

Table S1: Magnitude of variation summary

Map	Geography	Title	Optimum value	Range	Fold difference	Number of areas significantly higher than England (99.8% level)	Number of areas significantly lower than England (99.8% level)	Variation trend	Median trend
1a	CCG18	Variation in percentage of people aged 18 and over self-reporting as smokers (2018)	Low	3.6 - 26.1	7.3	12 (from 195)	12 (from 195)	No significant change	Significant Decreasing
1b	CCG18	Variation in percentage of women who are known to smoke at time of delivery (2017/18)	Low	1.6 - 26	16	75 (from 195)	62 (from 195)	No significant change	Significant Decreasing
2	LTLA	Variation in percentage of people (aged 19+) that meet CMO recommendations for physical activity (150+ moderate intensity equivalent minutes per week) (2017/18)	High	52.1 - 80.1	1.5	35 (from 326)	31 (from 326)	No significant change	Not significant Increasing
3	LTLA	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/m ²) (2017/18)	Low	43.4 - 77.6	1.8	43 (from 326)	37 (from 326)	No significant change	Not significant Increasing
4	UTLA	Variation in annual concentration of human-made outdoor fine particulate matter (PM _{2.5}) adjusted to account for population exposure (2016), Micrograms per cubic metre	Low	5.8 - 12.3	2.1	Significance not calculated	Significance not calculated	Max to min range and 95th to 5th percentile gap narrowed significantly	Not significant Decreasing
5a	LTLA	Variation in percentage of households in an area that experience fuel poverty (2017)	Low	4.2 - 19.1	4.5	Significance not calculated	Significance not calculated	Trend data unavailable	Trend data unavailable
5b	LTLA	Variation in the Excess Winter Deaths Index (Aug 2014-Jul 2017)	Low	4.3 - 36.6	8.4	Significance not calculated	Significance not calculated	Trend data unavailable	Trend data unavailable

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6	LTLA	Variation in percentage of homes in Radon Affected Areas (2019)	Low	0 - 100	Not applicable	Significance not calculated	Significance not calculated	Trend data unavailable	Trend data unavailable
7a	CCG18	Variation in mortality rate from COPD (underlying cause) per population (2015-2017), DSR per 100,000	Low	27.4 - 108.8	4	55 (from 195)	60 (from 195)	No significant change	Not significant Increasing
7b	CCG18	Variation in mortality rate from COPD as a contributory cause per population (2015-2017), DSR per 100,000	Low	26.8 - 120.8	4.5	63 (from 195)	56 (from 195)	No significant change	Significant Increasing
7c	CCG18	Variation in percentage of patients with COPD on GP registers (2017/18)	Requires local interpretation	0.8 - 3.7	4.7	92 (from 195)	81 (from 195)	Significant widening of all three measures	Significant Increasing
8a	CCG18	Variation in percentage of patients with COPD on GP registers in whom diagnosis confirmed by post bronchodilator spirometry (including exceptions) (2017/18)	High	69.2 - 86.8	1.3	49 (from 195)	27 (from 195)	95th to 5th percentile gap narrowed significantly	Not significant Increasing
8b	CCG18	Variation in percentage of patients with COPD on GP registers assessed using MRC dyspnoea score in the last 12 months (including exceptions) (2017/18)	High	69 - 90.9	1.3	76 (from 195)	54 (from 195)	Max to min range widened significantly	Not significant Decreasing
8c	CCG18	Variation in percentage of patients with COPD on GP registers with MRC dyspnoea grade ≥ 3 , with a record of oxygen saturation value within the preceding 12 months (including exceptions) (2017/18)	High	91.3 - 98.8	1.1	16 (from 195)	15 (from 195)	Max to min range narrowed significantly	Significant Increasing

