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Clinical Radiology
The Royal College of Radiologists

The clinical radiology workforce in Scotland: 2015 census report

RCR Standing Scottish Committee

September 2016

Faculty of Clinical Radiology

Contents

Foreword and acknowledgements

This report comes at a time when we know that radiology departments across Scotland are facing continued and considerable difficulties in the provision of safe, high-quality diagnostic and interventional radiology services. The pressures are, in the main, unchanged in recent years and reflect increasing demands for these services and significant workforce problems in radiology. Both of these issues have been discussed at considerable length by the Standing Scottish Committee of The Royal College of Radiologists (RCR) and this report draws on data collected through the RCR 2015 census.[1] Although many of the demand and workforce issues discussed are UK wide, this report provides data relating to radiology in Scotland and specifically highlights the important issues around the geography of the country and limited access to specialist services and the dangerously low staffing levels in some areas. While short- to medium-term solutions including international recruitment, should be pursued the longer term viability, support and replenishment of radiologists in Scotland is extremely concerning, particularly against a background of millions of pounds of expenditure on outsourcing. It is clear that a long term five to ten year plan is required to return radiology numbers to acceptable levels. Apart from any financial gain, it will more important in facilitating all the laudable initiatives and ambitions of Detect Cancer Early and the Scottish Cancer Strategy to be achieved which in turn will benefit healthcare and outcomes in this country.[2,3]

In total, 20 radiology departments across 12 NHS Health Boards in Scotland took part in the census. I would like to thank all the clinical directors, workforce leads and others who submitted data and the numerous unnamed individuals who work tirelessly at the RCR on our behalf collating and presenting this data. The RCR would appreciate your continuing support with future censuses and data collection exercises. Through maximum participation, we can obtain a reliable insight into emerging trends in radiology, increasing our ability to influence health policy, the delivery of services and the planning of the workforce at regional and national levels.

Dr Grant M Baxter

Secretary of the Standing Scottish Committee
The Royal College of Radiologists

1. Main findings from the 2015 census

Insufficient number of radiologists in Scotland

Scotland has a very low number of radiologists, in relation to the size of the population, when compared to other European countries. By taking consultants and trainees together, Scotland has 8 radiologists per 100,000 people (5.4 consultants per 100,000), placing them near the bottom of 31 European countries for which this information is available.[4] Growth in the number of consultant radiologists has been minimal in recent years, a concern that has been exacerbated by exponential increases in demand for advanced imaging services, which in turn adds to the extent and complexity of diagnostic reporting. In the five years leading up to 2015, the number of computed tomography (CT) and magnetic resonance imaging (MRI) examinations have each grown by 55%, whereas the consultant workforce has increased by only 3% during the same period.

Limited access for patients to specialist radiology expertise

There are parts of Scotland where consultants with certain specialty interest areas are so low in number that the safety and sustainability of patient care is being put into doubt. In some NHS Health Board areas there is no or very little access to interventional care which has major implications for any trauma service, patients with obstructed kidneys, mothers with post-partum haemorrhage, and so on. A major concern also exists in breast radiology where around one-third of current consultants are due to retire in the next five years. This could lead to a workforce deficit in breast radiology and, unless addressed, will have a serious negative impact in the area of breast screening and cancer care.

Increased expenditure on outsourcing to manage workload

Nearly all radiology departments in Scotland stated they were unable to meet their diagnostic reporting requirements for the period 1 April 2014 to 31 March 2015. In addressing shortfalls in these requirements, departments are increasingly outsourcing work to independent sector companies and making additional (overtime) payments to radiologists to report outside of contracted hours. Across Scotland, expenditure on outsourcing and additional payments has increased by 50%, from an estimated £3.5 million for 2013–14 to £5.25 million for 2014–15. To put this into perspective, £5.25 million is equivalent to the combined annual salaries of 60 full-time consultants (or 21% of the workforce).

Replenishment and sustainability of the consultant workforce

In Scotland, radiology has one of the lowest proportions of trainees to consultants when compared to other hospital medical specialties. The non-consultant grade, which in radiology is mainly comprised of trainees, accounts for 30% of the radiology workforce. These figures raise the question as to whether sufficient numbers of trainees are coming through the system to replenish and sustain the consultant workforce. It is also important to take into account future retirement rates of consultants currently working in the NHS. It is estimated that up to 19% of clinical radiology consultants will retire by 2020, 36% by 2025 and 53% by 2030. Preferred working patterns also have to be factored in. The last five years have shown a pronounced trend towards working less than full-time by consultants (nearly one-in-five now do so) and this reduces the overall capacity of the workforce.

Vacant consultant posts becoming the norm in radiology

The vacancy rate for consultant radiologists has fluctuated between 6% and 13% between 2010 and 2015, the annual mean being 8%. These figures suggest a situation has developed whereby around one-in-ten consultant posts in Scotland will always be vacant in the foreseeable future. There is evidence that some radiology departments have forsaken their recruitment efforts and are no longer making the business case for necessary further consultant posts, such is the workforce crisis in radiology and the

paucity of candidates applying for positions. When departments do make an effort to recruit, it often results in a failure to appoint. This is the case for 68% of unfilled consultant posts in Scotland.

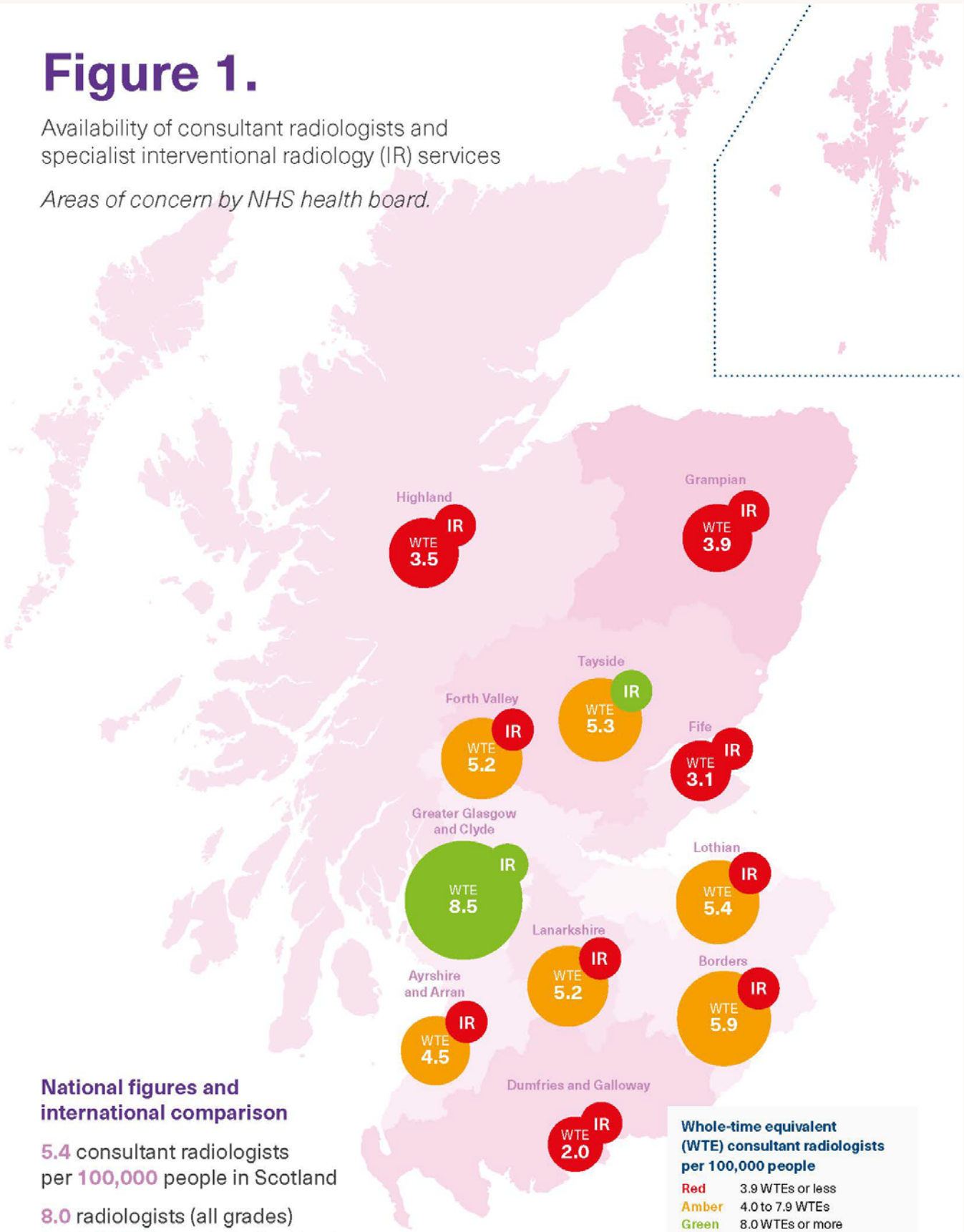
Support required for international recruitment of radiologists

In Scotland, the percentage of consultant radiologists who are non-UK, international medical graduates (IMGs) is 21%, which is much lower than the 40% in neighbouring North East England and 37% in North West England. There has been limited activity and success among Scottish departments in the area of international recruitment. Problems faced by departments include a lack of guidance, help and resources to recruit internationally and overcome visa difficulties and other administrative hurdles. Departments require funding and support to address these problems.

Figure 1.

