



Public Health
England

Protecting and improving the nation's health

Introduction to health indicators for air quality strategies

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Health indicators for air quality strategies

- Public Health Profiles – Fingertips
- Local health
- Strategic Health Asset Planning and Evaluation (SHAPE) place
- Air pollution: a tool to estimate healthcare costs
- Wider Impacts of COVID-19 on Health (WICH) monitoring tool

Public Health Profiles - Fingertips

National Public Health Profiles

[AMR local indicators](#)

[Atlas of Variation](#)

[Cancer Services](#)

[Cardiovascular Disease, Diabetes and Kidney Disease](#)

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[Health Protection](#)

[Inequality Tools](#)

[Inhale - INteractive Health Atlas of Lung conditions in England](#)

[Learning Disability Profiles](#)

[Liver Disease Profiles](#)

[Local Alcohol Profiles for England](#)

[Local Authority Health Profiles](#)

[Local Health](#)

[Local Tobacco Control Profiles](#)

[Marmot Indicators](#)

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[Wider Determinants of Health](#)

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[Link to the Public Health Profiles](#)

[Link to the Public Health Profiles user guide](#)

There is also an API available to access fingertips data as well as packages to help download fingertips data using R (fingertipsR) and Python (fingertips_py).

It is also possible to create bespoke indicator lists and lists of geographies online using the Your Data option.

Public Health Profiles - Fingertips

Compared with England

● Better 99.8%
 ● Better 95%
 ● Similar
 ● Worse 95%
 ● Worse 99.8%
 ● Lower
 ● Similar
 ● Higher
 ○ Not applicable

Quintiles: Best ○ ○ ○ ○ ○ Worst ○ Not applicable

Quintiles: Low ○ ○ ○ ○ ○ High ○ Not applicable

* a note is attached to the value, hover over to see more details

Recent trends:
 → Could not be calculated
 → No significant change
 ↑ Increasing & getting worse
 ↑ Increasing & getting better
 ↓ Decreasing & getting worse
 ↓ Decreasing & getting better
 ↑ Increasing
 ↓ Decreasing

 Export table as image
  Export table as CSV file



Indicator	Period	Sheffield			Region England			England		
		Recent Trend	Count	Value	Value	Value	Worst/ Lowest	Range	Best/ Highest	
Air pollution: fine particulate matter	2019	-	-	8.8	8.4	9.0	12.4		3.8	
Fraction of mortality attributable to particulate air pollution (Persons, 30+ yrs)	2018	-	-	4.0%	4.5%	5.2%	2.4%		7.3%	
Percentage of adults cycling for travel at least three days per week (Persons, 16+ yrs)	2018/19	-	-	1.8%	2.1%	3.1%	0.1%		13.0%	
Percentage of adults walking for travel at least three days per week (Persons, 16+ yrs)	2018/19	-	-	28.3%	20.8%	22.7%	13.1%		47.8%	
Utilisation of outdoor space for exercise/health reasons (Persons, 16+ yrs)	Mar 2015 - Feb 2016	-	-	15.3%	17.5%	17.9%	5.1%		36.9%	

ov.uk/interactive-map.) Data on primary emissions from different sources and a combination of measurement data for secondary inorganic aerosol and models for sources not included in the emission inventory (including re-suspension of dusts) are used to estimate the anthropogenic (human-made) component of these concentrations. By approximating LA boundaries to the 1km by 1km grid, and using census population data, population weighted background PM_{2.5} concentrations for each lower tier LA are calculated. This work is completed under contract to Defra, as a small extension of its obligations under the Ambient Air Quality Directive (2008/50/EC). Concentrations of anthropogenic, rather than total, PM_{2.5} are used as the basis for this indicator, as burden estimates based on total PM_{2.5} might give a misleading impression of the scale of the potential influence of policy interventions (COMEAP, 2012).

