

Clinical Radiology UK Workforce Census Report 2012

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Foreword

This latest workforce census (2012) sees a repeat of the successes in 2010 and 2011 by delivering a 100% response UK-wide for the third year running. In sustaining this level of response over time, we can obtain reliable insight into emerging trends and patterns, increasing our ability to direct and manage changes in service delivery, and continue to raise the difficulties faced in providing safe, high-quality imaging that many departments are facing.

In addition to this report, regional breakdowns of key findings from the census will be circulated via the Regional Chairs in due course.

I would like to thank all the Regional Chairs, clinical radiology departments and individuals who participated in the census, ensuring 100% participation and look forward to their continuing support in future census activities.

A handwritten signature in blue ink that reads "Sue Barter". The signature is written in a cursive, flowing style.

Dr Sue Barter

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1. Introduction

The Royal College of Radiologists (RCR) recognises the importance of effective workforce planning. The RCR's primary source of workforce data is captured through its workforce census. Data on new consultant appointments and the RCR membership additionally contribute to building an accurate picture of the workforce.

The RCR carried out a pilot workforce census among clinical radiologists for the first time in 2008. Following the success of the pilot exercise, the study was repeated and extended in 2009, 2010 and 2011. This report provides results of the 2012 census and comparisons to previous years. The 2010 to 2012 census data are the most accurate collected so far, achieving a 100% census completion across the three years.

The aim of the census is to obtain accurate data on the composition of the UK clinical radiology workforce for use by the RCR and external organisations with an interest in workforce planning. The intention is to establish trend data, for example, gender patterns and the extent of part-time working, to inform future workforce planning and to enable the RCR to identify opportunities and challenges facing the workforce in the future.

2. Methodology

Now in its fifth year, the 2012 workforce census captured information for all consultant clinical radiologists in substantive posts at all UK radiology departments. The census captures data on both organisational and individual details, including gender, grade, programmed activities, main and specialist interests, retirement expectations and unfilled posts.

The census also collects limited data on specialist registrars and staff grade posts. The full set of questions for the 2012 census is provided in Appendix 1.

The 2012 census was launched in June 2013 and sought to capture data as of 31 December 2012. The census data were collected online through a secure web portal. A link to the portal was emailed to the workforce leads across all UK radiology departments to complete the census online. The census is designed as a simple exercise to complete, to maximise the response rate and the quality of data captured. The names of the radiology departments that completed the 2012 census are provided in Appendix 2.

Census completion 2008 to 2012

Census year	Census date	% census completion
2008 pilot	1 July 2008	79%
2009	1 October 2009	87%
2010	1 October 2010	100%
2011	31 December 2011	100%
2012	31 December 2012	100%

All results in this report relate to the UK clinical radiology consultant workforce, unless stated otherwise. All data are reported as headcount (HC), unless stated otherwise. Where whole-time equivalent (WTE) is used, the calculation conforms to the current NHS convention of excluding programmed activities (PAs) that exceed ten PAs.

The results are based on the data supplied by radiology departments through the workforce census. The data were also verified against previous years' census data and RCR membership data.

In addition to the main workforce data, each department was asked to provide information about their workload. The workload findings are reported in Section 5.

3. UK clinical radiology workforce – overview

The number of consultant clinical radiologists in a substantive post in the UK increased from 3,058 in 2011 to 3,174 in 2012. These data are shown in Table 1. The number of trainee radiologists currently on the UK training schemes is 1,016 (as of 31 December 2012).

Expressed as whole-time equivalents (WTEs), there are 2,997 WTE consultant clinical radiologists employed in substantive posts in the UK as of 31 December 2012 – an increase of 131 WTEs on the previous year (Table 2). The 2,997 WTEs equate to 4.7 WTE consultant clinical radiologists per 100,000 population in the UK.¹

Table 1. Consultant and trainee workforce by country, 2012

		England	N. Ireland	Scotland	Wales	UK Total
Consultant	HC	2,592	114	317	151	3,174
	WTE ^a	2,444	109	302	142	2,997
Trainee	HC	853	37	94	32	1,016

a. WTE data available for consultant grade only

Table 2. UK consultant and trainee workforce 2008 to 2012

		2008 pilot	2009	2010	2011	2012
Consultant	HC	2,062	2,855	2,869	3,058	3,174
	WTE ^a	–	2,613	2,714	2,866	2,997
Trainee	HC	–	–	1,017	1,033	1,016

a. WTE data available for consultant grade only

– data not known

4. UK clinical radiology workforce – consultant grade

The number of consultant clinical radiologists in a substantive post in the UK increased from 3,058 in 2011 to 3,174 in 2012. These figures include NHS consultants, those described as holding mixed NHS/academic posts (on NHS contracts) and those holding wholly academic posts (on university contracts). The split across these groups is shown in Table 3.

Table 3. Type of consultant

		NHS consultant	Mixed NHS/ academic	Academic	UK total
Consultant	HC	3,091	23	60	3,174
	WTE	2,927	20	50	2,997

Age and gender

Table 4 shows the age profile of consultant clinical radiologists. More than a third of the workforce is aged 50 or over, and 6% is aged 60 and over. The average retirement age for clinical radiologists in 2012 was 62. Section 4.1 looks in more detail at the impact of retirement age on the future workforce.

Table 4. Workforce by age

Age group	Count	% of total
Under 35	109	3%
35 to 39	624	20%
40 to 44	678	21%
45 to 49	555	17%
50 to 54	498	16%
55 to 59	413	13%
60 to 64	166	5%
65 to 70	33	1%
70 plus	7	0%
not known	91	3%
Total	3,174	100%

Table 5 overleaf shows the gender profile across age groups. Overall, approximately a third of the consultant clinical radiology workforce is female; the proportion is higher for consultants under the age of 50, indicating the increasing feminisation of the workforce.

Table 5. Workforce by age and gender

Age group	Men	Women	Not known	Total
Under 35	72	37	0	109
35 to 39	388	236	0	624
40 to 44	427	251	0	678
45 to 49	332	223	0	555
50 to 54	336	162	0	498
55 to 59	313	100	0	413
60 to 64	129	37	0	166
65 to 70	29	4	0	33
70 plus	7	0	0	7
Not known	51	26	14	91
Total	2,084	1,076	14	3,174

Approximately one-third of the consultant clinical radiology workforce is female. However, this figure is set to increase as 42% of current trainees are female. In 2012, one in five consultants worked part-time (this figure rises to one in four in London). With the feminisation of the workforce, part-time working looks set to increase.

Part-time working

The 2012 census data shows that one in five consultant clinical radiologists now work part-time, a two percentage point increase on two years earlier – see Table 6.