Availability of consultant radiologists and specialist interventional radiology (IR) services

Areas of concern by NHS health board.



National figures and international comparison

5.4 consultant radiologists per **100,000** people in Scotland

8.0 radiologists (all grades) per **100,000** people in Scotland

12.0 radiologists per **100,000** – average across European countries

NHS Orkney, Shetland and Western Isles do not directly employ any consultant radiologists

2. Background and methodology

Background

The RCR first carried out the annual UK radiology workforce census in 2008 and has repeated the exercise annually ever since. This report is based on information collected through the RCR 2015 census and covers the radiology workforce in Scotland. The information is essential in contributing to the development of workforce plans and health service policies affecting NHS Scotland. New census questions have been introduced since 2008, mainly in the areas of departmental activity and workload. This is because workforce planning is only effective when the process considers both supply (number of radiologists) and demand (workload) elements.

Methodology

Collection of census information
Clinical directors and workforce leads of all 20 NHS radiology departments in Scotland were asked to provide information for the 2015 census. As with previous RCR censuses, a 100% response rate was achieved.

Census questions
The 2015 census questions can be found in Appendix 1. The questions focused on two related domains, workforce and workload:

- Workforce – respondents were asked to provide information to reflect their workforce at the census date of 31 March 2015. The information included number of consultant radiologists in substantive posts and their professional activities and specialty interest areas. Details of unfilled consultant posts (that is, vacancies) were also collected.
- Workload – respondents were asked to provide information on departmental workload and spending covering the period 1 April 2014 to 31 March 2015.

Presentation of results

Microsoft Excel was used to analyse the quantitative data collected, collate into tables and produce graphical charts. Free-text comments provided by respondents were analysed and used as supporting information in this report to highlight specific workforce and workload issues.

The workforce figures in this report are given as headcount unless otherwise stated. Where whole-time equivalent (WTE) figures are used, the calculation conforms to the current NHS convention of excluding programmed activities (PAs) that exceed ten. One of the intentions of the RCR censuses is to identify trends over time. Where appropriate, this report includes information from previous censuses, mainly 2010 and 2014, to allow for five- and one-year comparisons to be made with the 2015 information. Information for 2013 is not provided. This is because the timing for carrying out the census altered from calendar to financial year.

When presenting the information by geographical area the following regions are used in this report: East, North and West. The same regions are used by the Information Services Division at NHS Scotland to produce statistics on medical workforce and activity.

Table 1. Regions and NHS Health Boards covered by the census

Region	NHS Health Board
East	NHS Borders
	NHS Fife
	NHS Lothian
North	NHS Highland
	NHS Grampian
	NHS Tayside
	NHS Western Isles
West	NHS Ayrshire and Arran
	NHS Dumfries and Galloway
	NHS Forth Valley
	NHS Greater Glasgow and Clyde
	NHS Lanarkshire

3. Overview of the radiology workforce in Scotland

Headcount of radiologists

As of 31 March 2015, there were 304 consultant radiologists working full or less than full time in an NHS substantive post in Scotland. The growth in consultant numbers has been minimal, whether measured over a one- or five-year timeframe. Whereas the number of consultant radiologists grew by 16% in the UK from 2010–15, it was only 4% in Scotland. There has been no increase in the number of consultants between 2014 and 2015.

At the time of the census, the number of radiologists registered in Scottish training schemes was 115 (an increase on the 92 trainees recorded in the 2014 census report). Some of these 115 trainees were coming towards the end of training and were awarded their Certificate of Completion of Training (CCT) soon after the census date of 31 March 2015.

Table 2. Radiology workforce in Scotland, 2015

Grade	Headcount
Consultants	304
Trainees	115
Other grades	15
Scotland – total	**434**

Table 3. Headcount of consultant radiologists by region, 2010–15

Region	2010 headcount	2014 headcount	2015 headcount	% change 2014–15	% change 2010–15
East	68.0	78.5	72.5	-8%	7%
North	67.0	60.5	58.5	-3%	-13%
West	156.0	168.0	173.0	3%	11%
Scotland – total	**291.0**	**307.0**	**304.0**	**-1%**	**4%**
UK – overall	2,869.0	3,239.0	3,318.0	2%	16%

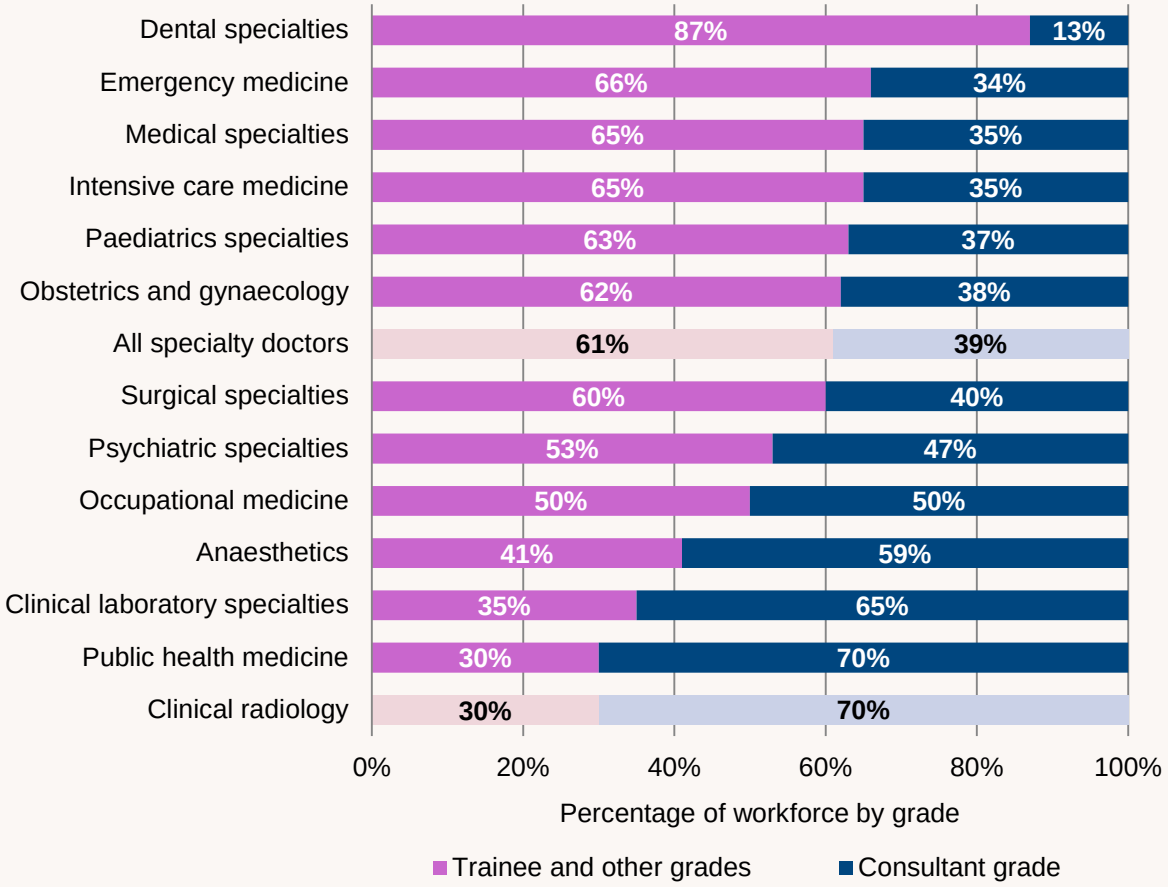
Table 4. Headcount of trainees by regional training scheme, 2015

Training scheme	Headcount
East	16
North	16
South East	30
West	53
Scotland – total	**115**

Proportion of trainees to consultants

Trainee and other non-consultant grades (including those in academic and staff grade or equivalent posts) made up 30% of the radiology workforce. This figure raises questions of future replenishment and sustainability of numbers in the consultant workforce. Workforce data from NHS Scotland show that, compared to other hospital medical specialty groups, radiology has one of the lowest proportions of trainees to consultants.

Figure 2. Percentage of consultants and non-consultants (trainees and other grades) by medical specialty group, 2015

