

# Diagnostic Imaging Dataset: Standardised CCG rates 2017/18



**Diagnostic Imaging Dataset:  
Standardised CCG rates 2017/18**

Version number: 1.0

First published: 6<sup>th</sup> December 2018

Prepared by: Operational Information for Commissioning

Classification: OFFICIAL

This information can be made available in alternative formats, such as easy read or large print, and may be available in alternative languages, upon request. Please contact:

Sheila Dixon  
Operational Information for Commissioning  
NHS England  
Room 5E24, Quarry House, Quarry Hill, Leeds LS2 7UE  
Email: [england.did@nhs.net](mailto:england.did@nhs.net)

## Contents

Contents .....	3
1 Introduction.....	4
2 CCG Standardised Rates .....	4
2.1 Method .....	4
2.2 Results .....	5
2.2.1 X-ray .....	6
2.2.2 Ultrasound .....	7
2.2.3 CT Scans .....	8
2.2.4 MRI Scans .....	9
2.2.5 Fluoroscopy .....	10
2.2.6 Nuclear Medicine .....	11
2.2.7 PET Scan.....	12
2.2.8 SPECT Scan.....	13
2.2.9 Medical Photography .....	14
2.2.10 Brain MRI.....	15
2.2.11 Chest X-ray.....	16
2.2.12 Chest CT .....	17
2.2.13 Kidney & Bladder Ultrasound.....	18
2.2.14 Abdomen & Pelvis Ultrasound .....	19
3 Odds Ratios.....	20
3.1 Method .....	20
3.2 Results .....	21
3.2.1 Sex.....	21
3.2.2 Deprivation.....	21
3.2.3 Age .....	22
4 Annex .....	23
4.1 Annex A - Data quality and the impact of missing data .....	23
4.2 Annex B - CCG Standardised Imaging Rates per 10,000, 2017/18.....	25
4.3 Contact Us.....	25
4.3.1 Feedback .....	25
4.3.2 iView .....	25
4.3.3 Websites .....	25
4.3.4 Additional Information .....	25

## 1 Introduction

Imaging activity from the Diagnostic Imaging Dataset (DID) is presented by Clinical Commissioning Group (CCG) in Tables 7 and 8 of the annual 2017/18 report<sup>1</sup>. This Annex to the report expresses CCG activity as a rate per population, for each modality and for early diagnosis of cancer (EDOC) tests<sup>2</sup>, standardised by age, sex and deprivation. It additionally shows the impact of age, sex and deprivation on the rates using Odds Ratios.

## 2 CCG Standardised Rates

### 2.1 Method

In 2017/18, the CCG of patients in the DID was derived from either their GP Practice code or, where this was missing, the Lower Super Output Area (LSOA) of their postcode. Rates per 10,000 population were calculated by dividing 2017/18 DID activity by CCG by October 2017 GP Practice-registered CCG populations from the Exeter system. Both sources were available by age and sex, with Index of Multiple Deprivation (IMD) quintile information added based on Lower Super Output Area (LSOA<sup>3</sup>).

Counts of imaging activity by CCG, sex, 5-year age band, imputed IMD quintile and modality or EDOC were extracted from DID. Cases that did not have full completeness for all these fields were removed: approximately 680,000 (1.6%) cases in 2017/18, down from 3.4 million (8%) cases in 2016/17. This improvement was largely achieved by using CCG of residence based on patient postcode where no GP Practice was available to derive CCG of responsibility (see section 4.1).

Rates were indirectly standardised by applying the national rate by modality or EDOC for each IMD/Sex/Age breakdown to the local CCG population, to obtain an expected rate for each CCG based on their demography. The extent to which the observed rate differed from the expected rate indicated the extent to which the CCG differed from the standard, national rate. A standardised rate for each CCG by modality or EDOC was calculated as:

$$\text{Standardised Rate}_{\text{CCG}} = \left( \frac{\text{Observed Rate}_{\text{CCG}}}{\text{Expected Rate}_{\text{CCG}}} \right) \times \text{National Rate}$$

Indirect standardisation allows each rate to be compared with the national average, but does not allow direct comparison between CCGs. Nevertheless, it can demonstrate regional patterns and indicate the extent of variation.

<sup>1</sup> [Diagnostic Imaging Dataset Annual Statistical Release 2017/18](https://www.england.nhs.uk/statistics/statistical-work-areas/diagnostic-imaging-dataset/diagnostic-imaging-dataset-2017-18-data/), NHS England, 22 November 2018. Available (with appended tables by CCG) from <https://www.england.nhs.uk/statistics/statistical-work-areas/diagnostic-imaging-dataset/diagnostic-imaging-dataset-2017-18-data/>.

<sup>2</sup> See above publication for definitions of each modality and further details on the collection.

<sup>3</sup> The 2017/18 DID has 2011 LSOA derived from patient postcode, which was matched to 2015 IMD quintiles.

## 2.2 Results

The national rates<sup>4</sup> of diagnostic imaging tests in 2017/18 per 10,000 people are shown in Tables 1 & 2 below.

**Table 1. National Imaging Rates per 10,000 by modality, 2017/18**

	X-ray	Ultrasound	CT Scan	MRI	Fluoroscopy	Nuclear Medicine	PET Scan	SPECT Scan	Medical Photography
<b>Rate per 10,000 people</b>	3,845	1,604	864	584	172	70	26	7	6

**Table 2. National Imaging Rates per 10,000 by Early Diagnosis of Cancer<sup>5</sup>, 2017/18**

	Brain MRI	Chest X-ray	Chest CT	Kidney or Bladder Ultrasound	Abdomen or Pelvis Ultrasound
<b>Rate per 10,000 people</b>	121	1,399	96	39	213

The use of a CCG of residence where no CCG of responsibility was available in 2017/18, together with ongoing improvement in completeness of the fields required for calculating standardised rates, has contributed to higher rates and less variance across CCGs than in 2016/17. Nevertheless, the rates for some CCGs were impacted by missing data, as outlined in Section 4.1. Consequently, the rates should be interpreted with caution, especially those at the lower end of the distribution across all modalities.

For most CCGs the standardised rate was within 10% of the crude rate, but there are bigger differences particularly in areas with predominantly younger or older populations. The impact of age, sex and deprivation on imaging rates is explored in Section 3.

Standardised 2017/18 rates by CCG are available in Annex B (separate Excel file). The following sections summarise the distribution of rates for each modality or EDOC and illustrate these on a map.

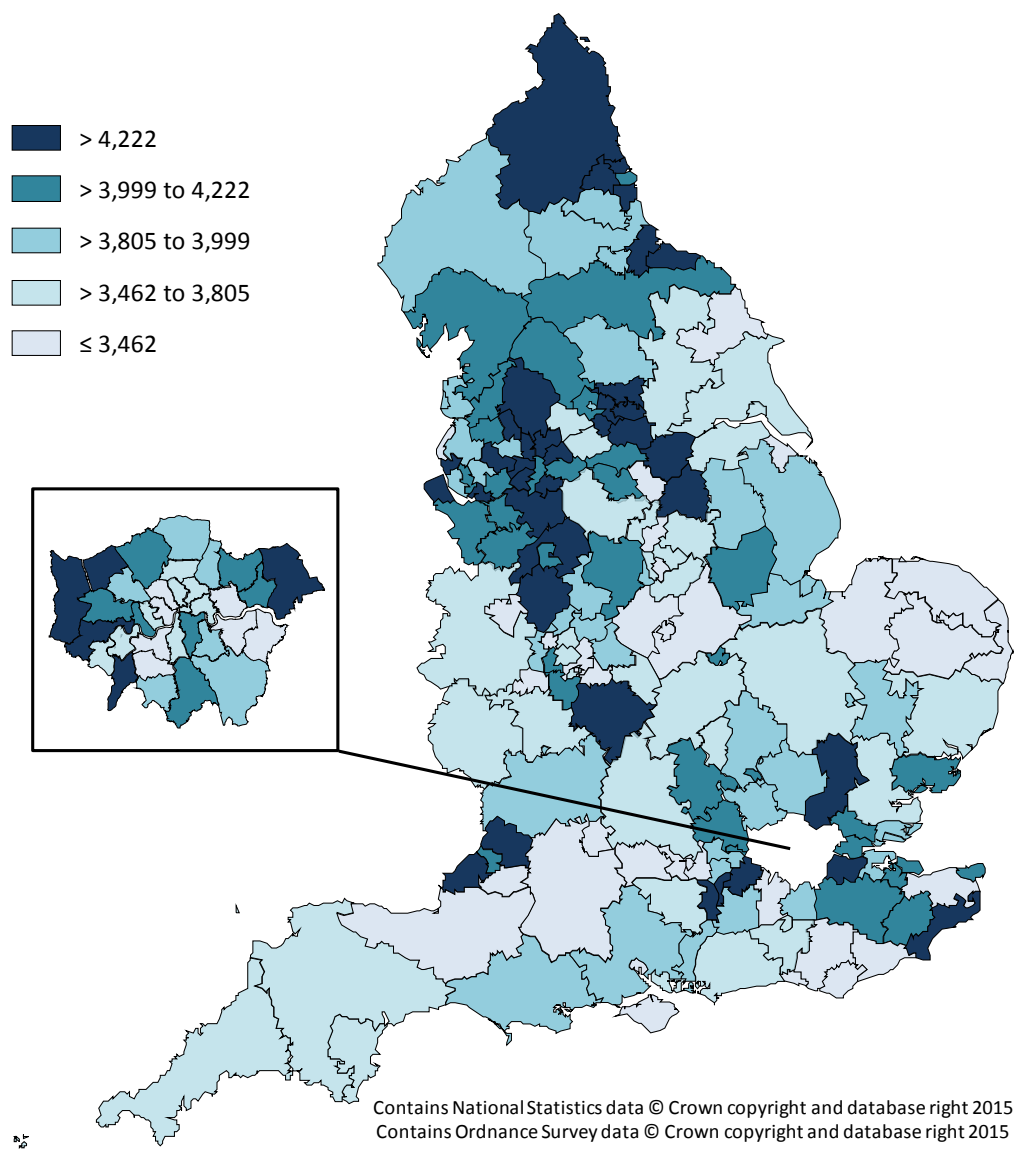
<sup>4</sup> These national rates exclude activity with missing age, sex, deprivation or CCG (1.6% of overall imaging tests).

<sup>5</sup> Brain MRI may be used to diagnose brain cancer; Chest X-ray and Chest CT to diagnose lung cancer, Kidney or Bladder ultrasound to diagnose kidney or bladder cancer and Abdomen and/or pelvis ultrasound to diagnose ovarian cancer (but this test, and the rates given here, are not restricted to females). Although these tests may be used to diagnose cancer, many have wider clinical uses and it is not possible to distinguish between the different uses of these tests.

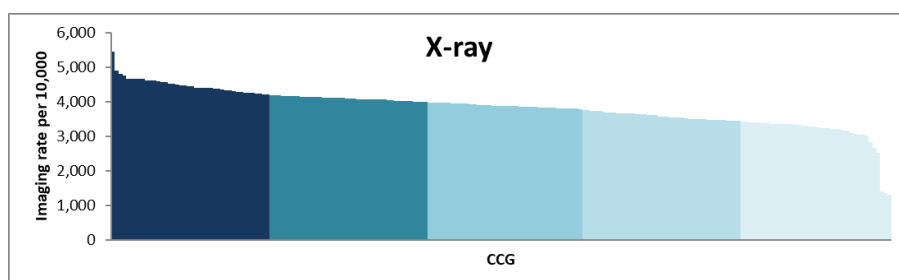
### 2.2.1 X-ray

There was some regional variation in X-ray rates, see Map 1 and Graph 1, with rates generally higher than average in CCGs in the North Region. The low level of rates for some CCGs in the lower fifth of CCGs illustrates the impact of missing data – most of these rates will be understated for that reason. The national rate was 3,845 X-rays per 10,000 registered population and 75% CCGs were within one standard deviation of the mean, that is between 3,306 and 4,382 tests per 10,000 population.