Table 6. Part-time working, 2010 to 2012

	2010	2011	2012
% working part-time	18%	20%	20%

Women are much more likely than men to work part-time regardless of age group (see Table 7). Given the increasing numbers of women entering the consultant workforce, the extent of part-time working is likely to grow in future years. Those least likely to be working part-time are those aged under 35 (16% of women and 0% men work part-time in this age group). Men are more likely to work part-time past the age of 60.

Table 7. Part-time working by age and gender

Age group		Men	Women
Under 35	Count	72	37
	% part-time	0%	16%
35 to 39	Count	388	236
	% part-time	3%	36%
40 to 44	Count	427	251
	% part-time	5%	40%
45 to 49	Count	332	223
	% part-time	7%	46%
50 to 54	Count	336	162
	% part-time	12%	44%
55 to 59	Count	313	100
	% part-time	9%	33%
60 to 64	Count	129	37
	% part-time	32%	57%
65 plus	Count	36	<10
	% part-time	69%	–
Not known	Count	51	26
	% part-time	6%	31%
Total	Count	2,084	1,076
	% part-time	9%	40%

Programmed activities

The census collected data on the number of programmed activities (PAs) per consultant clinical radiologist subdivided into direct clinical care (DCC) PAs and supporting professional activity (SPA) PAs.

The average number of SPAs for full-time consultant clinical radiologists in the UK is 2.28 (Table 8). In Wales, SPAs are slightly higher, at 2.63.

There is considerable variation when comparing the number of SPAs against the different age groups of consultants. Thirty per cent of consultants under the age of 35 are reported as having fewer than 2 SPAs in their job plan, compared with fewer than 20% of consultants in all other age groups. Thirteen per cent of those aged 45 to 64 have 3 SPAs or more, compared with 1% of under 35s.

Table 8. Mean contracted SPAs by country (full-time NHS consultants only)

Country	Average SPAs of full-time NHS consultants
England	2.27
Northern Ireland	2.28
Scotland	2.29
Wales	2.63
UK average	2.28

Specialisation and interests

Workforce leads were asked to categorise each radiologist they reported through the census according to type. The results are shown in Tables 9 and 10.

Table 9. Type of radiologist by country

Type		England	N Ireland	Scotland	Wales	UK total
General	Count	243	16	56	12	327
	% of total	9%	14%	18%	8%	10%
General with one main area of interest	Count	1,259	47	168	76	1,550
	% of total	49%	41%	53%	50%	49%
General with two or more main areas of interest	Count	473	34	49	45	601
	% of total	18%	30%	15%	30%	19%
Specialist	Count	617	17	44	18	696
	% of total	24%	15%	14%	12%	22%
Total	Count	2,592	114	317	151	3,174
	% of total	100%	100%	100%	100%	100%

Almost half of radiologists in the UK are described as general radiologists with one main area of interest. There is a greater proportion of specialist radiologists in England, and a greater proportion of general radiologists (with no main area of interest) in Scotland and Northern Ireland.

The results in Table 10 show that, unsurprisingly, specialists are more prevalent in teaching and specialist hospitals (in England). Generalists are more prevalent in non-teaching hospitals (in England).

Table 10. Type of radiologist by cluster (England only)²

Type		Teaching	Non-teaching	Specialist
General	Count	53	188	2
	% of total	6%	12%	2%
General with one main area of interest	Count	416	842	1
	% of total	45%	54%	1%
General with two or more main areas of interest	Count	76	397	0
	% of total	8%	26%	0%
Specialist	Count	383	118	116
	% of total	41%	8%	97%
Total	Count	928	1,545	119
	% of total	100%	100%	100%

Information on the specific areas of subspecialty/interests is collected through the census. The census allows for more than one subspecialty or interest to be entered against each consultant. The findings are shown in Tables 11 and 12.

The sum of consultants reported against each interest exceeds the total number as consultant job plans may encompass more than one interest/subspecialty. For example, it should not be interpreted that there are 480 consultants solely specialising in breast radiology, rather that there are 480 consultants whose job plan includes breast radiology.

Interventional radiology

Of the total 3,174 consultant clinical radiologists in post, 412 are described as having a subspecialty or interest in interventional radiology (IR) (including vascular) and 70 non-vascular. The demographic of interventional radiologists differs from the main, with men making up almost 90% of the IR consultant workforce, and more than 90% working full-time.

Table 11. Consultant subspecialties/interests (multi-response), by country

	England	Northern Ireland	Scotland	Wales	UK overall
<i>General</i>	243	16	56	12	327
Breast	390	15	54	21	480
Cardiac	78	2	7	4	91
Chest/lung	207	7	28	11	253
Endocrine	4	0	0	0	4
Gastrointestinal	273	11	32	22	338
Head and neck	114	3	17	10	144
Imaging IT	30	2	2	4	38
IR (including vascular)	337	12	41	22	412
IR (non-vascular)	61	4	3	2	70
Musculoskeletal	373	14	29	25	441
Neuro (mainly diagnostic)	163	14	26	10	213
Neuro (mainly intervent'l)	28	0	3	1	32
Obs/gynae	103	4	10	9	126
Oncological	131	7	7	9	154
Paediatric neuro	6	0	0	1	7
Paediatric	206	11	19	12	248
PET-CT	27	5	5	2	39
Radionuclide	123	10	10	8	151
Trauma	4	1	0	1	6
Ultrasound	52	4	4	0	60
Uroradiology	96	4	9	8	117
Other	15	2	4	2	23

Table 12. Consultant subspecialties/interests (multi-response), by cluster (England only)²

	Teaching	Non-teaching large	Non-teaching medium	Non-teaching small	Specialist	England
<i>General</i>	53	97	62	29	2	243
Breast	132	113	101	43	1	390
Cardiac	24	29	15	6	4	78
Chest/lung	61	68	46	26	6	207
Endocrine	2	0	1	1	0	4
Gastrointestinal	87	82	72	32	0	273
Head and neck	34	38	32	9	1	114
Imaging IT	11	2	10	7	0	30
IR (including vascular)	121	105	79	24	8	337
IR (non-vascular)	14	16	19	12	0	61
Musculoskeletal	110	100	106	39	18	373
Neuro (mainly diagnostic)	85	42	20	9	7	163
Neuro (mainly intervent'l)	23	3	0	0	2	28
Obs/gynae	27	36	28	10	2	103
Oncological	32	30	23	19	27	131
Paediatric neuro	0	0	0	0	6	6
Paediatric	71	43	49	13	30	206
PET-CT	15	5	6	1	0	27
Radionuclide	33	32	43	10	5	123
Trauma	4	0	0	0	0	4
Ultrasound	16	15	13	8	0	52
Uroradiology	39	28	21	8	0	96
Other	9	4	2	0	0	15

Regional patterns

In England, the distribution of the workforce across teaching, non-teaching and specialist hospitals is shown in Table 13.