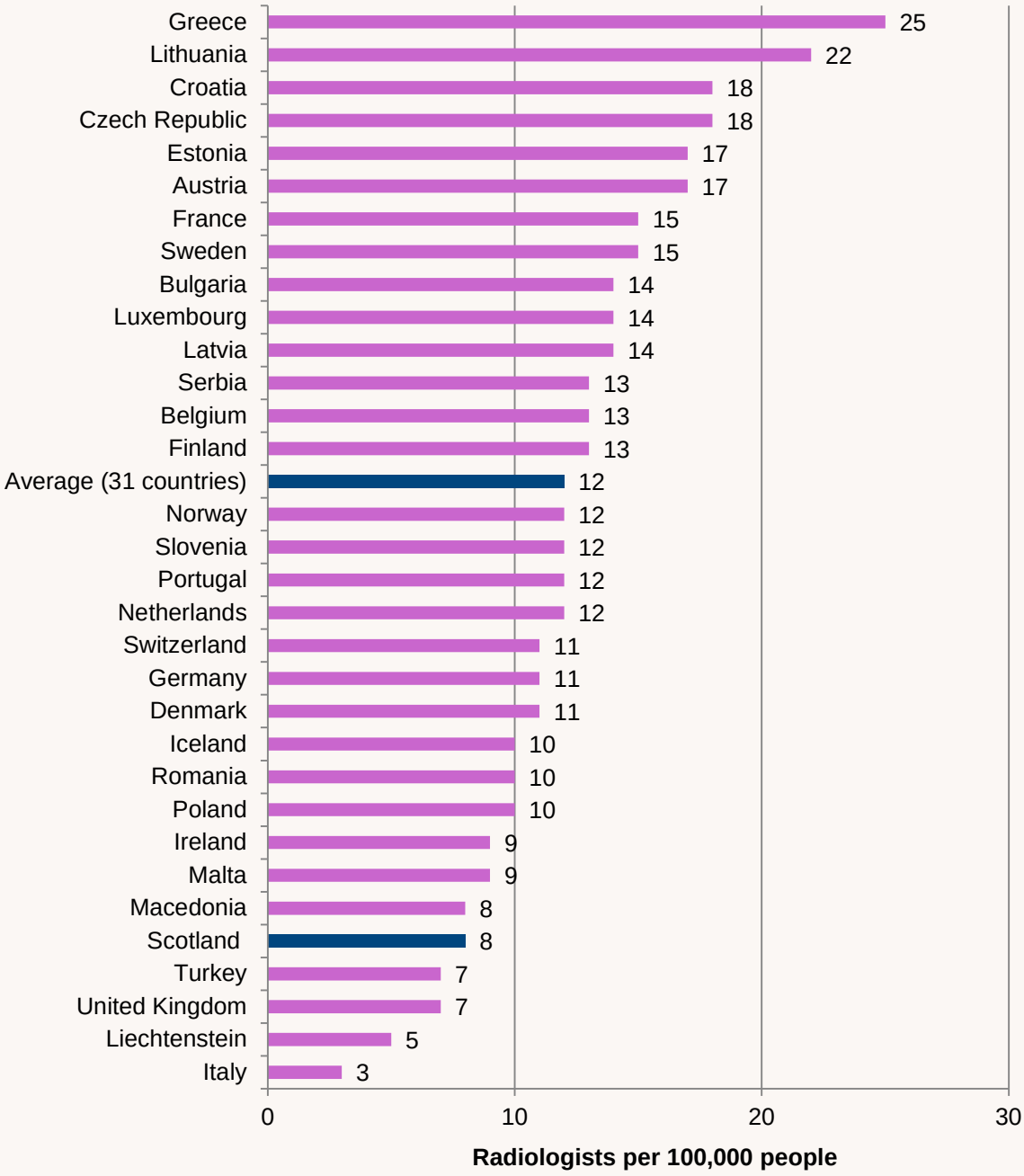


Source: ISD Scotland. NHS Scotland workforce information: HCHS medical and dental staff by grade, 31 March 2015 [website].[5] Radiology figures from the RCR census (the ISD Scotland statistics shows a breakdown of 28%, 72%).

Comparison with European countries

When the headcount for consultant, trainee and other grades are aggregated there are 434 radiologists covering a population of 5,373,000 in Scotland.[6] This equates to eight radiologists per 100,000 people, a figure similar to that for the UK overall (7.4 per 100,000). Both Scotland and the UK as a whole compare badly with other European countries and are someway behind the average of 12 per 100,000 across 31 countries where this information is available.[4]

Figure 3. Radiologists per 100,000 people in European countries

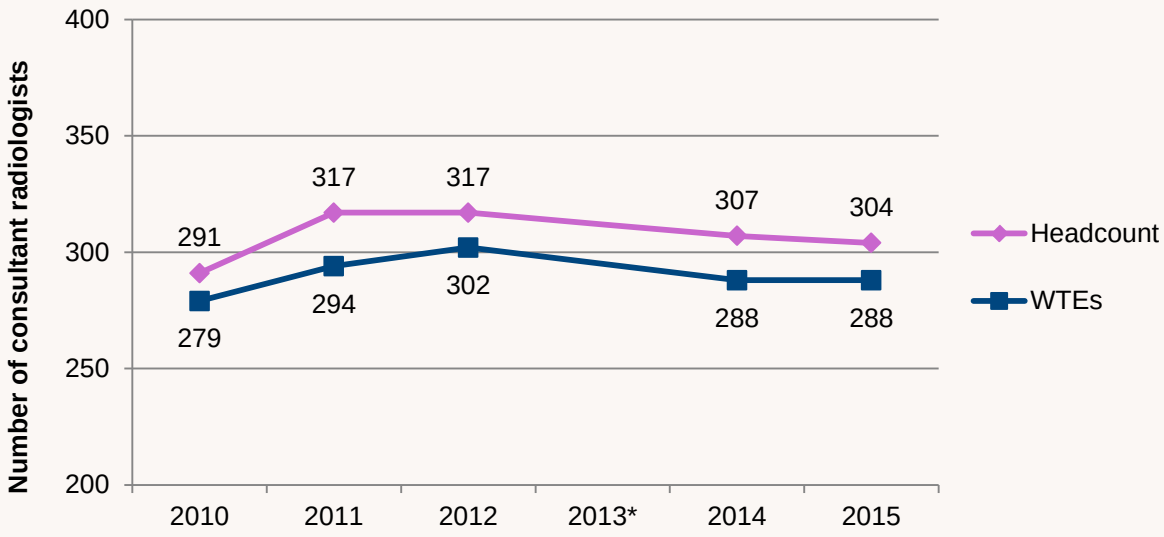


Source: European Commission – physicians by medical specialty (most recent available data is 2013).[4] UK and Scotland data based on RCR census returns.

Whole-time equivalent consultant radiologists

Increases in the number of whole-time equivalent (WTE) consultant radiologists have been minimal since 2010. Whereas the number of WTEs grew by 15% in the UK during the period 2010–15, Scotland saw only a 3% growth. Increases in the number of Scottish WTE consultants between 2010 and 2012 have been offset by decreases thereafter.

Figure 4. Consultant headcount and whole-time equivalents, 2010–15



*Information for 2013 is not provided due to the timing of the RCR census being altered from calendar to financial year.
Note: WTE calculations take into account those working less than full-time. As expected, the number of WTE consultants is lower than its headcount (in 2015, the WTE to headcount ratio was 0.95 to 1.00).

Table 5. Number of whole-time equivalent (WTE) consultants by region, 2010–15

Region	2010 WTEs	2014 WTEs	2015 WTEs	% change 2014–15	% change 2010–15
East	62	69	65	-6%	5%
North	65	57	56	-2%	-14%
West	152	162	167	3%	10%
Scotland – total	**279**	**288**	**288**	**0%**	**3%**
UK – overall	2,714	3,048	3,125	3%	15%

Uncapped WTEs

Where WTE information is shown, the calculation conforms to the current NHS convention of excluding programmed activities (PAs) that exceed 10 PAs per week. The conventional WTE consultant radiologist figure for Scotland is 288. However, 163 consultants (54%) work in excess of 10 PAs per week. If this was taken into account the uncapped WTE figure would be 315. The 'excess' worked (the difference between the conventional and uncapped WTE figures) is equivalent to an additional 27 WTE consultants, or nearly 10% of the current workforce. Whether this situation is set to continue is something that needs to be considered, as it affects workforce capacity in meeting the demands made on radiology services.

Table 6. Excess WTEs worked by consultant radiologists, 2015

Region	Conventional WTEs	Uncapped WTEs	Excess WTEs worked	% difference
East	65	71	6	9%
North	56	63	7	13%
West	167	181	14	8%
Scotland – overall	**288**	**315**	**27**	**9%**

WTE consultant radiologists per 100,000 people

Between 2014 and 2015 the population of Scotland grew by 0.5%, or just over 25,000. The number of WTE consultant radiologists per 100,000 people remained the same at 5.4. This compares favourably with the overall UK figure of 4.8 but not so when comparisons are made with other European countries (see above). NHS Dumfries and Galloway, Fife and Grampian saw decreases in the number of WTE consultants per 100,000 between 2014 and 2015, compounding the problem that these regions already have the fewest radiologists serving their populations in Scotland.

Figure 5. WTE consultant radiologists per 100,000 people by NHS Health Board area, 2015

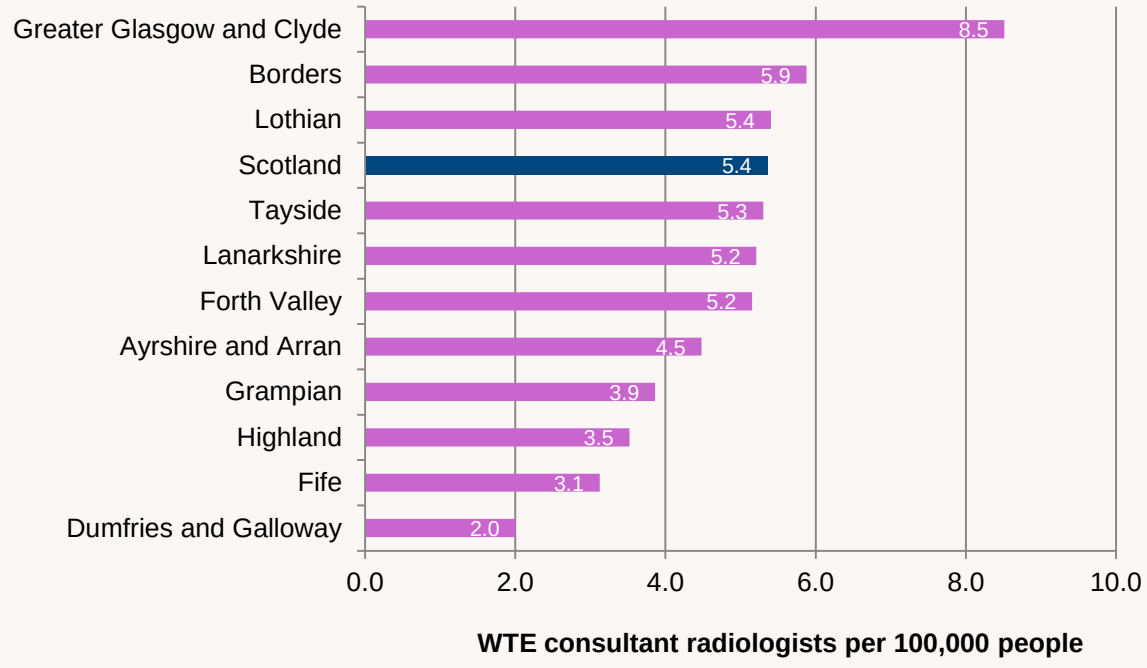


Table 7. WTE consultant radiologists per 100,000 people by NHS Health Board area, 2015[6]

