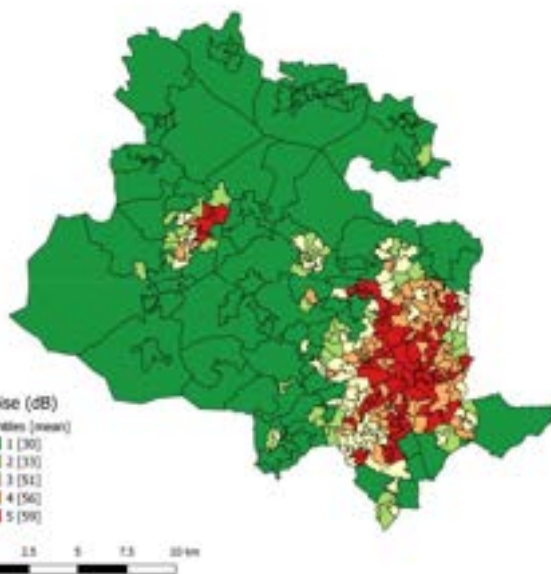
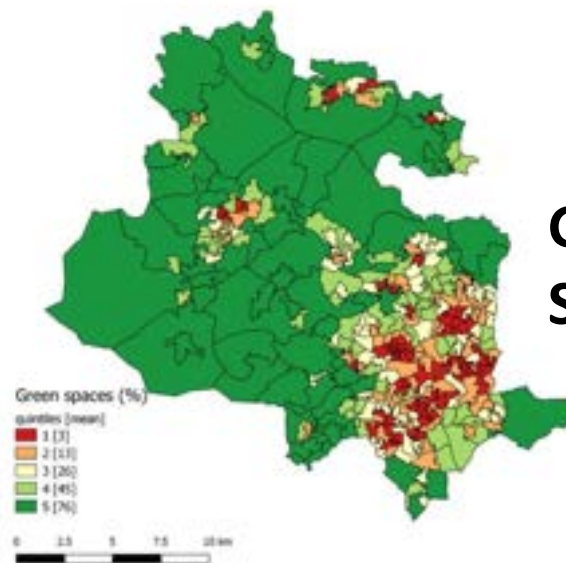
Local deprivation profile

% of LSOAs in each national deprivation decile



1 mile
Mapping: Alasdair Rae, University of Sheffield.

MHCLG, 2019. Contains National Statistics data © Crown copyright and database right 2019.

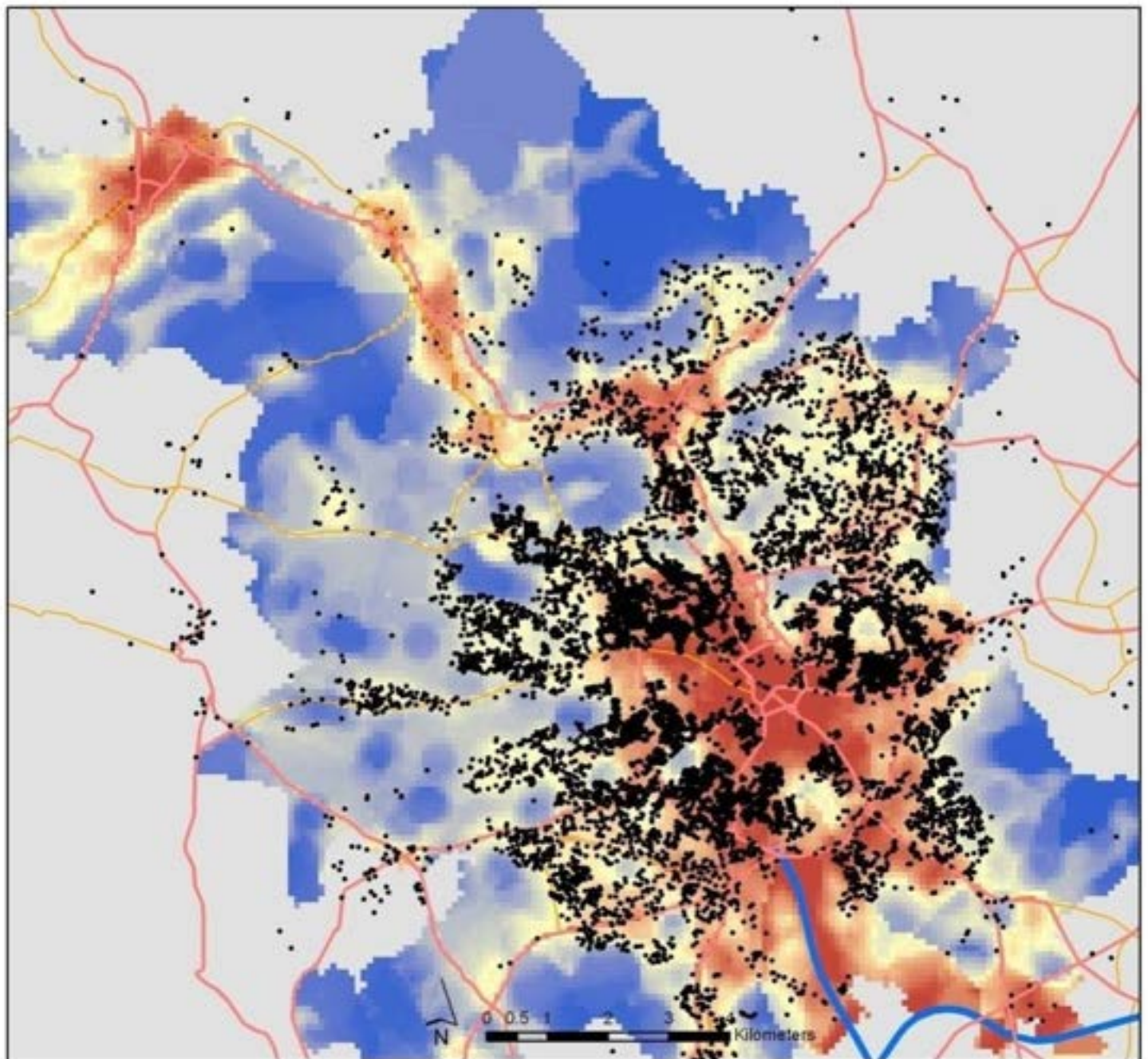
A**B****POLLUTION****C****NOISE****D****GREEN SPACE**