Table 13. Type of hospital (England only)²

		Teaching	Non-teaching large	Non-teaching medium	Non-teaching small	Specialist	England total
Consultant	HC	928	748	562	235	119	2,592
	WTE	865	710	533	225	111	2,444

The number of WTE consultant clinical radiologists per 100,000 population in the UK as a whole is 4.7, however there are significant variations across the UK. These data are shown in Figure 1 and Table 14.

The census shows the highest density of clinical radiologists to be in London and Northern Ireland, with 6.0 clinical radiologists per 100,000 of the population. This compares with 3.7 per 100,000 in the South East Coast region at the lowest end of the scale. The eastern side of England is generally less well served than the rest of the UK.

Figure 1. WTE consultant clinical radiologists per 100,000 across UK^{1,3}

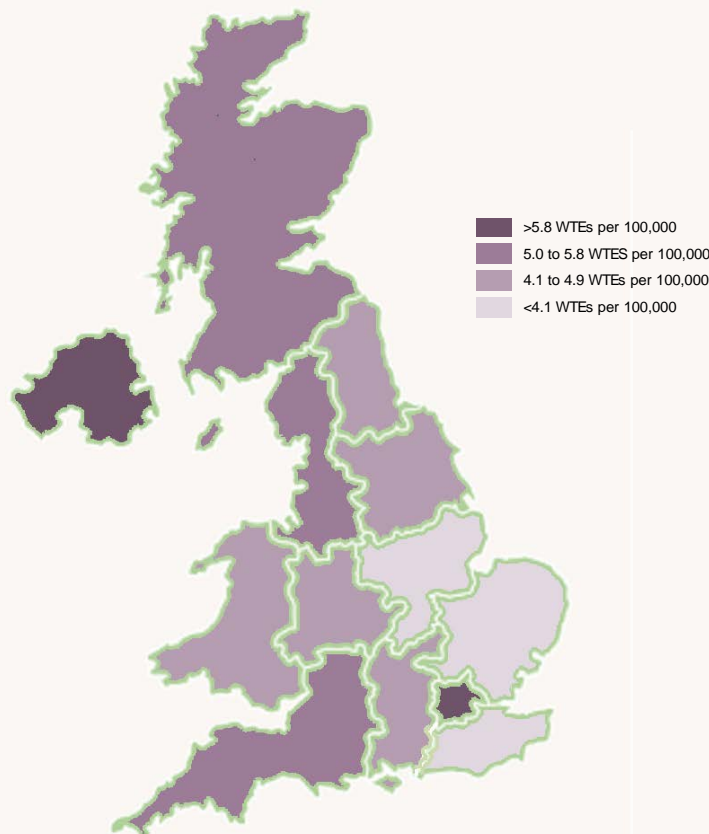


Table 14. WTE consultant clinical radiologists per 100,000 across UK, 2012^{1,3}

Region/country	WTEs	Population ^a	WTEs per 100,000 population
England – East Midlands	166	4,410,612	3.8
England – East	222	5,787,144	3.8
England – London	466	7,832,487	6.0
England – North East	122	2,600,233	4.7
England – North West	354	6,962,848	5.1
England – South Central	183	4,112,460	4.5
England – South East Coast	160	4,347,587	3.7
England – South West	260	5,221,895	5.0
England – West Midlands	251	5,445,991	4.6
England – Yorks & Humber	259	5,289,015	4.9
Northern Ireland	109	1,823,600	6.0
Scotland	302	5,313,600	5.7
Wales	142	3,074,100	4.6
UK total	2,997	63,705,000	4.7

a. The most recently published population figures at region level pre-date those at country level, therefore the sum of populations may not equal the UK total.

Table 15 shows the change since 2010.

Table 15. WTE consultant clinical radiologists by region, 2010 to 2012

Region/country	2010 WTEs	2011 WTEs	2012 WTEs
England – East Midlands	139	165	166
England – East	210	219	222
England – London	435	430	466
England – North East	102	109	122
England – North West	328	347	354
England – South Central	161	182	183
England – South East Coast	120	124	160
England – South West	228	252	260
England – West Midlands	233	250	251
England – Yorks & Humber	239	248	259
Northern Ireland	101	107	109
Scotland	279	292	302
Wales	140	140	142
UK total	2,714	2,866	2,997

As previously stated, where whole-time equivalent (WTE) data is shown, the calculation conforms to the current NHS convention of excluding programmed activities (PAs) that exceed ten PAs. However, many consultants are contracted to work in excess of ten PAs. If all consultants were limited to a contractual maximum of ten PAs, a further 250 WTE consultants across the UK would be required to replace the current excess – see Table 16.

Table 16. WTE consultant clinical radiologists – uncapped comparison

Region/country	WTEs	Uncapped WTEs
England – East Midlands	166	182
England – East of England	222	245
England – London	466	487
England – North East	122	136
England – North West	354	388
England – South Central	183	199
England – South East	160	175
England – South West	260	279
England – West Midlands	251	270
England – Yorks & Humber	259	287
Northern Ireland	109	121
Scotland	302	323
Wales	142	155
UK total	2,997	3,247

4.1 Workforce attrition

The census gathered data on those leaving the workforce during 2012. A total of 113 consultants, 4% of the current workforce, left clinical radiology in the UK during 2012. Table 17 shows the reasons given and changes since 2010.

Table 17. Workforce attrition, 2010 to 2012

Age group	2010	2011	2012
Retired from the NHS	42	53	53
Resigned from the NHS	14	24	38
Other	11	12	11
Not known	–	–	11
Total	67	89	113

A total of 38 consultants resigned from the NHS during the course of 2012, of whom 28 emigrated. Of those who emigrated, 40% were relatively new consultants (aged under 40).

Of the 113 who left in 2012, almost half were retirements. The average age at retirement was 62, with little variation in age across the four countries. Table 18 shows the spread of retirement ages. Of the 53 retiring, over half worked on a full-time basis immediately prior to retirement.

Table 18. Retirement age

Retirement age	Count
55 to 59	12
60 to 64	31
65 to 69	3
70 plus	3
Not known	4
Total	53

To give an understanding of the clinical radiology posts likely to become vacant in the short term, each workforce lead was asked to state if any of the consultants in their department are expected to retire in the next 12 months. These data, combined with the average retirement age of 62, are used as a basis for estimating the likely retirements in the next five, ten and 15 years – shown in Table 19 and Figure 2. The equivalent data for the next five years, calculated as WTEs, are shown in Table 20.

