Maps

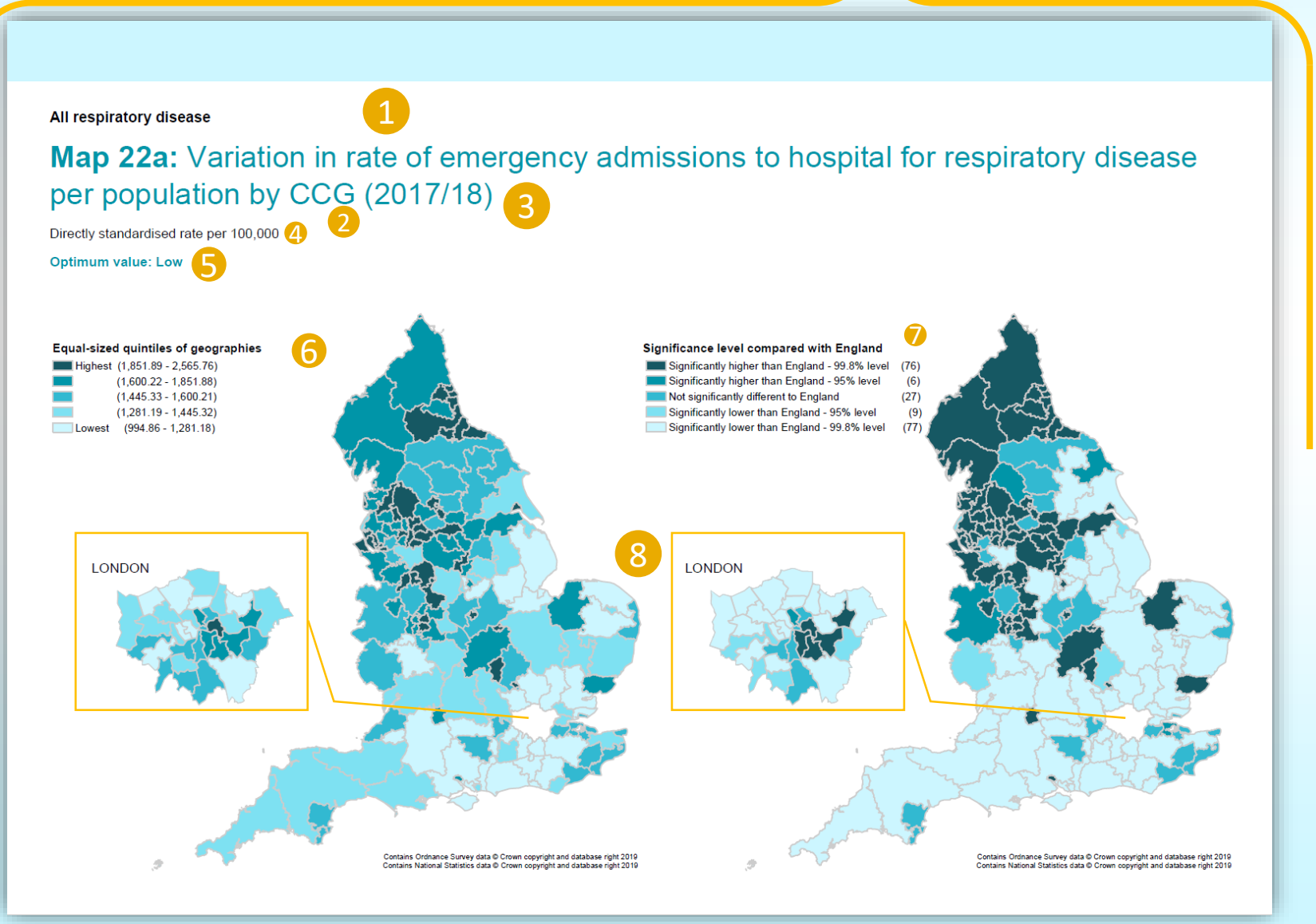
1 **Type of statistic** (e.g. rate, proportion)

2 **Geographic boundaries**

3 **Year of data presented**

4 **Rate calculated per x number of people**

5 **Optimum values** Low indicates lower values are preferential (high indicates higher values are preferential). Local interpretation maybe required for some indicators.



6 **Equal sized quintiles** The number of areas presented on the map are divided equally between the 5 categories with those with the highest values forming the 'Highest' group etc.

For example, in 2018 there were 195 CCGs, so 39 CCGs are in each category. Darker areas have the highest values.

7 **Significance level compared with England** The darkest and lightest shading on map shows CCGs whose confidence intervals do not overlap with the England value.

The second darkest and lightest colours show areas where the England value falls between the CCG's 95% and 99.8% CI.

The number in brackets indicates the number of CCGs in each category.

8 **London** is presented as a separate zoomed in map for clarity.

Quick user guide

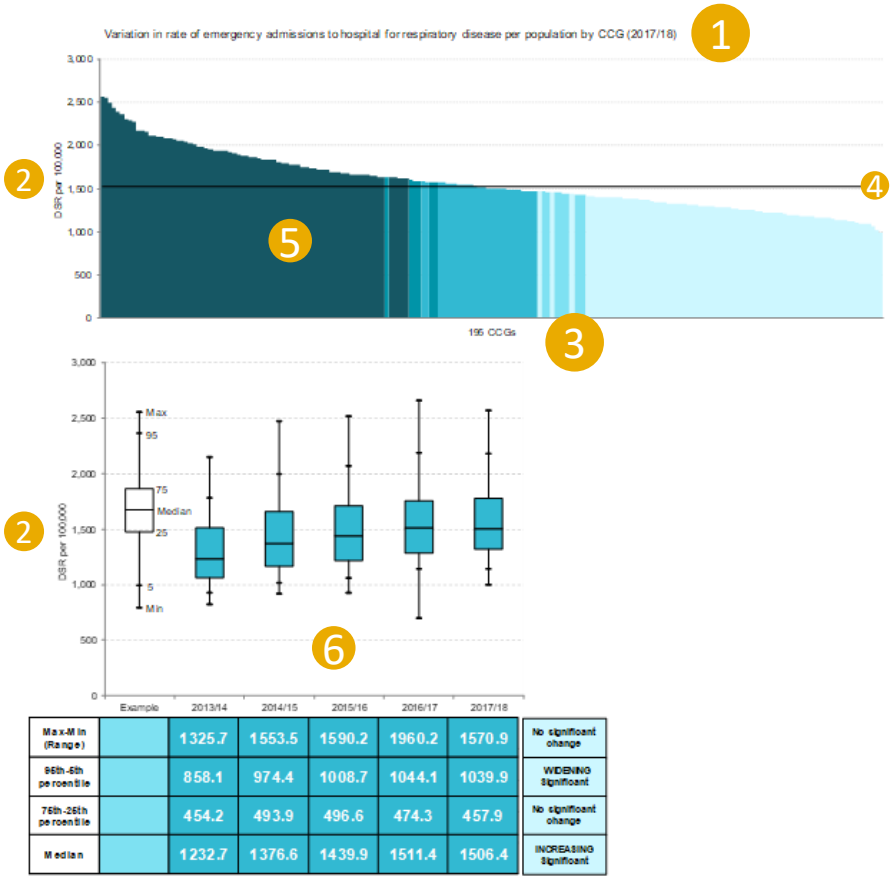
Chart, box plot and table

1. Title shows indicator details including: value type, geography and year .

2. The y-axis plots the value and gives details of the value type e.g. rate / proportion and the unit e.g. per 100,000 population.

3. The x-axis shows the geography and the number of areas on chart.

4. The line shows the England average.



5. Each bar represents an area (e.g. a CCG). The height of the bar is relative to the value for that area. Collectively, the bars show the spread of values across England.

   The colour of the bar represents how significant the area's value is in relation to England based on the area's confidence interval. Areas utilise the same colours and categories as the maps.

   Areas that are significantly higher than England at a 99.8% or 95% level are shown as darker bars whereas those with lower significance to England, at a 99.8% or 95% level, are lighter. The colour in the middle represents areas that are not significantly different from England.

   Where the significance bar chart shows little variation across the CCGs, the equal interval map colours have been used.

6. For each indicator, data is presented visually in a time series of box and whisker plots. The box plots show the distribution of data.

   The line inside each box shows the median (the mid-point, so if the 195 CCGs were sorted in order of value, the value halfway between the CCGs in the 97th and 98th position would give the median). The bottom and top of the teal box represents the values which 25% and 75% of the areas fall below. 50% of the areas have a value within this range.

   The whiskers mark the values at which 5% and 95% of areas fall below. The median and maximum values are also shown.

   The time series allows us to see how the median has changed over time, but also whether the gap between the extreme values has changed.

   The table accompanying the box and whisker plots shows whether there has been any statistically significant change in the median, or in the degree of variation over time.

7. **Sections in the chapter**

   Context – provides an overview of why the indicator is of public health interest

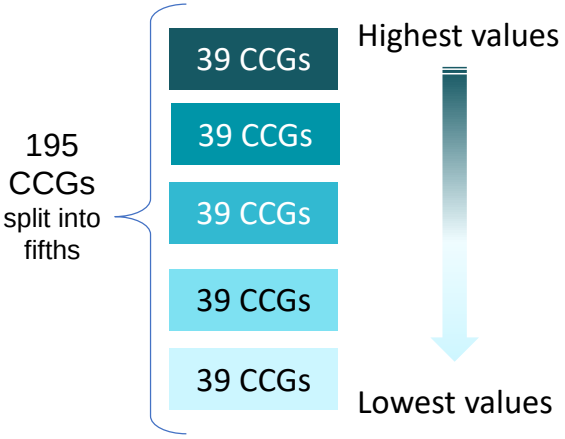
   Magnitude of variation – provides commentary in relation to the chart, box plot and table

   Option for action – gives suggestions for best practice

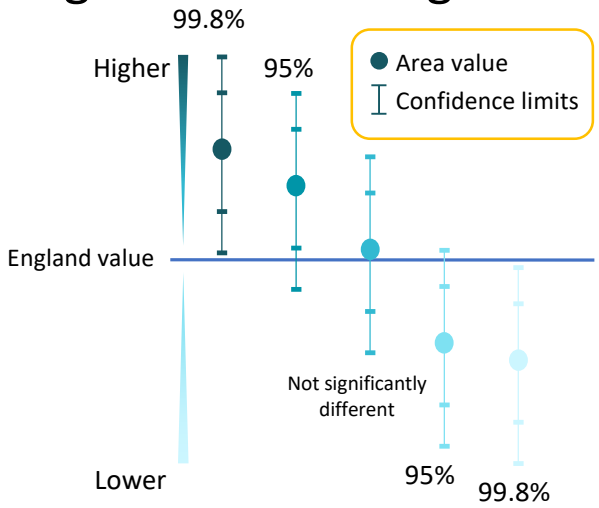
   Resources – gives links to useful documents

How were the categories calculated?

Equal-sized quintiles



Significance to England



Confidence intervals give an estimated range in which the true CCG value lies.

Where the CCG's confidence interval does not overlap with the England value, the CCG is classed as being *significantly higher or lower than England at a 99.8% level*.

If the England value lies between the 99.8% and 95% CI, this value is classed as being *significantly higher or lower than England at a 95% level*.

Where the England value is between the upper and lower 95% CI, the CCG is classed as *not being significantly different from England*.

Box & whisker plot

Whiskers
Show the extreme values in the dataset.

Box
50% of the data values lie between the 25th and 75th percentile. The distance between these is known as the inter-quartile range (IQR).

Maximum The value of the area with the highest value.

95th percentile 95% of areas have values below this.

75th percentile 75% of areas have values below this.

Median (50th percentile) The median is the middle value of an ordered dataset. Half of the observations are below it and half above.

25th percentile 25% of areas have values below this.

5th percentile 5% of areas have a value below this.

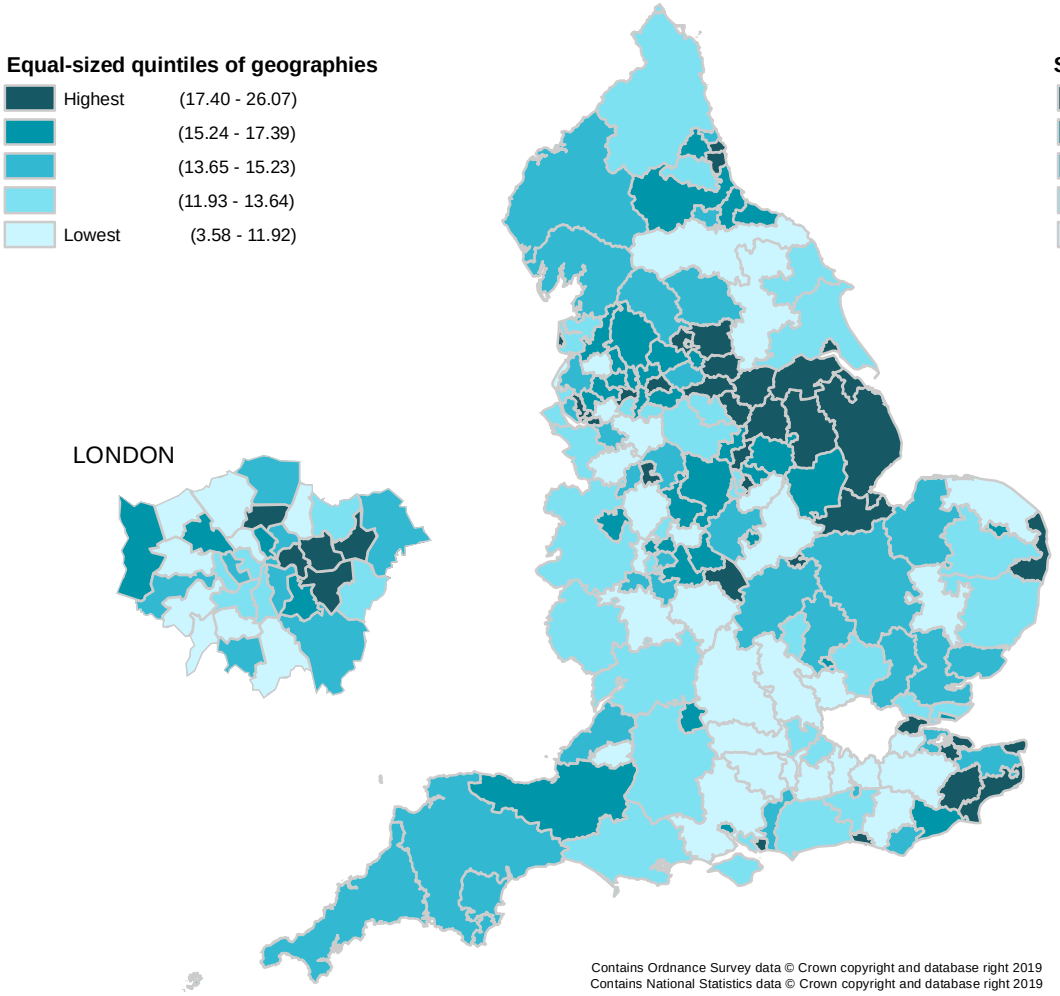
Minimum The value of the area with the lowest value.