A=Major road network of the Bradford district.
 B=PM_{2.5} concentrations (2009/ 2010) at LSOA level.
 C=Noise levels L_{den} (2006) at LSOA level.
 D=% green space (2012) at LSOA level.



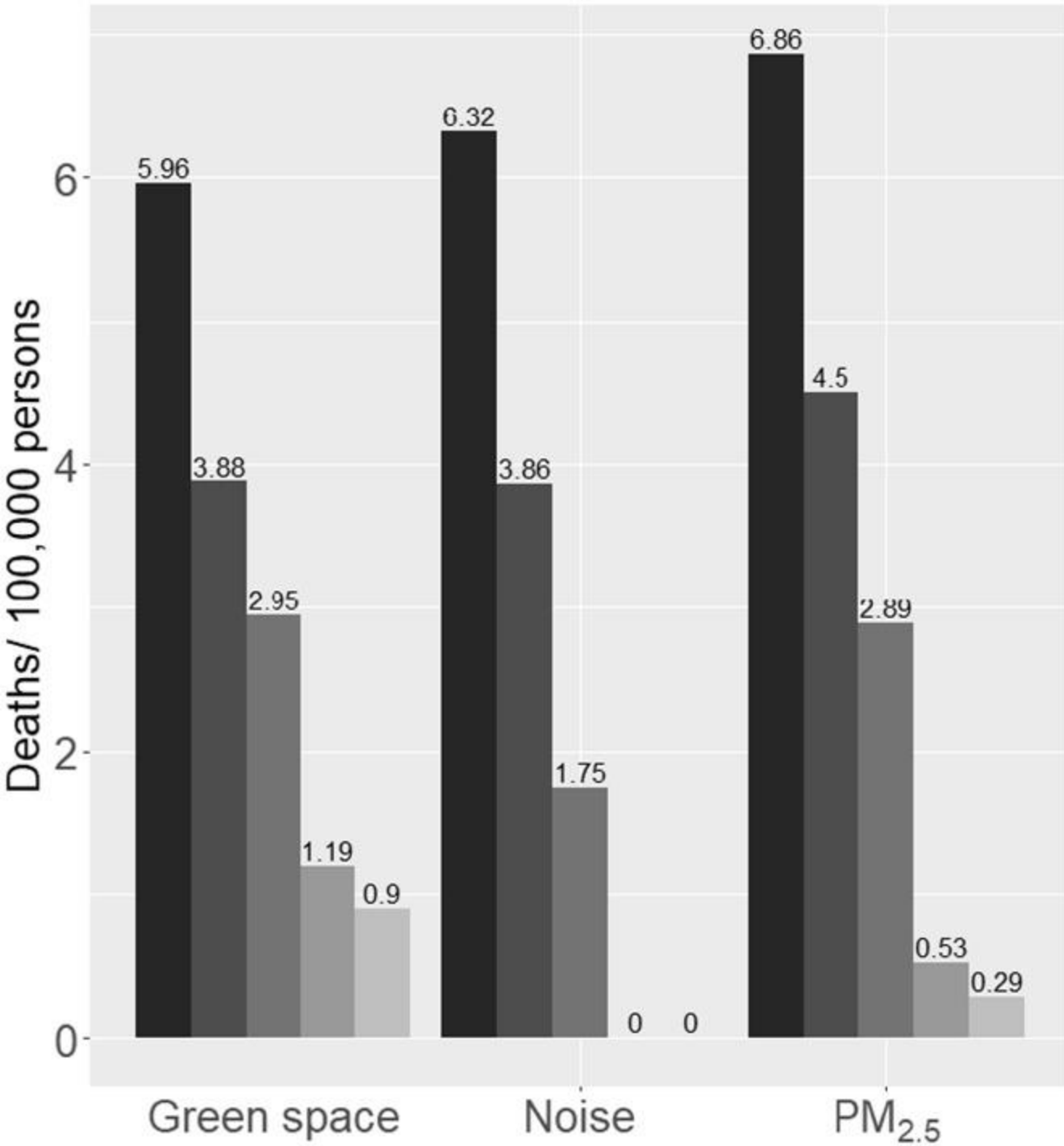


Image from <http://www.thetelegraphandargus.co.uk/resources/images/4576503/?type=responsive-gallery-fullscreen>



HELIX BUILDING THE EARLY-LIFE EXPOSOME





Index of Multiple Deprivation
 ■ Quintile 1 (most dep)
 ■ Quintile 2
 ■ Quintile 3
 ■ Quintile 4
 ■ Quintile 5 (least dep)

Mueller et al 2018,