Table 19. Estimated retirements, as a percentage of current workforce

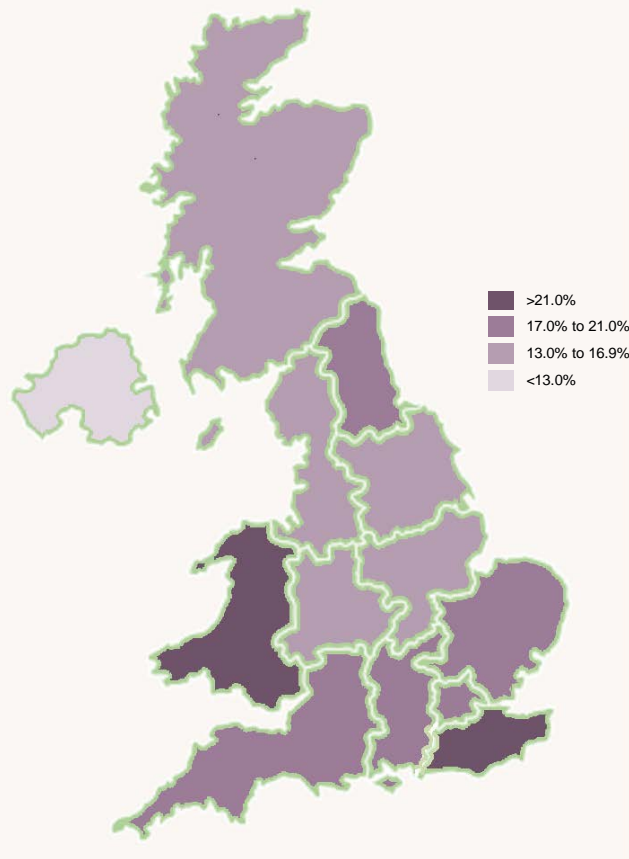
Region/country	Next 5 years	Next 10 years	Next 15 years
England – East Midlands	14%	39%	55%
England – East of England	21%	34%	46%
England – London	17%	26%	45%
England – North East	17%	33%	52%
England – North West	15%	32%	47%
England – South Central	17%	32%	51%
England – South East Coast	23%	35%	55%
England – South West	17%	34%	52%
England – West Midlands	16%	35%	51%
England – Yorks & Humber	14%	31%	48%
Northern Ireland	11%	24%	42%
Scotland	16%	32%	49%
Wales	25%	39%	50%
UK total	17%	32%	49%

Estimated retirements in the next five years are further illustrated in Figure 2, page 19.

Table 20. Estimated retirements (in WTEs)

Region/country	Next 5 years (WTEs)	Current workforce (WTEs)
England – East Midlands	24	166
England – East of England	41	222
England – London	74	466
England – North East	20	122
England – North West	49	354
England – South Central	30	183
England – South East Coast	37	160
England – South West	42	260
England – West Midlands	37	251
England – Yorks & Humber	34	259
Northern Ireland	12	109
Scotland	50	302
Wales	34	142
UK total	482	2,997

Figure 2. Estimated retirements next five years, as a percentage of current workforce



More than one in five of the consultant workforce in the East of England and South East Coast, and one in four in Wales, are estimated to retire in the next five years. Almost one in three of the current consultant clinical radiology workforce is expected to retire in the next ten years.

Table 21 overleaf shows expected retirements in the next five years by subspecialties/interests.

Table 21. Estimated retirements by subspecialties/interests, as a percentage of current workforce

Subspecialties/interests	Current workforce ^a	Estimated retirements next 5 years
<i>General</i>	327	28%
Breast	480	23%
Cardiac	91	7%
Chest/lung	253	10%
Endocrine	4	0%
Gastrointestinal	338	13%
Head and neck	144	13%
Imaging IT	38	13%
IR (including vascular)	412	13%
IR (non-vascular)	70	21%
Musculoskeletal	441	14%
Neuro (mainly diagnostic)	213	15%
Neuro (mainly interventional)	32	13%
Obs/gynae	126	13%
Oncological	154	13%
Paediatric neuro	7	0%
Paediatric	248	16%
PET-CT	39	15%
Radionuclide	151	26%
Trauma	6	0%
Ultrasound	60	30%
Uroradiology	117	18%
Other	23	17%

a. The sum of consultants reported against each interest exceeds the total number as consultant job plans may encompass more than one interest/subspecialty. For example, it should not be interpreted that there are 480 consultants solely specialising in breast radiology, rather that there are 480 consultants whose job plan includes breast radiology.

4.2 Unfilled posts

In addition to consultant clinical radiologists in post, the workforce census also captured information on unfilled posts. As the census is a snapshot at a given point in time, further posts may have been appointed to during the remainder of the year.

A total of 283 unfilled consultant posts were identified as of 31 December 2012 across the UK clinical radiology workforce – see Table 22. This translates to 8% of all consultant clinical radiology posts.

Of the 283 unfilled posts, more than half (51%) have been advertised but failed to appoint, and 18% have been appointed but not yet taken up (the remainder are in progress). Twenty-six per cent of unfilled posts are currently filled by locums.

Table 22. Unfilled posts, by country

	England	N Ireland	Scotland	Wales	UK total
Total posts ^a	2,824	125	342	166	3,457
Unfilled posts	232	11	25	15	283
Unfilled posts (% of total posts)	8%	9%	7%	9%	8%
Failed to appoint	123	5	10	7	145
Failed to appoint (% of unfilled posts)	53%	45%	40%	47%	51%

a. Total substantive posts, including unfilled

The data suggests that finding suitable candidates to fill vacant posts became more difficult between 2011 and 2012; in 2011, 27% of unfilled posts failed to appoint, rising to 51% in 2012 (see Table 23).

Table 23. Unfilled posts, 2010 to 2012

	2010	2011	2012
Total posts ^a	3,114	3,272	3,457
Unfilled posts	245	214	283
Unfilled posts (% of total posts)	8%	7%	8%
Failed to appoint	107	58	145
Failed to appoint (% of unfilled posts)	44%	27%	51%

a. Total substantive posts, including unfilled

With the two exceptions of London and Northern Ireland, the number of reported unfilled posts increased across every region in the UK between the census dates in 2011 and 2012.

As of 31 December 2012, more than one in ten posts were vacant in the East Midlands, North West and South Central England, and approximately one in seven posts were vacant in the North East of England. In addition to variations in the number of vacant posts there was also significant variation in the levels of difficulty being experienced in finding suitable candidates to fill the posts. For example, approximately one in nine of all clinical radiology posts in the North East of England had been advertised but failed to appoint. This compares with only one in 100 in London. These data are illustrated in Table 24 and Figure 3 (on page 23).

Table 24. Unfilled posts by region and country

Region/country	Total posts ^a	Unfilled posts	Unfilled posts (% of total)	Failed to appoint	Failed to appoint (% of total)
England – East Midlands	194	24	12%	5	3%
England – East of England	257	20	8%	14	5%
England – London	523	20	4%	6	1%
England – North East	151	23	15%	18	12%
England – North West	417	45	11%	27	6%
England – South Central	227	29	13%	11	5%
England – South East	184	14	8%	8	4%
England – South West	286	10	3%	7	2%
England – West Midlands	291	27	9%	13	4%
England – Yorks & Humber	294	20	7%	14	5%
Northern Ireland	125	11	9%	5	4%
Scotland	342	25	7%	10	3%
Wales	166	15	9%	7	4%
Total	3,457	283	8%	145	4%

a. Total substantive posts, including unfilled

In England, difficulty appointing suitable candidates appears to affect non-teaching hospitals to a greater extent than teaching or specialist centres. While the proportion of vacant posts is greatest at non-teaching hospitals (with 9% of all posts reported as vacant, compared with 6–7% at teaching and specialist centres), the more pressing issue appears to be finding suitable candidates to fill the posts at non-teaching hospitals (see Table 25).