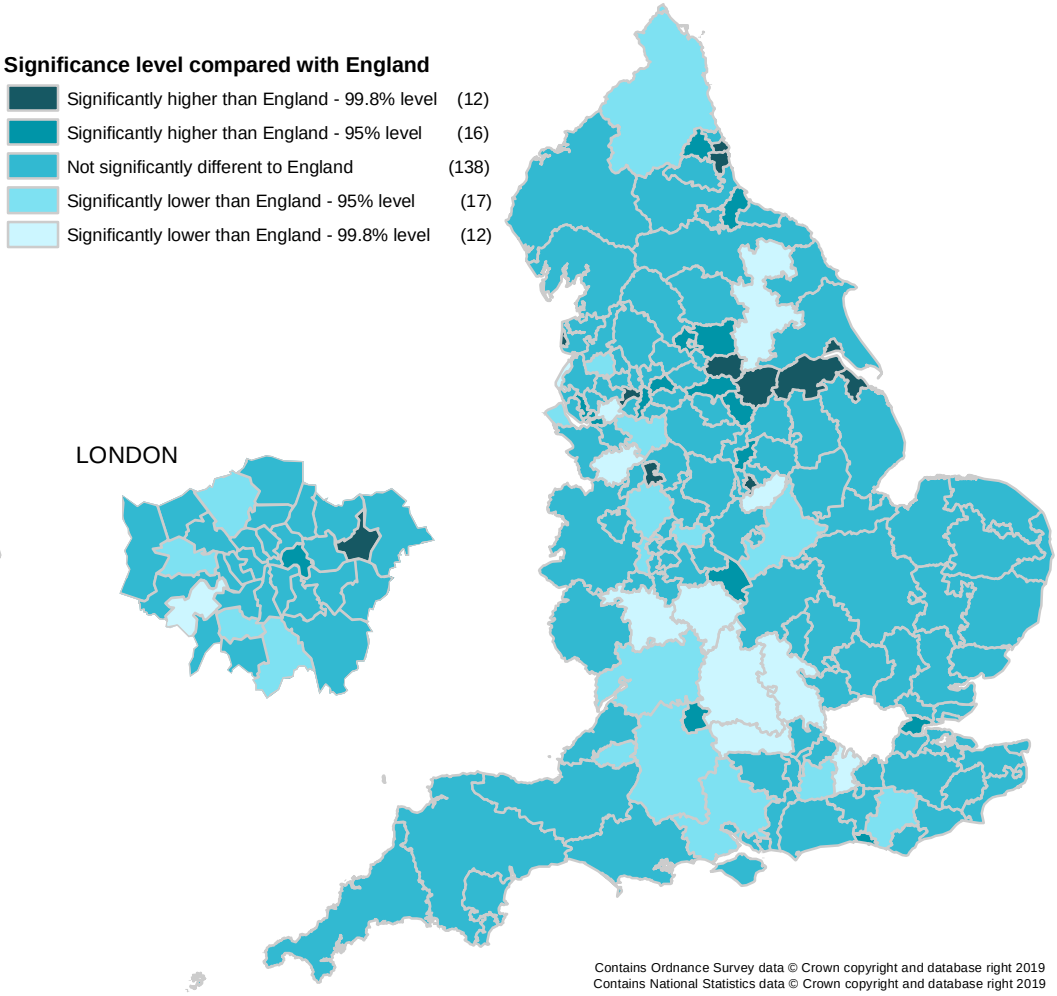
Box plot percentile	CCG rank position (195 CCGs in 2018)
Max	195
95%	Mid value between values of CCGs in ranks 185 and 186
75%	Mid value between values of CCGs in ranks 146 and 147
50% - Median	Mid value between values of CCGs in ranks 97 and 98
25%	Mid value between values of CCGs in ranks 48 and 49
5%	Mid value between values of CCGs in ranks 9 and 10
Min	1

Risk factors – Smoking

Map 1a: Variation in percentage of people aged 18 and over self-reporting as smokers by CCG (2018)

Optimum value: Low

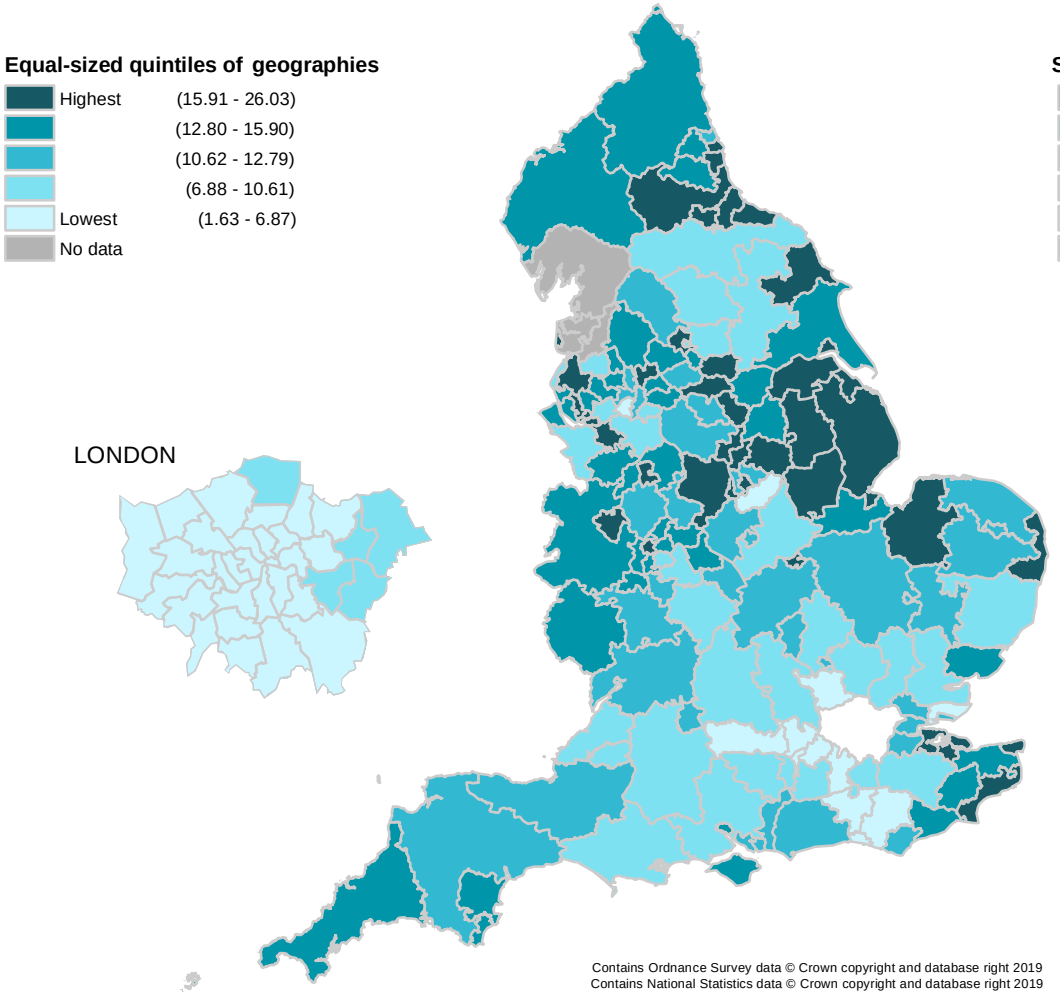


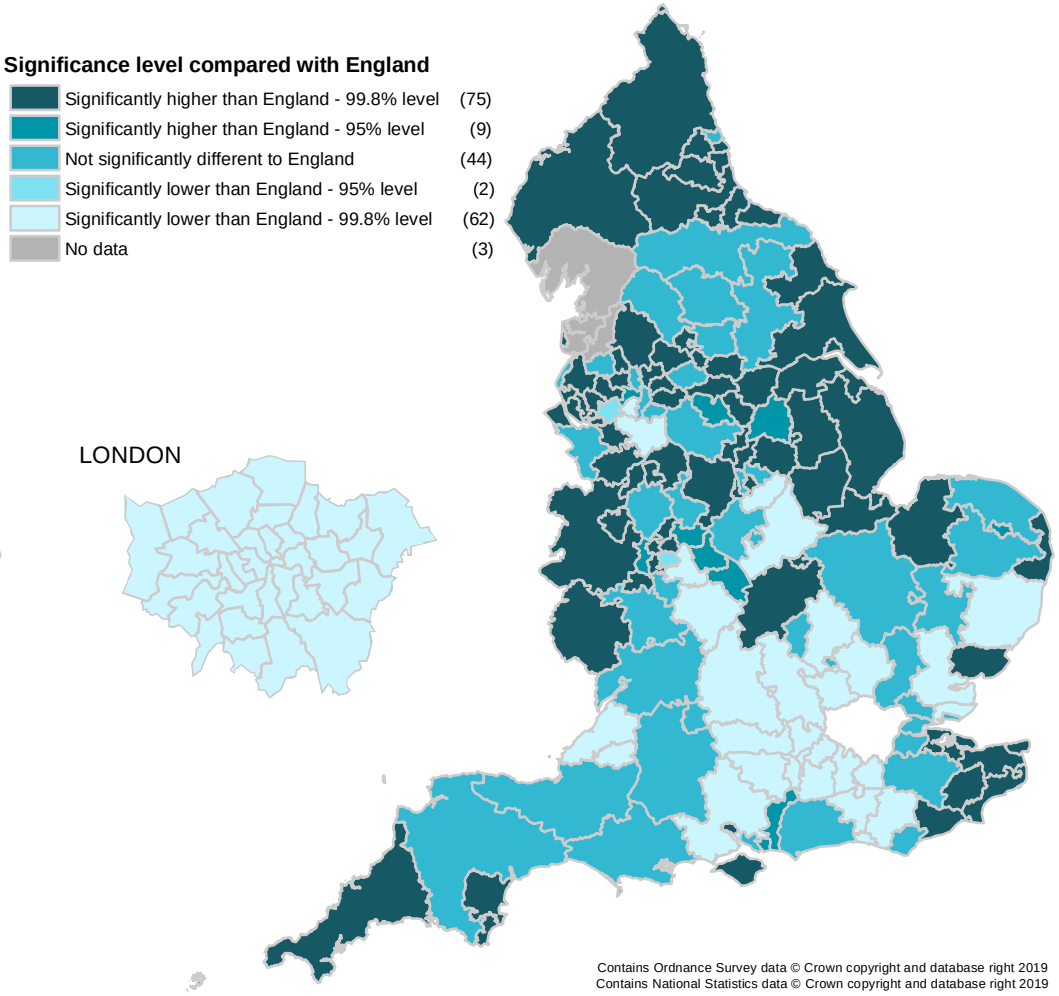


Risk factors – Smoking

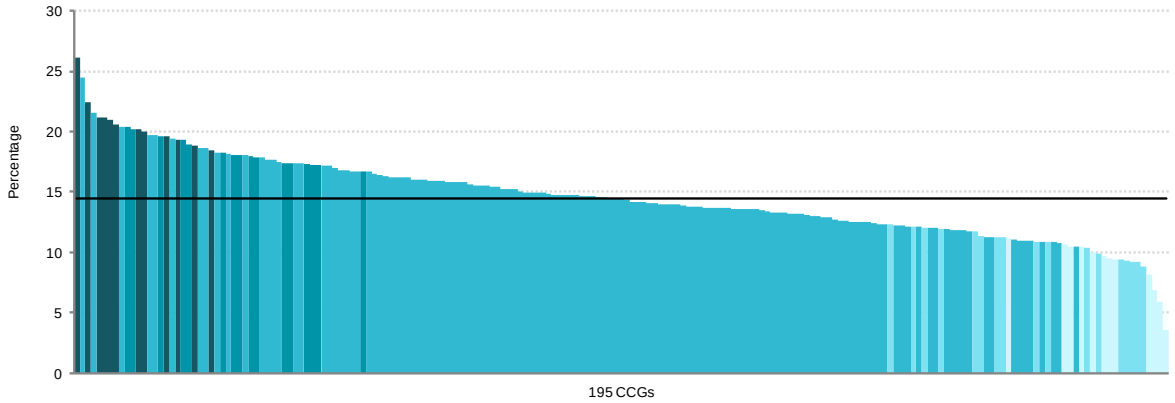
Map 1b: Variation in percentage of women who are known to smoke at time of delivery by CCG (2017/18)

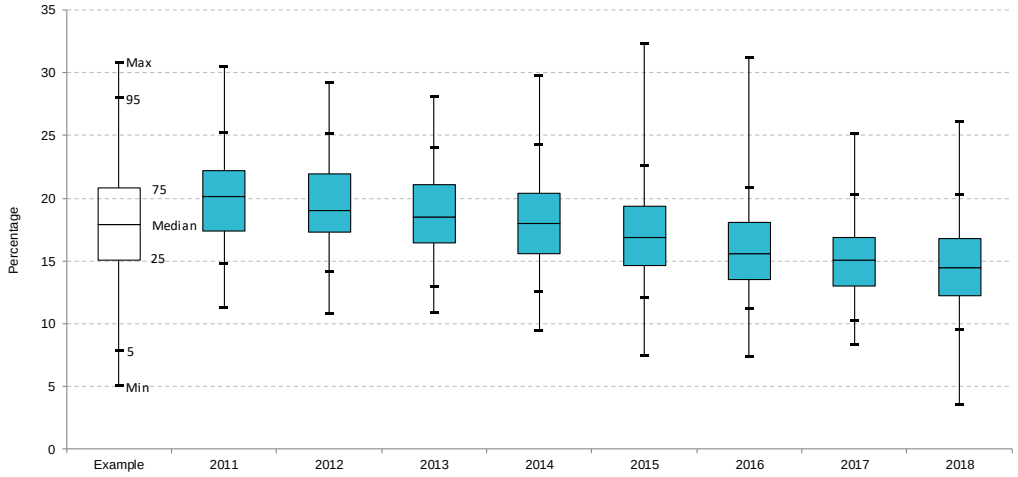
Optimum value: Low





Variation in percentage of people aged 18 and over self-reporting as smokers by CCG (2018)



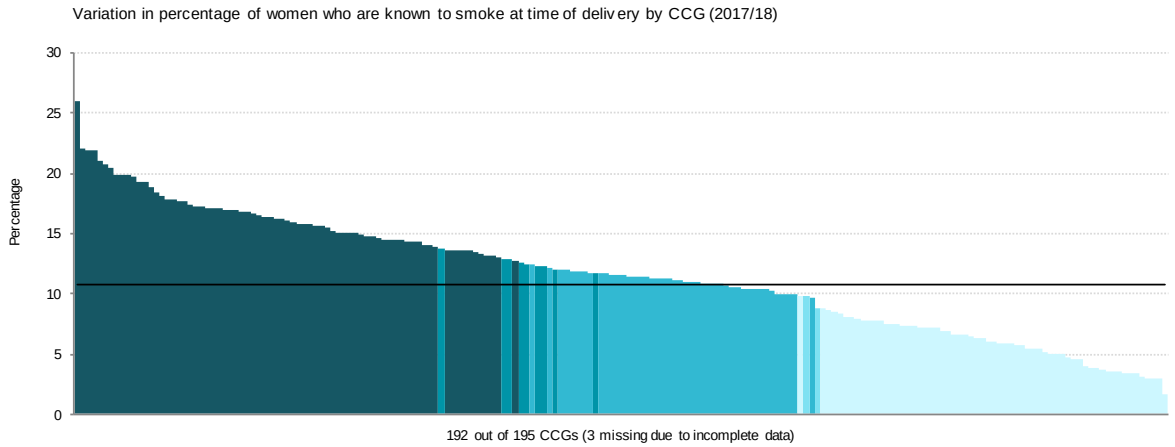


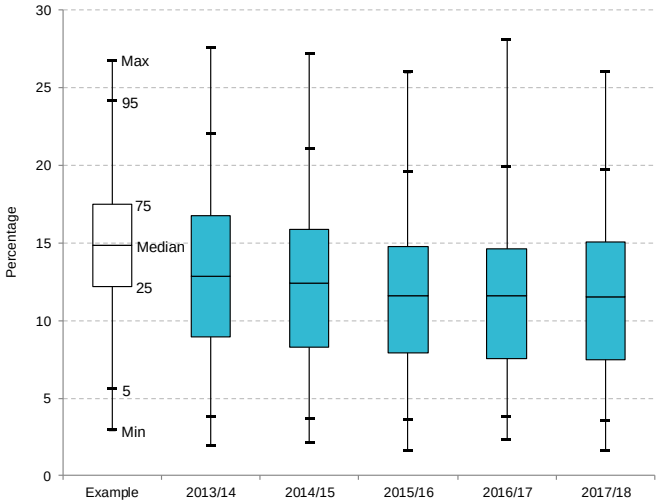
Max-Min (Range)		19.2	18.4	17.2	20.4	24.8	23.8	16.9	22.5	No significant change
95th-5th percentile		10.4	11.0	11.1	11.7	10.5	9.7	9.9	10.8	No significant change
75th-25th percentile		4.8	4.6	4.6	4.9	4.7	4.6	3.9	4.5	No significant change
Median		20.1	19.0	18.5	17.9	16.9	15.6	15.1	14.5	DECREASING Significant