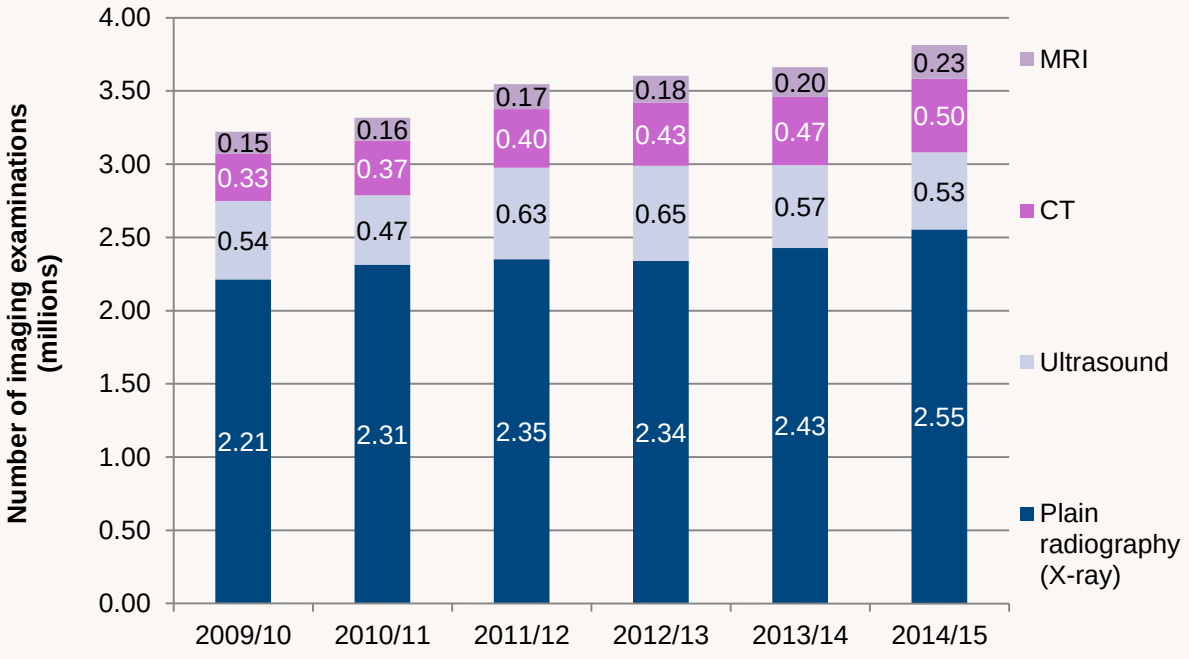
NHS Health Board	Population*	WTEs	WTEs per 100,000	% change 2014–15
Ayrshire and Arran	370,590	16.6	4.5	0%
Borders	114,030	6.7	5.9	29%
Dumfries and Galloway	149,670	3.0	2.0	-40%
Fife	368,080	11.5	3.1	-4%
Forth Valley	302,650	15.6	5.2	6%
Grampian	587,820	22.7	3.9	-8%
Greater Glasgow and Clyde	1,149,890	97.9	8.5	5%
Highland	321,000	11.3	3.5	3%
Lanarkshire	654,490	34.1	5.2	3%
Lothian	867,800	46.9	5.4	-11%
Tayside	415,040	22.0	5.3	3%
Scotland – overall	**5,373,000**	**288**	**5.4**	**0%**

*Source: National Records of Scotland – population and age structure of NHS Board areas, mid-2015.[6] Omitted are NHS Orkney, Shetland and Western Isles who do not directly employ any consultant radiologists.

Workload – imaging examinations

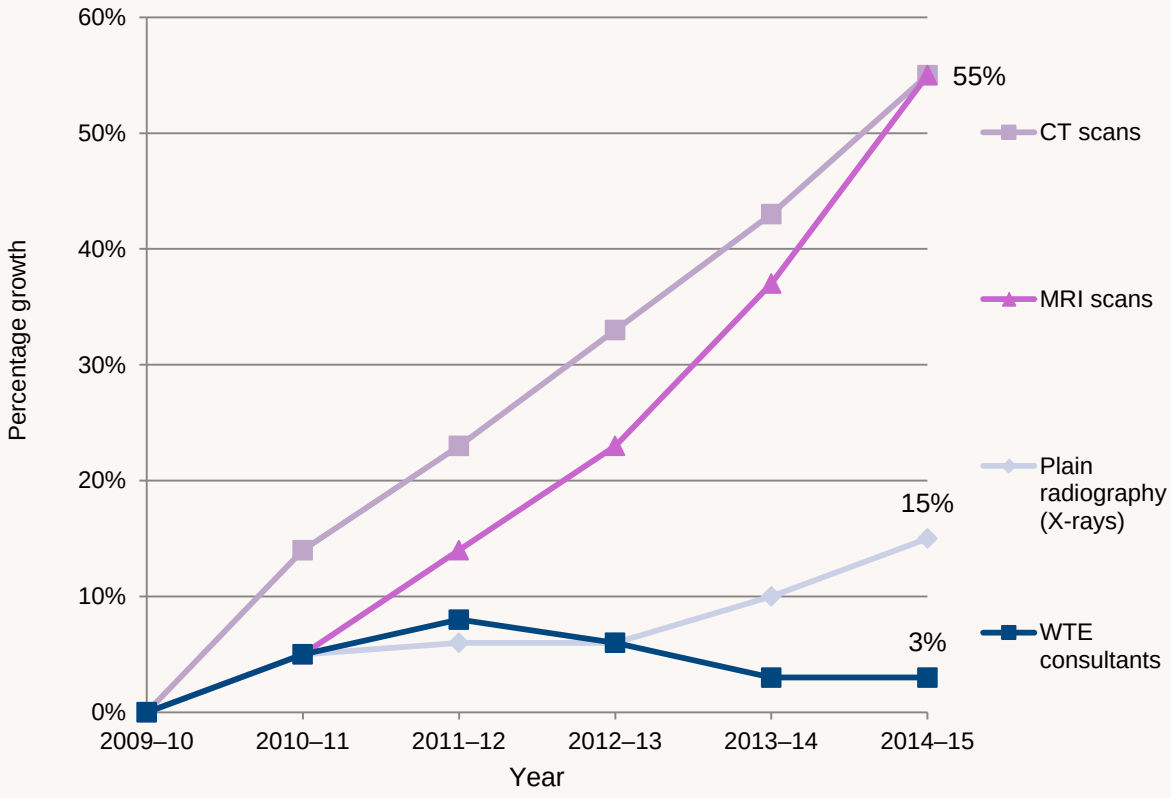
The limited increase in WTE consultants in recent years should be compared to the exponential growth in imaging examinations and, in turn, workload faced by radiologists. In particular, the number of CT and MRI examinations have each grown by 55% during the period 2010–15, compared to the 3% increase in WTE consultants. It must also be remembered that CT and MRI scanning are advanced medical technologies that add to the extent and complexity of diagnostic reporting demands on radiologists.

Figure 6. Number of imaging examinations in Scotland, 2009–10 to 2014–15



Source: NHS Scotland Information Services Division. Cost book data (radiology services R120X file).[7]

Figure 7. Percentage growth from 2009–10 until 2014–15 in the number of WTE consultants and imaging examinations in Scotland



4. NHS consultant radiologists

Gender

The percentage of female consultant radiologists in Scotland remains at 34% (the same percentage also applies to the East, North and West regions). The gender composition of the consultant workforce might gradually change, as nearly four-in-ten trainees and consultants in the 30–39 age group are women. This has implications for workforce planning. When examining those working less than full-time women are more likely to fall into this category therefore a change in the gender composition of the workforce will affect the whole-time equivalent consultant figure.