Three in every four posts advertised at small and medium non-teaching hospitals failed to result in an appointment in 2012. Teaching and specialist centres fared little better with 26% and 29% failing to result in an appointment respectively.

Table 25. Unfilled posts by cluster (England only)²

Cluster (England only)	Total posts ^a	Unfilled posts	Unfilled posts (% of total)	Failed to appoint	Failed to appoint (% of unfilled)
Teaching	994	66	7%	17	26%
Non-teaching large	831	83	10%	46	55%
Non-teaching medium	610	48	8%	37	77%
Non-teaching small	263	28	11%	21	75%
Specialist	126	7	6%	2	29%

a. Total substantive posts, including unfilled

Figure 3. Unfilled posts by region and country

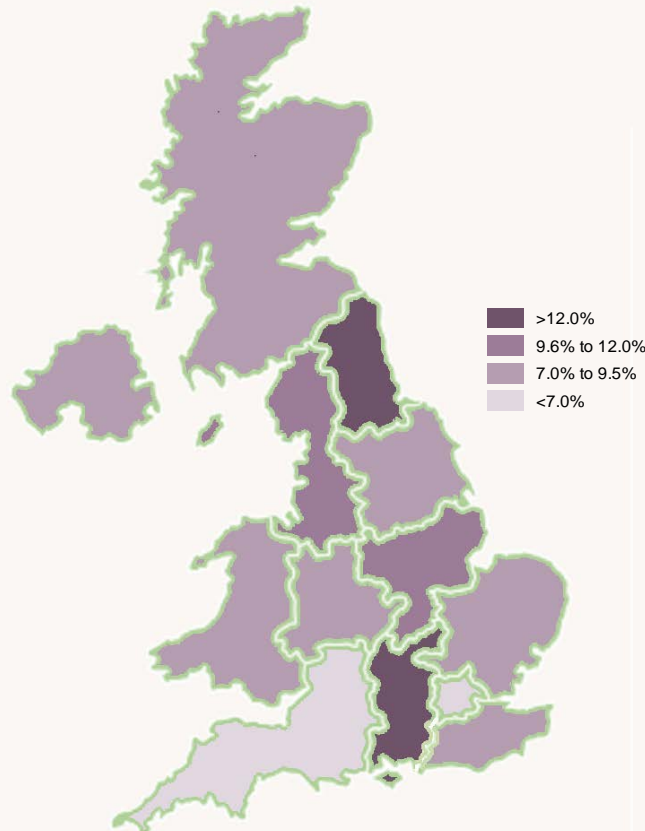


Table 26 reports unfilled posts by primary interest. The data shows that the 'big four' experiencing recruitment difficulties are general, breast, interventional and paediatric radiology. Neuroradiology, although a smaller subspecialty, also appears to be experiencing difficulties with five of the eight posts advertised in 2012 failing to result in an appointment.

Fewer than half the vacant breast posts and half the vacant interventional posts were successfully appointed to. Paediatric radiologists also proved hard to recruit, with over a third of posts failing to be appointed to.

To add to the difficulties, particularly with recruiting to the generalist and breast roles, a significant proportion of the current workforce will be approaching retirement age in the next five years. Based on the average retirement age of 62, 28% of general radiologists and 23% of breast radiologists are predicted to retire in the next five years.

Table 26. Unfilled posts by primary interest

Primary interest	Unfilled posts	Failed to appoint	Failed to appoint (% of unfilled)
General radiologist	101	74	73%
Neuro (mainly diagnostic)	8	5	63%
Breast	37	21	57%
Interventional	38	19	50%
Uroradiology	4	2	50%
Chest/lung	10	4	40%
Paediatric	25	9	36%
Oncological	4	1	25%
Cardiac	5	1	20%
Musculoskeletal	19	3	16%
Gastrointestinal	12	1	8%
Others	20	5	25%
Total	283	145	51%

The difficulties recruiting are echoed by feedback from workforce leads.

- *'A new consultant was appointed and left within a year to go to a more specialist post which left us with a gap in service.'*
- *'Concerned with potential recruitment problems. One unfilled post and a significant number of consultants of 55 years-plus age thinking of retirement due to pension changes.'*
- *'Difficult to recruit in some subspecialist areas – H&N and neuro posts advertised now for third time.'*
- *'Difficult to recruit to both general and subspecialty vacancies. Our best consultants are being aggressively headhunted by other trusts who are also short staffed.'*
- *'Disastrous. We have four unfilled vacancies and did not receive a single applicant.'*

- *'It has been difficult to recruit in subspecialties such as nuclear medicine and breast imaging in a regional DGH. Adverts placed but little interest in general radiology.'*
- *'It is increasingly challenging to replace retiring 'generalist' radiologists with multi-system and multi-modality skill sets. It can be difficult to recruit to smaller units where newly qualified consultants perceive that they will be required to perform outside their subspecialty, particularly on call.'*
- *'Most local trainees are not looking for consultant posts in the region – many are looking to move abroad. This is a big change and is affecting recruitment. We will need to try to attract candidates from outside the region who we don't know and they don't know us. There is a national shortage of IR consultants which is making it difficult to recruit substantively and even finding locums is difficult.'*
- *'The College is not producing enough trainees to cover national shortages. Get your act together please.'*
- *'We are a major trauma centre, but cannot provide a robust 24/7 IR on-call rota as we cannot recruit interventional radiologists.'*
- *'We are having huge problems recruiting an interventional radiologist to an already understaffed service thereby compromising its very existence. We are also having difficulty recruiting to general posts in summer 2013.'*
- *'We have been successful in obtaining significant funding for new posts but there are not the candidates out there to apply/appoint.'*
- *'We have experienced much higher turnover in the last two years, and are finding it very hard to fill empty posts. Even locums are hard to find.'*

5. Clinical radiology workload – observations

To supplement the workforce data, each workforce lead was asked to provide information about their department workload.

Of the 118 departments that responded, 99 respondents (84%) said that their department's reporting requirements were not met by the department consultant and trainee radiologists within their contracted hours. Table 27 shows how departments make up the shortfall. Many departments adopted more than one method.