Context

Smoking remains the leading cause of preventable illness and premature death in England.[1] Smoking is associated with many diseases, including respiratory disease, cardiovascular disease and cancers; the Royal College of Physicians' Hiding in Plain Sight report provides a useful summary of the health impacts of smoking.[2] Table 1.1 summarises the association between smoking and a variety of respiratory diseases. In England in 2016/17 22% of all hospital admissions for respiratory disease (excluding cancer) were attributable to smoking, and 37% of respiratory deaths.[3] Smoking is estimated to cost the NHS approximately £2.6 billion a year.[4]

Secondhand smoke is also associated with many diseases including respiratory disease, cardiovascular disease and cancer. Exposure to cigarette smoke pre-birth or 'in utero' is known to affect lung development,[5] and increase the risk of wheeze and asthma in children.[6] One pooled analysis of 21,600 pre-school children from 8 European birth cohorts found a 65% (95% CI 18% to 131%) increased risk of asthma among children aged 4 to 6 years whose mothers smoked during pregnancy, with the risk increasing in relation to daily cigarette consumption during the first trimester of pregnancy.[7]





Max-Min (Range)		25.7	25.1	24.4	25.8	24.4	No significant change
95th-5th percentile		18.3	17.3	16.0	16.1	16.2	No significant change
75th-25th percentile		7.8	7.6	6.9	7.1	7.6	No significant change
Median		12.9	12.4	11.6	11.6	11.6	DECREASING Significant

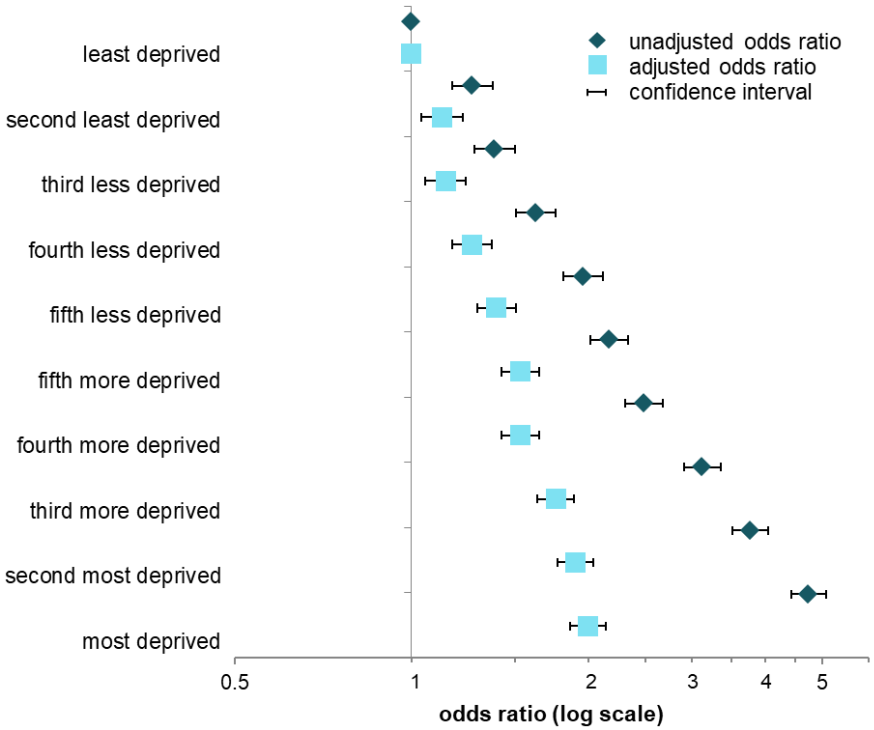
Table 1.1: Association of current smoking status with respiratory disease risk (including lung cancer)[2]

Disease	Estimated relative risk (95% CI) for current smokers relative to non-smokers
Lung Cancer	10.92 (8.28–14.40)
COPD	4.01 (3.18–5.05)
Asthma	1.61 (1.07–2.42)
Tuberculosis	1.57 (1.18–2.10)
Pneumonia	2.18 (1.69–2.80)
Influenza (clinically diagnosed)	1.34 (1.13–1.59)
Influenza (microbiologically confirmed)	5.69 (2.79–11.60)
Idiopathic Pulmonary Fibrosis	1.58 (1.27–1.97)
Obstructive Sleep Apnoea	1.97 (1.02–3.82)

Smoking prevalence in England has declined in the general population year on year and is now at a record low, with 14.9% of people aged 18 years and over who are current smokers (6.1 million people).[8] However, inequalities persist and there are still groups where smoking rates remain stubbornly high, such as among people in manual occupations (around 1 in 4 are smokers[8] and individuals who suffer with a serious mental illness (40.5%[9]). Even when other factors such as age, sex, occupation, ethnicity are adjusted for, the most deprived decile are twice as likely compared to the least deprived to smoke (Figure 1.1).

Smoking during pregnancy is also a major health inequality, with prevalence varying significantly across communities and social groups. Data from antenatal bookings found that mothers in the most deprived decile were over 5 times more likely to be current smokers than those in the least deprived decile (19.8% to 3.7%).[10] The last infant feeding survey

Figure 1.1: Odds* of smoking by deprivation decile, England 2016[11]



*Adjusted odds ratios accounting for age, sex, ethnicity, religion, occupation, marital status, sexual identity, general health, disability, educational qualifications, housing type and benefits status.

(2010) found that mothers in routine and manual occupations were also 5 times as likely to smoke throughout pregnancy than professional and managerial workers, while those under 20 were 6 times as likely as women aged 35 years and over.[12]

The most effective smoking cessation intervention is comprised of 2 key elements: behavioural support and medication or nicotine replacement. Those who use a combination of face-to-face, individual or group support and medication or nicotine replacement are estimated to experience improved quit rates around 2 to 3 times higher.[13] Stop smoking services in the UK are assessed to be both highly effective and provide value-for-money.[14] While some of the return on investment is long-term, there are also clear benefits and evidence of shorter term gains; a secondary care based smoking cessation service in Canada led to a 50% reduced risk of all-cause readmission within 30 days (adjusted, 95% CI 28%-66%).[15]

Commissioning of community stop smoking services in England has predominantly been by local authorities. It is however crucial that interventions to treat tobacco dependence are embedded across all primary and secondary care services, particularly considering improved health outcomes from smoking cessation. Total spend per smoker by local authorities on stop smoking interventions and tobacco control activity has reduced by 25% since 2013/14 (Figure 1.2). However, the need remains for effective tobacco dependence treatment for patients who smoke. The interventions are recommended by NICE and includes frontline health professionals discussing smoking with their patients, with stop smoking support offered on site or referrals to local services. The Royal College of Physician's recent report on treating tobacco dependency in the NHS concluded:

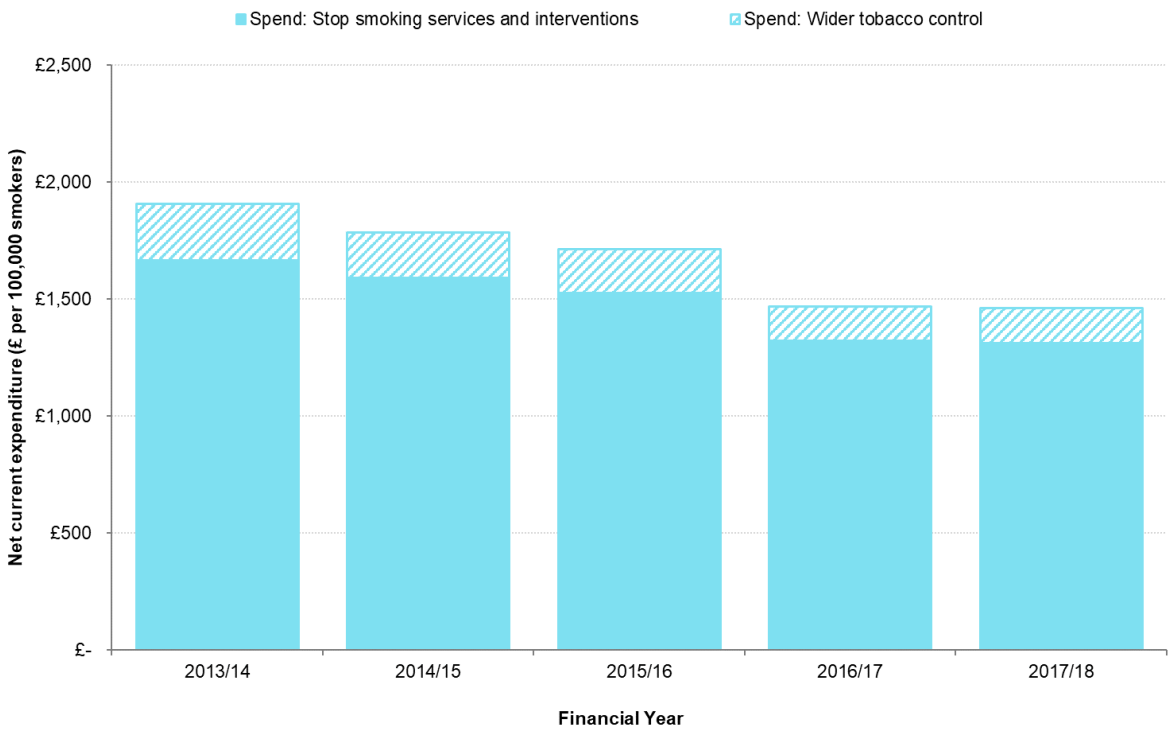
"Smoking is the largest avoidable cause of death and disability, and of social inequalities in health, in the UK. Preventing smoking should therefore be the highest priority in medicine"[2]

Magnitude of variation

Map 1a: Variation in percentage of people aged 18 and over self-reporting as smokers by CCG (2018)

The maps and column chart display the latest period (2018), during which CCG values ranged from 3.6% to 26.1%, which is a 7.3-fold difference between CCGs. The England value for 2018 was 14.4%. The box plot shows the distribution of CCG values for the period 2011 to 2018.There was no

Figure 1.2: Spend on stop smoking services and tobacco control per 100,000 smokers, local authorities in England[16]



significant change in any of the 3 variation measures between 2011 and 2018. The median decreased significantly from 20.1% in 2011 to 14.5% in 2018.

Map 1b: Variation in percentage of women who are known to smoke at time of delivery by CCG (2017/18)

The maps and column chart display the latest period (2017/18), during which CCG values ranged from 1.6% to 26.0%, which is a 16.0-fold difference between CCGs. The England value for 2017/18 was 10.8%. The box plot shows the distribution of CCG values for the period 2013/14 to 2017/18.

There was no significant change in any of the 3 variation measures between 2013/14 and 2017/18. The median decreased significantly from 12.9% in 2013/14 to 11.6% in 2017/18.

Health inequalities are preventable differences in health outcomes between different population groups. Due to the extent of harm caused by smoking, differences in smoking prevalence between populations and geographical areas translate into substantial variations in ill health and death rates.

Smoking is the single most important driver of health inequalities and much more common among unskilled, low income workers than it is in professional and more affluent groups. The more disadvantaged someone is, the more likely they are to smoke and to suffer from smoking-related disease and premature death.

Smoking is passed through generations and reinforced by social norms and attitudes. Young people living in communities where a greater proportion of their role models smoke, and where tobacco is easier to access are more likely to try smoking and become regular smokers into adulthood. Smoking is clearly associated health outcomes in different parts of the country, for example in the north of England where there are both higher rates of smoking and poorer health is observed. However, there will be variation in all local areas because smoking is higher among people with mental health conditions, prisoners, looked-after children, and in the LGBT community.[17]

To reduce this variation there is a need to implement measures that have a greater effect on smokers in higher prevalence groups. In practice, this means prioritising both population level and targeted interventions.

Options for action

NICE have published comprehensive guidance (NG92, PH48 and PH45) and effective treatment of tobacco dependence in the local health and social care system includes the following recommendations:

- use sustainability and transformation plans, health and wellbeing strategies, and any other relevant local strategies and plans to ensure evidence-based stop smoking interventions and services are available for everyone who smokes
- prioritise specific groups who are at high risk of tobacco-related harm
- set targets for stop smoking services, including the number of people using the service and the proportion who successfully quit smoking. Performance targets should include:
  - treating at least 5% of the estimated local population who smoke each year
  - achieving a successful quit rate of at least 35% at 4 weeks, based on everyone who starts treatment and defining success as not having smoked (confirmed by carbon monoxide monitoring of exhaled breath) in the 4th week after the quit date
- ensure the following evidence-based interventions are available for adults who smoke:
  - heath care professional advice (ASK, ADVISE, ACT)
  - varenicline
  - nicotine replacement therapy (NRT) – short and long acting
  - bupropion
  - support the use of e-cigarettes for stopping smoking
  - behavioural support (individual and group)

Resources

Department of Health and Social Care (2018) Tobacco Control Delivery Plan 2017-2022 [Accessed 12 February 2019]

Department of Health (2017) Towards a smoke free generation: Tobacco Control Plan for England 2017-2022 [Accessed 12 February 2019]

National Centre for Smoking Cessation and Training [Accessed 12 February 2019]

NHS England Commissioning for Quality and Innovation [2017/19 CQUIN] [Accessed 12 February 2019]

National Institute for Health and Care Excellence (2013) Smoking: acute, maternity and mental health services (NICE public health guideline [PH48]) [Accessed 12 February 2019]

National Institute for Health and Care Excellence (2013) Smoking: harm reduction (NICE public health guideline [PH45]) [Accessed 12 February 2019]

National Institute for Health and Care Excellence (2015) Smoking: harm reduction (NICE quality standard [QS92]) [Accessed 12 February 2019]

National Institute for Health and Care Excellence (2015) Smoking: reducing and preventing tobacco use (NICE quality standard [QS82]) [Accessed 12 February 2019]

National Institute for Health and Care Excellence (2010) Smoking: stopping in pregnancy and after childbirth (NICE public health guideline [PH26]) [Accessed 12 February 2019]

National Institute for Health and Care Excellence (2007) Smoking: workplace interventions (NICE public health guideline [PH5]) [Accessed 12 February 2019]

National Institute for Health and Care Excellence (2018) Stop smoking interventions and services (NICE Guideline [NG92]) [Accessed 12 February 2019]

National Institute for Health and Care Excellence (2012) Tobacco return on Investment tool: beta version [Accessed 12 February 2019]

Public Health England (2018) Stop smoking options: guidance for conversations with patients [Accessed 20 March 2019]

Public Health England (2017) Models of Delivery of Stop Smoking Services [Accessed 12 February 2019]