Source: Background annual average PM_{2.5} concentrations for the year of interest are modelled on a 1km x 1km grid using an air dispersion model, and calibrated using measured concentrations taken from background sites in Defra's Automatic Urban and Rural Network (<http://uk-air.defra.gov.uk/interactive-map>.) Data on primary emissions from different sources and a combination of measurement data for secondary inorganic aerosol and models for sources not included in the emission inventory (including re-suspension of dusts) are used to estimate the anthropogenic (human-made) component of these concentrations. By approximating LA boundaries to the 1km by 1km grid, and using census population data, population weighted background PM_{2.5} concentrations for each lower tier LA are calculated. This work is completed under contract to Defra, as a small extension of its obligations under the Ambient Air Quality Directive (2008/50/EC). Concentrations of anthropogenic, rather than total, PM_{2.5} are used as the basis for this indicator, as burden estimates based on total PM_{2.5} might give a misleading impression of the scale of the potential influence of policy interventions (COMEAP, 2012).

Public Health Profiles - Fingertips

There are over indicator currently in the public health profiles, available at local authority level and similar geographies but some directly relevant to air quality include:

- Proportion of population living within air quality management areas (2017)
- Annual concentration of human-made fine particulate matter (PM_{2.5}) adjusted to account for population exposure (2019)
- Fraction of mortality attributable to particulate air pollution in those aged 30 and over (2019)

Public Health Profiles - Fingertips

There are also many other indicators that can be useful when looking at air quality, including:

- General demographic and inequality data, including the index of multiple deprivation.
- Data around the wider determinants of health:
 - adults walking/cycling for travel at least three days per week
 - utilisation of outdoor space for exercise/health reasons
 - fuel poverty
- Mortality data:
 - Under 75 mortality rates from respiratory disease and respiratory disease considered preventable (2019 definition)
 - Under 75 mortality rate from all cardiovascular diseases
- Other health data:
 - Obesity in children and adults
 - Smoking prevalence
 - Prevalence of various health conditions

Local Health

Local Health offers a set of tools to explore a selection of health-related indicators at a sub-district level and then to analyse, compare, map and export for further use.

Many indicators are available at an MSOA or ward level and include:

- General demographic and inequality data (population density, age bands, ethnicity, deprivation, unemployment, fuel poverty etc) .
- Life expectancy and mortality from conditions such as respiratory disease, cancers and circulatory diseases (aggregate value 2015 to 2019).
- Emergency hospital admissions for conditions such as chronic obstructive pulmonary disease and stroke (aggregate value 2015/16 to 2019/20).
- Incidence of some cancers, such as lung cancer (aggregate value 2014 to 2018).

[Link to Local Health](#)

Strategic Health Asset Planning and Evaluation (SHAPE) is a web enabled, evidence based application that informs and supports the strategic planning of services and assets across a whole health economy. Its analytical and presentation features can help service commissioners to determine the service configuration that provides the best affordable access to care.

Access to the SHAPE Place Atlas is free to NHS professionals and Local Authority professionals with a role in Public Health or Social Care.

[Link to the main SHAPE website](#)

[Sign up to SHAPE here](#)