Figure 8. Percentage (and headcount) of female and male consultant and trainee radiologists, 2015

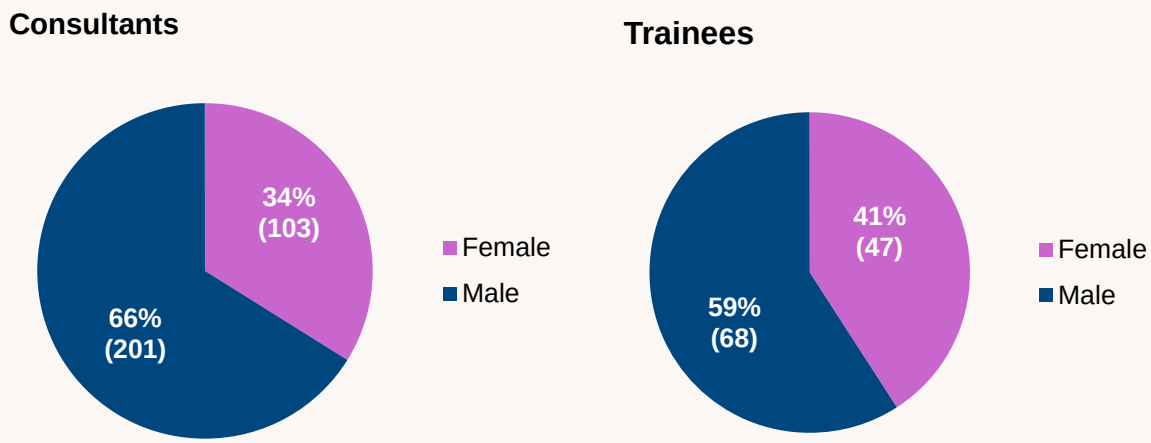


Figure 9. Percentage (and headcount) of female and male consultant radiologists, 2010–15

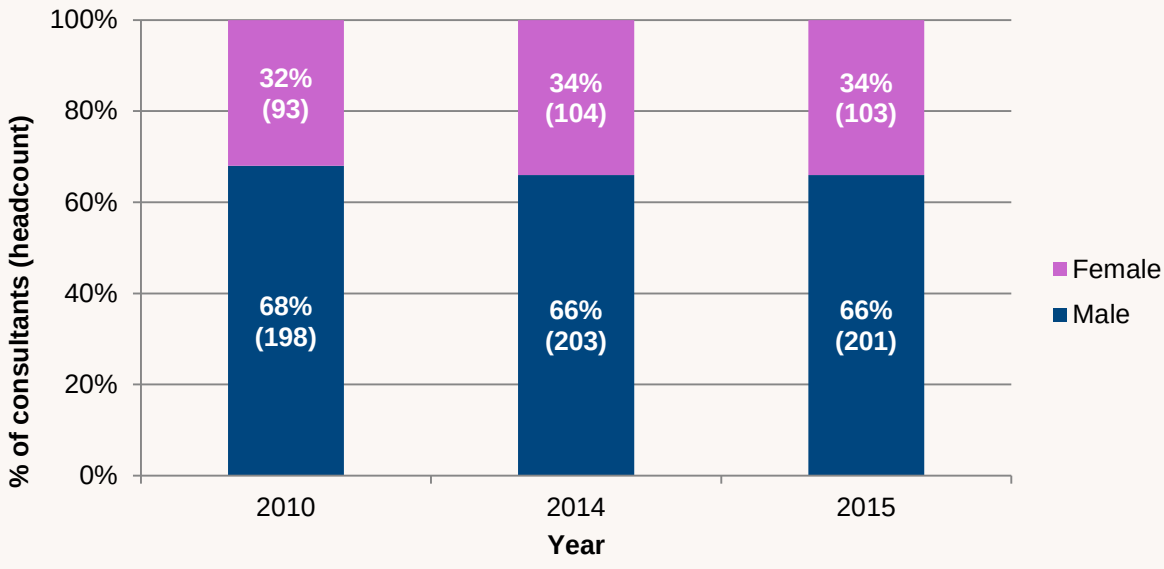


Table 8. Headcount (and percentage) of female and male consultants in each age group, 2015

Age group	Female	Male	Total
30–39	27 (39%)	42 (61%)	69
40–49	43 (37%)	73 (63%)	116
50–49	26 (27%)	69 (73%)	95
60 and over	3 (21%)	11 (79%)	14
Not known	4 (40%)	6 (60%)	10
Total	**103 (34%)**	**201 (66%)**	**304**

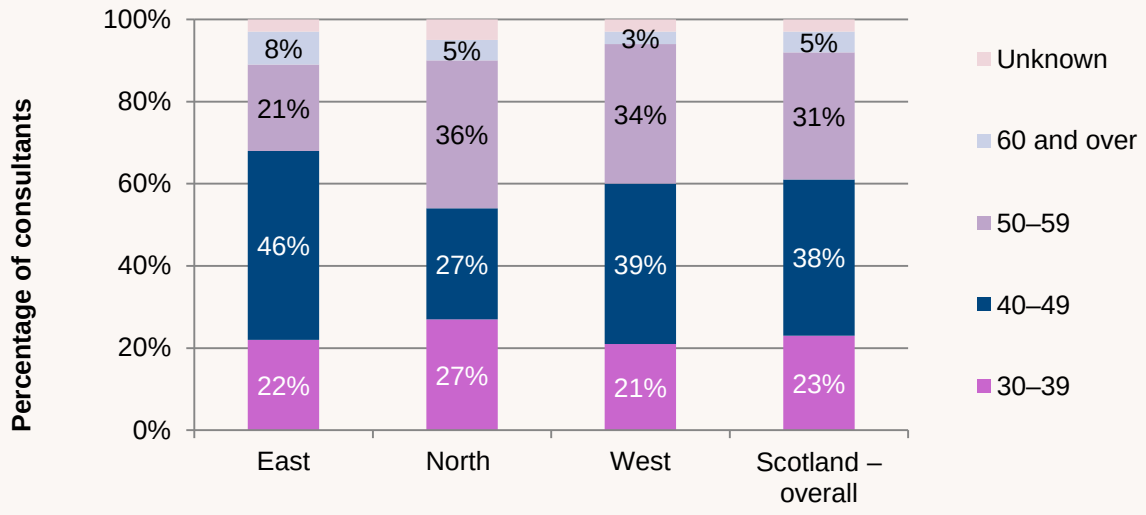
Age

The age composition of the Scottish consultant radiology workforce is shown in Table 9. There have been only small changes in the percentage of consultants comprising each age group since 2010. There are some subtle differences between the regions, with the North having a slightly older workforce compared to the rest of the country. The age composition of the workforce has implications when estimating retirement rates and for workforce planning.

Table 9. Percentage (and headcount) of consultants in each age group, 2010–15

Age group	2010	2014	2015
30–39	24% (69)	21% (65)	23% (69)
40–49	36% (104)	40% (123)	38% (116)
50–59	31% (89)	30% (93)	31% (95)
60 and over	5% (16)	5% (14)	5% (14)
Not known	4% (13)	4% (12)	3% (10)

Figure 10. Percentage of consultants in each age group by region, 2015



Country of primary medical qualification and international recruitment

Radiology in the UK is provided by an international workforce with some 28% of consultants being non-UK, international medical graduates (IMG). In some UK regions the percentage of consultants who are IMGs is considerably higher, 40% in North East England and 37% in North West England. The figure is only 21% in Scotland, indicating that radiology departments may be having difficulties in recruiting internationally.

The census asked whether departments attempted to recruit radiologists from outside of the UK during the period 31 March 2014 to 1 April 2015. Only five departments (25%) in Scotland had done so, with two being successful in their efforts. The limited activity and success in this area calls for further action to be taken. In particular, adequate funding is needed to overcome international recruitment difficulties faced by departments, not just in Scotland but across the UK. The following difficulties were identified through the census.

- Lack of guidance, help and resources in recruiting internationally.
- The high cost of using recruitment agencies to identify and attract international radiologists.
- The amount of administration required to obtain visas and meet other similar requirements.

Figure 11. Country of primary medical qualification for consultant radiologists working in Scotland, 2015

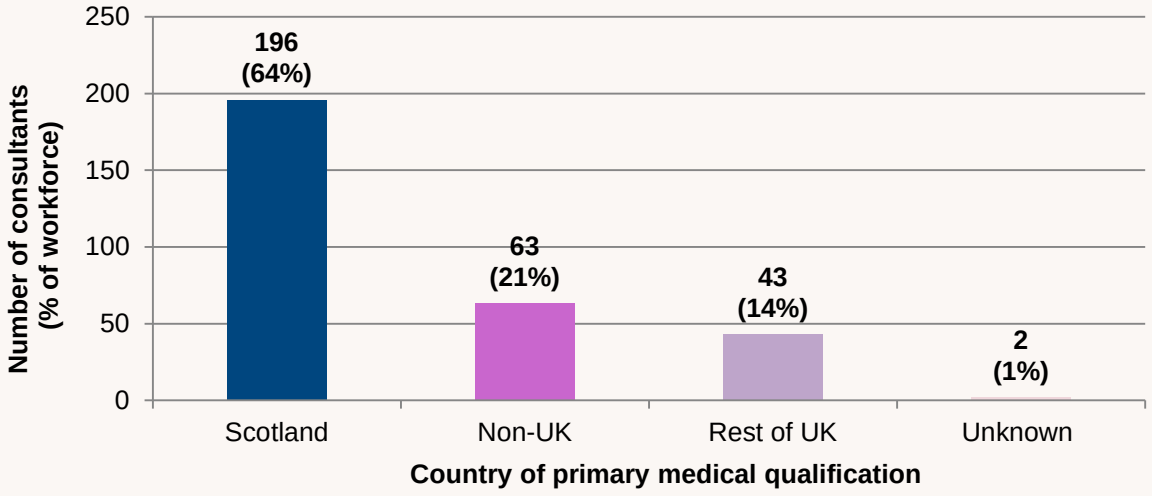


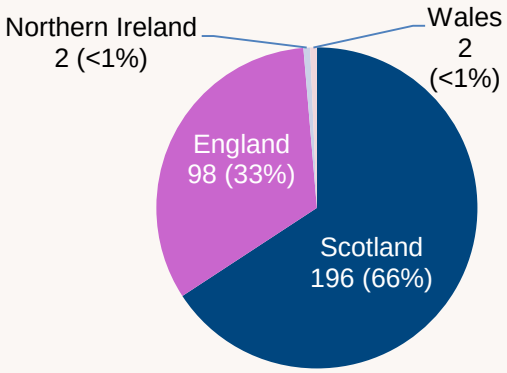
Table 10. Region of country of primary medical qualification for international medical graduates working as consultant radiologists in Scotland, 2015

Region of primary medical qualification	Headcount	Percentage of IMGs
Africa	4	6%
Asia	29	46%
Europe	29	46%
Oceania	1	2%
Total IMGs	**63**	**100%**

Scottish medical graduates working in the UK

Of the 3,318 NHS consultant radiologists working in the UK, 298 (around 9%) are graduates of Scottish medical schools. One-third of these graduates currently worked in England, making up 4% of the English consultant workforce. In contrast, English graduates made up 14% (n=42) of the Scottish consultant workforce.