<https://doi.org/10.1016/j.jenvint.2018.10.017>



City of
BRADFORD
METROPOLITAN DISTRICT COUNCIL



breathe better
BRADFORD

News

12th February

Bradford 'clean air zone' could see HGVs, buses and taxis charged to enter city



By Chris Young | [@ChrisY_TandA](#)
Local Democracy Reporter



A HGV in Bradford city centre



70 comments

Telegraph & Argus



Department
for Environment
Food & Rural Affairs



Department
for Transport

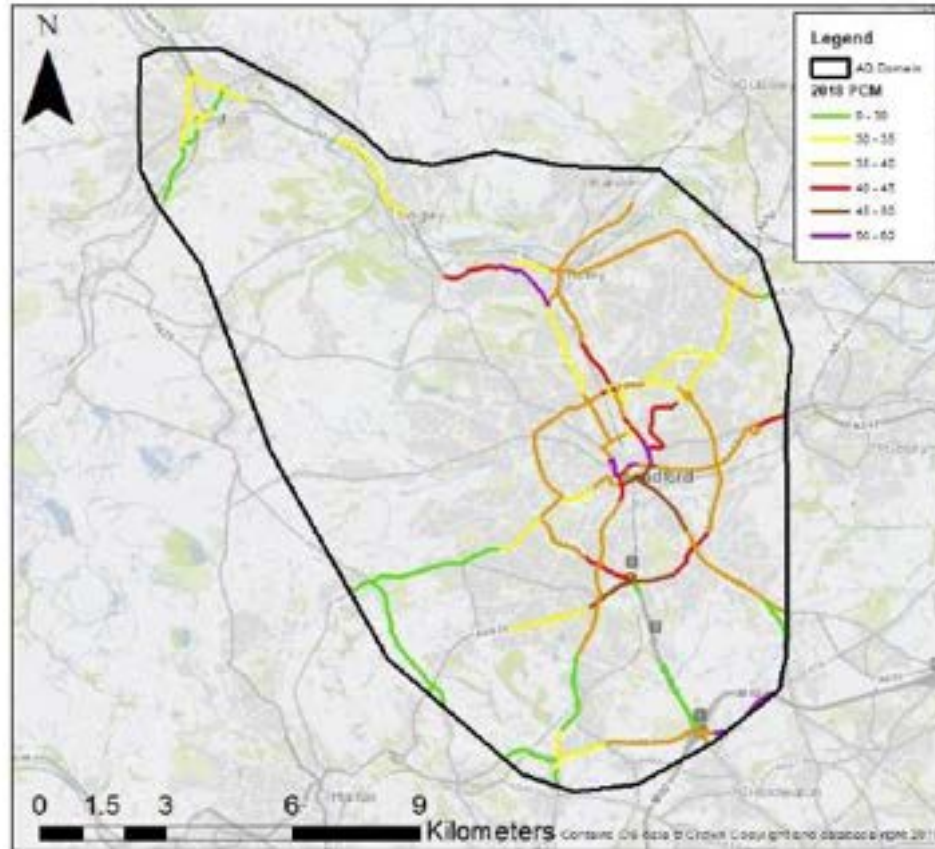
Supplement to the UK plan
for tackling roadside nitrogen
dioxide concentrations