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9a	CCG18	Variation in percentage of patients with certain conditions, including COPD, whose notes record smoking status in the preceding 12 months (including exceptions) (2017/18)	High	91.5 - 97	1.1	87 (from 195)	59 (from 195)	No significant change	Not significant Decreasing
9b	CCG18	Variation in percentage of patients with certain conditions, including COPD, who smoke whose notes contain a record of an offer of support and treatment within the preceding 12 months (including exceptions) (2017/18)	High	88 - 98.9	1.1	110 (from 195)	37 (from 195)	No significant change	Significant Increasing
10a	CCG18	Variation in percentage of patients with COPD on GP registers receiving influenza immunisation in the preceding 1 August to 31 March (including exceptions) (2017/18)	High	71 - 87.3	1.2	53 (from 195)	48 (from 195)	Max to min range and 75th to 25th percentile gap widened significantly	Not significant Decreasing
10b	CCG17	Variation in percentage of people with COPD and Medical Research Council Dyspnoea Scale ≥ 3 referred to a pulmonary rehabilitation programme (2014/15)	High	3.8 - 68.5	17.9	69 (from 207)	92 (from 207)	Trend data unavailable	Trend data unavailable
11a	CCG18	Variation in rate of emergency admissions to hospital for COPD per population (2017/18), DSR per 100,000	Low	112.1 - 625	5.6	64 (from 195)	74 (from 195)	No significant change	Not significant Increasing

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11b	CCG18	Variation in median length of stay (days) of emergency admissions to hospital for COPD (2017/18)	Requires local interpretation	1 - 5	5	Significance not calculated	Significance not calculated	No significant change	Not significant Decreasing
11c	CCG18	Experimental Statistic: Variation in percentage of admissions to hospital for COPD that were re-admitted as an emergency within 30 days of discharge (2017/18)	Low	5.9 - 22.3	3.7	Significance not calculated	Significance not calculated	No significant change	Significant Decreasing
12a	CCG18	Variation in percentage of patients admitted to hospital for COPD receiving non-invasive ventilation (NIV) (2017/18)	Requires local interpretation	2.2 - 17.7	8	21 (from 195)	12 (from 195)	No significant change	Not significant Increasing
12b	CCG18	Experimental Statistic: Variation in mortality rate of patients who died within 30 days of an emergency hospital admission for COPD (2016-2018), DSR per 100,000 COPD hospital admission	Low	785.7 - 12167.3	15.5	0 (from 195)	22 (from 195)	No significant change	Not significant Decreasing
13a	CCG18	Variation in percentage of patients with asthma on GP registers (2017/18)	Requires local interpretation	3.4 - 7.9	2.3	108 (from 195)	62 (from 195)	Significant widening of all three measures	Not significant Increasing
13b	CCG18	Variation in percentage of patients with asthma on GP registers aged 8 years or over, in whom measures of variability or reversibility are recorded (including exceptions) (2017/18)	High	76.4 - 93.1	1.2	57 (from 195)	48 (from 195)	95th to 5th and 75th to 25th percentile gaps widened significantly	Significant Increasing

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14a	CCG18	Variation in percentage of patients with asthma on GP registers who had a review in the last 12 months that included an assessment of asthma control using the 3 RCP questions (including exceptions) (2017/18)	High	58.3 - 81.1	1.4	77 (from 195)	65 (from 195)	Significant widening of all three measures	Not significant Increasing
14b	CCG18	Variation in percentage of patients with asthma on GP registers aged 14 to 19 years, in whom there is a record of smoking status in the preceding 12 months (including exceptions) (2017/18)	High	70.3 - 90.9	1.3	37 (from 195)	25 (from 195)	Significant widening of all three measures	Significant Decreasing
15a	CCG18	Variation in rate of emergency admissions to hospital for asthma in adults aged 19 years and over per population (2017/18), DSR per 100,000	Low	43.6 - 318.2	7.3	42 (from 195)	38 (from 195)	No significant change	Not significant Increasing
15b	CCG18	Variation in median length of stay (days) of emergency admissions to hospital for asthma in adults aged 19 years and over (2017/18)	Requires local interpretation	0 - 5	Not applicable	Significance not calculated	Significance not calculated	No significant change	No significant change
16a	CCG18	Variation in rate of emergency admissions to hospital for asthma in children aged 0-18 years per population (2017/18), Crude rate per 100,000	Low	60.8 - 453.6	7.5	35 (from 195)	48 (from 195)	95th to 5th percentile gap narrowed significantly	Not significant Decreasing