Table 27. Methods used to meet shortfall in reporting requirements

Methods used to meet shortfall (multi-response)	% of respondents
Goodwill	50%
Reporting by radiographer	62%
Additional paid reporting by dept's own radiologists outside contracted hours	57%
Employing ad-hoc locums	38%
Delegation of reporting to clinicians through an agreed mechanism	41%
Images left unreported or 'auto-reported'	47%
Outsourcing of reporting to an independent sector company	34%
Other	20%

Further questions asked about methods used by departments to manage their out-of-hours workload and arrangements on 'rest' following overnight on-call duties. The results are shown in Tables 28 and 29.

Table 28. Methods used to manage out-of-hours workload

Methods used to manage out-of-hours workload (multi-response)	% of respondents
Conventional rota arrangements	84%
Outsourcing to an independent sector company	25%
Local hospital networking collaboration	7%
Hub & spoke model	3%
Other	8%

Table 29. Arrangements on 'rest' following overnight on-call duties

Arrangements on 'rest' following overnight on-call duties (multi-response)	% of respondents
Work as usual	67%
Teleradiology outsourcing	13%
Day off	8%
Morning off	5%
Ad hoc depending on whether usual amount of sleep while on call	2%
Administrative duties only	1%
Other/no arrangements	8%

The workload questions also sought to measure the time commitment required from departments for attendance at MDT meetings.

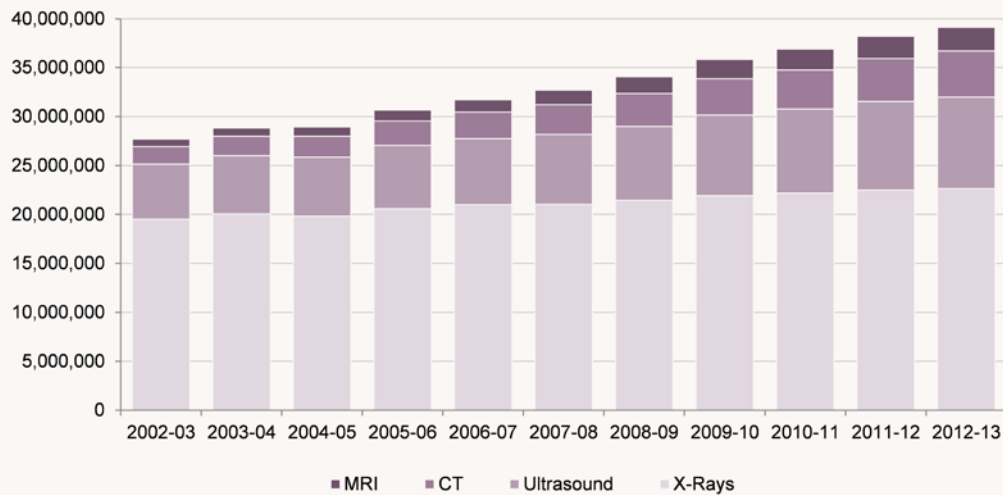
The number of MDT meetings appearing on departments' formal timetable increased from an average of 11.8 a week to 13.3 a week between 2010 and 2012. The average duration of these meetings is shown in Table 30.

Table 30. Average duration of an MDT meeting (excluding associated preparation and administration time), 2010 and 2012

Average duration, to nearest hour	Number of departments 2010	Number of departments 2012
<1 hour	12	6
1 hour	43	33
1.5 hours	8	13
2 hours	7	16
2.5 hours	2	1
3 hours	0	3
Not known	46	46

At a more general level, it is clear from both the data published by the Department of Health on imaging numbers and radiodiagnostic examinations (Table 27 and Figure 4 - *please note these data are England only*) and from the feedback from workforce leads (overleaf) through the annual census, that the demands of the workload outstrip the growth in capacity of UK radiology departments.

Figure 4. Total number of imaging and radiodiagnostic examinations or tests, by imaging modality, England, 2002–03 to 2012–13⁴



In England, the number of MRI examinations or tests has tripled in the last ten years. The number of CT tests has also nearly tripled, with 3 million more CT tests being conducted than ten years ago.

Table 27. Total number of imaging and radiodiagnostic examinations or tests, by imaging modality, England, 2002–03 to 2012–13⁴

Year	MRI	CT	Ultrasound	X-rays
2002–03	786,646	1,767,791	5,635,358	19,512,924
2003–04	857,550	1,992,826	5,937,383	20,056,669
2004–05	944,935	2,141,652	6,029,104	19,818,330
2005–06	1,118,487	2,481,571	6,469,396	20,585,678
2006–07	1,257,972	2,728,119	6,715,486	21,011,234
2007–08	1,488,059	3,044,516	7,135,551	21,028,109
2008–09	1,725,793	3,355,161	7,552,156	21,437,735
2009–10	1,970,323	3,719,089	8,217,414	21,919,881
2010–11	2,129,973	3,986,831	8,599,380	22,170,523
2011–12	2,298,527	4,381,226	9,054,409	22,485,317
2012–13	2,447,414	4,725,859	9,323,688	22,640,047
Growth 2012–13	6.5%	7.9%	3.0%	0.7%
Avg annual growth over 10 years	12.0%	10.3%	5.2%	1.5%

The difficulties in meeting an increasing workload were also expressed by workforce leads.

- 'All modalities continue to be in demand in excess of the rate of outpatient increases. Over the last five years, CT increase = 43.1%; interventional increase = 34.8%; ultrasound increase = 62.5%; MRI increase = 71.7%.'
- 'Clinical demand is outstripping radiologist reporting capacity. Development of new posts is not keeping pace with clinical demand and removal of waiting lists. We are now facing outsourcing either some of our elective reporting or some of our on call to free up additional consultant PAs.'
- 'Clinical demand is rising faster than staffing levels. This applies to both radiologists and radiographers. We have been able to recruit radiologists, which is an improvement over a few years ago.'
- 'The trend to investigate particularly with CT and MRI continues to increase but we see no increase in availability of appointable candidates. We are, therefore, turning more and more to outsourcing our reporting.'
- 'Unable to appoint any more consultants at the moment with ever increasing demand resulting in longer waits for investigations and reports.'
- 'We constantly need to recruit to cope with a rising demand for our services. We struggle to recruit suitable people. We are also running out of space to accommodate the new recruits.'
- 'We are having to outsource plain film and CT reporting. We have gaps in service provision regarding interventional radiology and also MDT cover. Our on call is getting busier. The CT workload has shot up by 200% over last five years.'
- 'We are overworked and struggling to meet the workload.'
- 'We are unable to keep pace with increasing demand and activity. We have implemented seven-day working as of September 2012 and this increased inpatient CT activity by 25% overall, 200% from medical specialties!'
- 'Workforce inadequate relative to workload. Not enough radiologists to facilitate seven-day working'
- 'Workload increasing by 6–7% per annum, particularly complex modalities and interventions. Consultant numbers static since 2005–06 however and difficult to persuade trust to expand.'