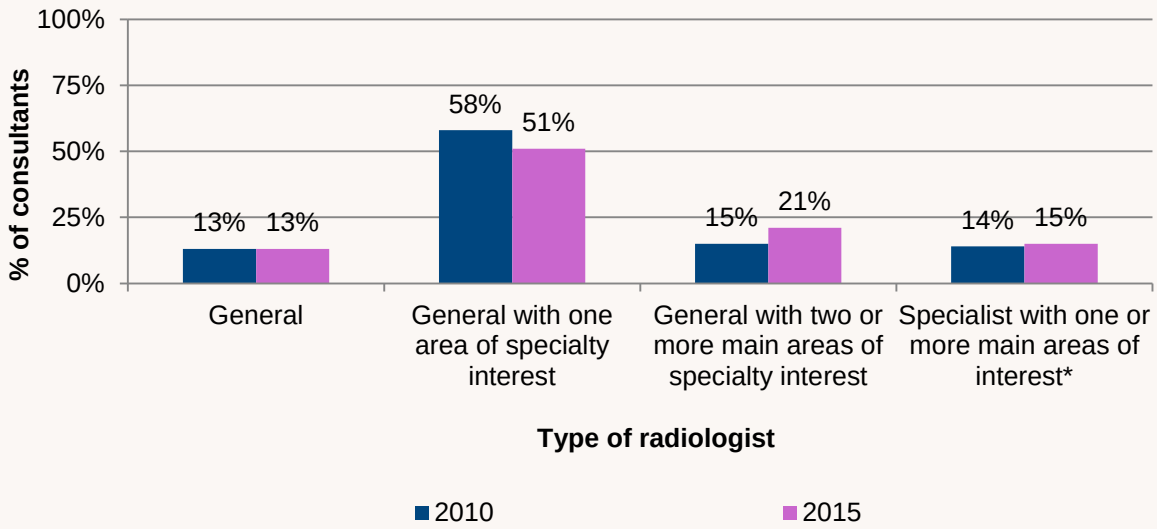
Figure 12. UK countries where Scottish medical graduates are working as consultant radiologists, 2015



Types of radiologists

Information collected through the census for each consultant radiologist included whether they are generalists or specialists, with or without one or more areas of specialty interests. Figure 13 points to a gradual shift away from general to more specialty interest forms of practice undertaken by consultants. It is notable that most specialists are based in the East and West regions, in the tertiary centres and teaching hospitals of Edinburgh and Glasgow where there are sufficient caseloads in their specialty fields.

Figure 13. Types of radiologists (generalist and specialist) as a percentage of the consultant workforce, 2010 and 2015



*Specialist – for the 2014 census onwards, data was collected across two categories, 'specialist with one main area of interest' and 'specialist with two or more main areas of interest'.

Table 11. Types of radiologists (generalists and specialists) by region, 2015

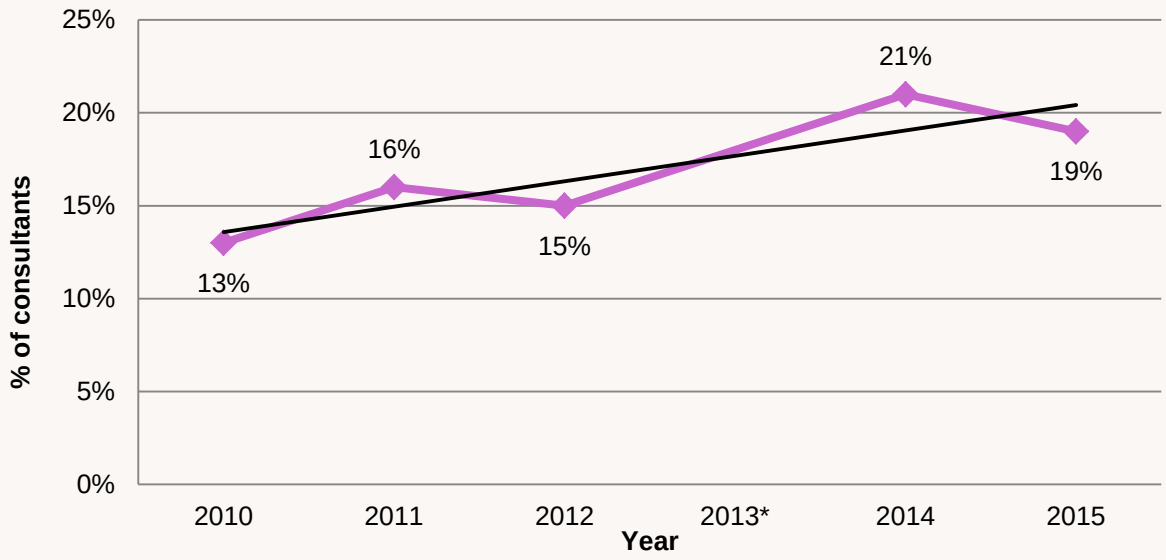
Type of radiologist		East	North	West	Scotland
General	Headcount	15	3	20	38
	% of total in region	21%	5%	12%	13%
General with one main area of specialty interest	Headcount	39	33	83	155
	% of total in region	54%	56%	48%	51%
General with two or more main areas of specialty interest	Headcount	5	23	37	65
	% of total in region	7%	39%	21%	21%
Specialist with one main areas of interest	Headcount	14	0	30	44
	% of total in region	19%	0%	17%	14%
Specialist with two or more main areas of interest	Headcount	0	0	2	2
	% of total in region	0%	0%	1%	1%

Table excludes one individual whose radiologist type is unknown

Less than full-time working

Those consultants with fewer than ten programmed activities per week in their job plans are categorised as working less than full-time (LTFT). There is a pronounced trend towards working LTFT among consultant radiologists. Around one-in-five now do so, compared to 13% in 2010. Working LTFT is much more prevalent in the East region (34%) and among female consultants (between 50–67% depending on age group). The increasing extent of LTFT working among consultants contributes, along with other factors, to the problem of inadequate workforce capacity in responding to demands made on radiology departments in Scotland.

Figure 14. Percentage of consultants working less than full-time, 2010–15



*Information for 2013 is not provided due to the timing of the RCR census being altered from calendar to financial year.

Figure 15. Percentage (and headcount) of consultants working less than full-time in each region, 2010–15

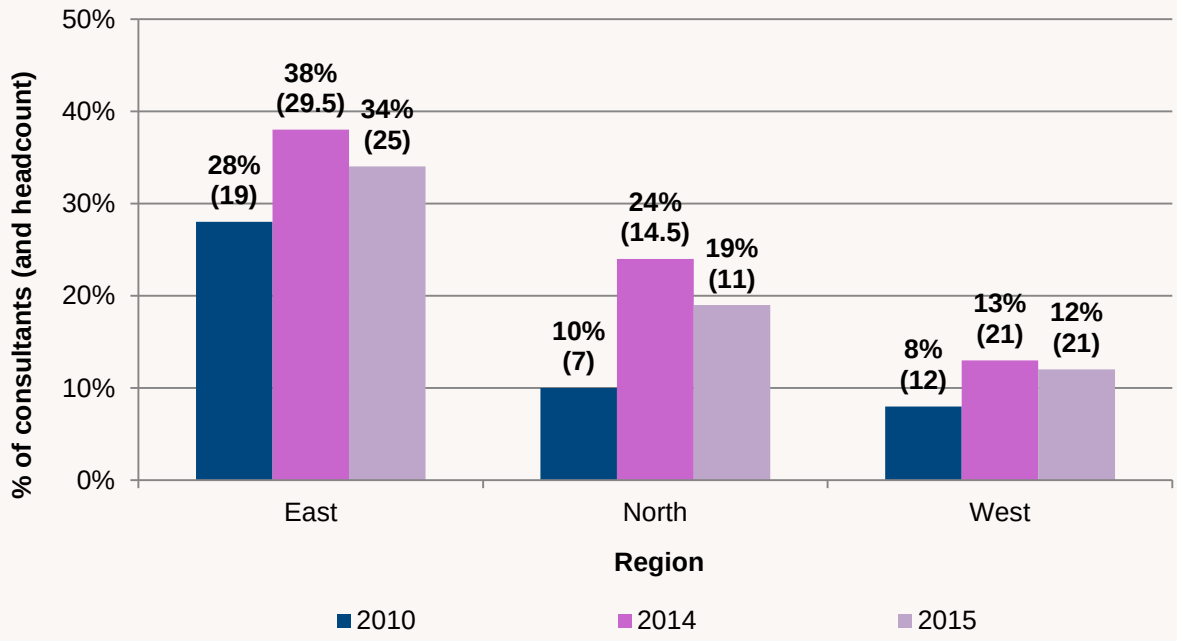


Table 12. Percentage of female and male consultants in each age group working full-time and less than full-time, 2015

	Female			Male		
Age group	Headcount	% FT	% LTFT	Headcount	% FT	% LTFT
30–39	27	67%	33%	42	100%	0%
40–49	43	58%	42%	73	95%	5%
50–49	26	50%	50%	69	88%	12%
60 and over	3	67%	33%	11	82%	18%
All age groups	99	59%	41%	195	93%	7%

Excludes those consultants whose ages are unknown.