October 2018

The journey in Bradford...

UK plan for tackling roadside nitrogen dioxide concentrations
An overview
July 2017

Clean Air Zone Framework
Principles for setting up Clean Air Zones in England
February 2018



Bradford Feasibility study 2018



Outline Business Case 2019



Full Business Case October 2020



Planned implementation 2021 2022

Views from seldom heard communities in Bradford

I'd say it's very poor quality but then how do you know, you can't see it

A lot of people who are in taxis are in taxis because they have no choice, they don't have anywhere else to go, there's nowhere else they can get jobs

But that smell [from fly-tipping], it's like the dead rat and it happens regularly and this is what we have to live with. For me, living with this is harder than pollution... and the rubbish and fly-tipping. These are the real issues

Sometimes I have to decide if I should eat or if I should pay the bills. We're the wrong people to ask about these things. Owning a car is a luxury. In Keighley we battle to survive

CLASS C



Buses



Coaches



Taxis



HGVs



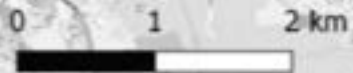
Large Vans



Minibuses



Small Vans





Legend

Relative change in NO₂ concentration (%)

■ -35.00 to -30.00

■ -29.99 to -26.00

■ -25.99 to -21.00

■ -20.99 to -18.00

■ -17.99 to -13.07

□ CAZ area

0 2.5 5 km



- What is the impact of the Bradford Clean Air Plan on:
 - Respiratory health, cardiovascular health and birth outcomes
 - Health inequalities
- What is value for money of the Bradford Clean Air Plan?