SHAPE place

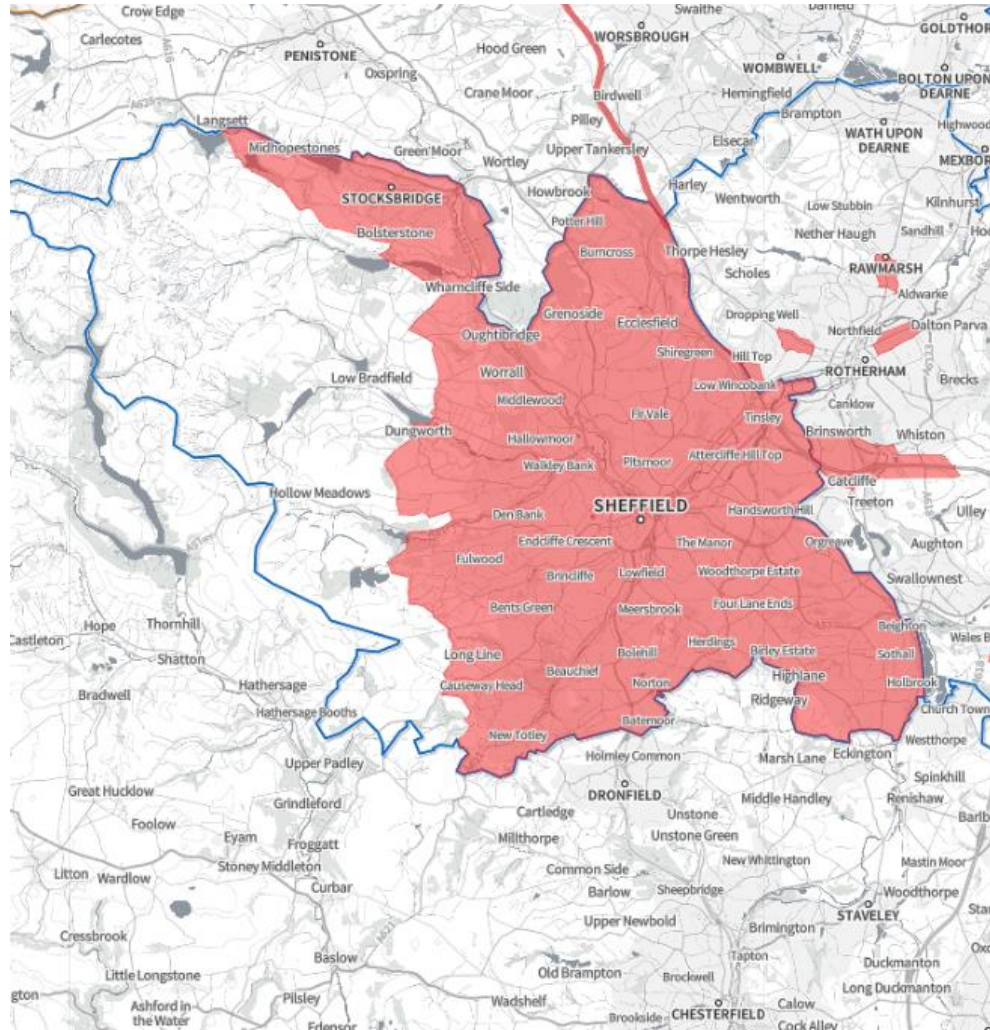
SHAPE includes:

- Environmental layers including:
 - estimates of air pollution at LSOA level (DEFRA 2016) for nitrogen dioxide, particulate matter (10um) and sulphur dioxide
 - air quality management areas
 - flood risk and road traffic noise
- Location of sites such as hospitals, schools, care homes and GP practices.
- Coverage of population density, index of multiple deprivation and ACORN and Wellbeing ACORN.
- Quality Outcome Framework (QOF) indicators 2019/20 for practice prevalence of asthma, chronic obstructive pulmonary disease and cardiovascular disease.
- Travel times and distance from selected points.

SHAPE place - AQMA

Air Quality Management Areas

With open greenspace and access points



○ Air Quality Management Areas (AQMAs)

Since December 1997 each local authority in the UK has been carrying out a review and assessment of air quality in their area. This involves measuring air pollution and trying to predict how it will change in the next few years. The aim of the review is to make sure that the national air quality objectives will be achieved throughout the UK by the relevant deadlines. These objectives have been put in place to protect people's health and the environment.