References

1. Office for National Statistics (ONS). *Annual Mid-year Population Estimates for UK, 2011 and 2012*. Cardiff: ONS, 2013. www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/mid-2011-and-mid-2012/stb---mid-2011---mid-2012-uk-population-estimates.html (accessed 17/10/14)
2. National Patient Safety Agency (NPSA). *Cluster Type*. London: NPSA, 2014 www.nrls.npsa.nhs.uk/ (accessed 17/10/14)
3. Health and Social Care Information Centre. *Attribution Data Set GP-Registered Populations Scaled to ONS Population Estimates – 2011*. HSCIC, 2012. www.hscic.gov.uk/pubs/gpregpop11 (accessed 17/10/14)
4. NHS England. *Annual Imaging and Radiodiagnostics Data*. Leeds: NHS England, 2014. www.england.nhs.uk/statistics/statistical-work-areas/diagnostics-waiting-times-and-activity/imaging-and-radiodiagnostics-annual-data/ (accessed 17/10/14)

Appendix 1. 2012 census questions

Section 1 – Workforce details

Permanent staff details – clinical radiology

Name

Gender

Hospital

Grade

Contracted PAs

Full- or part-time

Type of radiologist

- General
- General with one main area of interest
- General with two main areas of interest
- Specialist

Please select area(s) of interest/specialist interests

- | | |
|--|--|
| ▪ Breast | ▪ Neuroradiology (mainly interventional) |
| ▪ Cardiac | ▪ Obstetric/gynaecological |
| ▪ Chest/lung | ▪ Oncological |
| ▪ Endocrine | ▪ Paediatric neuroradiology |
| ▪ Forensic | ▪ Paediatric radiology |
| ▪ Gastrointestinal | ▪ PET-CT |
| ▪ Head and neck | ▪ Radionuclide |
| ▪ Imaging IT | ▪ Trauma |
| ▪ Interventional (mainly non-vascular) | ▪ Ultrasound |
| ▪ Interventional (mainly vascular) | ▪ Uroradiology |
| ▪ Musculoskeletal | ▪ Other |
| ▪ Neuroradiology (mainly diagnostic) | |

Expected to retire by end of 2013?

Left since December 2011?

Reason for leaving

Unfilled permanent posts

Unfilled post status:

- Funded but not yet advertised
- Advertised but not yet interviewed
- Advertised but failed to appoint
- Appointed but not yet taken up

Grade

Total contracted PAs of post

Full- or part-time

Type of radiologist

- As before

Please select primary area of interest/specialist interest

- As before

Locum filled?

Additional questions

Please use the space provided below to enter any further workforce details you feel are relevant to your 2012 census submission but have not already been captured and/or provide general feedback to the College regarding the census.

Section 2 – Reporting, plain X-ray studies and workload

Is the full reporting requirement met by the department's consultant, trainee radiologists and staff grade within their contractual hours?

- Yes
- No – please select
 - Goodwill
 - Reporting by radiographers
 - Additional paid reporting by the department's own radiologists outside their contracted hours
 - Employing ad-hoc locums
 - Delegation of reporting to clinicians through an agreed mechanism
 - Images left unreported or auto-reported
 - Outsourcing of reporting to an independent sector company
 - Other

Approximately how many of the radiologists included in your census submission regularly provide a general out-of-hours service?

Do you manage your out-of-hours workload by any of the following:

- Conventional rota arrangements
- Hub & spoke model
- Local hospital networking collaboration
- Outsourcing to an independent sector company
- Other – please specify

What are your department's arrangements on 'rest' following overnight on-call duties?

- Work as usual
- Morning off
- Day off
- Administrative duties only
- Ad hoc depending on whether usual amount of sleep while on call
- Teleradiology outsourcing and if so which hours and what case mix

On average, how many clinical radiological meetings (MDTMs) per week appeared on your department's formal timetable in your trust?

What is/was the average duration of an MDTM (excluding associated preparation and administration time)?

Finally, please use the space below to provide further information regarding workload. We are also particularly keen to capture observations regarding the change in complexity of interventional radiology procedures in recent years.

Appendix 2. 2012 census completions

Thank you to all the people at the departments listed below for completing the 2012 census – your input is greatly appreciated.

England – East Midlands

Chesterfield Royal Hospital NHS Foundation Trust
Derby Hospitals NHS Foundation Trust
Kettering General Hospital NHS Foundation Trust
Northampton General Hospital NHS Trust
Nottingham University Hospitals NHS Trust
Sherwood Forest Hospitals NHS Foundation Trust
United Lincolnshire Hospitals NHS Trust
University Hospitals of Leicester NHS Trust

England – East of England

Basildon and Thurrock University Hospitals NHS Foundation Trust
Bedford Hospital NHS Trust
Cambridge University Hospitals NHS Foundation Trust
Colchester Hospital University NHS Foundation Trust
East and North Herts NHS Trust
Hinchingbrooke Health Care NHS Trust
Ipswich Hospital NHS Trust
James Paget University Hospitals NHS Foundation Trust
Luton and Dunstable Hospital NHS Foundation Trust
Mid-Essex Hospital Services NHS Trust
Norfolk and Norwich University Hospitals NHS Foundation Trust
Papworth Hospital NHS Foundation Trust
Peterborough and Stamford Hospitals NHS Foundation Trust
Princess Alexandra Hospital NHS Trust
Queen Elizabeth Hospital King's Lynn NHS Trust
Southend University Hospital NHS Foundation Trust
West Hertfordshire Hospitals NHS Trust
West Suffolk NHS Foundation Trust

England – London

Barking, Havering and Redbridge University Hospitals NHS Trust
Barnet and Chase Farm Hospitals NHS Trust
Barts Health NHS Trust
Chelsea and Westminster Hospital NHS Foundation Trust
Croydon Health Services NHS Trust
Ealing Hospital NHS Trust
Epsom and St Helier University Hospitals NHS Trust
Great Ormond Street Hospital for Children NHS Foundation Trust
Guy's & St Thomas' NHS Foundation Trust
Hillingdon Hospitals NHS Foundation Trust
Homerton University Hospital NHS Foundation Trust
Imperial College Healthcare NHS Trust
King's College Hospital NHS Foundation Trust
Kingston Hospital NHS Foundation Trust
Lewisham Healthcare NHS Trust
Moorfields Eye Hospital NHS Foundation Trust
North Middlesex University Hospital NHS Trust
North West London Hospitals NHS Trust
Royal Brompton and Harefield NHS Foundation Trust
Royal Free London NHS Foundation Trust
Royal Marsden NHS Foundation Trust
Royal National Orthopaedic Hospital NHS Trust
South London Healthcare NHS Trust
St George's Healthcare NHS Trust
University College London Hospitals NHS Foundation Trust
West Middlesex University Hospital NHS Trust
Whittington Hospital NHS Trust