FUNDED BY

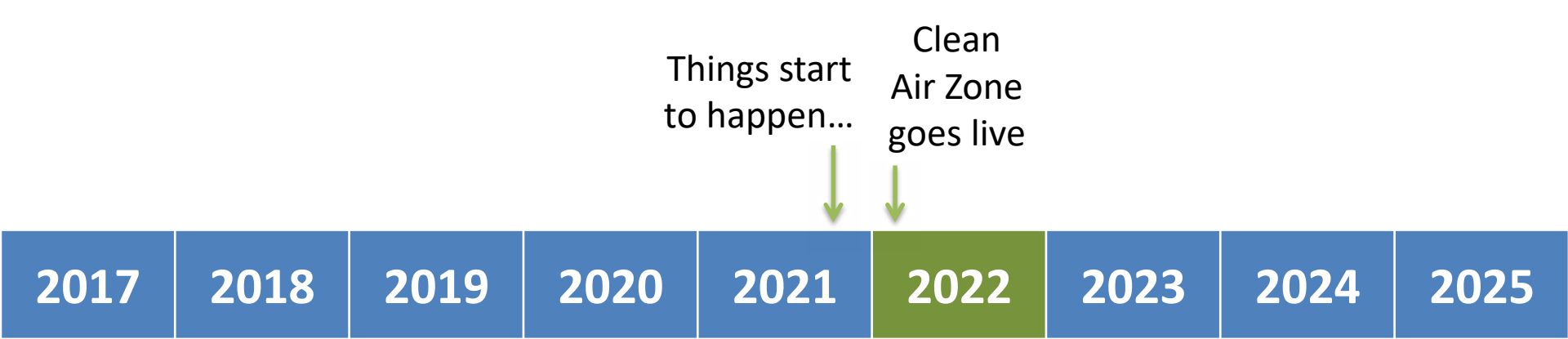


Our City of Research data infrastructure



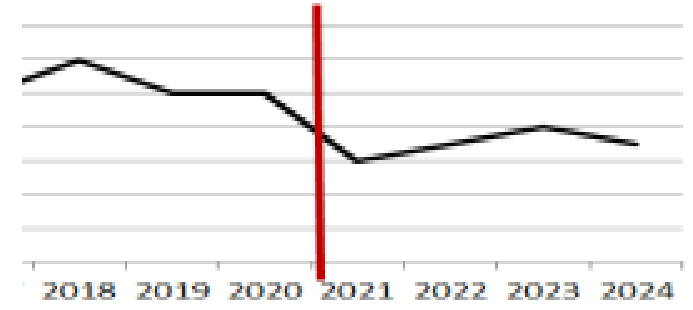
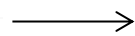
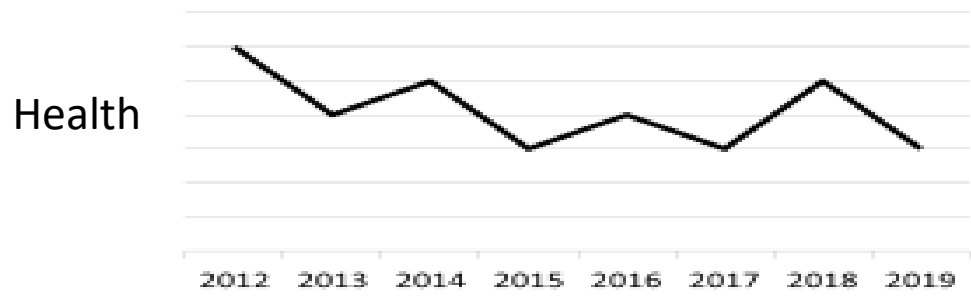
>12,500 BiB Families