**Map 1. Standardised X-ray rates by CCG, 2017/18**



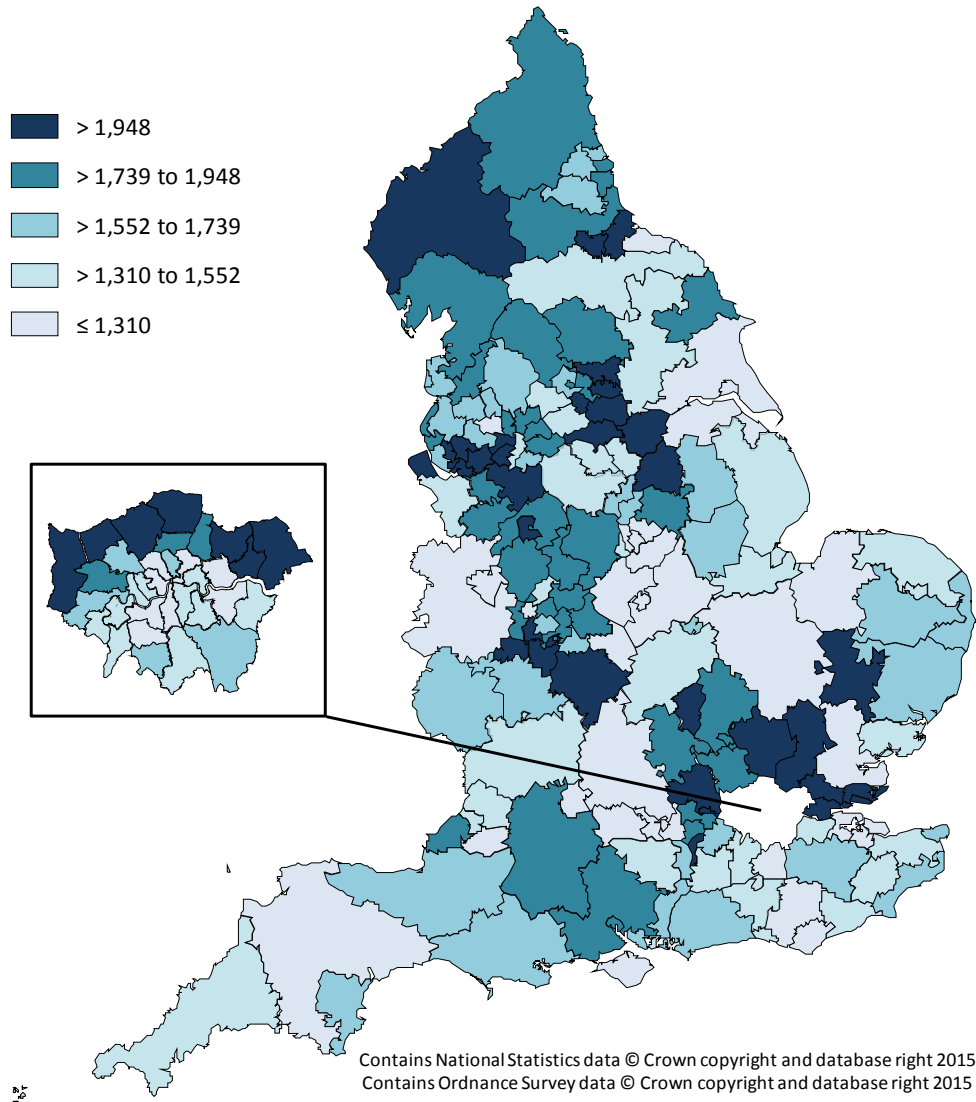
**Graph 1. Standardised X-ray rates by CCG, 2017/18**



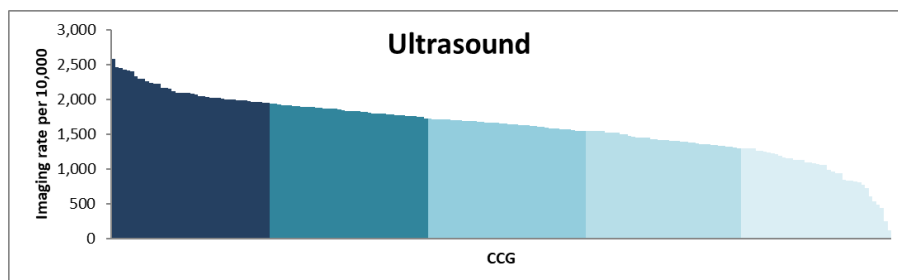
### 2.2.2 Ultrasound

As with X-ray, Ultrasound showed a concentration of higher rates in CCGs in the North region (Map 2). Ultrasound does not rise as steeply with age as the other modalities (see Odds ratios), so most CCGs have similar standardised rates and crude rates per 10,000 population. Nevertheless, the CCG rates varied more than the other major modalities, probably because of differences in the extent to which all ultrasound activity (especially obstetric) is recorded in hospitals' radiological information systems. The national rate was 1,604 ultrasounds per 10,000 population.

**Map 2. Standardised Ultrasound rates by CCG, 2017/18**



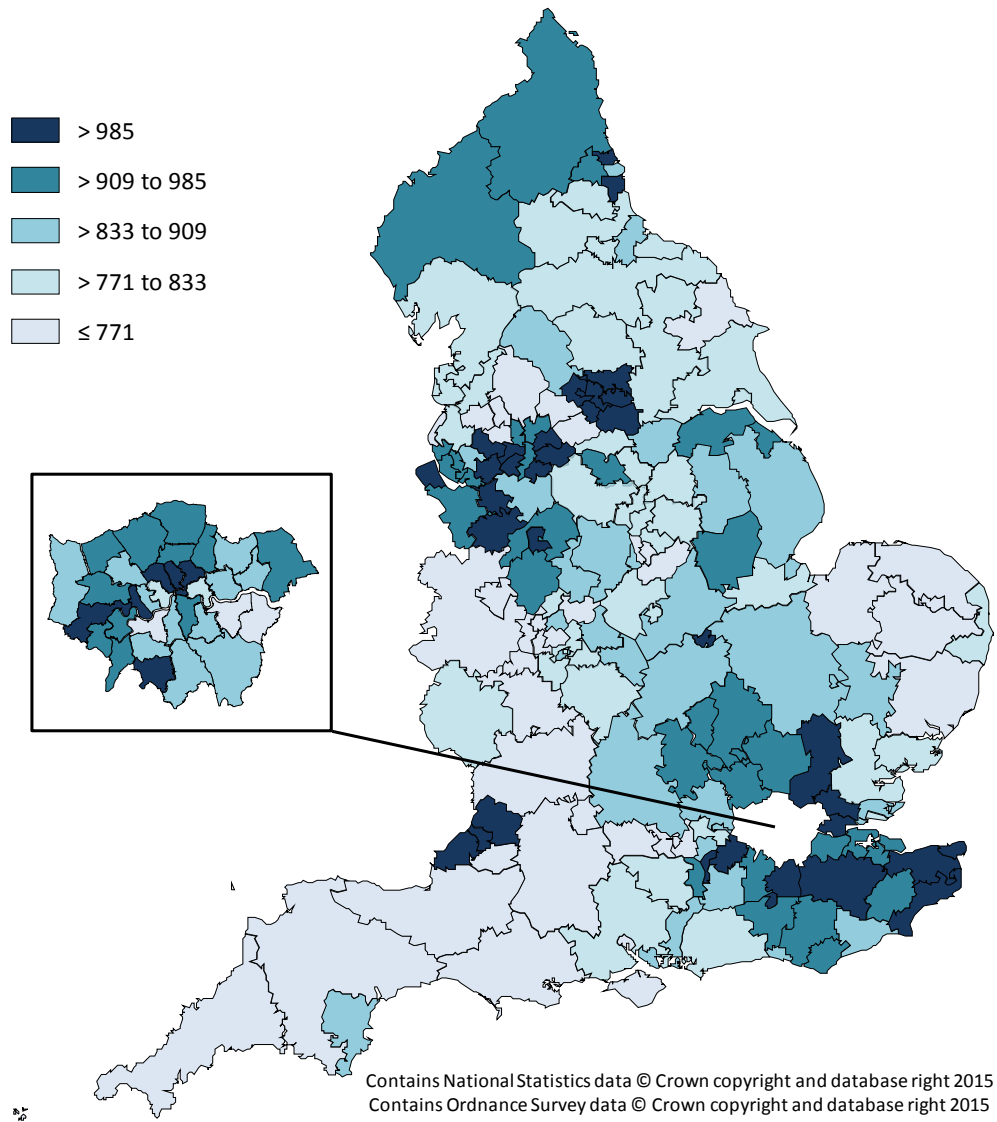
**Graph 2. Standardised Ultrasound rates by CCG, 2017/18**



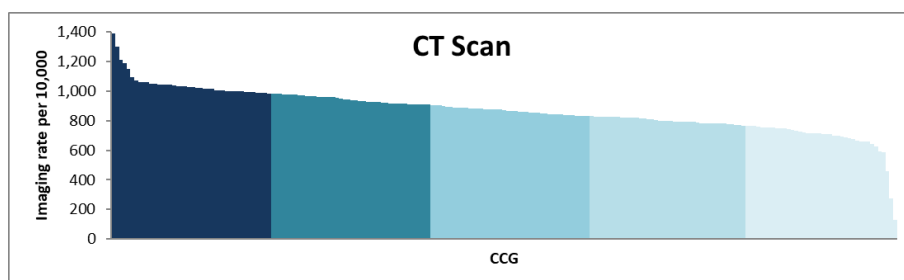
### 2.2.3 CT Scans

CT scans did not appear to show any strongly regional concentration and there were both high and lower rates across England (Map 3). Demographics had a large effect on CT scan rates, with only 52% of CCGs having a standardised rate within 10% of their crude rate. The national rate was 864 CT scans per 10,000 registered population and 75% CCGs were within one standard deviation of the mean, that is between 726 and 1,013 tests per 10,000 population.