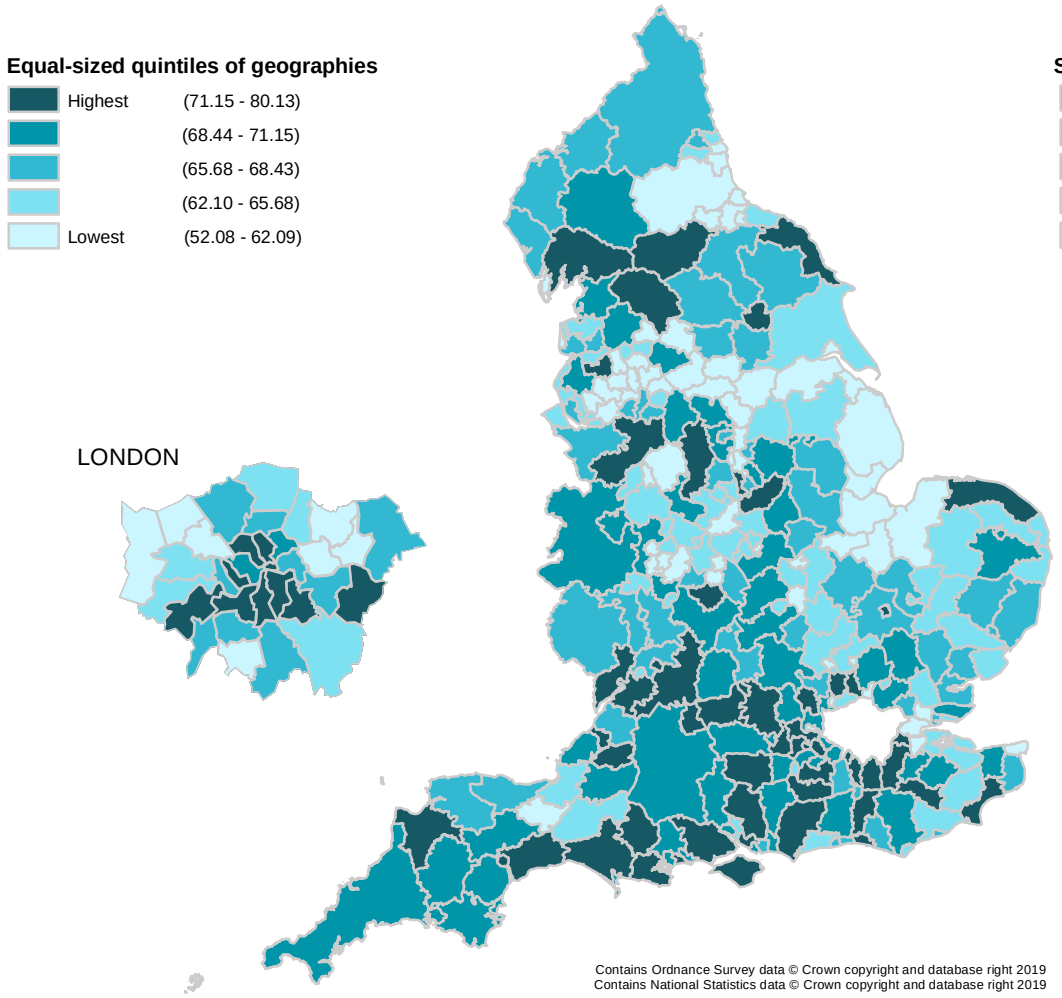
Royal College of Physicians (2018) Hiding in plain sight: treating tobacco dependency in the NHS [Accessed 12 February 2019]

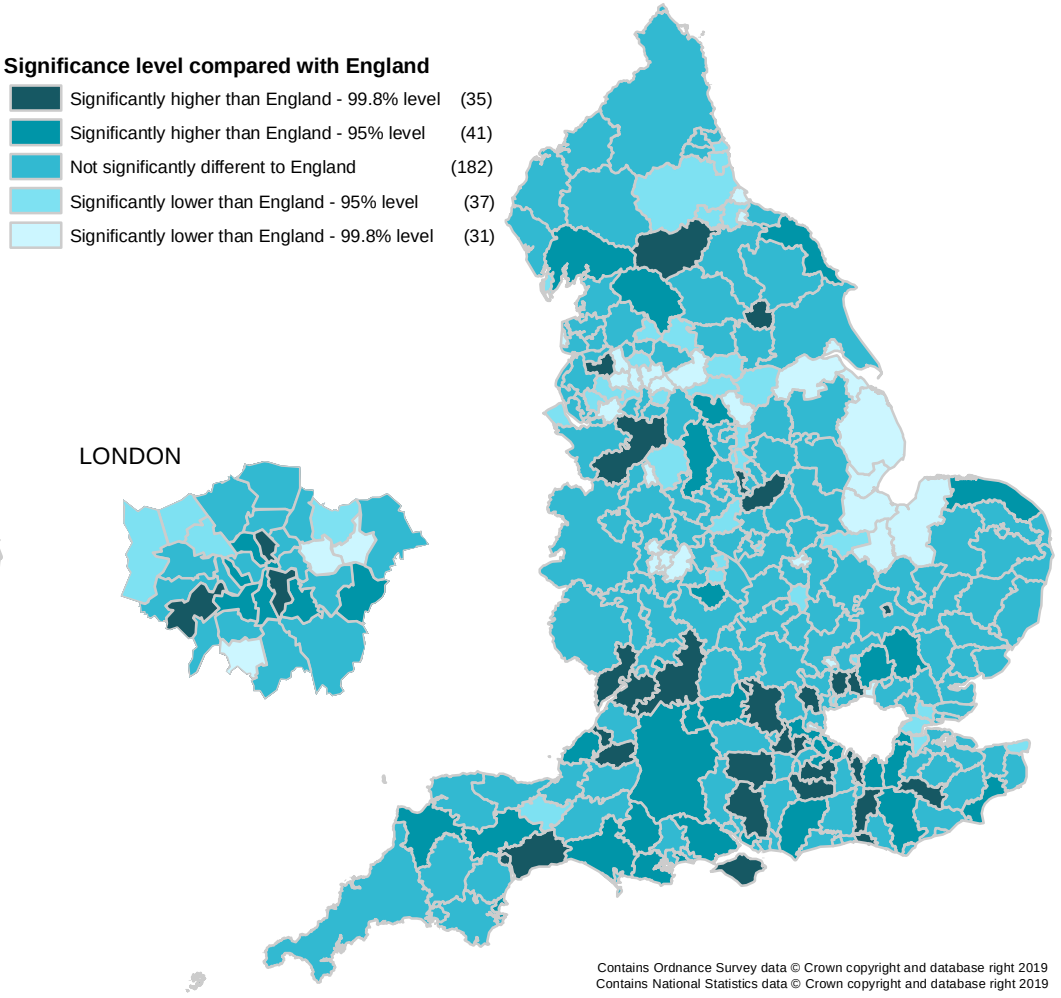
[1] NHS Digital Statistics on Smoking England 2018 [Accessed 12 February 2019]
[2] Royal College of Physicians (2018) Hiding in plain sight: treating tobacco dependency in the NHS [Accessed 12 February 2019]
[3] NHS Digital Statistics on Smoking – England 2018 [Accessed 12 February 2019]
[4] Public Health England (2017) Cost of smoking to the NHS in England: 2015 [Accessed 12 February 2019]
[5] Gibbs K, Collaco J and McGrath-Morrow S (2016) Impact of Tobacco Smoke and Nicotine Exposure on Lung Development Chest 149(2):552-561 [Accessed 28 July 2019]
[6] Burke H, Leonardi-Bee J, Hashim A and others (2012) Prenatal and Passive Smoke Exposure and Incidence of Asthma and Wheeze: Systematic Review and Meta-analysis Paediatrics 129(4):735-44 [Accessed 28 July 2019]
[7] Neuman Å, Hohmann C, Orsini N and others (2012) ENRIECO Consortium. Maternal Smoking in Pregnancy and Asthma in Preschool Children: A Pooled Analysis of Eight Birth Cohorts Am J Respir Crit Care Med 186(10):1037-43 [Accessed 28 July 2019]
[8] Office of National Statistics (2018) Adult Smoking Habits in the UK 2017 [Accessed 12 February 2019]
[9] Public Health England Local Tobacco Control Profiles [Accessed 12 February 2019]
[10] Public Health England (2018) Health of women before and during pregnancy: health behaviours, risk factors and inequalities [Accessed 12 February 2019]
[11] Public health matters Progressing a smokefree NHS [Accessed 12 February 2019]
[12] NHS Digital (2011) Infant Feeding Survey - UK, 2010: Chapter 11, Dietary supplements, smoking and drinking [Accessed 12 February 2019]
[13] Public Health England (2017) Models of Delivery of Stop Smoking Services [Accessed 12 February 2019]
[14] Shahab L (2015) Effectiveness and cost-effectiveness of programmes to help smokers to stop and prevent smoking uptake at local level National Centre for Smoking Cessation and Training (NCSCT) [Accessed 12 February 2019]
[15] Mullen K, Manuel D, Hawken S and others (2017) Effectiveness of a hospital-initiated smoking cessation programme: 2-year health and healthcare outcomes Tobacco Control 26(3):293-299 [Accessed 28 July 2019]
[16] Ministry of Housing, Communities and Local Government Local authority revenue expenditure and financing [Accessed 9 July 2019]
[17] Action on Smoking and Health (2016) Health inequalities and smoking [Accessed 12 February 2019]

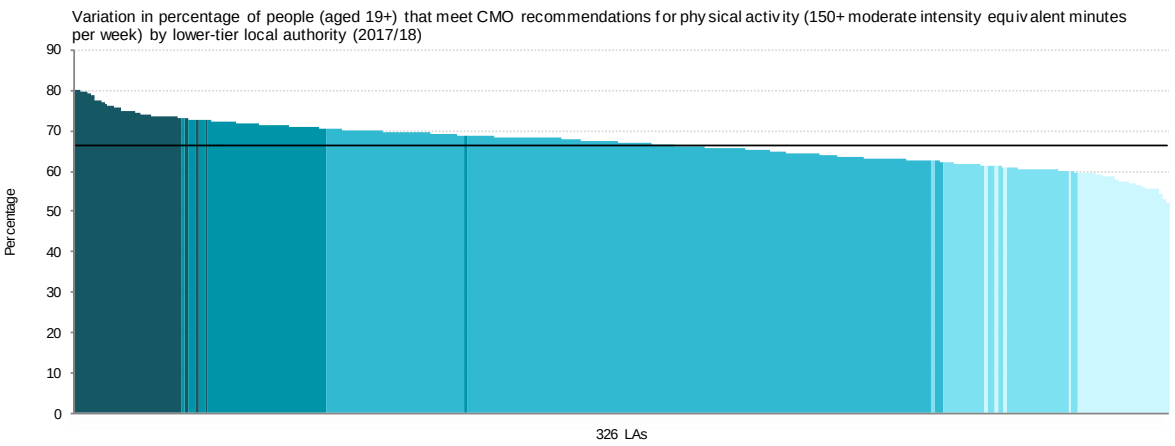
Risk factors – Physical activity

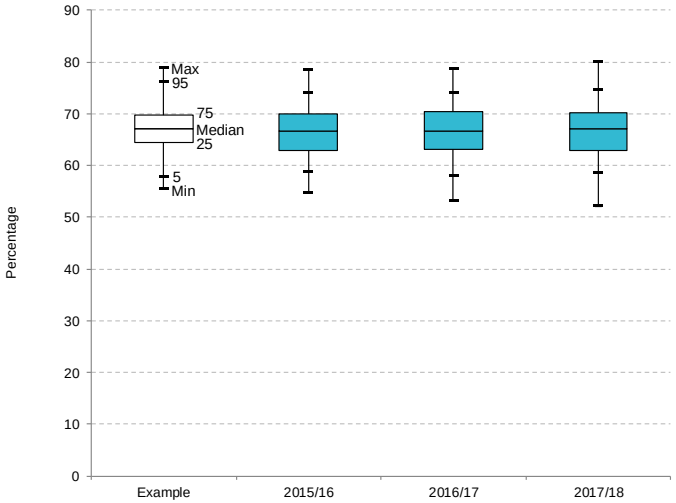
Map 2: Variation in percentage of people (aged 19+) that meet CMO recommendations for physical activity (150+ moderate intensity equivalent minutes per week) by lower-tier local authority (2017/18)

Optimum value: High









Max-Min (Range)		23.8	25.4	28.1	No significant change
95th-5th percentile		15.2	15.9	16.2	No significant change
75th-25th percentile		7.2	7.4	7.2	No significant change
Median		66.7	66.8	67.2	No significant change

Context

The UK Chief Medical Officers' recommendations are that adults undertake at least 150 minutes of moderate intensity physical activity (for example brisk walking or cycling), 75 minutes of vigorous physical activity (for example running or swimming) per week. Individuals should undertake muscle and bone strengthening activity on at least 2 days per week and reduce extended periods of sedentary (sitting) time.[1] Physical inactivity in adults is defined as less than 30 minutes of moderate intensity physical activity per week.[2]

68.5% of adult men and 64.2% of adult women met the guidelines for physical activity in 2017/18.[3] There are also low levels of activity among individuals with a disability and long-term health conditions; 50.2% of people with a disability meet the guidelines for physical activity compared to 70.7% of those without.[3]

Physical activity has a wide range of both physical and mental health benefits. Overall it is estimated that 16.9% of premature mortality (all cause) in the UK could be prevented if physical inactivity was eliminated,[4] and taking into account the costs of treating 5 major diseases (cardiovascular disease, type 2 diabetes, bowel cancer, breast cancer and cerebrovascular disease) and the impact of physical inactivity on each, physical activity is estimated to cost the NHS over £450 million per year (or £8.17 per person).[5]

There are clear inequalities in levels of physical activity with older age groups, individuals living in areas of higher deprivation, women, disabled people (including those with a long-term health condition) and members of certain ethnic groups less likely to be physically active.[2]

The impact of physical activity on respiratory health specifically is often not described when discussing the benefits of physical activity; however, there is evidence that physical activity is an important part of any treatment plan for a patient with COPD.[6] It can increase their quality of life, improve confidence, reduce symptoms and lead to fewer hospital admissions. There is also some observational evidence that physical activity is associated with reduced decline in lung function; this includes among individuals with asthma,[7] and among people who smoke where physical activity is also associated with a reduced risk among smokers of developing COPD.[8] Obesity and some respiratory diseases are known to be linked (see Map 3: Excess weight), and therefore the impact of physical activity on weight may also be a factor.

Magnitude of variation

Map 2: Variation in percentage of people (aged 19+) that meet CMO recommendations for physical activity (150+ moderate intensity equivalent minutes per week) by lower-tier local authority (2017/18)

The maps and column chart display the latest period (2017/18), during which lower-tier local authority values ranged from 52.1% to 80.1%, which is a 1.5-fold difference between lower-tier local authorities. The England value for 2017/18 was 66.3%.

The box plot shows the distribution of lower-tier local authority values for the period 2015/16 to 2017/18. There was no significant change in any of the 3 variation measures between 2015/16 and 2017/18

A number of common health inequalities exist that can prevent adults from meeting the recommended levels of physical activity. These factors such as age, socio-economic status, race, disability, health conditions, gender and religion/culture can lead to variation in physical activity rates and should be taken into consideration when designing activities to promote physical activity in adults.

Options for action

Local authorities and health and care systems should review their practice using the new NICE quality standard [QS183] ‘Physical activity: encouraging activity in the community’, published in June 2019.