>600,000 Bradford Citizens



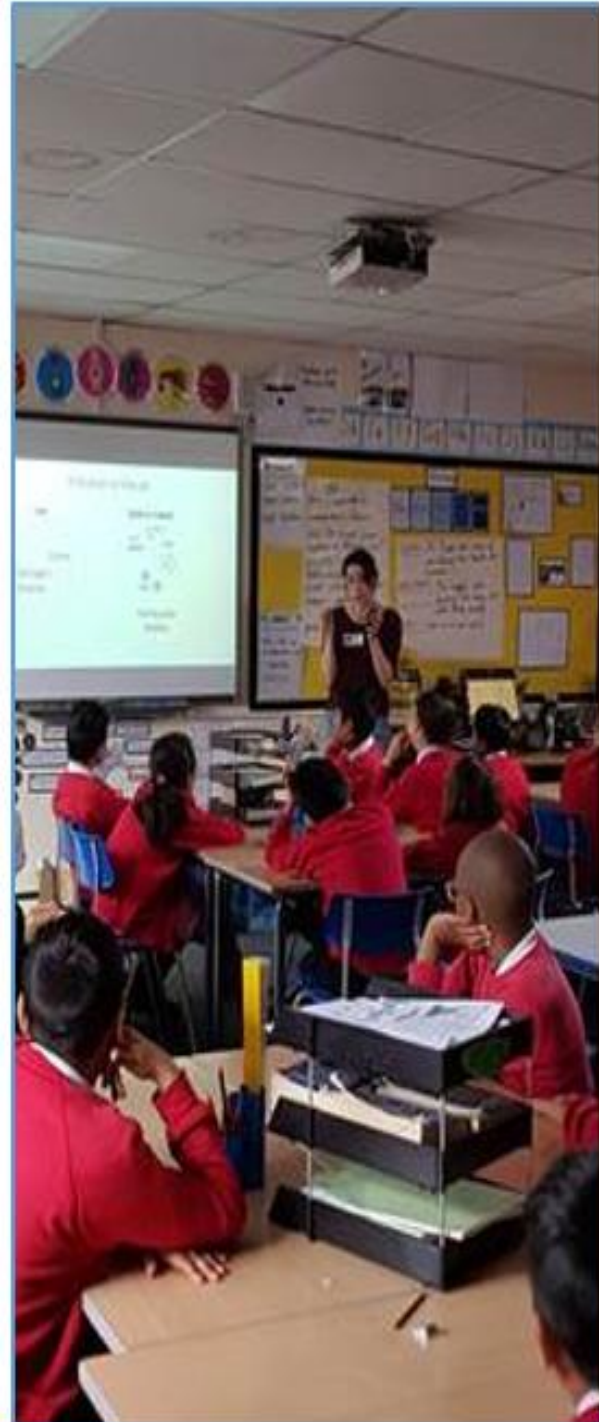
Baseline period

Follow-up



Attitudes and behaviours





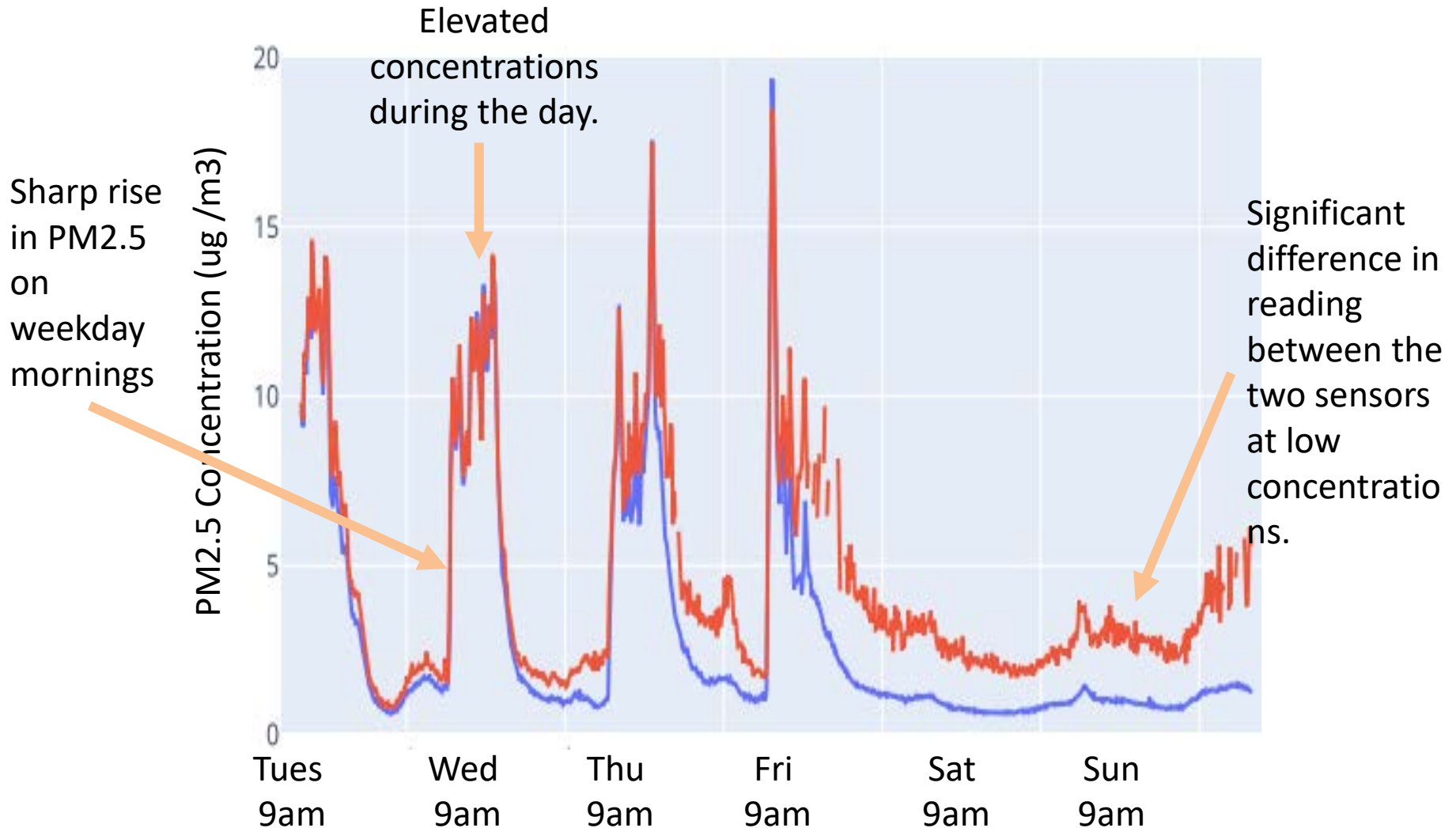
Low

Medium

High



Example data from Static Sensors



Example Time Series: Two indoor R2 sensors placed side by side.



Success
Failure



Born **in** Bradford:
people powered research

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<https://fundingawards.nihr.ac.uk/award/NIHR128833>