**Map 3. Standardised CT rates by CCG, 2017/18**



**Graph 3. Standardised CT rates by CCG, 2017/18**

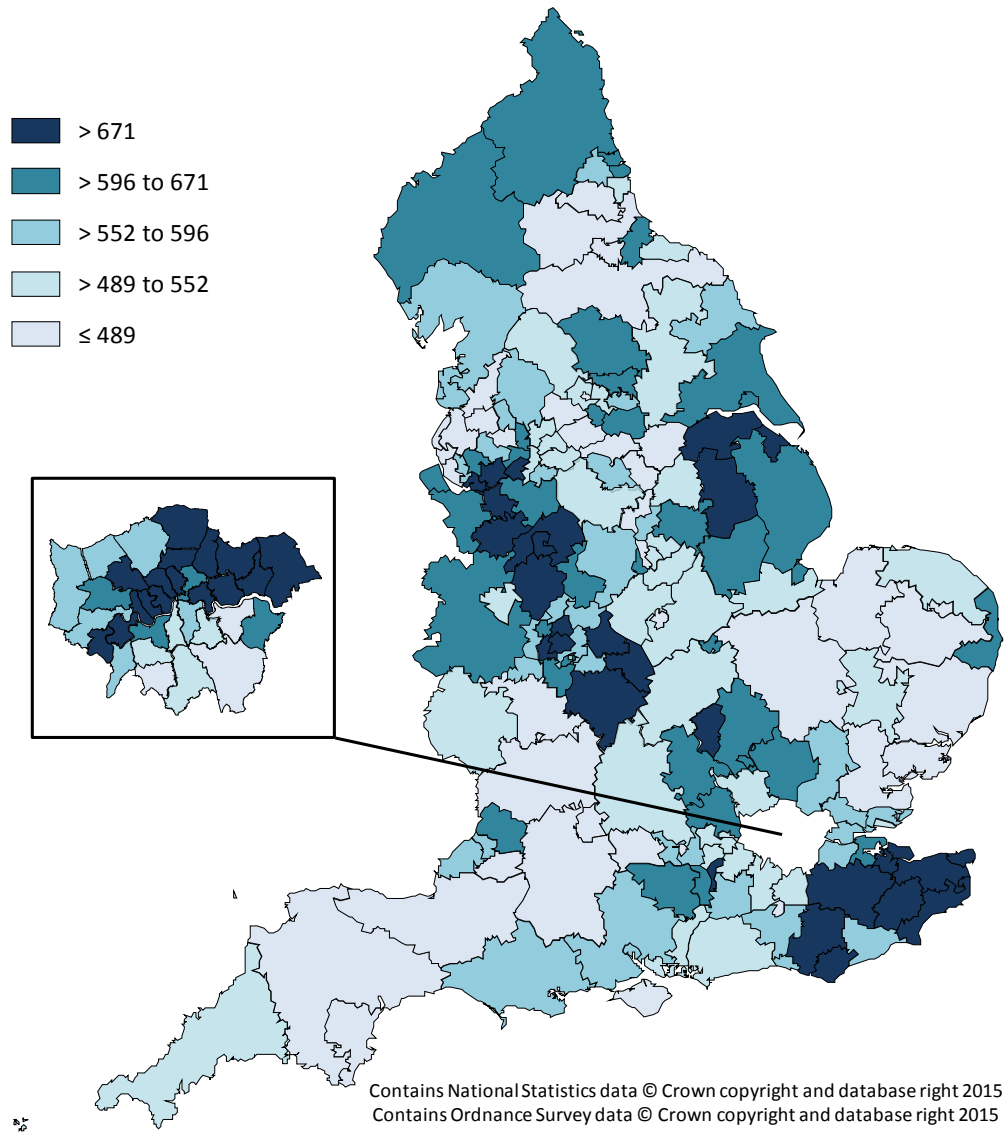




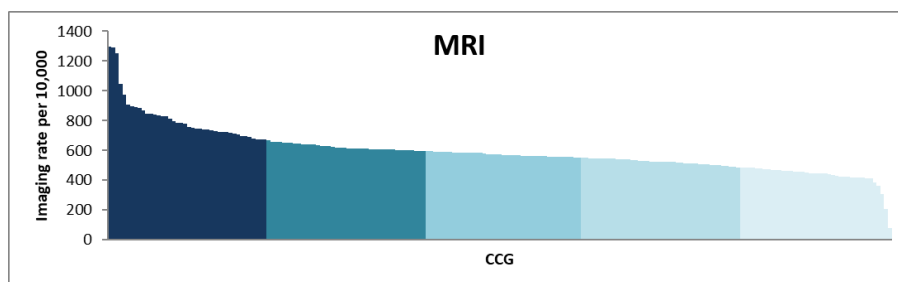
## 2.2.4 MRI Scans

MRI showed relatively little regional pattern but with a slight concentration of high rates in southern Yorkshire, the Midlands and Kent (Map 4). The national rate was 584 MRI scans per 10,000 registered population but three CCGs were more than twice that rate: NHS South Kent Coast, Ashford and Thanet CCGs (all served by East Kent Hospitals University NHS Foundation Trust).

**Map 4. Standardised MRI rates by CCG, 2017/18**



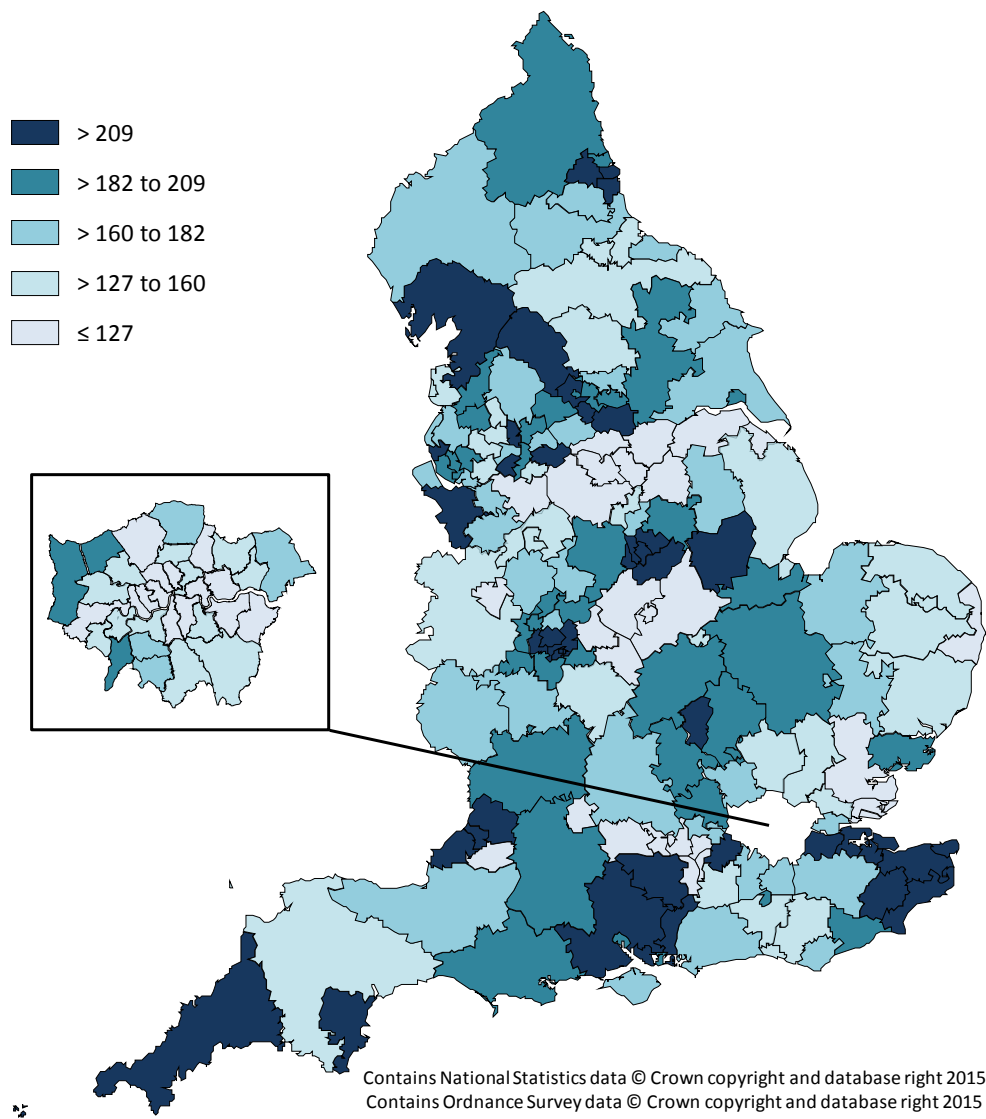
**Graph 4. Standardised MRI rates by CCG, 2017/18**



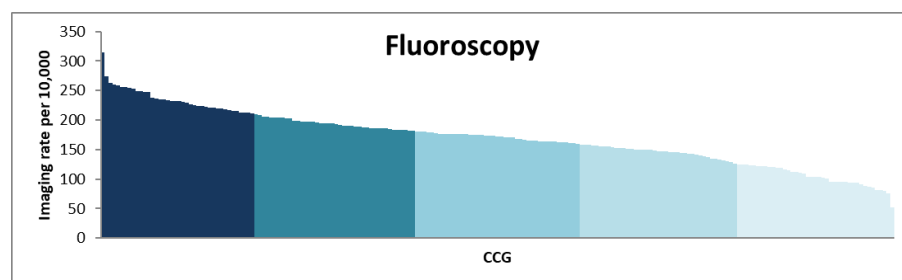
## 2.2.5 Fluoroscopy

Fluoroscopy showed no marked concentration of high or low standardised rates (Map 5), but rates were nonetheless quite variable across CCGs. The national rate was 172 Fluoroscopy scans per 10,000 registered population and 65% CCGs were within one standard deviation of the mean, that is between 124 and 216 tests per 10,000 population.

**Map 5. Standardised Fluoroscopy rates by CCG, 2017/18**



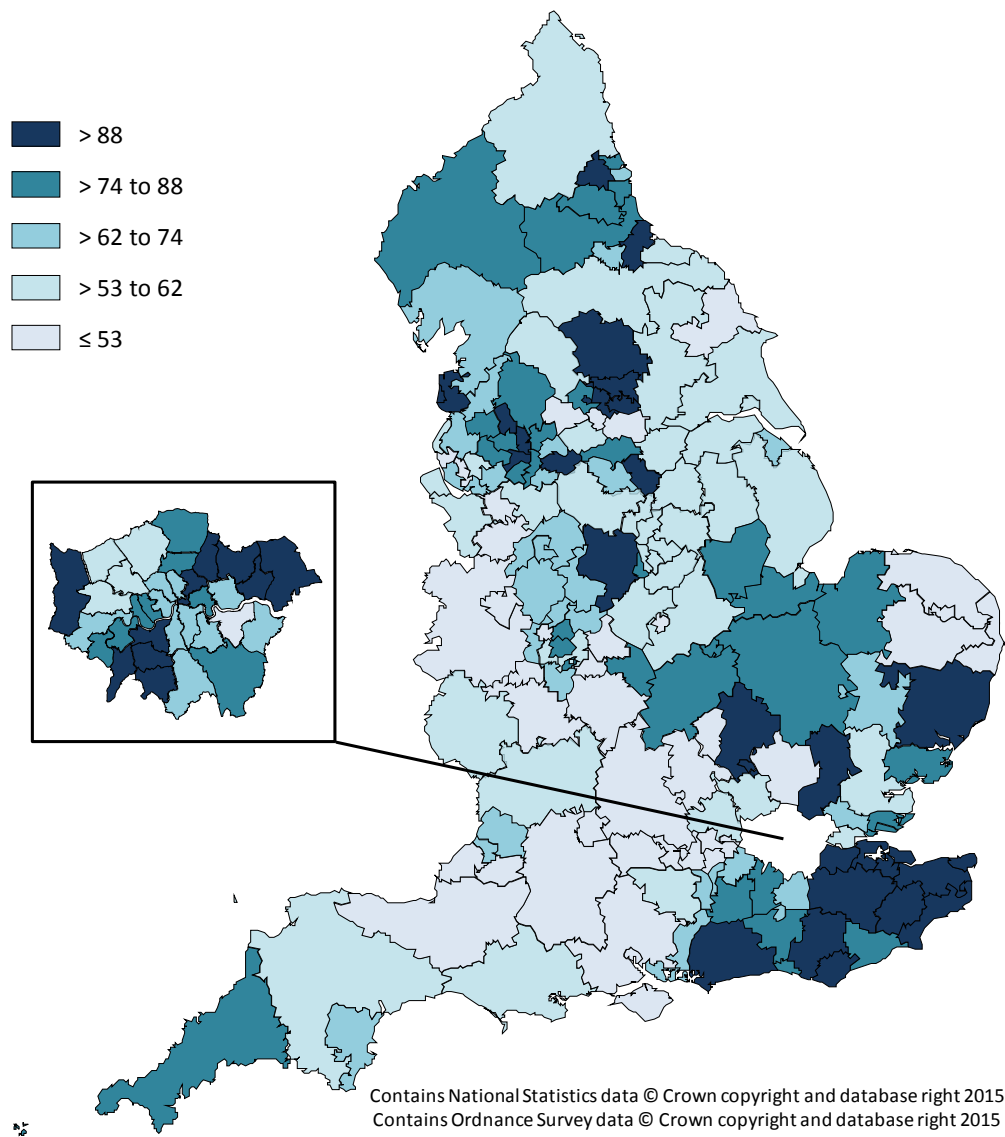
**Graph 5. Standardised Fluoroscopy rates by CCG, 2017/18**