Local healthcare organisations should use the NICE quality standard [QS 84] ‘Physical activity: for NHS staff, patients and carers’ to review their offer. This includes:

- brief advice to patients during NHS Health Checks
- advice on physical activity to parents and carers during the Healthy Child Programme 2 year review and as part of the National Child Measurement Programme
- having ‘an organisation-wide, multi-component programme to encourage and support employees to be more physically active’[9]

NICE guidelines NG115[10] on chronic obstructive pulmonary disease recommend:

- pulmonary rehabilitation should be available to all appropriate people with COPD, including those with recent hospitalisation for an acute exacerbation
- pulmonary rehabilitation should be offered to all patients who consider themselves functionally disabled by COPD (MRC dyspnoea grade 3 and above)
- the rehabilitation process should incorporate a programme of physical training, disease education, nutritional, psychological and behavioural intervention

Furthermore, The British Thoracic Society guidelines,[6] also includes patients with a Medical Research Council dyspnoea grading level 1-2 should also be encouraged to increase their activity to slow their decline in pulmonary function and progression of COPD[8] with evidence that community based programmes can also help.[11]

Resources

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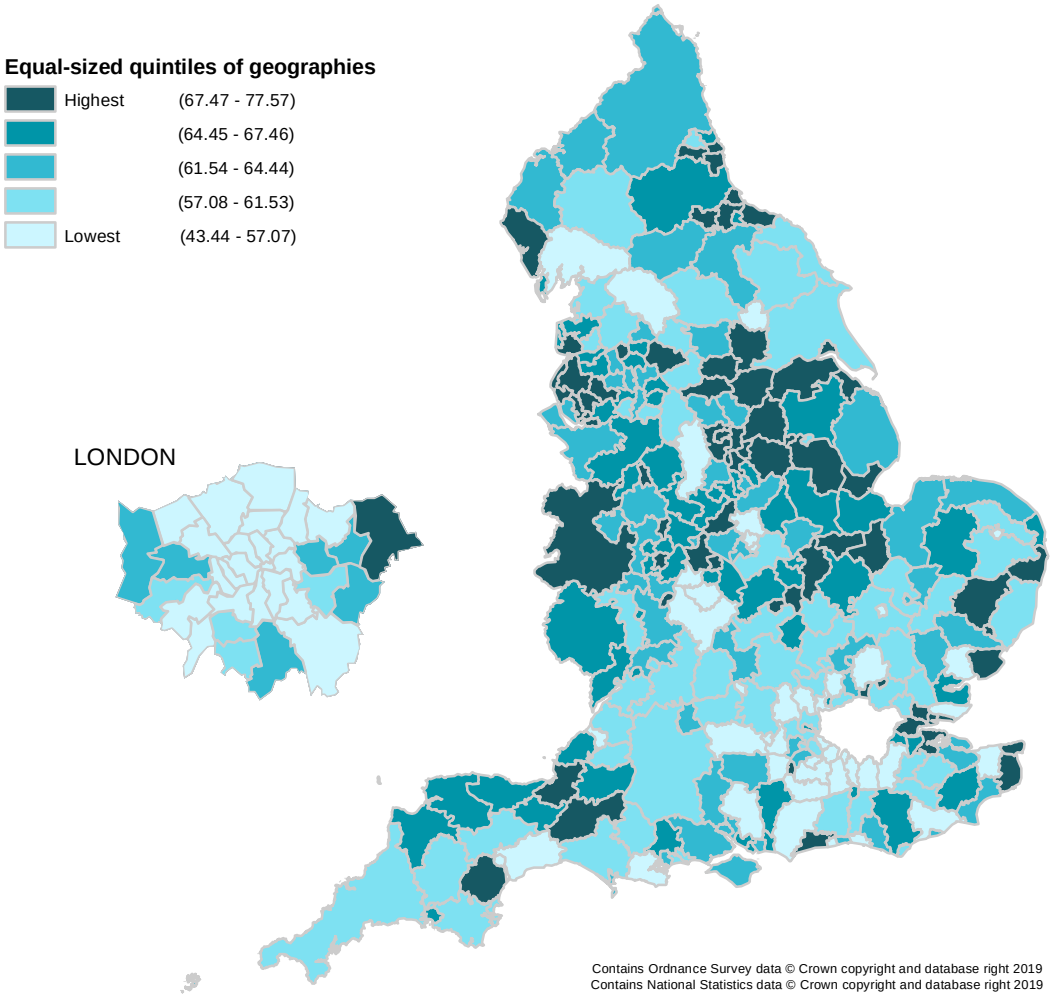
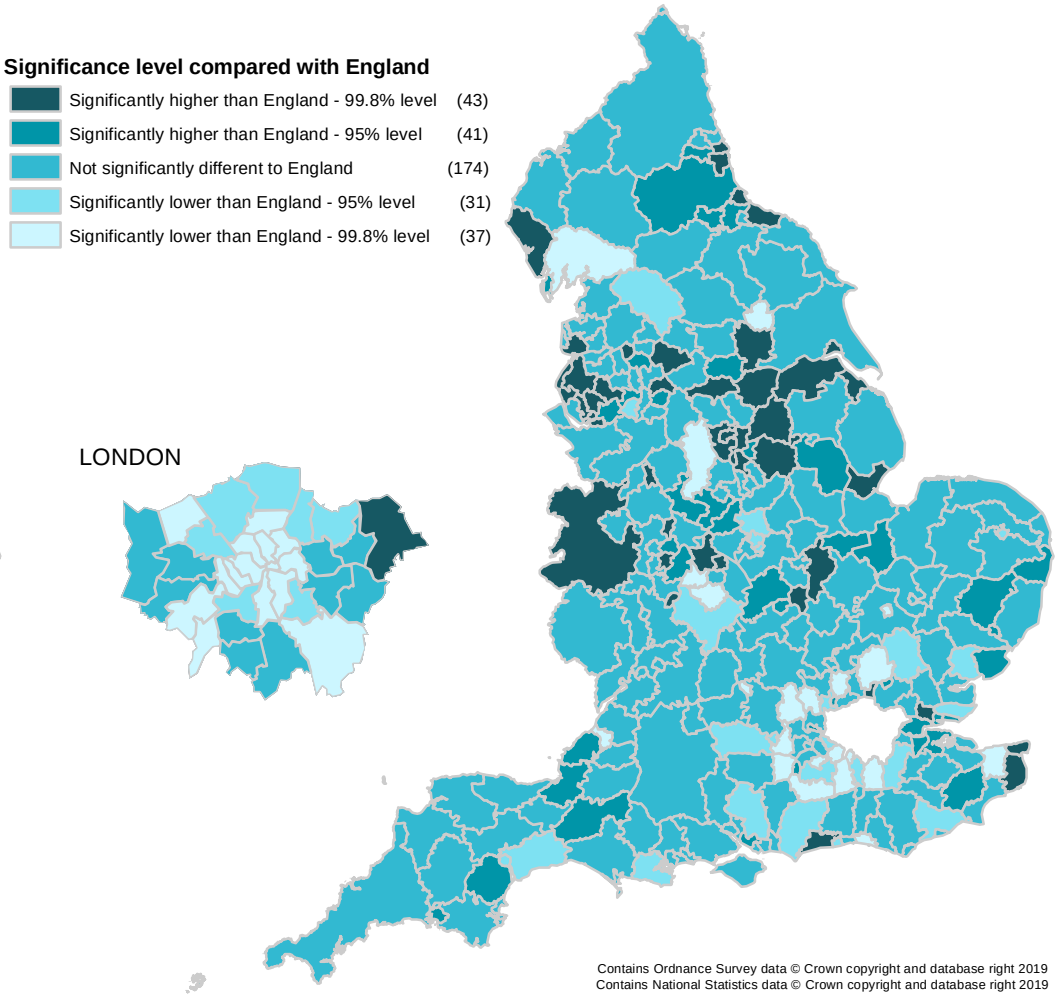
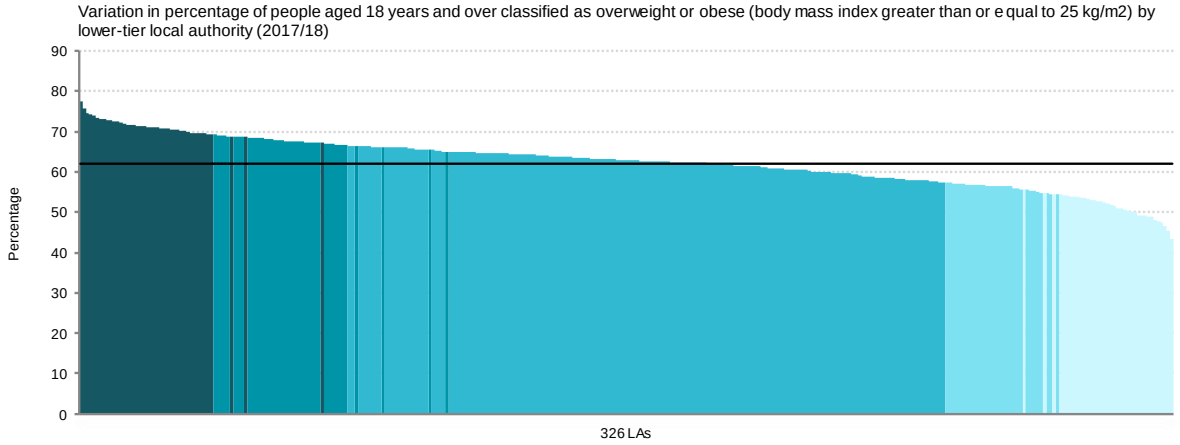
Risk factors – Excess weight

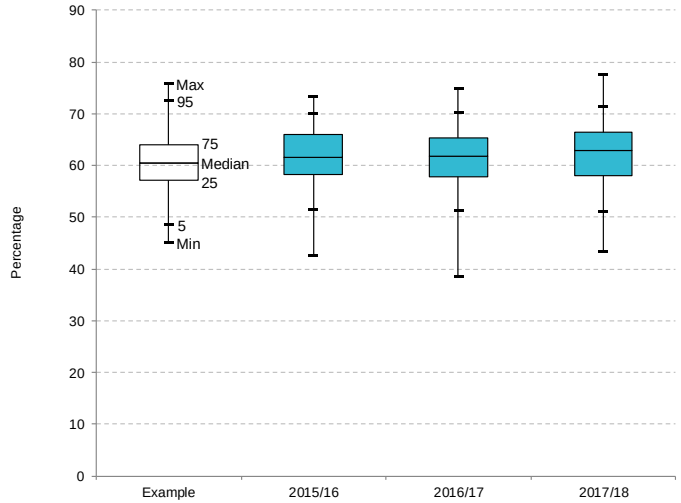
Map 3: Variation in percentage of people aged 18 years and over classified as overweight or obese (body mass index greater than or equal to 25 kg/m2) by lower-tier local authority (2017/18)

Optimum value: Low









Max-Min (Range)		30.7	36.5	34.1	No significant change
95th-5th percentile		18.6	19.0	20.4	No significant change
75th-25th percentile		7.7	7.4	8.4	No significant change
Median		61.6	61.8	62.9	No significant change

Context

Obesity is an accumulation of excess body fat when energy intake from food and beverage consumption exceeds the energy expended through metabolism and physical activity. The causes of obesity are complex, and relate to a variety of genetic, environmental, societal and behavioural factors.[1]

In England, the prevalence of adults living with obesity (Body Mass Index (BMI) ≥30 kg/m^2) was 29% in 2017. Obesity prevalence increased steeply from 15% in 1993 to around 2000 with a slower rate from 2003 to 2016, between 23% and 27%. 2017 has seen a slight increase. The proportion of men and women living with morbid obesity (BMI ≥40 kg/m^2 or higher) is 2% and 5% respectively.[2]

Table 3.1: Prevalence of overweight and obese adults, England, 2017[2]

Body Mass Index (BMI)		Men	Women
Overweight (%)	BMI >= 25 <than 30kg/m^2	39.8	31.5
Obese (%)	BMI >= 30 <than 40kg/m^2	24.9	25.4
Morbidly obese (%)	BMI >= 40kg/m^2	2.5	4.6
Total overweight or obese (%)	BMI >= 25 kg/m^2	67.2	61.5

Obesity is associated with multiple health risks including:

- type 2 diabetes
- cardiovascular disease
- some cancers
- increased risk of skeletal and joint problems

Obesity is also associated with psychological conditions and reduced wellbeing.

Along with increasing age and being male, obesity is a major risk factor for obstructive sleep apnoea/hypopnoea syndrome (OSAHS).[3] Individuals who are overweight or obese are more likely to have respiratory symptoms than those with a normal BMI, even where there is no demonstrable lung disease;[4] there are a variety of mechanisms which might contribute including fat deposition around the upper airway increasing collapsibility and a heavier thorax that reduces lung compliance.[5] Obesity is also associated with asthma with some studies, indicating that individuals living with obesity are at a higher risk when compared to individuals who are a healthy weight. One meta-analysis found a 51% (95% CI 27% to 80%) increased odds of asthma incidence among those who were overweight or obese compared to individuals with a healthy weight.[6] The reasons behind the association are not fully understood, though weight loss may bring benefit for some people.[7]

The current costs to the NHS attributable to overweight and obesity are £6.1 billion for the UK as a whole and £5.1 billion for England.[8,9] The wider costs to society and the economy have been estimated to rise to £49.9 billion per year by 2050.[10] The treatment and prevention of obesity are major public health challenges.

Magnitude of variation

Map 3: Variation in percentage of people aged 18 years and over classified as overweight or obese (body mass index greater than or equal to 25 kg/m2) by lower-tier local authority (2017/18)

The maps and column chart display the latest period (2017/18), during which lower-tier local authority values ranged from 43.4% to 77.6%, which is a 1.8-fold difference between lower-tier local authorities. The England average for 2017/18 was 62.0%.

The box plot shows the distribution of lower-tier local authority values for the period 2015/16 to 2017/18. There was no significant change in any of the 3 variation measures between 2015/16 and 2017/18.

When interpreting this data, it is important to note that the statistics presented are adjusted estimates rather than actual prevalence. These estimates, however, give the best indication of relative prevalence's of overweight and obesity currently available. It should also be borne in mind that the prevalence of obesity is high in all local authorities; obesity is a major problem even in the local authorities with the lowest prevalence.

Prevalence of obesity in adults varies by age, sex, ethnic group and disability.[2] Obesity prevalence increases with age up to approximately 70 years in both sexes. Health Survey for England data show women from Black ethnic groups have a higher prevalence of obesity when compared with that in the general population, and men and women from Asian ethnic groups have a lower prevalence. Although data are limited, people with disabilities are more likely to be obese and have lower levels of physical activity.

Obesity prevalence can vary with socioeconomic status: 38% of women in the lowest quintile of household income were obese compared with 18% of women in the highest quintile. In men, a smaller decrease is seen from the lowest income quintile to the highest but this decrease does not appear to be significantly different.[2] Potential reasons for differences seen in the degree of variation between areas are complex including the wider determinants of health.[11] Drivers of obesity in the local area include the food environment, which tends to be characterised through the density of fast food outlets.[10] Other potential reasons may include:

- higher levels of sedentary behaviour and lower levels of physical activity due to demographic, social, individual and environmental factors
- lack of access to lifestyle management services such lifestyle weight management and obesity services and exercise referral

Options for action

When planning service improvement or development to prevent and tackle obesity in adults, especially in view of the rising trend in most parts of England, commissioners, clinicians, service providers and public health departments should consider working with their local health and wellbeing boards and sustainability and transformation footprints:

- to review local prevalence and trends for obesity
- to work across the local system to understand the drivers of obesity and plan actions[12]
- to refine and develop local strategies for reducing obesity, supported by guidance from NICE (see 'Resources') and other organisations. This needs to be conducted as part of a whole-system response in conjunction with national, regional and health service responses

Resources

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National Institute for Health and Care Excellence Obesity: working with local communities overview - NICE Pathway [Accessed 5 July 2019]

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Public Health England Adult obesity: applying All Our Health Information and resources for health professionals [Accessed 5 July 2019]

Public Health England Adult weight management: short conversations with patients Practical advice and tools to support health and care professionals make brief interventions in weight management for adults [Accessed 5 July 2019]

Public Health England Obesity Intelligence Knowledge hub website Wide-ranging authoritative information on data, evaluation and evidence related to weight status and its determinants [Accessed 5 July 2019]

Public Health England Weight management: guidance for commissioners and providers Guides to support the commissioning and delivery of tier 2 weight management services for children, families and adults [Accessed 5 July 2019]