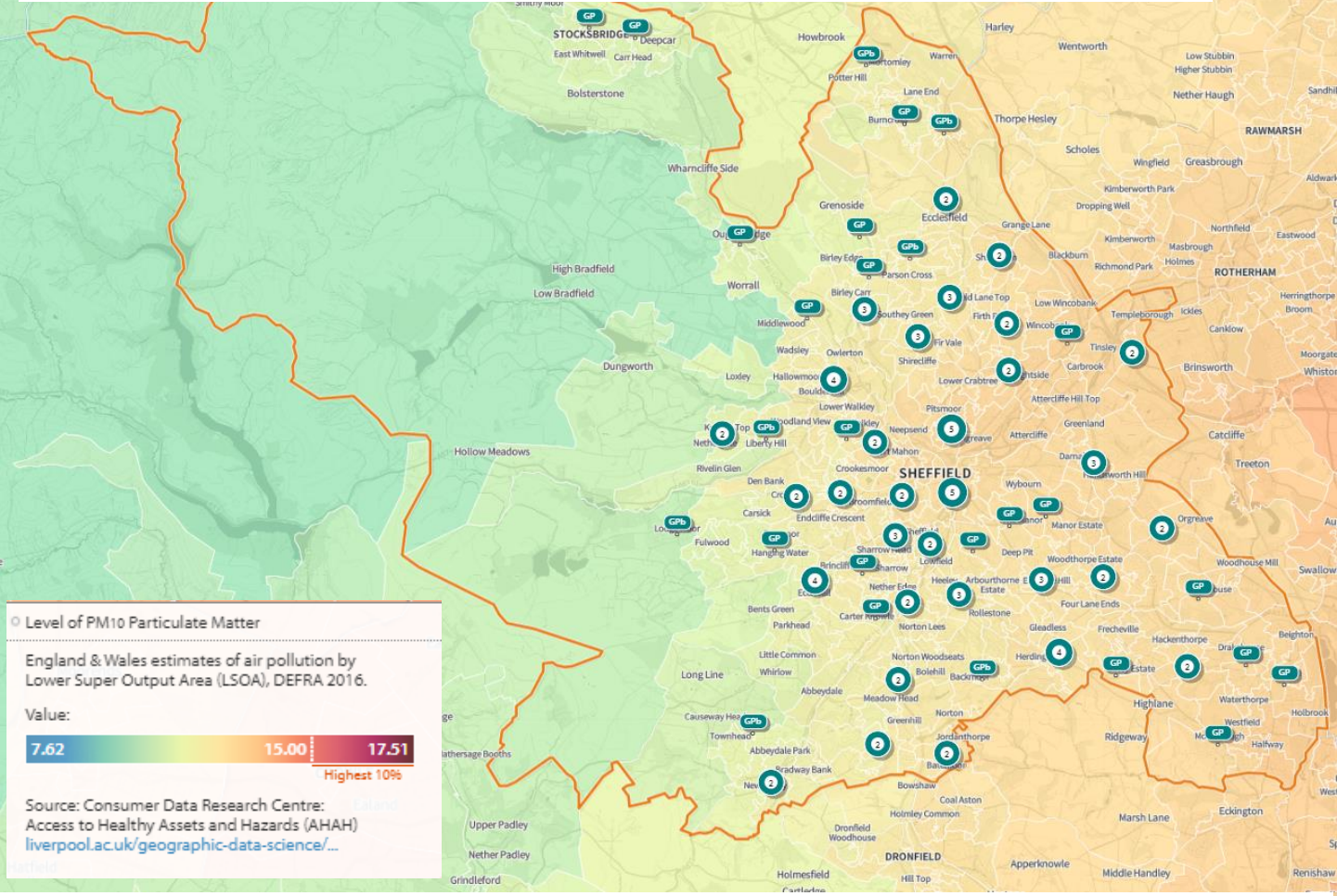
If a local authority finds any places where the objectives are not likely to be achieved, it must declare an Air Quality Management Area there. This area could be just one or two streets, or it could be much bigger.

Then the local authority will put together a plan to improve the air quality - a Local Air Quality Action Plan.

Defra UK Air: January 2020
uk-air.defra.gov.uk/aqma/

SHAPE place - locations

Level of PM10 particulate matter with GP practice locations



Level of PM10 Particulate Matter

England & Wales estimates of air pollution by Lower Super Output Area (LSOA), DEFRA 2016.