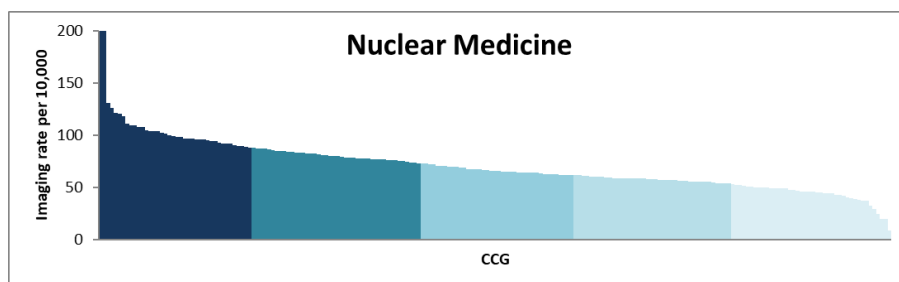
## 2.2.6 Nuclear Medicine

Nuclear Medicine showed some regional variation, with the highest rates around Kent (Map 6). The national rate was 70 Nuclear Medicine exams per 10,000 registered population, but two CCGs were more than twice that rate: NHS Swale and NHS Medway CCGs (both served by Medway NHS Foundation Trust).

**Map 6. Standardised Nuclear Medicine rates by CCG, 2017/18**



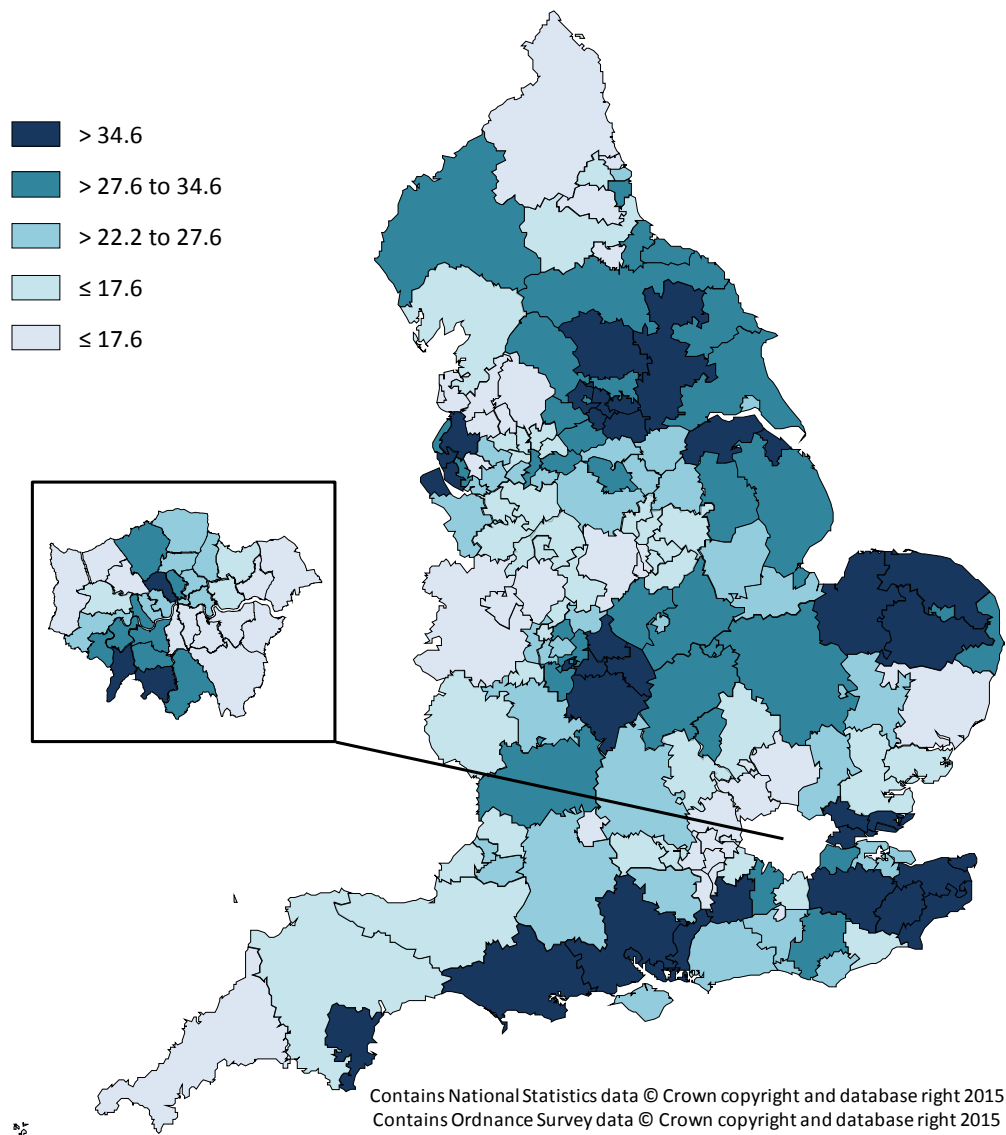
**Graph 6. Standardised Nuclear Medicine rates by CCG, 2017/18**



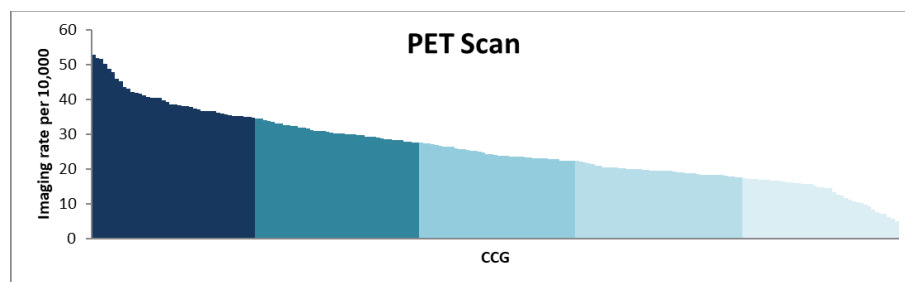
### 2.2.7 PET Scan

PET scan showed some regional variation, with several clusters of higher rates (Map 7). Some of the variability arose from the relatively small numbers: the national rate was 26 PET scans per 10,000 registered population and 70% CCGs were within one standard deviation of the mean between 16 and 35 tests per 10,000 population.

**Map 7. Standardised PET Scan rates by CCG, 2017/18**



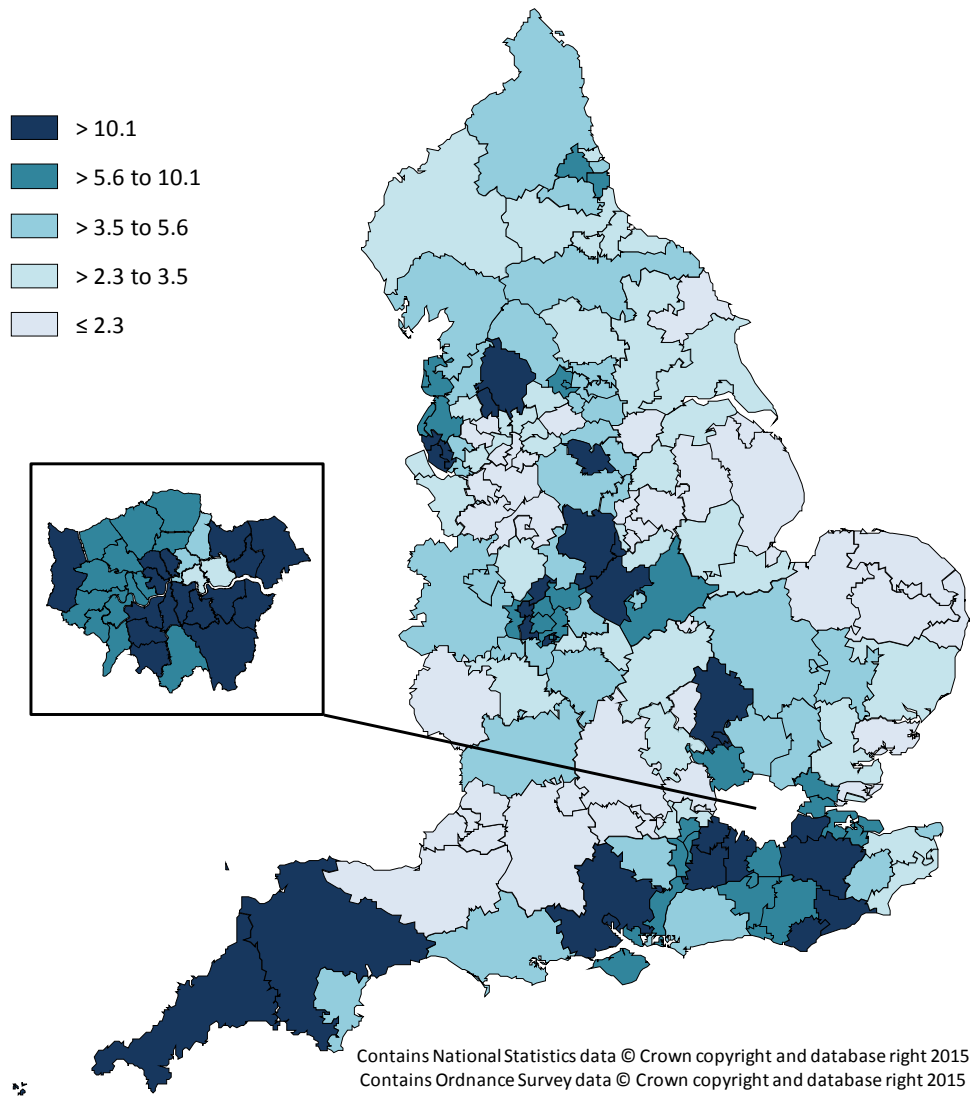
**Graph 7. Standardised PET Scan rates by CCG, 2017/18**



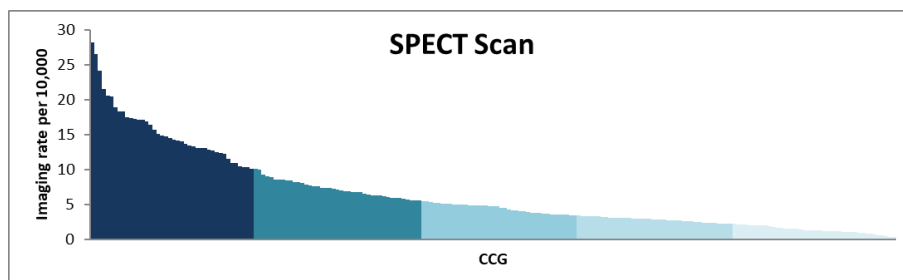
### 2.2.8 SPECT Scan

SPECT scan showed clusters of high rates amongst generally low rates (Map 8). The biggest volume providers of SPECT were in Plymouth, Sheffield, Southampton and Derby, with others in and around London, leading to higher rates in those and some neighbouring CCGs (Chart 8). The national rate was 7 SPECT scans per 10,000 registered population but the variance was wide and one standard deviation of the mean extended from 1 to 12 tests per 10,000 population (with 79% CCGs within this range, but some considerably higher).