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16b	CCG18	Variation in median length of stay (days) of emergency admissions to hospital for asthma in children aged 0-18 years (2017/18)	Requires local interpretation	0 - 2	Not applicable	Significance not calculated	Significance not calculated	No significant change	No significant change
17	CCG18	Variation in mortality rate from asthma in all ages per population (2015-2017), DSR per 100,000	Low	0.7 - 6	8.9	6 (from 195)	1 (from 195)	No significant change	Not significant Increasing
18a	CCG18	Variation in median length of stay (days) of emergency admissions to hospital for pneumonia (2017/18)	Low	2 - 7	3.5	Significance not calculated	Significance not calculated	No significant change	Not significant Decreasing
18b	CCG18	Variation in percentage of zero and one day emergency admissions to hospital for pneumonia (2017/18)	High	11.1 - 38.5	3.5	36 (from 195)	51 (from 195)	95th to 5th and 75th to 25th percentile gaps widened significantly	Significant Increasing
18c	CCG18	Variation in mortality rate from pneumonia (underlying cause) per population (2015-2017), DSR per 100,000	Low	29.5 - 83.2	2.8	38 (from 195)	29 (from 195)	75th to 25th percentile gap narrowed significantly	Significant Decreasing
18d	CCG18	Variation in mortality rate from pneumonia (all mentions) per population (2015-2017), DSR per 100,000	Low	123.4 - 305.2	2.5	59 (from 195)	58 (from 195)	95th to 5th and 75th to 25th percentile gaps narrowed significantly	Significant Decreasing
19	CCG18	Variation in rate of emergency admissions to hospital for pneumonia per population (2017/18), DSR per 100,000	Low	299.4 - 821.2	2.7	66 (from 195)	57 (from 195)	No significant change	Not significant Increasing

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20a	CCG18	Variation in rate of emergency admissions to hospital for bronchiolitis in children aged under 2 years per population (2015/16-2017/18), Crude rate per 100,000	Low	1373.6 - 6144.9	4.5	73 (from 195)	59 (from 195)	Trend data unavailable	Trend data unavailable
20b	CCG18	Variation in percentage of zero and one day emergency admissions to hospital for bronchiolitis in children aged under 2 years (2015/16-2017/18)	Requires local interpretation	20.9 - 81.3	3.9	54 (from 195)	58 (from 195)	Trend data unavailable	Trend data unavailable
21a	CCG18	Variation in mortality rate from respiratory disease in persons aged under 75 years per population (2015-2017), DSR per 100,000	Low	18.2 - 74.9	4.1	46 (from 195)	46 (from 195)	No significant change	Not significant Decreasing
21b	CCG18	Variation in mortality rate from respiratory disease considered preventable in persons aged under 75 years per population (2015-2017), DSR per 100,000	Low	7.5 - 46.4	6.2	42 (from 195)	41 (from 195)	No significant change	Not significant Increasing
22a	CCG18	Variation in rate of emergency admissions to hospital for respiratory disease per population (2017/18), DSR per 100,000	Low	994.9 - 2565.8	2.6	76 (from 195)	77 (from 195)	95th to 5th percentile gap widened significantly	Significant Increasing
22b	CCG18	Experimental Statistic: Variation in percentage of admissions to hospital for respiratory disease that were re-admitted as an emergency within 30 days of discharge (2017/18)	Low	7.1 - 12.7	1.8	Significance not calculated	Significance not calculated	No significant change	Significant Increasing

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23	NHS Area Team	Variation in percentage of people aged 6 months to 65 years with chronic respiratory disease who have received the influenza vaccine according to national ambitions (2018/19)	High	44.8 - 54.6	1.2	Number of areas above 55% target: 0 (from 25)	Number of areas below 55% target: 25 (from 25)	No significant change	Not significant Increasing
24	CCG18	Variation in rate of diagnostic sleep studies undertaken per population (2018/19), Crude rate per 100,000	High	4.3 - 1312.3	305	63 (from 195)	110 (from 195)	Max to min range widened significantly	Not significant Increasing
25	CCG18	Variation in total expenditure on home oxygen therapy per population (2017/18), Spend (£) per 1,000 patients	Requires local interpretation	738.8 - 4436.6	6	Significance not calculated	Significance not calculated	No significant change	Not significant Decreasing
26	CCG18	Variation in high-dose inhaled corticosteroid items as a percentage of all inhaled corticosteroid prescription items (2018)	Low	24.5 - 57.6	2.3	91 (from 195)	93 (from 195)	95th to 5th percentile gap widened significantly	Not significant Increasing
27	CCG18	Variation in incidence rate of tuberculosis (TB) per population (2015-2017), Crude rate per 100,000	Low	0.7 - 59	87.2	40 (from 195)	111 (from 195)	95th to 5th percentile gap narrowed significantly	Not significant Decreasing
28a	CCG18	Variation in percentage of people with pulmonary tuberculosis (TB) who started treatment within four months of symptom onset (2017)	High	21.4 - 100	4.7	1 (from 195)	2 (from 195)	No significant change	Not significant Decreasing