Contracted programmed activities

The census collected information on the number of contracted PAs worked per week for each full-time consultant radiologist, subdivided into direct clinical care (DCC) and supporting professional activity (SPA) PAs. The mean number of PAs has remained stable, although the median has increased by one between 2010–15. Radiologists are typically working longer now than they were five years ago. Around 62% of full-time consultants worked 11 PAs or more per week in 2015, 44% worked more than 12 PAs per week.

Table 13. Mean (and median) contracted programmed activities (PAs) per week for full-time consultant radiologists, 2010–15

Programmed activities	2010	2014	2015
DCCs	8.46 (8.25)	8.62 (8.50)	8.87 (9.00)
SPAs	2.40 (2.50)	2.27 (2.50)	2.22 (2.50)
Total PAs	**10.86 (10.00)**	**10.90 (11.00)**	**11.09 (11.00)**

Figure 16. Mean contracted programmed activities (PAs) per week for full-time consultant radiologists by age group, 2015

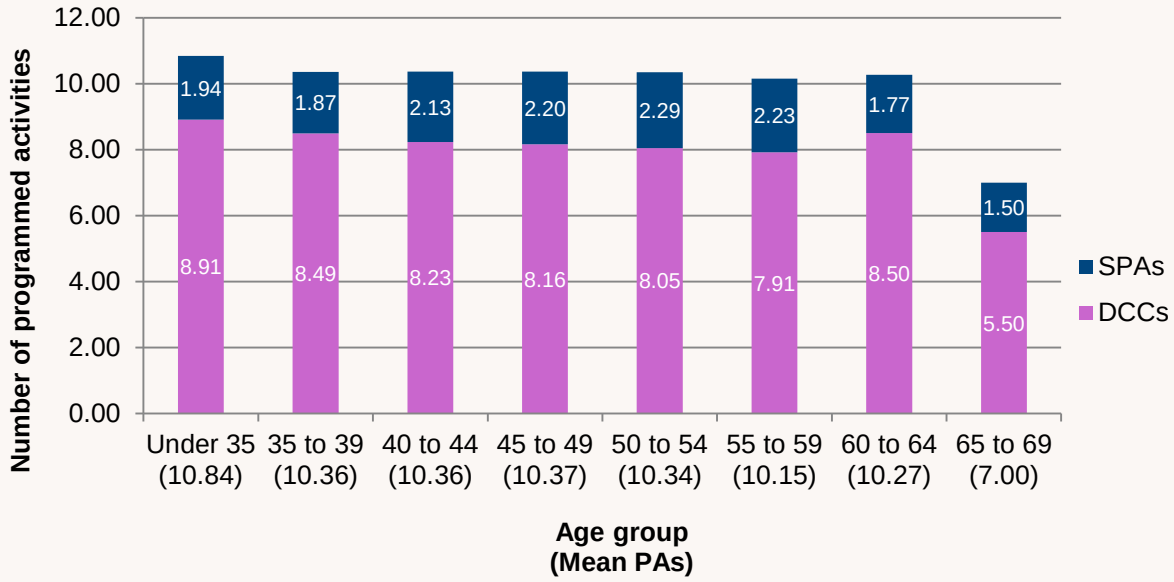


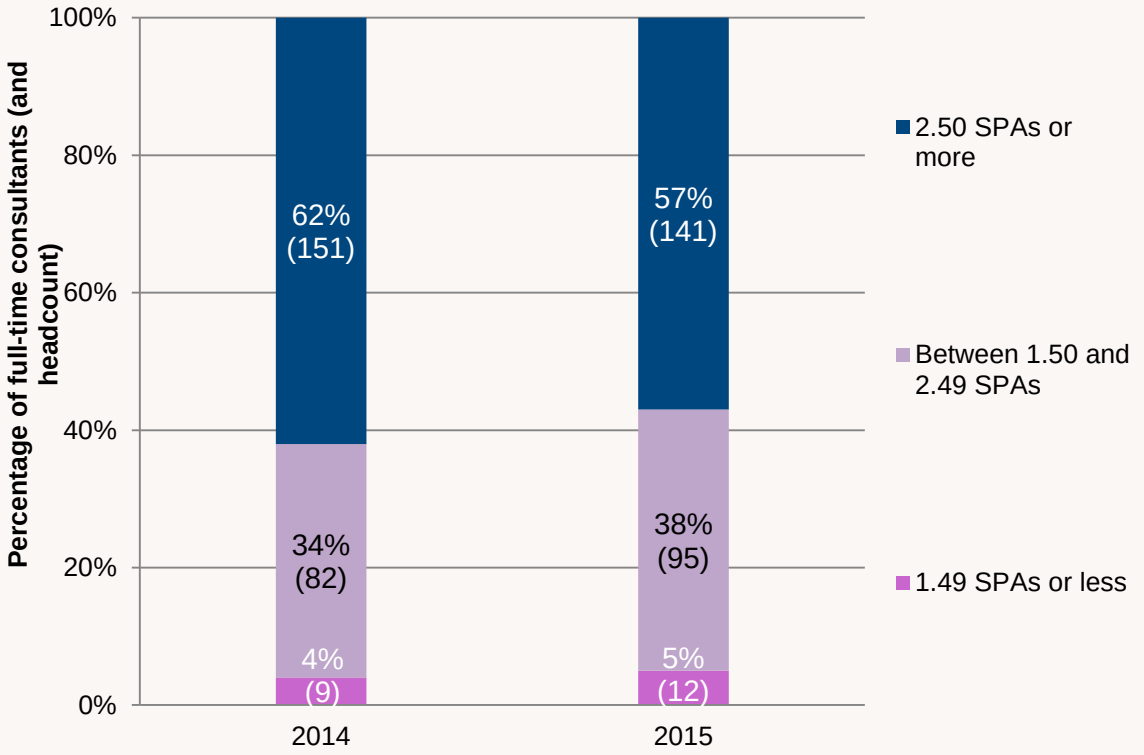
Table 14. Number (and percentage) of full-time consultants with 11-00–11.99 and 12.00 or more programmed activities (PAs) in each region, 2015

Region	11–11.99 PAs	12 or more PAs
East	15 (31%)	22 (46%)
North	7 (15%)	29 (60%)
West	23 (15%)	57 (38%)
Scotland – overall	**45 (18%)**	**108 (44%)**

Supporting professional activities

The RCR considers 1.5 SPAs as the minimum to enable a consultant to provide evidence for enhanced appraisal and revalidation.[8] The census shows that nearly all full-time consultants (95%) meet this minimum in their job plan. The minimum, however, would not allow time for other SPA work such as teaching, research, service development, clinical governance and contribution to management. As such, for the professional development of consultants, the RCR sees 2.5 SPAs as being important for activities not related to direct patient care. The census shows that the percentage of full-time consultants having at least 2.5 SPAs in their job plan fell, from 62% in 2014 to 57% in 2015.

Figure 17. Percentage (and headcount) of full-time consultants with 1.49 or less, 1.50–2.49 and 2.50 or more supporting professional activities (SPAs), 2014 and 2015



Areas of specialty interest

Information on areas of specialty interest is collected through the census. The census allows for more than one specialty interest to be entered against each consultant radiologist. The findings are shown in Table 15. The total sum of responses (332) reported against these specialty interest areas exceeds the total headcount of consultants (304). This is because job plans may encompass more than one area of specialty interest. Therefore, it should not be interpreted that there are 54 consultants solely specialising in breast radiology, rather there are 54 consultants whose job plan includes breast radiology.

There are parts of Scotland where consultants with certain specialty interest areas are so low in number that the safety and sustainability of patient care is being put into doubt. In some NHS Health Board areas there is no or very little access to interventional care which has major implications for any trauma service, patients with obstructed kidneys, mothers with post-partum haemorrhage and so on.