England – North East

City Hospitals Sunderland NHS Foundation Trust
County Durham and Darlington NHS Foundation Trust
Gateshead Health NHS Foundation Trust
Newcastle upon Tyne Hospitals NHS Foundation Trust
North Cumbria Acute Hospitals NHS Trust
North Tees and Hartlepool NHS Foundation Trust
Northumbria Healthcare NHS Foundation Trust
South Tees Hospitals NHS Foundation Trust
South Tyneside NHS Foundation Trust

England – North West

Aintree University Hospital NHS Foundation Trust
Alder Hey Children's NHS Foundation Trust
Blackpool Teaching Hospitals NHS Foundation Trust
Bolton NHS Foundation Trust
Central Manchester University Hospitals NHS Foundation Trust
Central Manchester University Hospitals NHS Foundation Trust
Christie NHS Foundation Trust
Clatterbridge Cancer Centre NHS Foundation Trust
Countess of Chester Hospital NHS Foundation Trust
East Cheshire NHS Trust
East Lancashire Hospitals NHS Trust
Lancashire Teaching Hospitals NHS Foundation Trust
Liverpool Heart and Chest NHS Foundation Trust
Mid Cheshire Hospitals NHS Foundation Trust
Pennine Acute Hospitals NHS Trust
Royal Liverpool and Broadgreen University Hospitals NHS Trust
Salford Royal NHS Foundation Trust
Southport and Ormskirk Hospital NHS Trust
St Helens and Knowsley Hospitals NHS Trust
Stockport NHS Foundation Trust
Tameside Hospital NHS Foundation Trust
The Walton Centre NHS Foundation Trust
University Hospital of South Manchester NHS Foundation Trust
University Hospitals of Morecambe Bay NHS Foundation Trust
Warrington and Halton Hospitals NHS Foundation Trust
Wirral University Teaching Hospital NHS Foundation Trust
Wrightington, Wigan and Leigh NHS Foundation Trust

England – South Central

Buckinghamshire Healthcare NHS Trust
Hampshire Hospitals NHS Foundation Trust
Heatherwood and Wexham Park Hospitals NHS Foundation Trust
Isle of Wight NHS Trust
Milton Keynes Hospital NHS Foundation Trust
Oxford University Hospitals NHS Trust
Portsmouth Hospitals NHS Trust
Royal Berkshire NHS Foundation Trust
University Hospital Southampton NHS Foundation Trust

England – South East Coast

Ashford and St Peter's Hospitals NHS Foundation Trust
 Brighton and Sussex University Hospitals NHS Trust
 Dartford and Gravesham NHS Trust
 East Kent Hospitals University NHS Foundation Trust
 East Sussex Healthcare NHS Trust
 Frimley Park Hospital NHS Foundation Trust
 Maidstone and Tunbridge Wells NHS Trust
 Medway NHS Foundation Trust
 Queen Victoria Hospital NHS Foundation Trust
 Surrey & Sussex Healthcare NHS Trust
 Western Sussex Hospitals NHS Foundation Trust

England – South West

Dorset County Hospital NHS Foundation Trust
 Gloucestershire Hospitals NHS Foundation Trust
 Great Western Hospitals NHS Foundation Trust
 North Bristol NHS Trust
 Northern Devon Healthcare NHS Trust
 Plymouth Hospitals NHS Trust
 Poole Hospital NHS Foundation Trust
 Royal Bournemouth & Christchurch Hospitals NHS Foundation Trust
 Royal Cornwall Hospitals NHS Trust
 Royal Devon and Exeter NHS Foundation Trust
 Royal National Hospital for Rheumatic Diseases NHS Foundation Trust
 Royal United Hospital Bath NHS Trust
 Salisbury NHS Foundation Trust
 South Devon Healthcare NHS Foundation Trust
 Taunton and Somerset NHS Foundation Trust
 University Hospitals Bristol NHS Foundation Trust
 Weston Area Health NHS Trust
 Yeovil District Hospital NHS Foundation Trust

England – West Midlands

Birmingham Children's Hospital NHS Foundation Trust
 Birmingham Women's NHS Foundation Trust
 Burton Hospitals NHS Foundation Trust
 Dudley Group NHS Foundation Trust
 George Eliot Hospital NHS Trust
 Heart of England NHS Foundation Trust
 Mid-Staffordshire NHS Foundation Trust
 Robert Jones and Agnes Hunt Orthopaedic Hospital NHS Foundation Trust
 Royal Orthopaedic Hospital NHS Foundation Trust
 Royal Wolverhampton NHS Trust
 Sandwell and West Birmingham Hospitals NHS Trust
 Shrewsbury and Telford Hospital NHS Trust
 South Warwickshire NHS Foundation Trust
 University Hospital Birmingham NHS Foundation Trust
 University Hospital of North Staffordshire NHS Trust
 University Hospitals Coventry and Warwickshire NHS Trust
 Walsall Healthcare NHS Trust
 Worcestershire Acute Hospitals NHS Trust
 Wye Valley NHS Trust

England – Yorks & Humber

Airedale NHS Foundation Trust
 Barnsley Hospital NHS Foundation Trust
 Bradford Teaching Hospitals NHS Foundation Trust
 Calderdale and Huddersfield NHS Foundation Trust
 Doncaster and Bassetlaw Hospitals NHS Foundation Trust
 Harrogate and District NHS Foundation Trust
 Hull and East Yorkshire University Teaching Hospitals NHS Foundation Trust
 Leeds Teaching Hospitals NHS Trust
 Mid Yorkshire Hospitals NHS Trust
 Northern Lincolnshire and Goole Hospitals NHS Foundation Trust
 Sheffield Children's NHS Foundation Trust
 Sheffield Teaching Hospitals NHS Foundation Trust
 The Rotherham NHS Foundation Trust
 York Teaching Hospital NHS Foundation Trust

Northern Ireland

Belfast Health and Social Care Trust
 Northern Health and Social Care Trust
 South Eastern Health and Social Care Trust
 Southern Health and Social Care Trust
 Western Health and Social Care Trust

Scotland

NHS Ayrshire & Arran
 NHS Borders
 NHS Dumfries and Galloway
 NHS Fife
 NHS Forth Valley
 NHS Grampian
 NHS Greater Glasgow and Clyde
 NHS Highland
 NHS Lanarkshire
 NHS Lothian
 NHS Tayside
 NHS Western Isles

Wales

Abertawe Bro Morgannwg University LHB
 Aneurin Bevan LHB
 Betsi Cadwaladr University LHB
 Cardiff and Vale University LHB
 Cwm Taf LHB
 Hywel Dda LHB
 Velindre NHS Trust

Citation details

The Royal College of Radiologists. *Clinical Radiology UK Workforce Census Report 2012*. London: The Royal College of Radiologists, 2014.

Ref No. BFCR(14)14

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October 2014.

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