Value:

7.62 15.00 17.51

Highest 10%

Source: Consumer Data Research Centre: Access to Healthy Assets and Hazards (AHAH) [liverpool.ac.uk/geographic-data-science/...](http://liverpool.ac.uk/geographic-data-science/)

Location Focus Interpretation

Area

CCG Local Authority

South Yorkshire and Bassetlaw

- All
- NHS Barnsley CCG
- NHS Bassetlaw CCG
- NHS Doncaster CCG
- NHS Rotherham CCG
- NHS Sheffield CCG

Secured content

- Pharmaceutical Needs Assessment data 2018

Category

- Primary care
- 108 GP practice, branch practice

15 Primary Care Networks

- 90 Health Centre, Clinic, Walk in Centre
- 124 Pharmacy
- Secondary care
- Other
- NHS Trust
- NHS Property Services & LIFT
- Urgent & Emergency Care
- Independent healthcare provider
- Clinical service
- Infrastructure
- Local dental service
- COVID-19 vaccination sites
- Community Diagnostic Hubs
- User added location

Attribute overlay

CCC Primary care

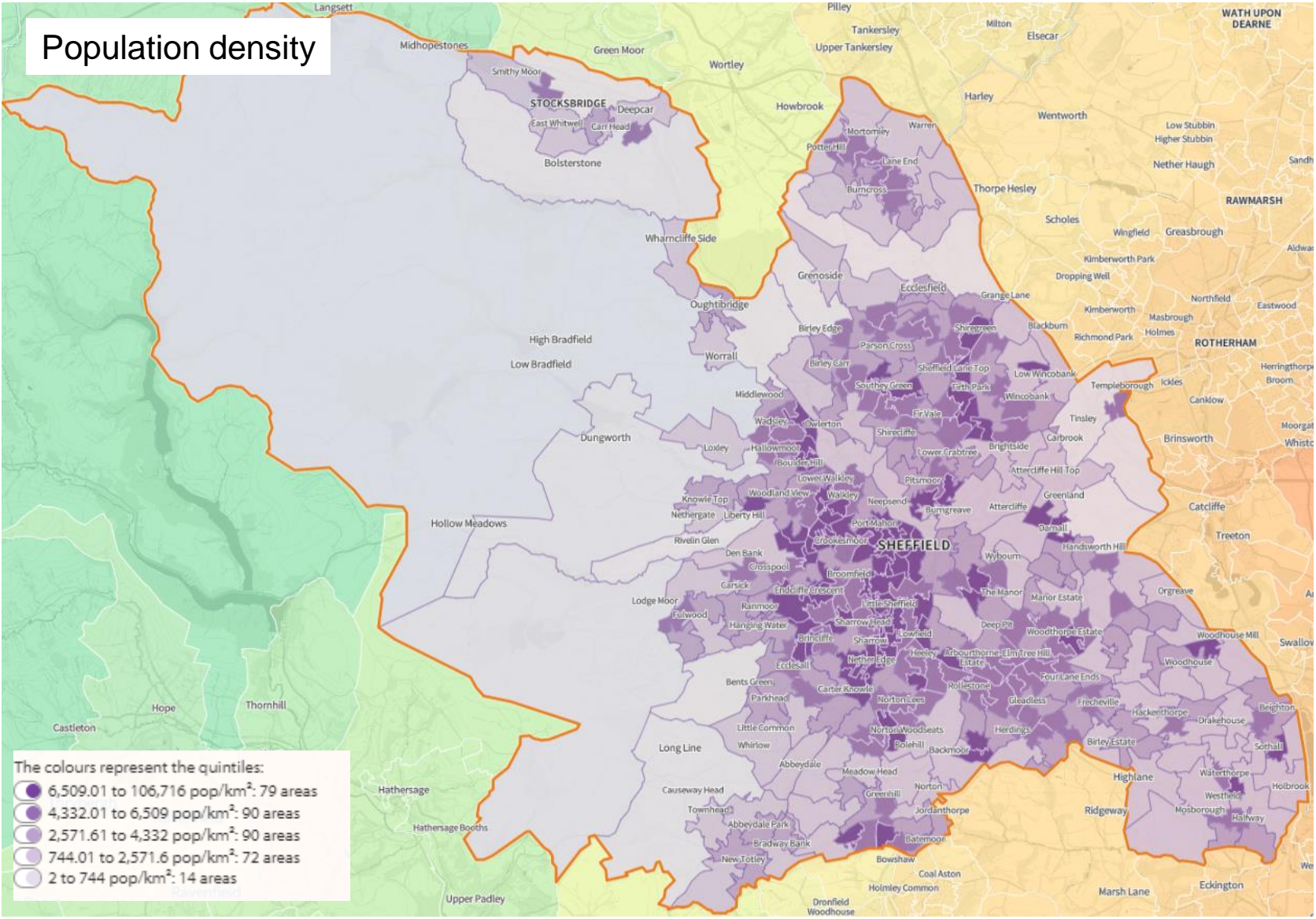
Care Quality Commission

- 78 Has CQC assessment

CQC overall rating

- 1 Outstanding
- 75 Good
- 2 Requires improvement
- 1 No assessment

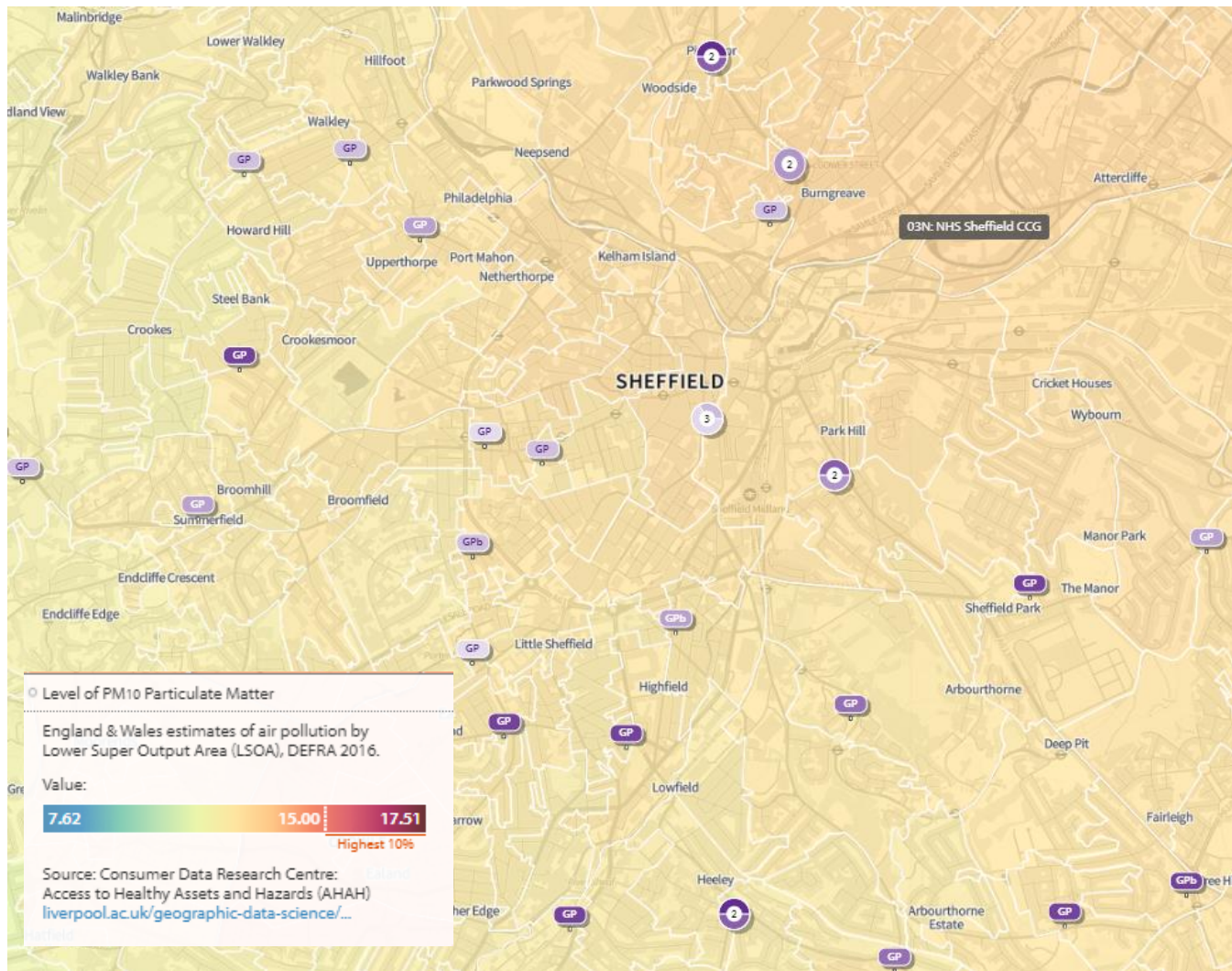
SHAPE place – mappable indicators



Introduction to health indicators for air quality strategies

SHAPE place – quality outcomes framework

Population density



The indicator shows the recorded prevalence of patients with asthma expressed as a percentage of the practice list size for 2019/20.