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28b	CCG18	Variation in percentage of people with drug-sensitive tuberculosis (TB) who completed a full course of treatment within 12 months of treatment onset (2016)	High	36.4 - 100	2.8	1 (from 195)	3 (from 195)	Significant narrowing of all three measures	Significant Increasing
29a	CCG18	Variation in incidence rate of lung cancer per population (2015-2017), DSR per 100,000	Low	41.5 - 160.6	3.9	48 (from 195)	59 (from 195)	95th to 5th percentile gap narrowed significantly	Not significant Decreasing
29b	CCG18	Variation in mortality rate from lung cancer per population (2015-2017), DSR per 100,000	Low	29.9 - 108	3.6	46 (from 195)	54 (from 195)	No significant change	Not significant Decreasing
29c	CCG18	Variation in percentage of one-year survival estimates for lung cancer patients, all adults aged 15 to 99 years, by year of diagnosis (2016)	High	30.7 - 53.8	1.8	32 (from 195)	29 (from 195)	Significant widening of all three measures	Significant Increasing
30a	CCG18	Variation in percentage of lung cancer patients diagnosed at an early stage (stage 1 and 2) (2015-2017)	High	16.6 - 37.5	2.3	13 (from 195)	18 (from 195)	No significant change	Not significant Increasing
30b	CCG18	Variation in percentage of lung cancer patients presenting as an emergency (2014-2016)	Low	24.4 - 49.8	2	15 (from 195)	14 (from 195)	No significant change	Significant Decreasing
30c	CCG18	Variation in percentage of lung cancer patients presenting via the two-week wait route (2014-2016)	High	7.8 - 44.1	5.7	44 (from 195)	41 (from 195)	No significant change	Not significant Increasing
31a	SHA	Variation in rate of lung transplant registrations per population (2017/18), Crude rate per 1,000,000	High	1.9 - 6.2	3.3	Significance not calculated	Significance not calculated	Trend data unavailable	Trend data unavailable

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31b	SHA	Variation in rate of lung transplants per population (2017/18), Crude rate per 1,000,000	High	1 - 5.3	5.3	Significance not calculated	Significance not calculated	Trend data unavailable	Trend data unavailable
32a	CCG18	Variation in percentage of deaths from COPD that occurred in hospital (2015-2017)	Requires local interpretation	48.3 - 74.1	1.5	9 (from 195)	6 (from 195)	95th to 5th percentile gap narrowed significantly	Significant Decreasing
32b	CCG18	Variation in percentage of deaths from COPD that occurred at home (2015-2017)	Requires local interpretation	15.2 - 35.7	2.3	2 (from 195)	4 (from 195)	75th to 25th percentile gap narrowed significantly	Significant Increasing
32c	CCG18	Variation in percentage of deaths from lung cancer that occurred in hospital (2015-2017)	Requires local interpretation	21.9 - 59.9	2.7	20 (from 195)	22 (from 195)	No significant change	Significant Decreasing
32d	CCG18	Variation in percentage of deaths from lung cancer that occurred at home (2015-2017)	Requires local interpretation	19.2 - 50	2.6	16 (from 195)	15 (from 195)	No significant change	Significant Increasing
32e	CCG18	Variation in percentage of deaths from lung cancer that occurred in a care home (2015-2017)	Requires local interpretation	4.3 - 33.5	7.8	11 (from 195)	13 (from 195)	No significant change	Significant Increasing
32f	CCG18	Variation in percentage of deaths from lung cancer that occurred in a hospice (2015-2017)	Requires local interpretation	1.1 - 40.4	38.1	42 (from 195)	23 (from 195)	95th to 5th percentile gap narrowed significantly	Not significant Decreasing