**Map 8. Standardised SPECT Scan rates by CCG, 2017/18**



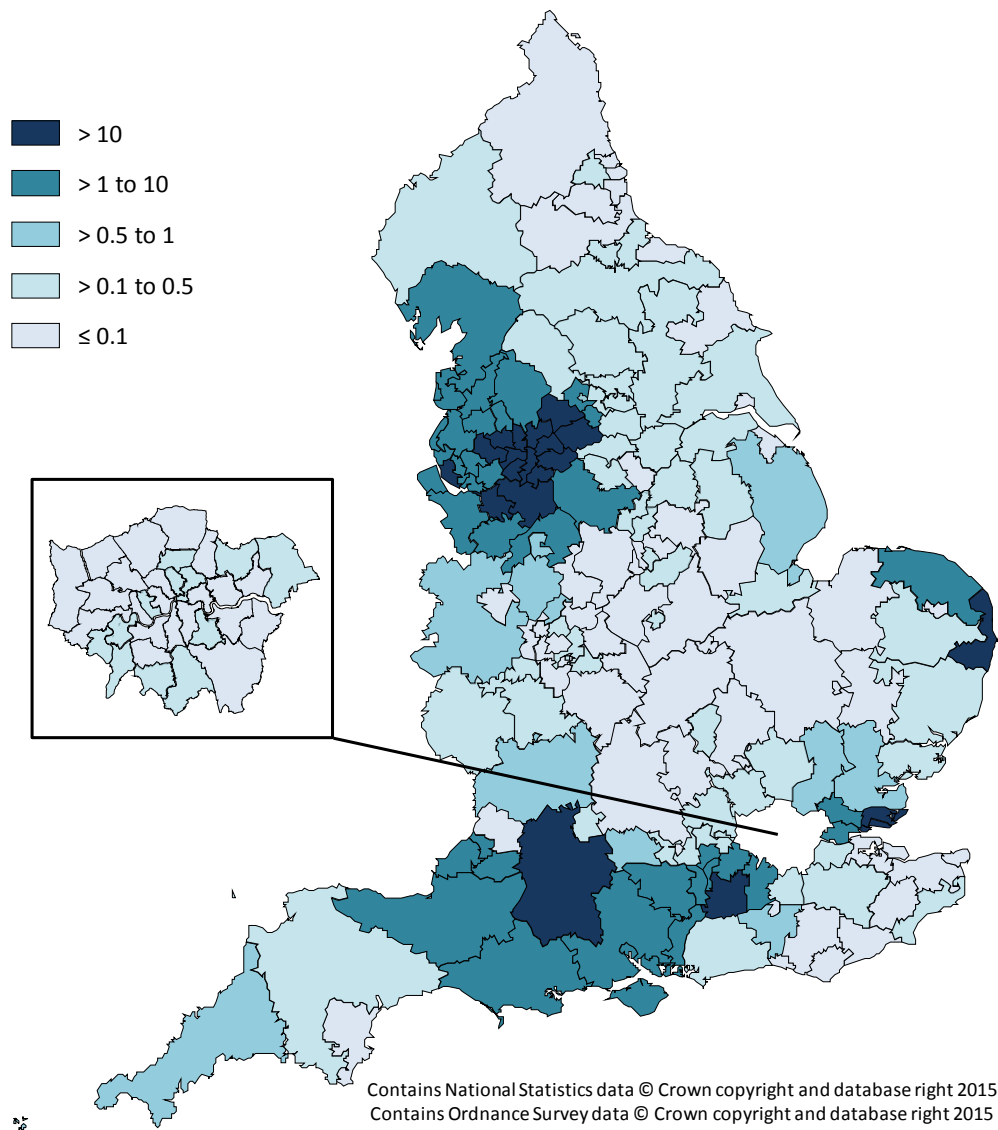
**Graph 8. Standardised SPECT Scan rates by CCG, 2017/18**



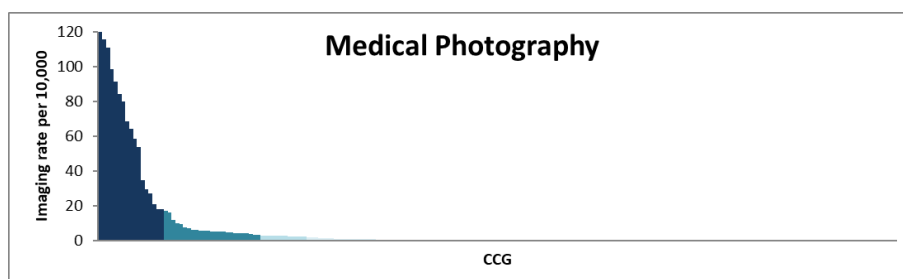
### 2.2.9 Medical Photography

Medical Photography showed a very marked cluster of high rates in the North West of England and Wessex (Map 9). Only 11 providers nationally reported more than a few Medical Photography images in the DID, the biggest being Pennine Acute Hospitals NHS Trust, Salford Royal NHS Foundation Trust and Manchester University NHS Foundation Trust. Most CCGs had no reported Medical Photography (Graph 9).

**Map 9. Standardised Medical Photography rates by CCG, 2017/18**



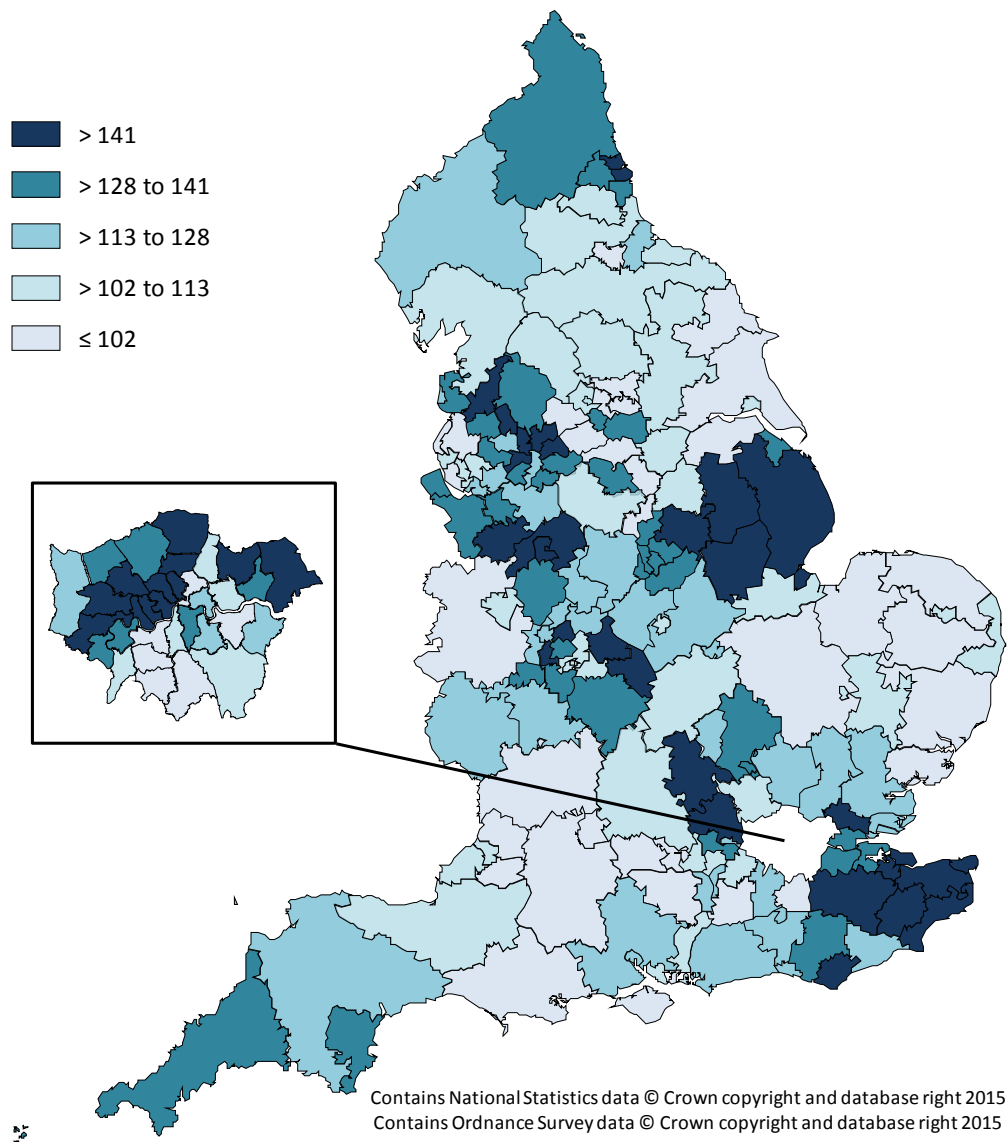
**Graph 9. Standardised Medical Photography rates by CCG, 2017/18**



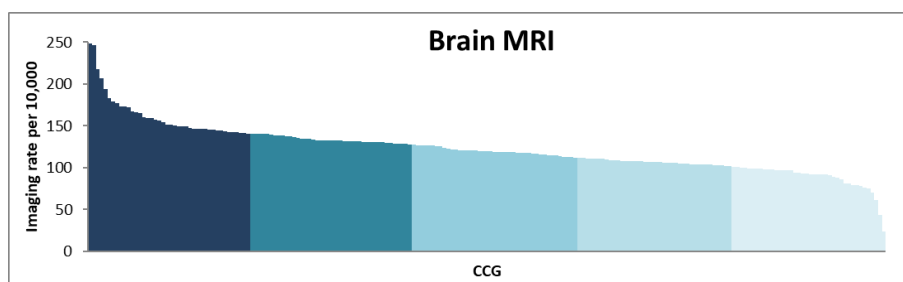
### 2.2.10 Brain MRI

Brain MRI showed relatively little regional pattern (Map 10), but with the highest rates in Kent, as for all MRI (see section 2.2.4). High rates tended to cluster around neighbouring CCGs and many of these areas had at least one high-volume provider, but there was a wide variety of providers of different levels of activity. The national rate was 121 Brain MRIs per 10,000 registered population, but two CCGs had twice that rate: NHS Ashford and South Kent Coast CCGs.