NHS Sheffield CCG's recorded prevalence of patients with asthma is 6.86% for year 2019/20. The England-wide GP distribution is 0.71% to 34.67% with a mean value of 6.49%.

- Key**
- Values for GP practices within the selected boundary are shown.
- The colours represent the quintiles:
- 7.65% to 34.67%: 49 practices
 - 6.95% to 7.64%: 20 practices
 - 6.25% to 6.94%: 40 practices
 - 5.34% to 6.24%: 21 practices
 - 0.71% to 5.33%: 7 practices

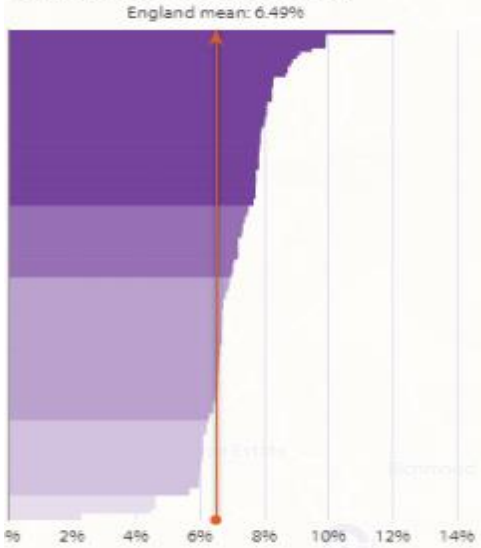
Data

Register: 42,249
List size: 615,556

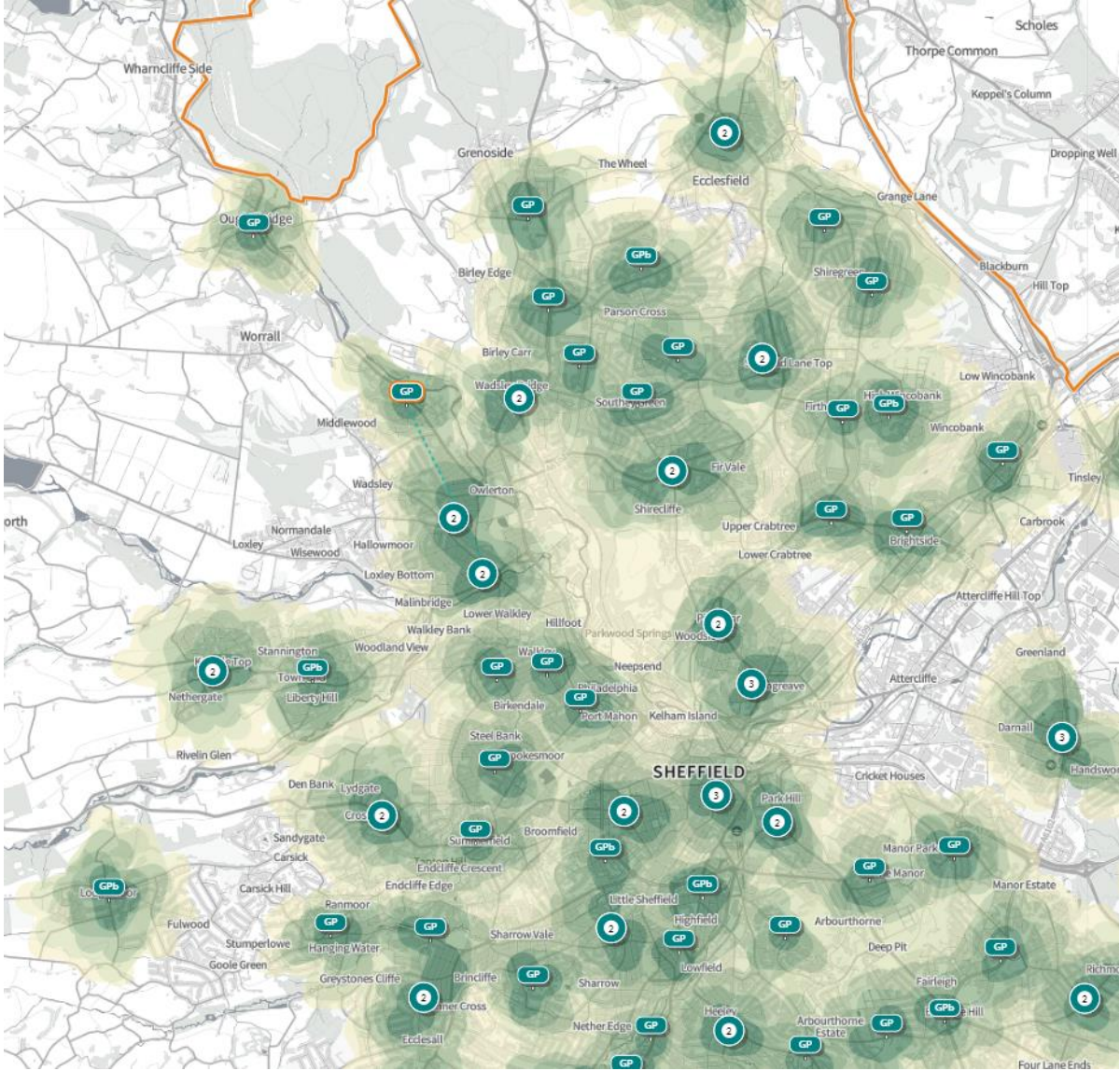
NHS Digital: QOF results for year 2019/20 digital.nhs.uk/quality-and-outcomes/2019-20

Distribution

The chart shows the recorded QOF prevalence of patients with asthma for year 2019/20.



SHAPE place – Travel times and distance



Introduction to health indicators for air quality strategies

Air pollution: a tool to estimate healthcare costs

The UK Health Forum and Imperial College London, in collaboration with, and funded by Public Health England, carried out a modelling study to quantify the potential costs to the NHS and social care system due to the health impacts of fine particulate matter (PM2.5) and NO2.

The cost of air pollution tool quantifies the potential costs to the NHS and social care due to the health impacts of particulate matter (PM2.5) and nitrogen dioxide (NO2) in England and separately for each local authority.