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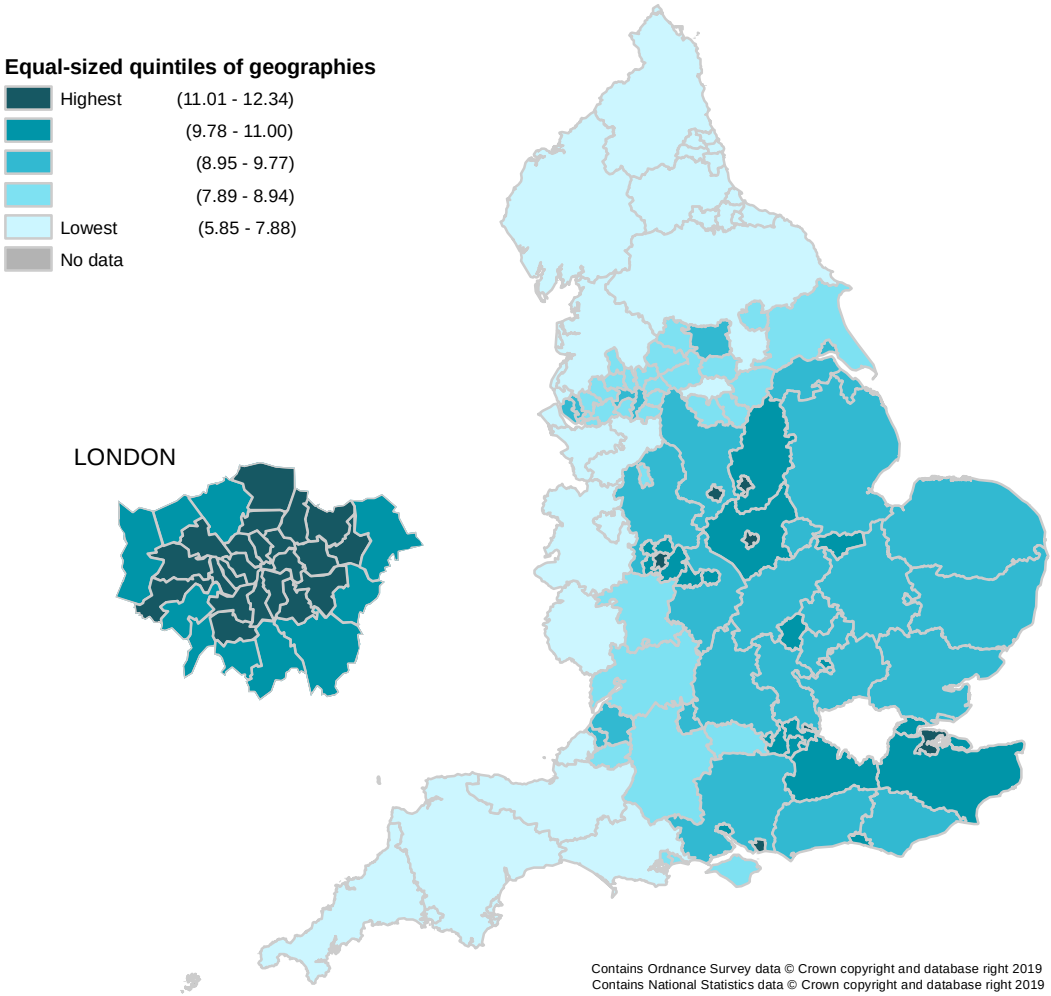
Risk factors – Air pollution

Map 4: Variation in annual concentration of human-made outdoor fine particulate matter (PM2.5) adjusted to account for population exposure by upper-tier local authority (2016)

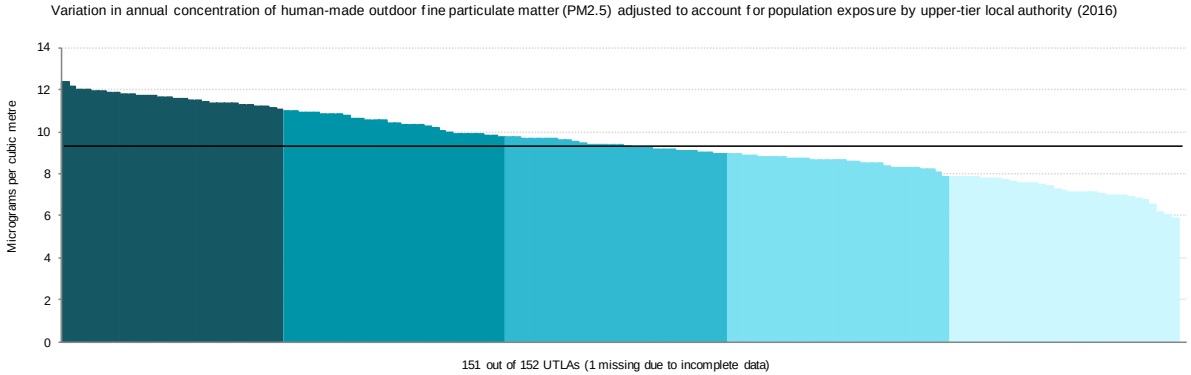
Micrograms per cubic metre (µg/m3)

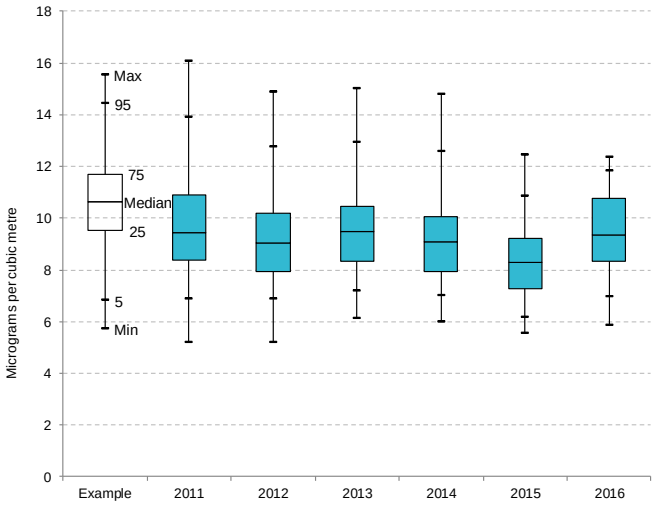
Optimum value: Low



Context

Ambient (outdoor) air pollution is a major public health concern at local, national and international levels. In the UK, poor air quality is the largest environmental risk to public health and is estimated to cost society more than 20 billion pounds every year.[1] Air pollutants are emitted from a range of both man-made and natural sources. Local and national policy seeks to influence the man-made component of these concentrations, as less can be done to reduce levels from natural sources. Population studies have shown that long-term exposure to man-made air pollution (over several years) reduces life expectancy, mainly due to cardiovascular and respiratory causes and from lung cancer. It is estimated that long-term exposure to man-made pollution in the UK has an annual effect in reducing life-years by 328,000 – 416,000, effects equivalent to 28,000 to 36,000 deaths at typical ages.[2] Short-term exposure (over hours or days) to elevated levels of air pollution can also cause a range of effects including exacerbation of asthma, reduced lung function, increases in respiratory hospital admissions and premature deaths.





Max-Min (Range)		10.9	9.7	8.9	8.8	6.9	6.5	NARROWING Significant
95th-5th percentile		7.0	5.8	5.8	5.5	4.7	4.9	NARROWING Significant
75th-25th percentile		2.5	2.3	2.1	2.1	1.9	2.5	No significant change
Median		9.4	9.1	9.5	9.1	8.3	9.4	No significant change

The evidence for the effects of air pollution on health is especially strong for the fine airborne particulate matter pollution (referred to as PM2.5). When inhaled, these fine particles, measuring less than 2.5 microns in diameter, are small enough to enter deep in the lungs and cause health effects. Those most at risk include children, the elderly and those with pre-existing medical conditions, such as respiratory and cardiovascular disease.[1] Lower socio-economic status and minority populations are also often disproportionately exposed to air pollution.[3]

PM2.5 in ambient air consists of both primary (directly emitted from a source) and secondary (formed through atmospheric reactions). In the UK, the main sources of primary PM2.5 are from domestic and industrial combustion processes, and motor vehicle engines, friction from brakes and tyres, and dust from road surfaces.[4] Natural sources include pollen, soil and sand from as far as the Sahara Desert.[5] Transport and travel linked to Health and Social Care services generates a significant share of road traffic in England, and it is estimated that the NHS is responsible or can influence 3.5% of all road traffic in England.[6]

Magnitude of variation

Map 4: Variation in annual concentration of human-made outdoor fine particulate matter (PM2.5) adjusted to account for population exposure by upper-tier local authority (2016)

The maps and column chart display the latest period (2016), during which upper-tier local authority concentrations ranged from 5.8 to 12.3 micrograms per cubic metre, which is a 2.1-fold difference between upper-tier local authorities. The England annual concentration for 2016 was 9.3 micrograms per cubic metre. The UK and EU annual mean objectives for

PM2.5 are 25 micrograms per cubic metre,[7] while the World Health Organisation's annual mean guideline value is 10 micrograms per cubic metre.[8]

The box plot shows the distribution of upper-tier local authority values for the period 2011 to 2016. Both the maximum to minimum range and the 95th to 5th percentile gap narrowed significantly.

Potential reasons for the degree of variation observed include geographical variations in:

- the magnitude of local emission sources, weather conditions (such as wind speed, wind direction and air temperature) and industry and traffic infrastructure
- socio-economic status and ethnicity – low socio-economic status and minority populations are more likely to live, learn or work in densely populated areas, that are nearer to busy roads and/or industrial sources of pollution

Options for action

Multiple interventions, each producing a small benefit, can act cumulatively to produce significant overall air quality and health benefits.[9] Interventions that will have the greatest impact on reducing harm to people's health are those which reduce emissions of air pollution at source and these should be the main focus of action.

Active travel interventions, such as promoting walking and cycling, can bring multiple public health benefits, in addition to air quality improvements, such as increased physical activity and prevention of traffic collisions. The current evidence suggests that in healthy individuals, the benefits of physical activity are likely to outweigh health risks from air pollution.

Considering healthcare services, commissioners should:

1. Support large-scale national awareness campaigns aimed to change behaviour, such as the Global Action Plan National 'Clean Air Day'.[10]
2. Ensure better awareness amongst healthcare professionals of the impact of air quality on health through training and by directing employees toward useful resources, such as the 'Air quality: a briefing for directors of public health'.[11]
3. Encourage the use of NHS data (for example, hospital admissions and GP consultations) to inform research on the effects of air pollutants on the health of the UK population.

Healthcare service providers should:

1. Consider National Institute for Health and Care Excellence (NICE) guidelines 70 on Air pollution: outdoor air quality and health and its associated quality standard.
2. Consider PHE's review of interventions to improve outdoor air quality and public health.
3. Consider the recommendation actions to tackle air pollution set out in the Royal College of Physicians and the Royal College of Paediatrics and Child Health report, 'Every breath we take: the lifelong impact of air pollution'.
4. Help the public understand the health effects of air pollution (using clear, unambiguous messages) and offer their patients advice on managing their conditions, as well as actions they can take to reduce their day-to-day and lifetime exposure to air pollution. The Daily Air Quality Index (DAQI) provides information on levels of air pollution and recommended actions and health advice.
5. Use the Health Outcomes of Travel Tool. NHS organisations (provider, CCG or primary care) can measure the air pollution release from their models of care.[6]
6. Encourage the participation of their staff and patients of walking and cycling (see NICE guidelines on 'physical activity: walking and cycling')[12] and use of public transportation. However, development of effective infrastructure will be important to enable safe walking and cycling.
7. Consider air quality when procuring vehicles (ultra low emissions vehicle) and training staff in fuel efficient driving (including anti-idling), or creating no-idling zones on NHS sites and/or utilising Clean Air Zones developed by the Local Authority as per NICE guidance NG70.

8. The NHS estate should move away from burning the dirtiest fuels onsite such as coal and oil as primary heating fuel (NHS Long Term Plan).[13]

Resources

Department for Environment, Food and Rural Affairs Daily Air Quality Index [Accessed 24 May 2019]

Department for Environment, Food and Rural Affairs Short-term effects of air pollution on health [Accessed 24 May 2019]

Department for Environment, Food and Rural Affairs, Public Health England and Local Government Association (2017) Air Quality: A briefing for directors of Public Health [Accessed 1 March 2019]

Global Action Plan Clean Air Day Website [Accessed 19 February 2019]

NHS Sustainable Development Unit Health Outcomes Travel Tool v3.0 [Accessed 25 July 2019]

National Institute for Health and Care Excellence (2017) Air pollution: outdoor air quality and health (NICE guideline [NG70]) [Accessed 1 March 2019]

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National Institute for Health and Care Excellence (2012) Physical activity: walking and cycling (NICE public health guideline [PH41]) [Accessed 19 February 2019]

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Public Health England (2019) Review of Interventions to improve outdoor air quality and public health [Accessed 24 May 2019]

Royal College of Physicians and Royal College of Paediatrics and Child Health (2016) Every breath we take: the lifelong impact of air pollution Report of a working party [Accessed 1 March 2019]

[1] Royal College of Physicians and Royal College of Paediatrics and Child Health (2016) Every breath we take: the lifelong impact of air pollution Report of a working party [Accessed 1 March 2019]
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[5] British Lung Foundation (2017) Where does air pollution come from? [Accessed 25 July 2019]
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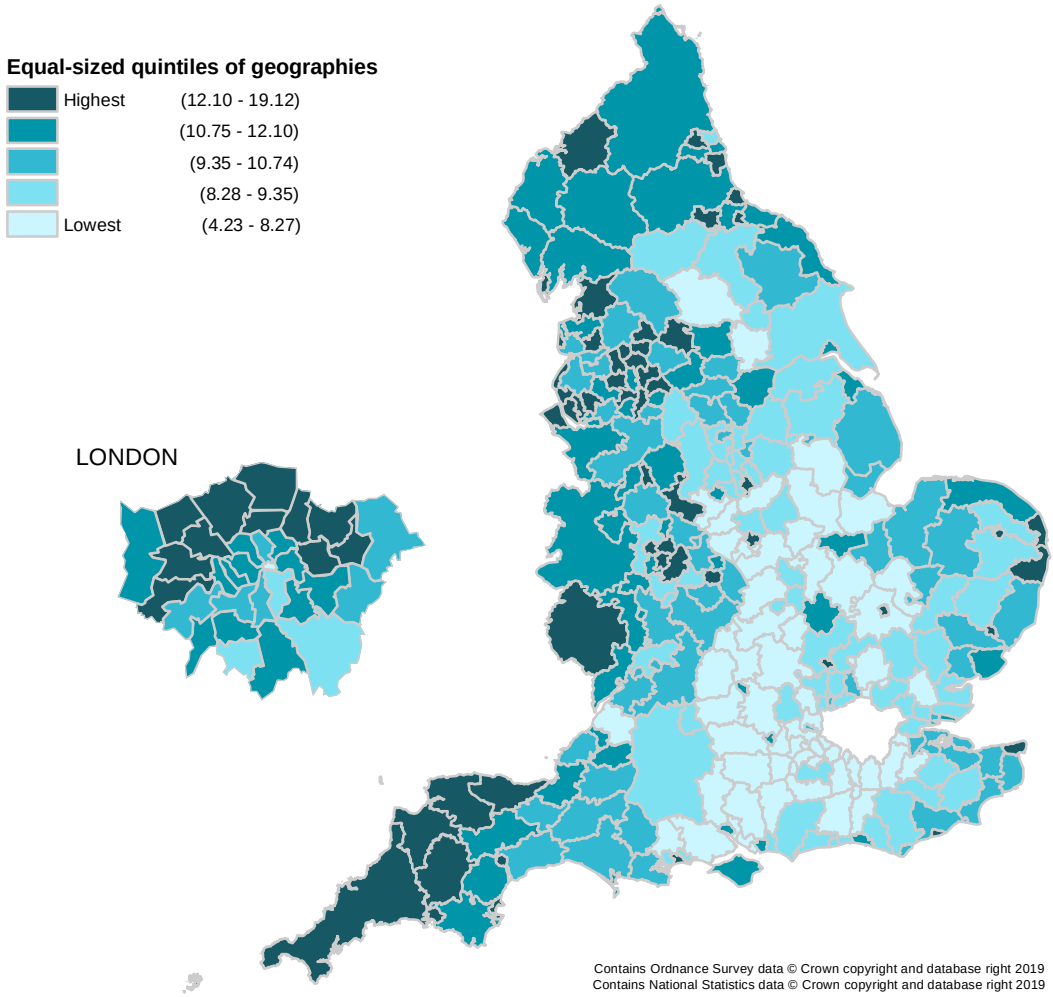
Risk factors – Housing

Map 5a: Variation in percentage of households in an area that experience fuel poverty by lower-tier local authority (2017)

Optimum Value: Low



Context

The home environment is a key determinant of both physical and mental health.[1,2] More than 90% of our time is spent indoors.[3]