**Map 10. Standardised Brain MRI rates by CCG, 2017/18**



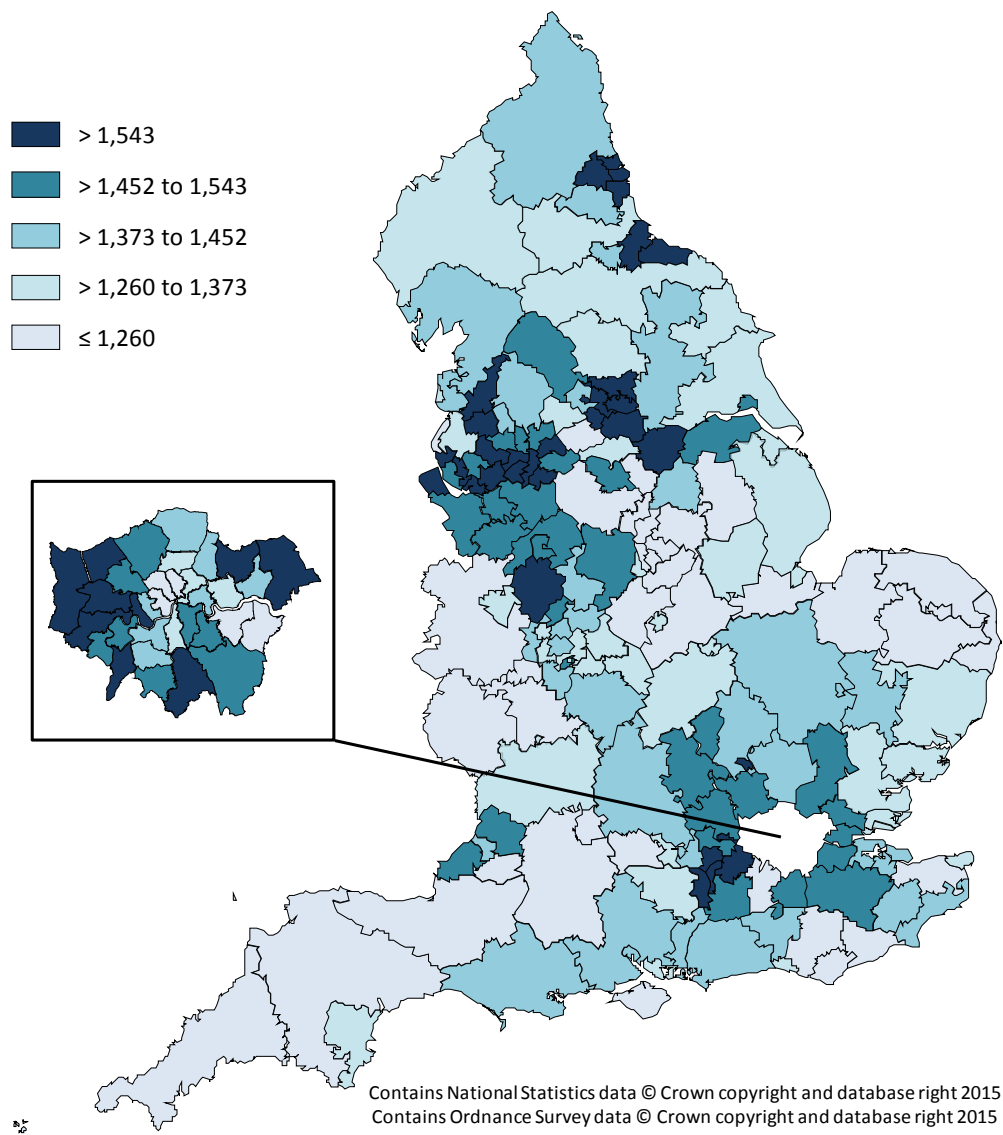
**Graph 10. Standardised Brain MRI rates by CCG, 2017/18**



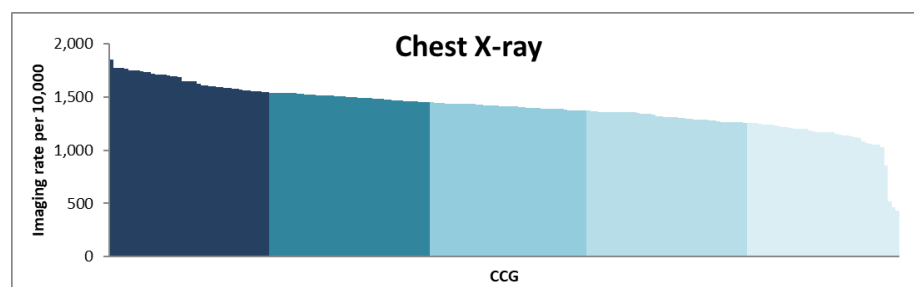
### 2.2.11 Chest X-ray

Chest X-ray showed less variation across CCGs than the other tests for potential early diagnosis of cancer, with much bigger numbers of tests (Map 11). The national rate was 1,399 Chest X-rays per 10,000 registered population and 76% CCGs were within one standard deviation of the mean (a similar spread as for all X-ray, see Section 2.2.1), between 1,194 and 1,607 tests per 10,000 population.

**Map 11. Standardised Chest X-ray rates by CCG, 2017/18**



**Graph 11. Standardised Chest X-ray rates by CCG, 2017/18**

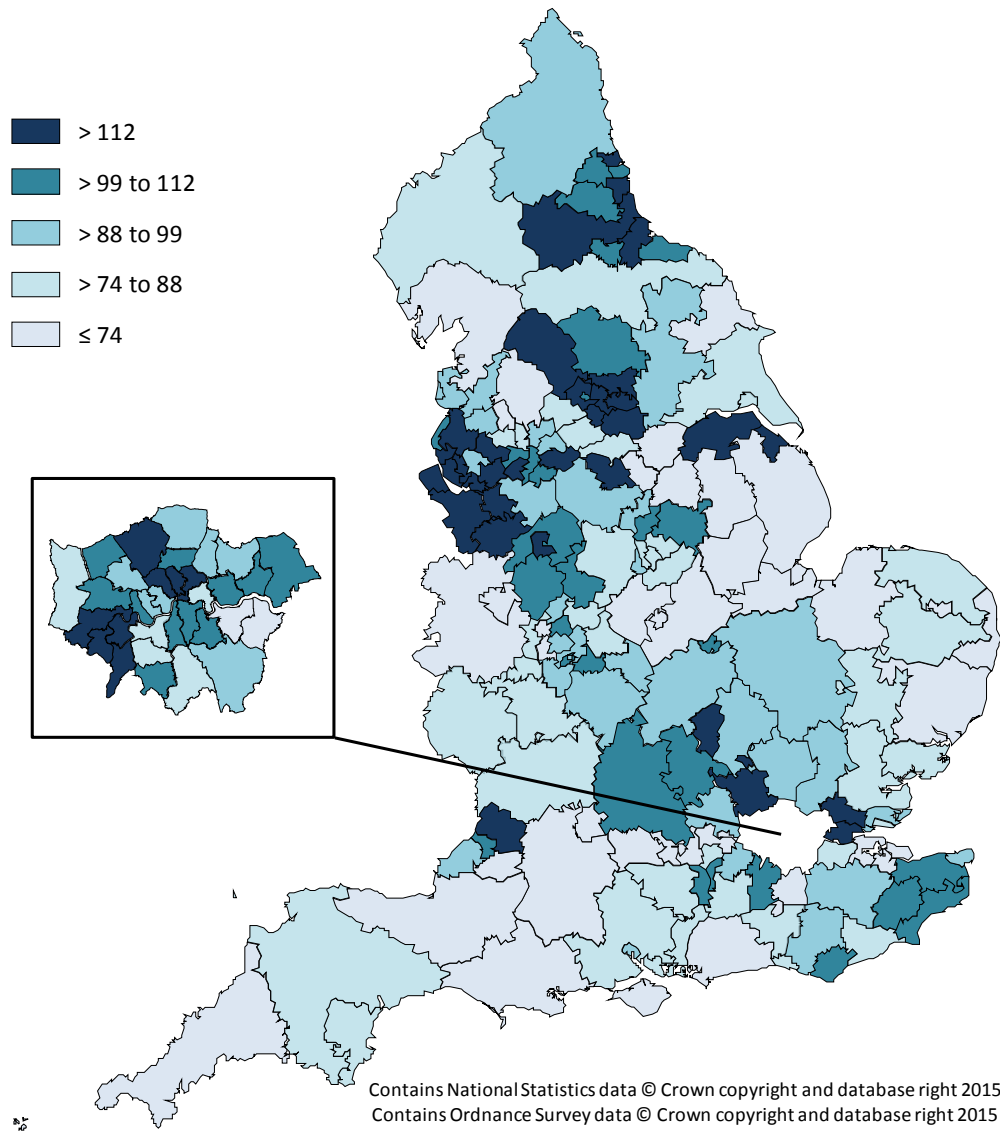




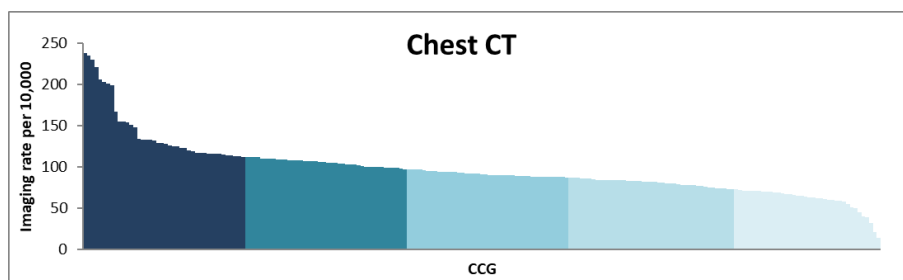
### 2.2.12 Chest CT

Chest CT showed some regional variation with the highest rates clustered around West Yorkshire (Map 12). The national rate was 96 Chest CTs per 10,000 registered population and 82% CCGs were within one standard deviation of the mean, between 63 and 130 tests per 10,000 population. However, eight CCGs had more than twice the national rate: NHS Leeds South & East, Leeds West, Wakefield, North Kirklees, North Lincolnshire, Sunderland and North East Lincolnshire CCGs.

**Map 12. Standardised Chest CT rates by CCG, 2017/18**



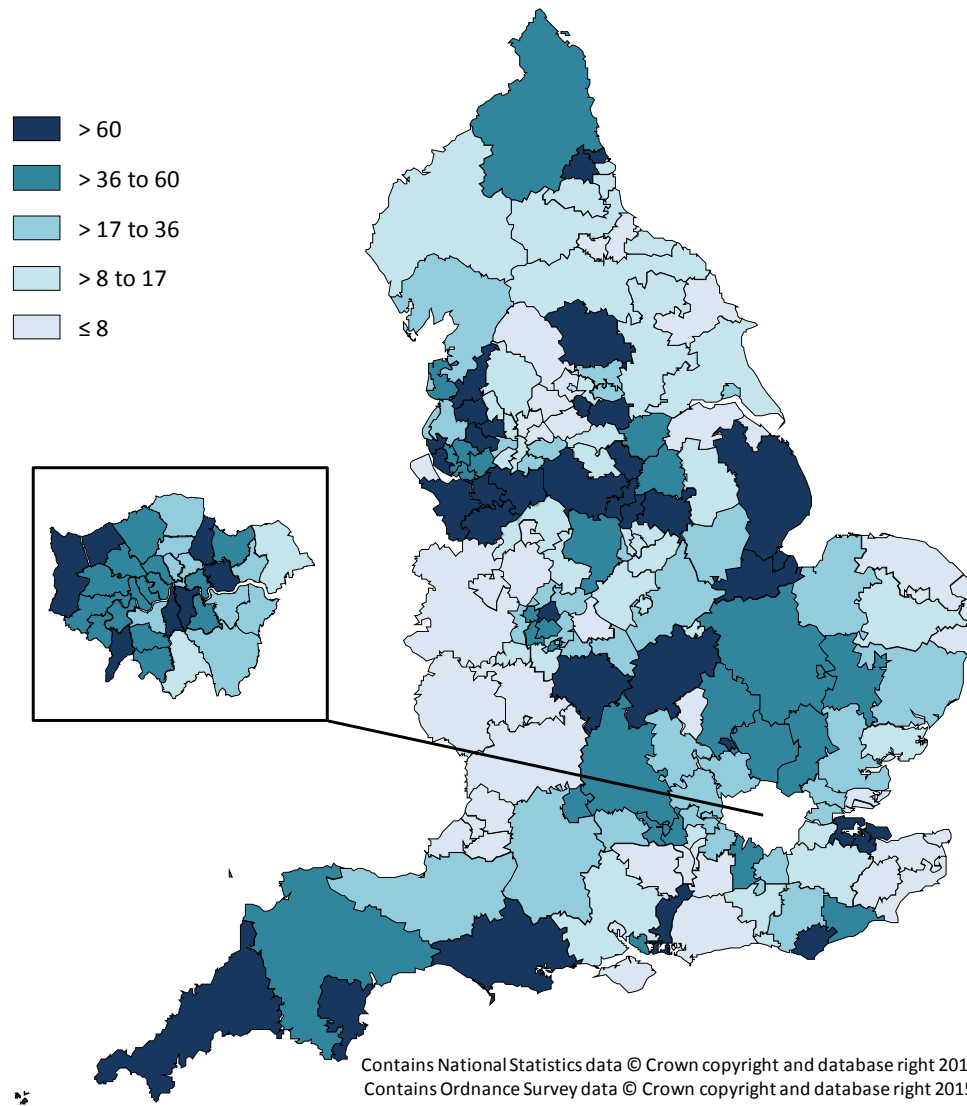
**Graph 12. Standardised Chest CT rates by CCG, 2017/18**