The tool has the ability to test different 'what if' scenarios for the reduction of air pollution, such as a given reduction in the levels of air pollution on the future impact of health and related cost. The outputs include the number of disease prevalence cases and costs avoided due to a given scenario relative to a baseline ('no change') scenario.

[Link to the air pollution webinar recording](#)

[Link to the air pollution – a tool to estimate healthcare cost website](#)

Air pollution: a tool to estimate healthcare costs

Example of tool here

Wider Impacts of COVID-19 on Health (WICH) monitoring tool

The Wider Impacts of COVID-19 on Health (WICH) monitoring tool is designed to allow you to explore the indirect effects of the COVID-19 pandemic on the population's health and wellbeing. WICH presents a range of health and wellbeing metrics in interactive plots that can be broken down to show differences between groups. Indicators tend to be at a national or regional level.

There are a number of categories available, including:

- Social determinants of health (social capital, access to outdoor space, income and employment, mobility)
- Mental health and wellbeing
- Behavioural risk factors (physical activity, alcohol, smoking)
- Air quality
- Mortality and life expectancy
- Access to care

[Link to the WICH tool](#)

WICH tool – Air quality

For air quality there are currently only three areas available (London, Manchester and Birmingham) for three pollutants, ozone, nitrogen dioxide and fine particulate matter (2.5 $\mu\text{g}/\text{m}^3$).

Weekly mean concentration of particulate matter (PM2.5) by city