The Housing Health and Safety Rating System (HHSRS) (a risk based evaluation tool for local authorities) details a number of key risks and hazards to health caused by deficiencies in dwellings, including damp and mould growth, excess heat and excess cold.[4]

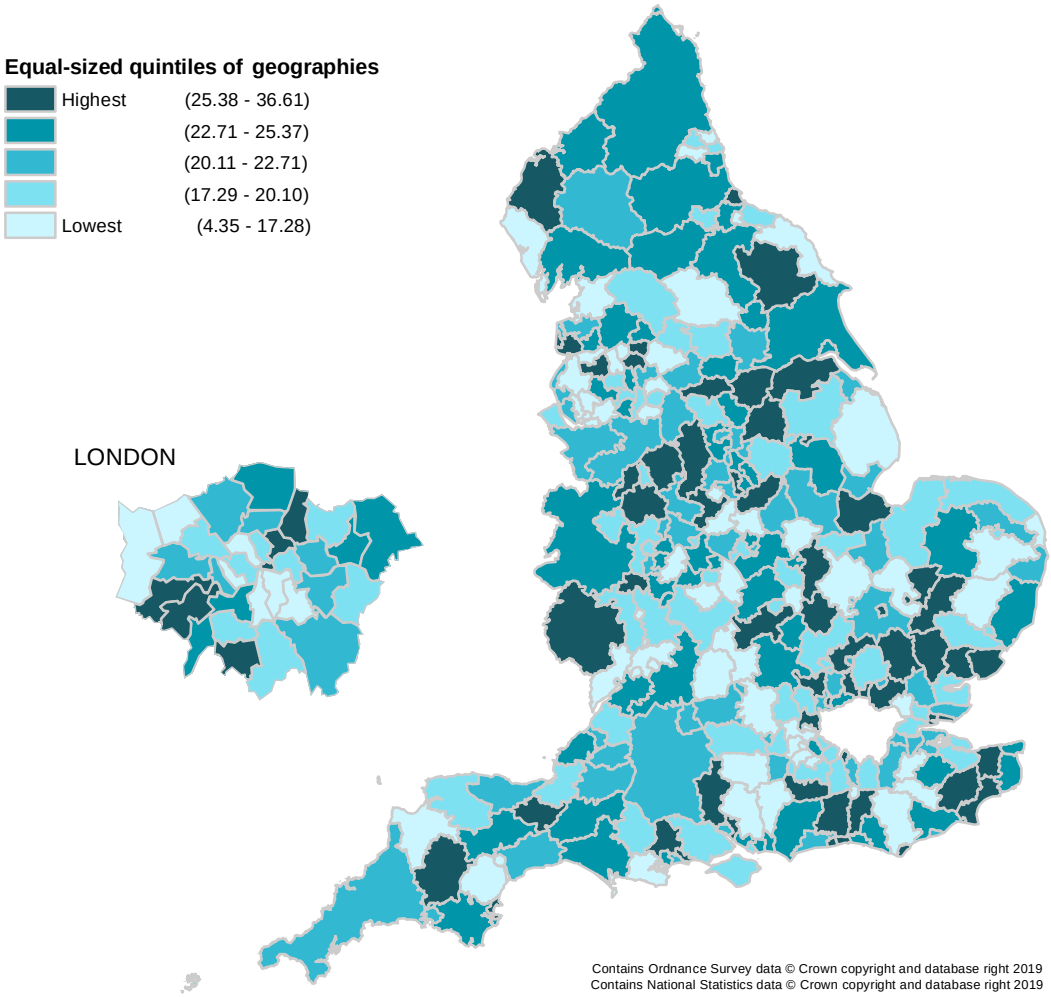
The most recent data from the English Housing Survey (2017) showed that 1 in 5 dwellings (4.5 million homes) did not meet the Decent Homes Standard, which takes into account the HHSRS as its statutory element, along with considerations around thermal comfort, state of repair and facilities.[5]

Respiratory health is particularly affected by indoor temperature (both high and low), by damp and mould, and by the presence of air pollutants within the home.[4]

Risk factors – Housing

Map 5b: Variation in the Excess Winter Deaths Index by lower-tier local authority (Aug 2014-Jul 2017)

Optimum value: Low



Cold homes and fuel poverty

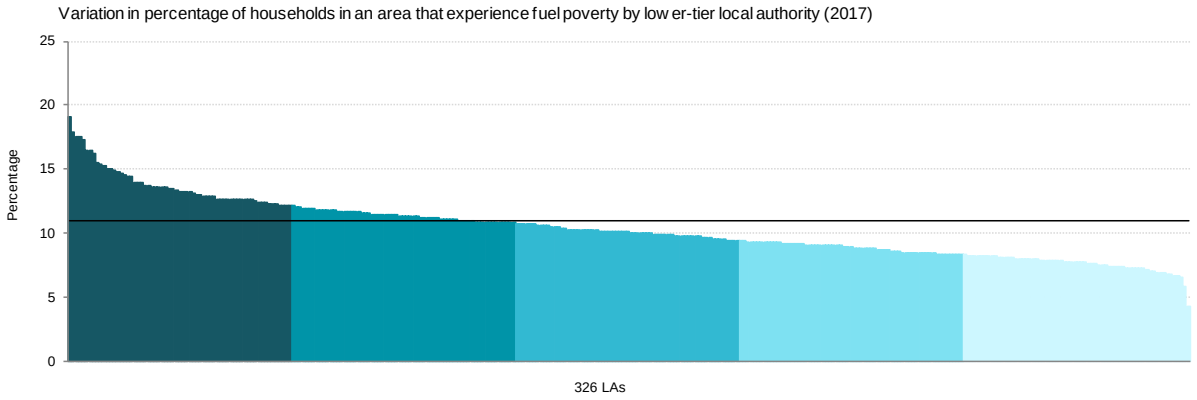
Exposure to low indoor or outdoor temperatures can lead to suppression of the immune system, increasing susceptibility to infection. Cold temperatures increase constriction of airways, which stimulates mucus production - factors associated with increased risk of bronchitis and pneumonia.[6]

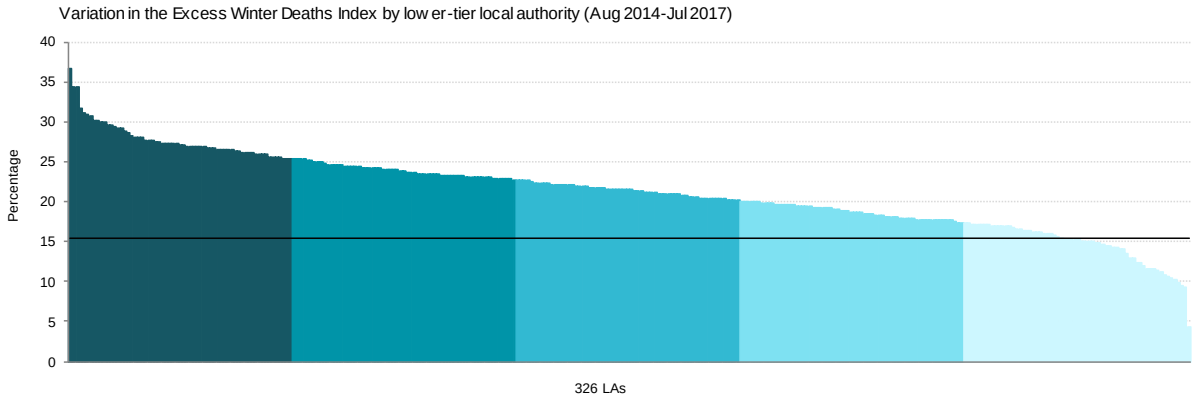
Many more people die in the winter months than the summer months; these data are captured by the Office of National Statistics (ONS) each year. The number of excess winter deaths (EWDs) is calculated by comparing the number of deaths across the winter (December to March) with the average number of deaths occurring in the preceding August to November and the following April to July.[7] ONS also publish the excess winter mortality index (EWMI), the percentage of extra deaths that occurred in the winter, to allow comparisons to be made.

Notably, EWDs are reported as an absolute number i.e. the figure is not age-standardised.

Trends in excess winter deaths

Factors contributing to EWDs include age and underlying health conditions, housing and fuel poverty and seasonal factors such as weather and the impact of influenza.





Large fluctuations in EWDs are common between years. The 5 year moving average smooths out short term fluctuations and provides a clear trend over time. Generally historical trends in England and Wales show that the steady decrease since the 1950/51 winter period has levelled off in recent years, with the latest 5 year averages showing an increase from 2013/14 (28,188) to 2015/16 (34,074).[7]

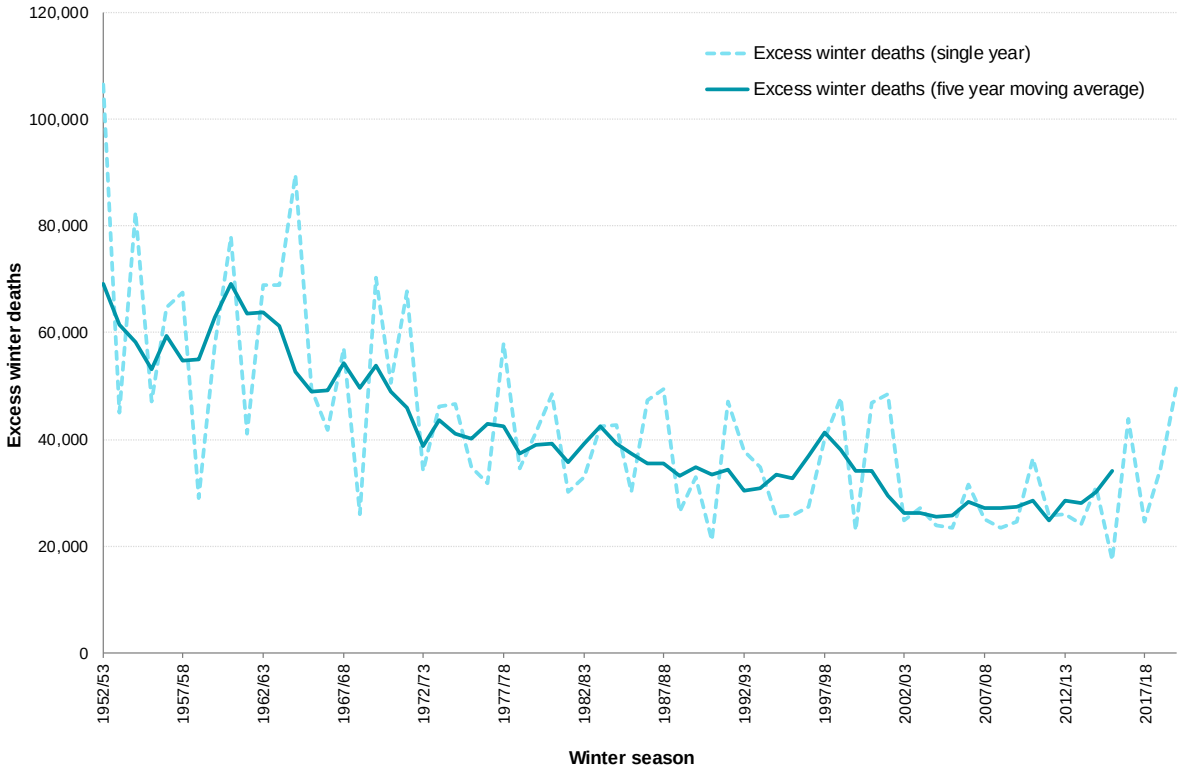
The winter of 2017/18 was unusually cold and saw moderate to high levels of influenza activity with co-circulation of influenza B and influenza A(H3). The impact of this co-circulation was predominantly seen in older adults, with increased numbers of care home outbreaks and excess mortality seen particularly in the 65 plus age group.[8]

ONS reported 50,100 EWDs in 2017/18. Over a third (34.7%) of EWDs were attributed to respiratory disease (i.e. 17,400 EWDs). Although the 85 plus age group had the highest EWMI (EWMI was 36.1% for males, 43.3% for females), all age groups were affected.[7]

Fuel poverty

The definition of ‘fuel poverty’ used in England is ‘Low Income, High Cost’ (LIHC). A household is considered to be experiencing fuel poverty if the required fuel costs are above the national median level and were they to spend that amount, they would be left with a residual income below the official poverty line.[9] Fuel poverty is one of the major contributing factors to a person living in a cold home with approximately 2.53 million households identified as experiencing fuel poverty and therefore at risk of being too cold.[9]

Figure 5.1: **Excess winter deaths 5-year central moving average England and Wales, between 1952 to 1953 and 2015 to 20167**



Mould and damp

When a cold home is also damp, mould is likely to occur. An estimated 4% of homes are affected by damp, whilst 2% (approximately 450,000 homes) have problems with condensation and mould.[5] Damp housing and mould are associated with upper respiratory tract symptoms, cough, wheeze and asthma (both current and ever diagnosed) with an estimated 30% to 50% increase in these symptoms in damp/mouldy homes.[10] There are steps that can be taken to reduce mould and damp in the homes. Landlords (private and social) have a legal obligation to ensure that a property is fit to live in.

Overheating in homes

High ambient temperatures are associated with increases in mortality and morbidity, even at relatively moderate temperatures. Many of these exposures occur in the home. There were approximately 2,000 excess deaths in England and Wales during the heatwave in 2003[11] and respiratory disease is one of the main causes of illness and death during periods of hot weather.

Older people, those with chronic health conditions and infants are most at risk. Environmental factors that increase an individual's risk during a heatwave include living in urban areas and south-facing top floor flats. An estimated 20% of properties in England are overheating and given the magnitude of the current problem as well as future impacts relative to climate change, indoor overheating has been identified as a priority risk for action in the cross-government Climate Change Risk Assessment 2017.[12]

Indoor air quality

Levels of some air pollutants in the home can be significantly higher than those outside.[13] For example, volatile organic compounds (VOCs) are emitted indoors from construction products and furniture as well as from consumer products (detergents, cleaning, air fresheners and personal care products).

Indoor levels of particulates and combustion products Nitrogen dioxide (NO_2) and Carbon Monoxide (CO) are influenced by the ingress of outdoor air, building characteristics including ventilation conditions and occupant activities such as cooking, smoking, wood burning, cleaning and use of consumer products.[14] NO_2 and CO are

associated with increased risk of respiratory disease. Particulate matter has been associated with increased respiratory illness (wheezing, cough, including asthma) and chronic obstructive pulmonary disease (COPD). VOCs emitted from consumer products are associated with increased wheezing during pregnancy and wheezing among infants and their mothers.[14,15]

Inadequate ventilation results in increased concentrations of indoor generated pollutants, which have been associated with increases in allergic diseases among children.[16]

A recent modelling study estimated the burden of disease attributable to exposures to indoor air pollutants from both indoor sources and outdoor air used to ventilate homes was 23% for asthma, 11% for COPD, 5% for respiratory infections and 15% for lung cancer (due to radon exposure).[17]

Selected indicators

There are a large number of factors within the home environment that impact on health and it is worth noting that often more than one exposure may co-exist. Likewise, often there are multiple vulnerabilities that together contribute to adverse health outcomes. For example, housing and economic factors are key to cold weather vulnerability. Fuel poverty captures some of this complexity. However, additional vulnerabilities such as extremes of age and behavioural factors are also relevant.[18]

Magnitude of Variation

Map 5a: Variation in percentage of households in an area that experience fuel poverty by lower-tier local authority (2017)

The maps and column chart display the latest period (2017), during which lower-tier local authority values ranged from 4.2% to 19.1%, which is a 4.5-fold difference between lower-tier local authorities. The England value for 2017 was 10.9%.

Map 5b: Variation in the Excess Winter Deaths Index by lower-tier local authority (Aug 2014-Jul 2017)

The maps and column chart display the latest period (Aug 2014-Jul 2017), during which lower-tier local authority values ranged from 4.3% to 36.6%, which is an 8.4-fold difference between lower-tier local authorities. The England value for Aug 2014-Jul 2017 was 21.1%.