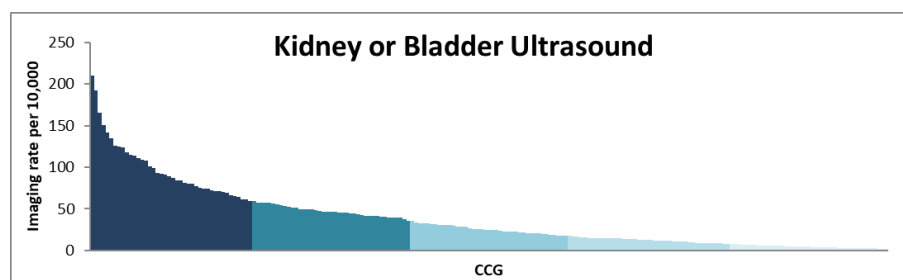
### 2.2.13 Kidney & Bladder Ultrasound

There was a wider range of rates of Kidney & Bladder Ultrasound than other Early Diagnosis of Cancer (EDOC) tests. Nearly half of the CCGs had rates less than a tenth of the highest reported (Graph 13), with both the lowest and highest rates grouped together in clusters of CCGs (Map 13). The national rate was lower than for the other EDOC tests at 39 Kidney & Bladder ultrasounds per 10,000 registered population, with one standard deviation of the mean ranging from 0 to 75 tests per 10,000 population (86% CCGs within this range).

**Map 13. Standardised Kidney & Bladder Ultrasound rates by CCG, 2017/18**



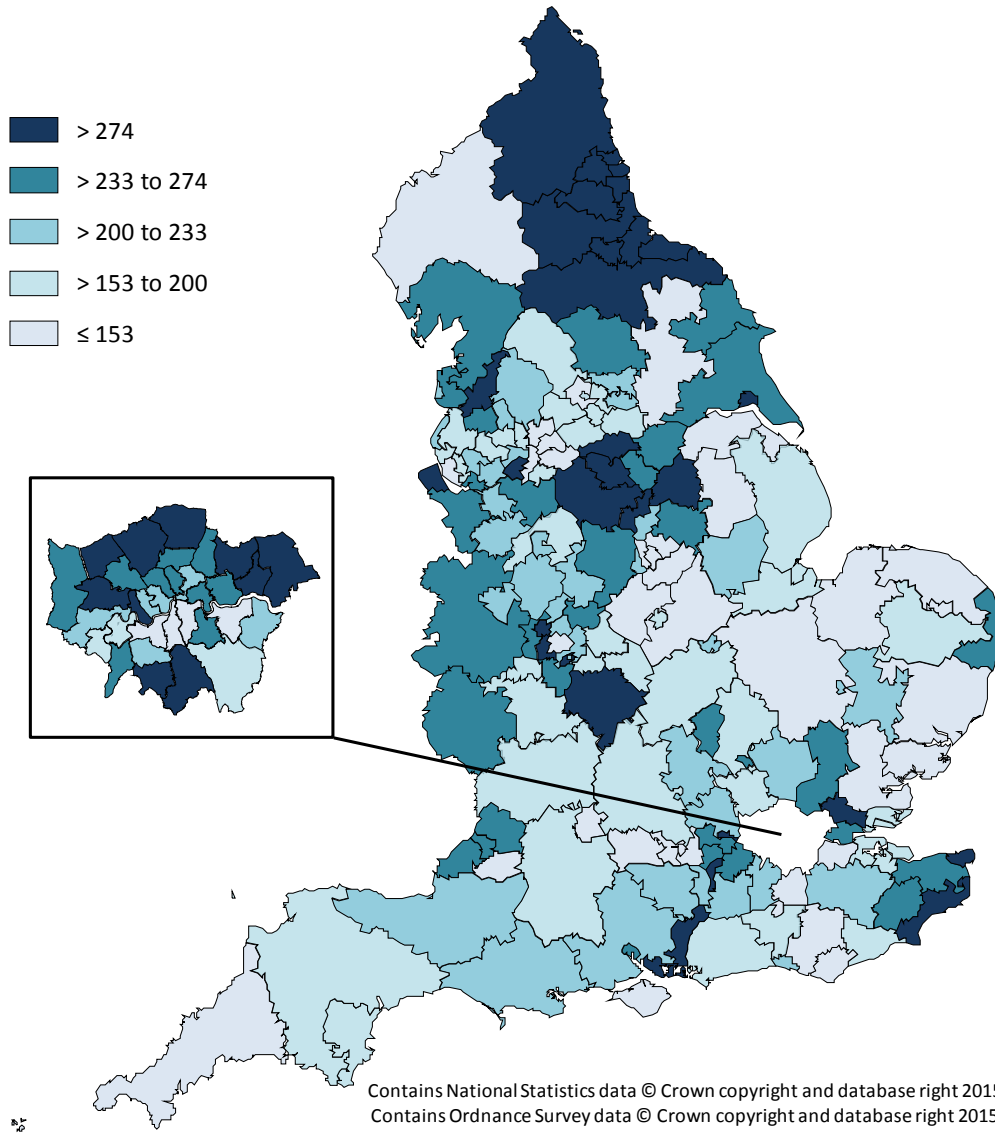
**Graph 13. Standardised Kidney & Bladder Ultrasound rates by CCG, 2017/18**



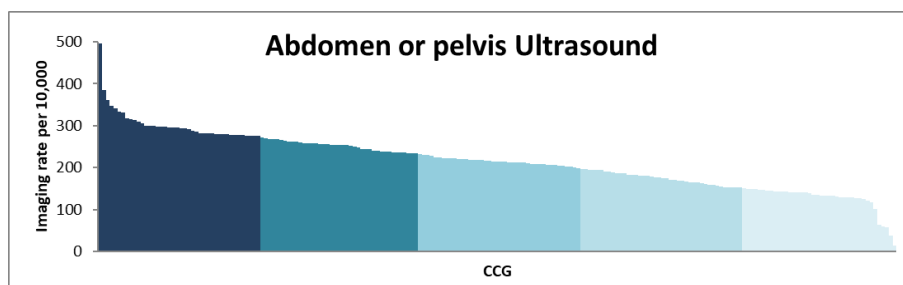
### 2.2.14 Abdomen & Pelvis Ultrasound

The highest rates of Abdomen & Pelvis Ultrasound were in the North, especially NHS Sunderland CCG, with relatively few high rates in the South and East (Map 14). The national rate was 213 Abdomen & Pelvis ultrasounds per 10,000 registered population, with one standard deviation of the mean ranging from 149 to 280 tests per 10,000 population (68% CCGs within this range).

**Map 14. Standardised Abdomen & Pelvis Ultrasound rates by CCG, 2017/18**



**Graph 14. Standardised Abdomen & Pelvis Ultrasound rates by CCG, 2017/18**



### 3 Odds Ratios

#### 3.1 Method

Three factors were considered that could have an impact on the rate of diagnostic testing: age (five-year age bands<sup>6</sup>), sex (male and female) and deprivation (quintiles of the Index of Multiple Deprivation). Differences in the distribution of these factors across CCGs might be partially responsible for the differences in crude observed rates between CCGs. Odds ratios were used to demonstrate the impact of each factor on the rate of diagnostic testing, whilst controlling for the others. Significant differences between the odds ratios for each factor suggest that it was worth standardising for these.

Odds ratios were calculated using similar methodology to the standardised rates (above). National rates of diagnostic testing activity were calculated by two of the three factors at a time, in order to estimate expected values for the third factor (IMD, Sex or Age). For example, if odds ratios were being calculated for IMD, rates were standardised by Sex and Age. This resulted in three sets of standardised rates per 10,000 population. Odds ratios then used the following formula:

$$\text{Ratio}_2 = \frac{\left(\frac{p_2}{1-p_2}\right)}{\left(\frac{p_1}{1-p_1}\right)}$$

Where

$p_1$  = standardised rate for the base category (e.g. female)

$p_2$  = standardised rate for the comparison category (e.g. male)  
expressed per unit of population.

So for example the odds ratio for male X-rays was calculated by:

	Standardised rate per 10,000	p	p/(1-p)	Odds Ratio
Female	4,115	0.4115	0.6993	1.00
Male	3,424	0.3424	0.5208	0.74

Note: The base level will always be set to 1 with other levels given as a ratio of this.

In this example, males were 26% less likely to have an X-ray than females, even after standardising for the effect of age and IMD.

Further statistical analysis of the odds ratios was conducted using Pearson's Chi Square test of significance.

<sup>6</sup> Although five-year age bands were used for analysis and standardisation, Odds ratios are given for broader age bands. This illustrates the age effect whilst overcoming the complication that  $p > 1$  for the higher 5-year age bands for some modalities.

## 3.2 Results

### 3.2.1 Sex

There was variation in how likely each gender was to have imaging by test, see Tables 1 and 2. As would be expected, men were around a third as likely to have an ultrasound (odds ratio = 0.31), however they were more likely to have a Chest X-ray (1.13). Of these odds ratios, X-ray, Ultrasound, MRI, Chest X-ray and Abdomen or Pelvis Ultrasound were found to be significant.

**Table 1. Sex odds ratios by modality, 2017/18**

	X-ray	Ultrasound	CT Scan	MRI	Fluoro-scopy	Nuclear Medicine	PET Scan	SPECT Scan	Medical Photography
<b>Female</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>Male</b>	0.74 <sup>***</sup>	0.31 <sup>***</sup>	0.99	0.84 <sup>**</sup>	1.04	0.83	1.19	0.78	0.96

**Table 2. Sex odds ratios by Early Diagnosis of Cancer, 2017/18**

	Brain MRI	Chest X-ray	Chest CT	Kidney or Bladder Ultrasound	Abdomen or Pelvis Ultrasound
<b>Female</b>	1.00	1.00	1.00	1.00	1.00
<b>Male</b>	0.82	1.13 <sup>**</sup>	1.21	0.98	0.68 <sup>***</sup>

### 3.2.2 Deprivation

There appears to be a consistent tendency for areas of highest deprivation to have most imaging tests, see Tables 3 and 4. Deprivation had a significant impact at all levels for X-ray, Ultrasound, CT and Chest X-ray, whilst the two or three least deprived quintiles were significantly different from the most deprived for MRI, Fluoroscopy, Chest CT and Abdomen or Pelvis Ultrasound.

**Table 3. Deprivation odds ratios by modality, 2017/18**

	X-ray	Ultrasound	CT Scan	MRI	Fluoro-scopy	Nuclear Medicine	PET Scan	SPECT Scan	Medical Photography
<b>1 Most deprived</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>2 More deprived</b>	0.80 <sup>***</sup>	0.85 <sup>***</sup>	0.84 <sup>***</sup>	0.94	0.89	0.93	0.86	0.92	0.58
<b>3 Mid quintile</b>	0.69 <sup>***</sup>	0.81 <sup>***</sup>	0.74 <sup>***</sup>	0.89 <sup>*</sup>	0.84	0.85	0.83	0.85	0.48
<b>4 Less deprived</b>	0.63 <sup>***</sup>	0.77 <sup>***</sup>	0.69 <sup>***</sup>	0.85 <sup>**</sup>	0.78 <sup>*</sup>	0.82	0.79	0.80	0.45
<b>5 Least deprived</b>	0.57 <sup>***</sup>	0.73 <sup>***</sup>	0.64 <sup>***</sup>	0.81 <sup>**</sup>	0.73 <sup>**</sup>	0.78	0.76	0.81	0.45

\* significant at p < 0.05

\*\* significant at p < 0.01

\*\*\* significant at p < 0.001

**Table 4. Deprivation odds ratios by Early Diagnosis of Cancer, 2017/18**

	Brain MRI	Chest X-ray	Chest CT	Kidney or Bladder Ultrasound	Abdomen or Pelvis Ultrasound
<b>1 Most deprived</b>	1.00	1.00	1.00	1.00	1.00
<b>2 More deprived</b>	0.93	0.78 <sup>***</sup>	0.79	0.96	0.86
<b>3 Mid quintile</b>	0.88	0.67 <sup>***</sup>	0.67 <sup>**</sup>	0.81	0.76 <sup>**</sup>
<b>4 Less deprived</b>	0.84	0.59 <sup>***</sup>	0.62 <sup>***</sup>	0.77	0.69 <sup>***</sup>
<b>5 Least deprived</b>	0.79	0.53 <sup>***</sup>	0.56 <sup>***</sup>	0.70	0.64 <sup>***</sup>

### 3.2.3 Age

Age has the largest impact on the likelihood of having an imaging test, with the age band of 75 or older showing much higher odds ratios across all modalities and early diagnosis of cancer tests compared with age under 45. All modalities and EDOCs have a significant result for the 65+ age bands. Other age bands were also significantly higher than the 0 to 45 group except for ultrasound, which varies least by age perhaps because of a large number of obstetric ultrasounds for pregnant women, and the modalities with small numbers (SPECT Scan and Medical Photography). Full breakdowns are given in Tables 5 and 6.

**Table 5. Age band odds ratios by modality, 2017/18**

	X-ray	Ultrasound	CT Scan	MRI	Fluoroscopy	Nuclear Medicine	PET Scan	SPECT Scan	Medical Photography
<b>0 - &lt;45</b>	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
<b>45 - &lt;55</b>	2.13 <sup>***</sup>	1.03	3.14 <sup>***</sup>	2.30 <sup>***</sup>	2.54 <sup>***</sup>	2.98 <sup>***</sup>	4.70 <sup>**</sup>	2.44	1.99
<b>55 - &lt;65</b>	3.81 <sup>***</sup>	1.03	5.23 <sup>***</sup>	2.73 <sup>***</sup>	4.10 <sup>***</sup>	5.13 <sup>***</sup>	10.23 <sup>***</sup>	4.37 <sup>*</sup>	3.04
<b>65 - &lt;75</b>	34.18 <sup>***</sup>	1.22 <sup>***</sup>	9.38 <sup>***</sup>	3.12 <sup>***</sup>	6.00 <sup>***</sup>	8.31 <sup>***</sup>	18.68 <sup>***</sup>	7.40 <sup>***</sup>	4.87 <sup>*</sup>
<b>75+</b>		1.49 <sup>***</sup>	20.90 <sup>***</sup>	2.70 <sup>***</sup>	7.87 <sup>***</sup>	9.11 <sup>***</sup>	17.28 <sup>***</sup>	8.85 <sup>***</sup>	10.78 <sup>***</sup>

Note: Due to limitations in the odd ratio methodology it was not possible to calculate ratios for the 75+ x-rays category ( $p > 1$ ). The odds ratio for 65+ has been reported instead.

**Table 6. Age band odds ratios by Early Diagnosis of Cancer, 2017/18**

	Brain MRI	Chest X-ray	Chest CT	Kidney or Bladder Ultrasound	Abdomen or Pelvis Ultrasound
<b>0 - &lt;45</b>	1.00	1.00	1.00	1.00	1.00
<b>45 - &lt;55</b>	1.86 <sup>***</sup>	2.44 <sup>***</sup>	4.75 <sup>***</sup>	1.48	1.89 <sup>***</sup>
<b>55 - &lt;65</b>	2.23 <sup>***</sup>	4.15 <sup>***</sup>	10.08 <sup>***</sup>	1.89 <sup>*</sup>	2.24 <sup>***</sup>
<b>65 - &lt;75</b>	2.73 <sup>***</sup>	7.74 <sup>***</sup>	18.68 <sup>***</sup>	2.89 <sup>***</sup>	2.53 <sup>***</sup>
<b>75+</b>	3.08 <sup>***</sup>	24.65 <sup>***</sup>	24.03 <sup>***</sup>	4.79 <sup>***</sup>	3.00 <sup>***</sup>

## 4 Annex

### 4.1 Annex A - Data quality and the impact of missing data

In 2017/18, the CCG of patients in the DID was derived from either their GP Practice code or, where this was missing, the Lower Super Output Area (LSOA) of their postcode. Although resident (LSOA based) CCG may not be the same as responsible (GP Practice based) CCG, with nationally around 7% patients living in a different CCG from their GP Practice, this method improves the coverage of CCG activity.

For the standard modalities, 95.4% imaging tests (40.7 million) had an English CCG based on GP Practice in 2017/18, up from 93.1% in 2016/17. A further 0.5% (220,000) had a non-English or other valid GP Practice (e.g. prisons and Ministry of Defence practices), 3.8% (1.6 million) had an English CCG derived from LSOA and 0.3% (110,000) were unknown or unidentified.

Providers with more than 10% and 10,000 imaging tests (standard modalities) with no GP Practice are listed in Table A.1. Most of these were allocated using LSOA and no provider had more than 5,000 and 1.5% imaging tests unallocated to a CCG. Consequently, no CCG was estimated to have more than 2,400 or 1.5% activity missing due to inability to attribute tests by CCG. Nationally, 110,000 (0.3%) imaging tests were omitted from the CCG tables because no valid CCG could be identified.

**Table A.1. Providers with more than 10% and 10,000 imaging tests with no GP Practice in the Diagnostic Imaging Dataset, 2017/18**

Provider code and name		Activity with no GP Practice		Of which, activity with no LSOA	
		No. tests	% tests	No. tests	% tests
RBL	Wirral University Teaching Hospital NHS Foundation Trust	317,900	92%	1,970	0.6%
RDU	Frimley Health NHS Foundation Trust	112,400	20%	2,050	0.4%
RTD	The Newcastle Upon Tyne Hospitals NHS Foundation Trust	62,700	13%	1,500	0.3%
NTP	Care UK	38,200	28%	860	0.6%
NT2	Nuffield Health	35,300	99%	90	0.3%
RLT	George Eliot Hospital NHS Trust	30,900	21%	590	0.4%
RQX	Homerton University Hospital NHS Foundation Trust	22,400	12%	950	0.5%
RFS	Chesterfield Royal Hospital NHS Foundation Trust	20,300	11%	300	0.2%
NT4	BMI Healthcare	17,700	33%	360	0.7%
NT9	Alliance Medical	16,000	21%	50	0.1%
RGM	Royal Papworth Hospital NHS Foundation Trust	11,300	20%	250	0.4%

Providers with more than 5% and 10,000 imaging tests (standard modalities) with no age or sex or LSOA (to impute deprivation score) are listed in Table A.2. Nationally, 250,000 (0.6%) imaging tests with a valid CCG were omitted from standardised rates because no deprivation score could be imputed from LSOA, 76,000 (0.2%) had no gender and a further 10,000 (0.02%) had no date of birth submitted (to impute age band).

**Table A.2. Providers with more than 5% and 10,000 imaging tests with no Age or Sex or LSOA in the Diagnostic Imaging Dataset, 2017/18**

Provider code and name		Total no. tests	Of which, age, sex or LSOA missing	% missing	Most common missing
RD1	Royal United Hospitals Bath NHS Foundation Trust	275,000	101,000	37%	LSOA
RHW	Royal Berkshire NHS Foundation Trust	271,000	36,000	13%	Sex
RK5	Sherwood Forest Hospitals NHS Foundation Trust	245,000	22,000	9%	Sex
RJ2	Lewisham And Greenwich NHS Trust	192,000	18,000	9%	LSOA
RP6	Moorfields Eye Hospital NHS Foundation Trust	15,000	11,000	71%	LSOA + sex

The CCGs most affected by the omission of sex or LSOA (to impute deprivation score) are listed in Table A.3. The biggest shortfall is for NHS Bath and North East Somerset CCG, which has standardised rates less than half those expected.

**Table A.3. CCGs with more than 10% or 10,000 imaging tests with no Age or Sex or LSOA in the Diagnostic Imaging Dataset, 2017/18**

CCG code and name		Total no. tests	Of which, age, sex or LSOA missing	% missing	Most common missing
11E	NHS Bath and North East Somerset CCG	126,000	79,000	62%	LSOA
03L	NHS Rotherham CCG	201,000	24,000	12%	LSOA
11X	NHS Somerset CCG	408,000	15,000	4%	LSOA
08L	NHS Lewisham CCG	229,000	13,000	6%	LSOA
08M	NHS Newham CCG	233,000	11,000	5%	LSOA
10W	NHS South Reading CCG	69,000	7,000	11%	Sex

In addition to the list above, some CCGs have reduced rates because of shortfalls in the data submissions of their providers. Details of known data coverage issues by provider are listed in Section 6.1 of the [DID Annual Statistical Release 2017-18](#). The most impactful of these is the shortfall for Great Western Hospitals NHS Foundation Trust (RN3), which particularly affects rates for all modalities in NHS Swindon CCG (12D). There is also a suspected shortfall for a site within Lewisham and Greenwich NHS Trust (RJ2), which affects NHS Greenwich CCG. Consequently, rates at the lower end of the distribution across all modalities should be interpreted with caution.



## 4.2 Annex B - CCG Standardised Imaging Rates per 10,000, 2017/18

See separate excel file (Annex 4a – DID Standardised CCG Rates 2017-18).

## 4.3 Contact Us

### 4.3.1 Feedback

We welcome feedback on this publication. Please contact us at [england.did@nhs.net](mailto:england.did@nhs.net)

### 4.3.2 iView

NHS Digital allow health sector colleagues to access DID information through their web-based reporting tool, iView. Registered users can access anonymised data at aggregate level in a consistent and flexible format:

- **Access Information** – choose from a variety of data areas.
- **Build Reports** – select data to suit your needs.
- **Generate Charts** – customise report tables and graphs.
- **Export Data** – copy to Excel and manipulate data your way.
- **Save Reports** – store your favourite views for future use.

If you would like to register to use iView for DID, please email [enquiries@nhsdigital.nhs.uk](mailto:enquiries@nhsdigital.nhs.uk) (subject: DID iView Access). For more information, please visit the [iView website](#).

### 4.3.3 Websites

Further information about the DID dataset can be found on [NHS Digital DID website](#).

The DID Tables and Reports can be found on the [NHS England DID website](#) (<http://www.england.nhs.uk/statistics/diagnostic-imaging-dataset/>).

### 4.3.4 Additional Information

For press enquiries contact the NHS England Media team on 0113 825 0958 or 0113 825 0959. Email enquiries should be directed to [nhsengland.media@nhs.net](mailto:nhsengland.media@nhs.net)

The Government Statistical Service (GSS) statistician responsible for producing these data is:

Sheila Dixon  
Operational Information for Commissioning  
NHS England  
Room 5E24, Quarry House, Quarry Hill, Leeds LS2 7UE  
Email: [england.did@nhs.net](mailto:england.did@nhs.net)