There is some regional variation in the proportion of households experiencing fuel poverty. The Annual Fuel Poverty Statistics Report, 2019[9] shows that in 2017 households living in the north-west had the highest proportion of fuel poor households. However, of households experiencing fuel poverty, those in the south-east had the highest average fuel poverty gap. This is the reduction in fuel bill that a household experiencing fuel poverty needs in order not to be classed as fuel poor.

Fuel poverty in households is determined by the interaction of 3 key drivers: energy efficiency of the household; energy prices and income.[19]

The energy efficiency[20] of a property is a key driver of fuel poverty as better energy efficiency reduces household fuel requirements and thus costs. Relevant property characteristics include floor area, wall insulation, and age of property.

Household income is another key factor as it impacts on affordability. It is worth noting that a significant number of households are clustered around the fuel poverty costs threshold. In a recent projection, the Department for Business, Energy and Industrial Strategy (BEIS) estimated that in 2016 over half a million households were within £30 of the threshold. Changes in personal circumstance and household income can result in households particularly those close to the threshold, and therefore at greater risk, moving in and out of fuel poverty.[21] This is particularly relevant when considering the potential impact of illness on income.[22]

Options for action

Cold homes and fuel poverty

The NICE guidelines NG6 'Excess winter deaths and illness and the health risks associated with cold homes'[23] have a number of recommendations for Health and Wellbeing boards, local authorities, housing providers, energy utility and distribution companies, faith and voluntary sector organisations, primary health and home care practitioners, secondary health care practitioners, social care practitioners, NHS England, universities and other training providers, Public Health England and the Department for Business, Energy and Industrial Strategy.

For secondary care practitioners:

Recommendation 7 in the NICE guideline NG6 is to ensure that as part of the discharge planning from a health or social care setting, an assessment is made of the patient's vulnerability to the cold, and where action is needed to ensure co-ordination of efforts to ensure that the home is warm enough for the individual to return to.

Patients may be unaware of how their home environment may be affecting their respiratory heath. They may also be unaware of the help that is available and how to access this. Therefore, clinicians can provide advice to patients on how best to keep their home safe and warm during colder months or refer them to the NHS Keep Warm Keep Well website.

In addition, clinicians can identify the services or referral pathways available locally to support patients who may be vulnerable to cold. Individuals may be eligible for assistance through schemes such as the Warm Home Discount Scheme and home efficiency improvements provided by energy companies.[24]

Most local authorities have programmes in place to support vulnerable people living in their area affected by fuel poverty or living in cold homes. This may include practical help and/or funding to improve the energy efficiency of properties (regardless of tenure) and provision of income support or other means tested benefits to help with energy costs. Energy companies have an obligation to engage with local authorities to identify households that would benefit from energy efficiency measures and to fund these.

NICE further recommends that primary health and home care practitioners:

- identify people at risk of ill health from living in a cold home (recommendation 4)
- make every contact count (MECC) by assessing the heating needs of people who use primary health and home care services (recommendation 5)

NICE recommends a number of strategic actions for Health and Wellbeing Boards which secondary and primary care clinicians may be able to influence directly or indirectly as part of their wider role. These include:

- developing a strategy to address the health consequences of cold homes (recommendation 1)
- ensuring there is a single point-of-contact health and housing referral service for people living in cold homes

Mould and damp

- refer patients to NHS information on how to remove damp and mould from the home[25]
- refer patients to local authority environmental health
- vulnerable patients can also be referred to Shelter for information and support, including advice for those living in social and private rented housing[26]

Overheating in homes

- refer patients to the PHE 'Beat the heat: keep cool at home' checklist and linked 'Beat the heat' resources[27]

Indoor air pollution

The NICE guideline on Indoor air quality at home[28] is expected to be published in December 2019. This will include guidance for health professionals, local authorities and members of the public to be aware of and reduce exposure to indoor air pollutants.

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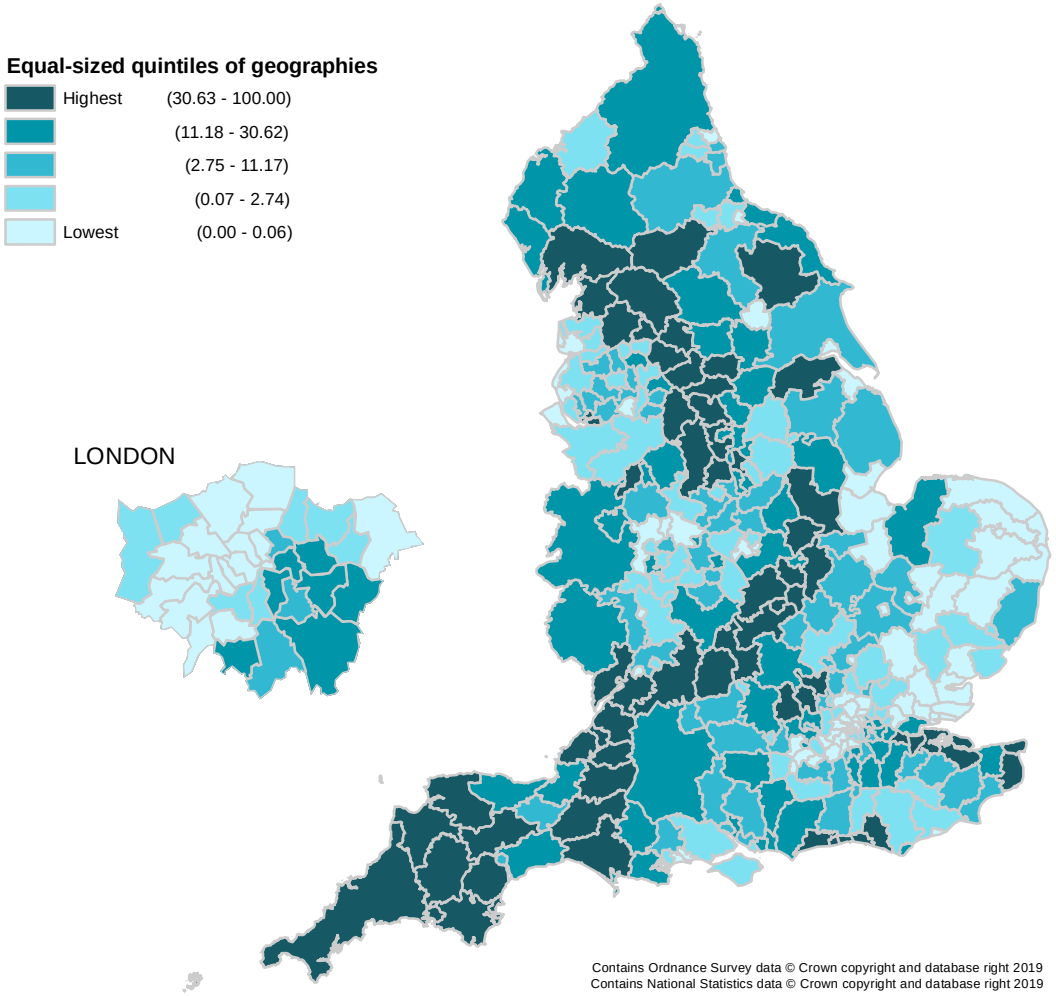
Risk factors - Radon

Map 6: Variation in percentage of homes in Radon Affected Areas by lower-tier local authority (2019)

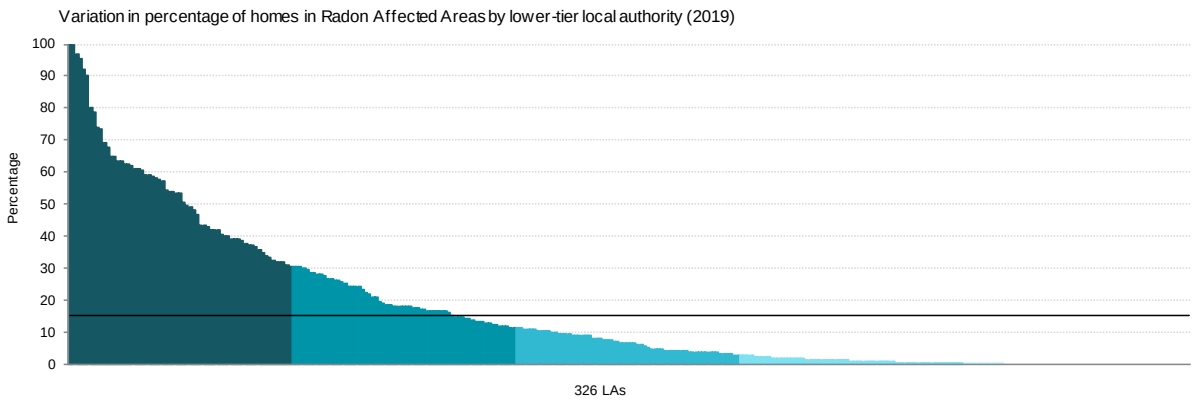
Optimum value: Low



Context

Radon is a radioactive gas released from the earth and is the single largest source of radiation exposure in UK homes and workplaces. Radon is an established lung carcinogen,[1] with good evidence that the risk is approximately proportional to long term exposure.[2] In the UK, radon is estimated to be associated with over 1,000 lung cancer deaths annually.[3] Radon is present in all buildings but at concentrations that range over 3 orders of magnitude between properties.[4] The lung cancer risk from radon has a synergy with tobacco smoking: continuing and ex-smokers are at the greatest lung cancer risk from a given radon concentration.

The level of radon in a property is expressed as the activity concentration (the number of radon atoms radioactively decaying, in 1 second, measured in unit “becquerel”, Bq) in a unit volume of indoor air (1 cubic metre). Radon concentrations can only be determined reliably by a radon measurement – preferably made over a 3 month period to reduce short term fluctuations.



Established techniques and services are available both to establish the radon levels in properties and to make the necessary changes to buildings to reduce high radon levels. Zero radon exposure is not possible since outdoor air contains low concentrations of radon.

To determine the need for action in homes, radon measurements (as an annual average) are compared with an Action Level of 200 Bq m^{-3}.[3] A separate regulatory criterion applies to workplaces. Box 6.1 gives a list of radon related terms.

Box 6.1: Radon related terms[5]

Becquerel (symbol Bq): The unit of the amount of activity of a radionuclide. Describes the rate at which the transformations (the number of radon atoms radioactively decaying) occur. 1 Bq = 1 transformation per second.

Becquerel per cubic metre of air (symbol Bq m^{-3}): The amount of radionuclide in each cubic metre of air. Often referred to as the activity concentration.

Radon Action Level: The reference level for taking action on the activity concentration of radon in UK homes. Its value, expressed as the annual average radon gas concentration in the home, is 200 Bq m^{-3}

Radon Affected Areas: Parts of the country with a 1% probability or more of present or future homes being above the Action Level.

A radon risk map and supporting data set identify areas where high radon levels are more likely and where measurement of radon should be prioritised. These are termed radon Affected Areas and are where at least 1% of the homes are expected to be above the radon action level.

The radon map assigns each Ordnance Survey 25 metre grid square to 1 of 6 bands of increasing radon potential. All bands except the lowest are radon Affected Areas. Figure 6.1 is an indicative radon map, showing the highest radon potential band present in each 1 km grid square.

The radon risk map is used to support radon prevention through building regulations. New (or significantly altered) properties in areas of elevated radon risk (areas over 3% risk) are expected to include “basic” protection – generally an impermeable membrane across the building footprint. Additional protective measures should be included in areas where more than 10% of houses are expected to exceed the Action Level.

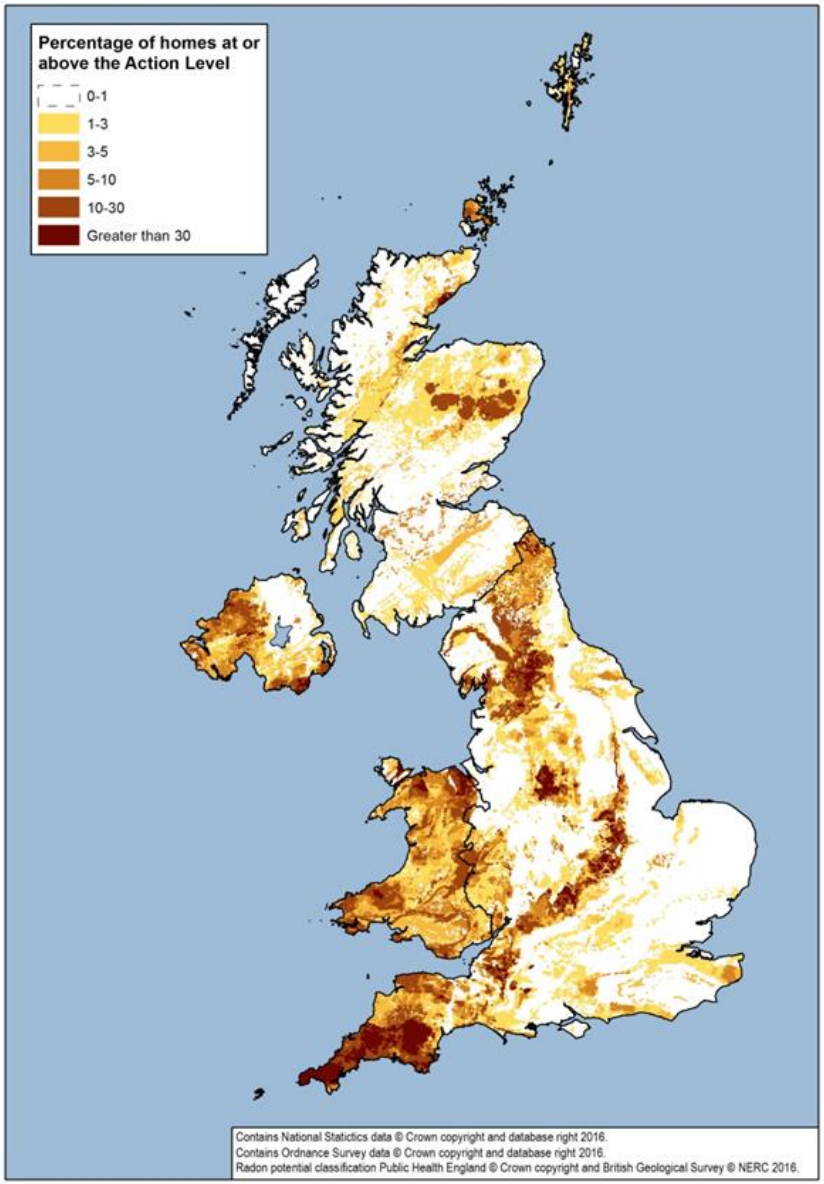
Magnitude of variation

Map 6: Variation in percentage of homes in Radon Affected Areas by lower-tier local authority (2019)

The map and column chart display the latest period (2019). The percentage of homes within Radon Affected Areas ranges from no homes to all (100%) homes.

Research has indicated that geology is the single largest source of variation in indoor radon levels. Additional sources of variation include the house type and living conditions of the occupants such as heating and ventilation. Radon levels tend to be higher in properties built over geological features that are rich in uranium (the radioactive precursor to and source of radon) and/or also have physical structures (e.g. porosity, fracturing, permeability) that allow radon to migrate with soil gas.

Figure 6.1: **Indicative radon map of the UK[6]**



Time dependency of the radon risk factor is not shown, since the local geology is static and housing stock evolves relatively slowly.

Options for action

Public Health England can work with and help local authorities and others to address radon. Consider these options for raising local awareness and action on radon through:

- media communications encouraging householders and property owners to assess the risk in their property
- targeted postal / digital campaigns, focused on areas of higher radon risk, considering options of information provision, funding of radon testing, local information events for householders and others with existing radon measurements
- encouraging social landlords with local property stock to assess the radon risk in their properties
- promoting awareness of radon in housing, estates, education and other teams in the local authority
- promoting the assessment of radon risk in local workplaces, including: local authority premises, NHS premises, private sector workplaces
- reviewing the local policy and practice around radon prevention in new properties

Contact PHE at 01235 822622 or radon@phe.gov.uk or through ukradon.org

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