Table 15. Consultant specialty interest areas (multi-response) by region, 2015

Specialty interest area	East	North	West	Scotland – total	Increase or decrease since 2014
Breast	9	14	31	54	-1
Cardiac	1	3	2	6	1
Chest/lung	3	6	21	30	1
Endocrine	0	0	0	0	-1
Gastrointestinal	9	11	17	37	6
Head and neck	1	2	16	19	2
Imaging information technology (IT)	0	0	2	2	0
Interventional (including vascular)	7	11	21	39	-3
Interventional (non-vascular)	0	1	5	6	1
Musculoskeletal	9	7	19	35	5
Neuroradiology (mainly diagnostic)	7	5	11	23	-3
Neuroradiology (mainly interventional)	2	0	4	6	3
Obstetrics/gynaecology	2	4	6	12	3
Oncological	1	1	5	7	1
Paediatric neuroradiology	0	0	1	1	1
Paediatric radiology	4	7	15	26	3
Positron emission tomography-computed tomography (PET-CT)	2	0	2	4	0
Radionuclide	5	1	6	12	0
Trauma	0	0	0	0	0
Uroradiology	2	6	4	12	3
Other	0	0	1	1	-7

5. Consultant radiology workforce attrition

Retirements

Three consultants were identified in the census as having retired from the NHS between 1 April 2014 and 31 March 2015. This figure is probably an underestimate due to respondents overlooking those consultants who retired during the year in their census returns. Also, some consultants elect to semi-retire, whereby they reach an age at which they no longer want to work full-time and significantly reduce the number of programmed activities worked. These semi-retired consultants are counted in the census as still working in the NHS.

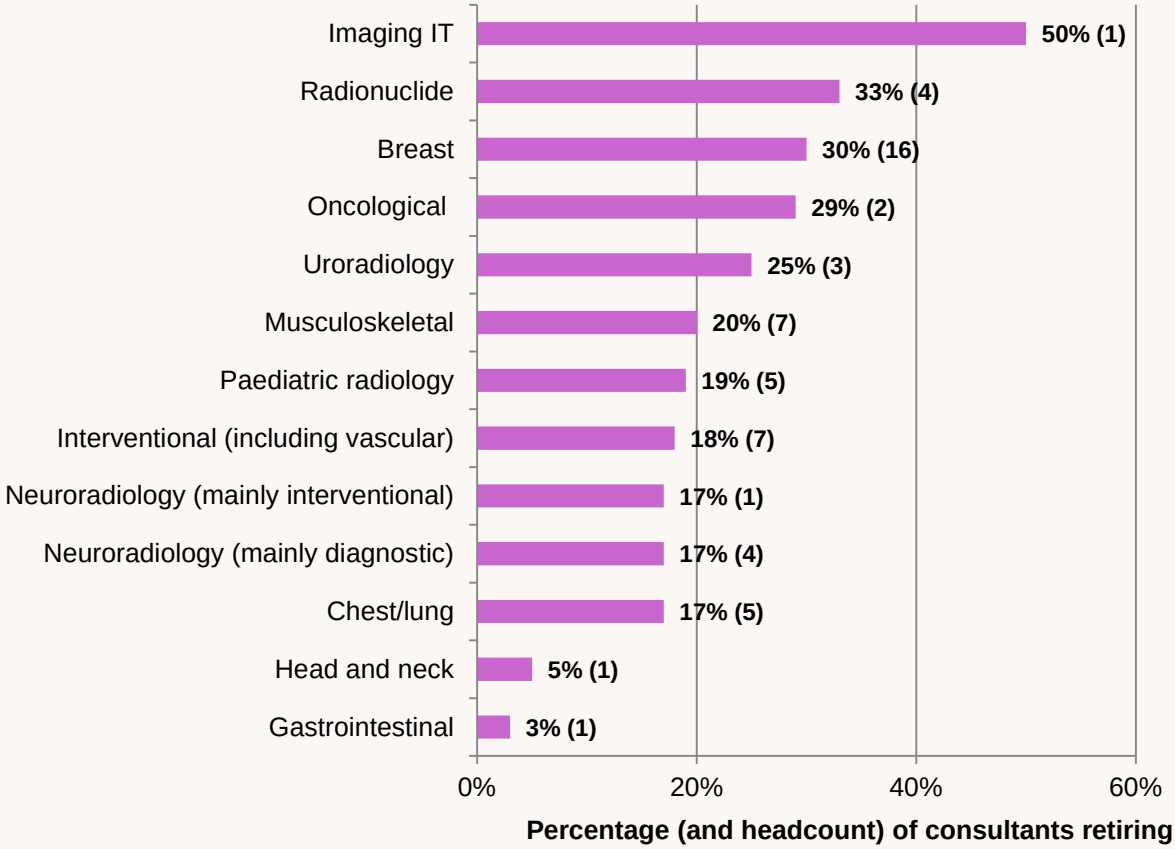
Estimated retirement rates – next five, ten and 15 years

Based on the mean and median ages of those retiring from the NHS across the UK for 2013–14 and 2014–15, the following estimates have been made as to retirement rates in Scotland in the next five, ten and fifteen years. Scenario one is based on a retirement age of 62 and scenario two on a retirement age of 60. In the next five years, 13–19% of the current consultant radiology workforce in Scotland will retire. There is major concern in breast radiology where 30% of consultants are due to retire between 2015 and 2020. This could lead to a workforce deficit in breast radiology and, unless addressed, will have a serious impact on breast screening and cancer care.

Longer term retirement projections are provided in Table 16. By 2025, it is estimated that between 30–36% of current consultants will have retired. By 2030, the figure is expected to be 47–53%.

Figure 18. Percentage (and headcount) of current consultants retiring in the next five years in each region

Figure 19. Percentage (and headcount) of current consultants expected to retire in the next five years in each specialty interest area



Estimates are based on a retirement age of 60. Specialty areas where no consultants are expected to retire between 2015 and 2025 have been omitted from this figure.

Table 16. Percentage (and headcount) of the current consultant workforce expected to retire in each region between 2015–2025 and 2015–2030

Region	2015–2025 Retirement age 62	2015–2025 Retirement age 60	2015–2030 Retirement age 62	2015–2030 Retirement age 60
East	25% (18)	29% (21)	37% (27)	41% (30)
North	34% (20)	41% (24)	53% (31)	58% (34)
West	31% (54)	37% (64)	50% (86)	56% (97)
Scotland – overall	**30% (92)**	**36% (109)**	**47% (144)**	**53% (161)**

6. Unfilled consultant radiology posts

Consultant vacancy rates

In addition to consultant radiologists in post, the census also asked respondents to provide details of unfilled posts in their departments as of 31 March 2015. It must be noted that the number of formally recognised unfilled posts is smaller than the number of new consultants that are required but are not being sought. This is because some departments have forsaken their recruitment efforts and no longer make the business case for necessary further posts, such is the workforce crisis in radiology and paucity of candidates applying for positions. Another reason is that demands made on radiology services have not been properly assessed, if undertaken these assessments would have reflected the need for more consultant radiologists. The following comments were received from clinical directors in Scotland.

Radiology posts are now not being funded as the chance of filling [them] is not good. I suspect this does not only apply to us!

Correct establishment remains unassessed. Benchmarked population and activity figures suggest a correct establishment of 20 radiologists, i.e. eight unfilled posts, but management is unwilling to undertake a capacity demand study.

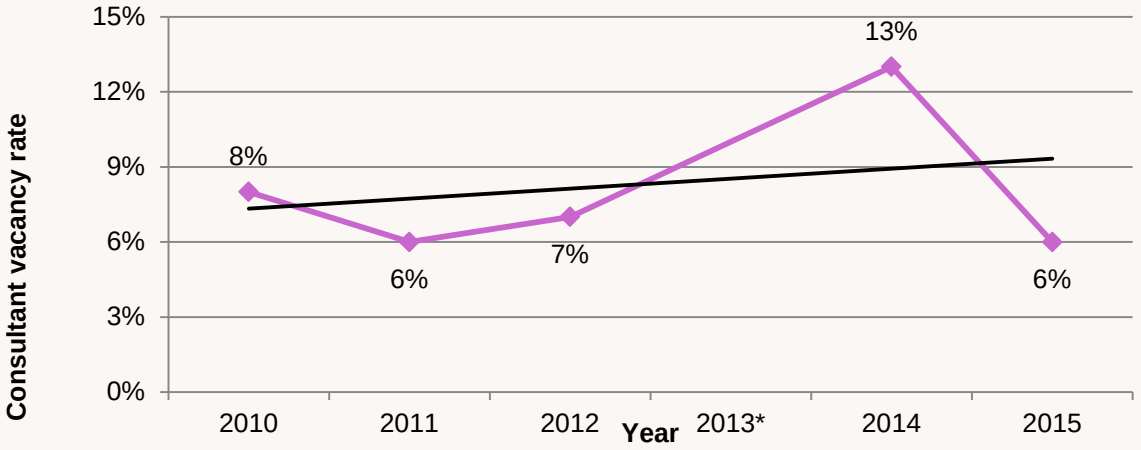
The 2015 census recorded 19 unfilled posts, or 6% of total consultant posts (that is, the vacancy rate). As explained above this may be an understatement of the requirement for satisfactory consultant staffing for radiology patients. The annual mean vacancy rate is 8% for 2010 to 2015 (range 6% to 13%). This is also worrying as it suggests a situation has developed whereby around one-in-ten consultant radiologist posts in Scotland will consistently be vacant in the foreseeable future.

Table 17. Number of reported filled and unfilled consultant radiologist posts, 2010 to 2015

	Total consultant posts	Filled	Unfilled
2010	315	291	24
2011	338	317	21
2012	342	317	25
2013	No data	No data	No data
2014	352	307	45
2015	323	304	19

*Information for 2013 is not provided due to the timing of the RCR census being altered from calendar to financial year.

Figure 20. Consultant radiologist vacancy rates, 2010–15



*Information for 2013 is not provided due to the timing of the RCR census being altered from calendar to financial year.

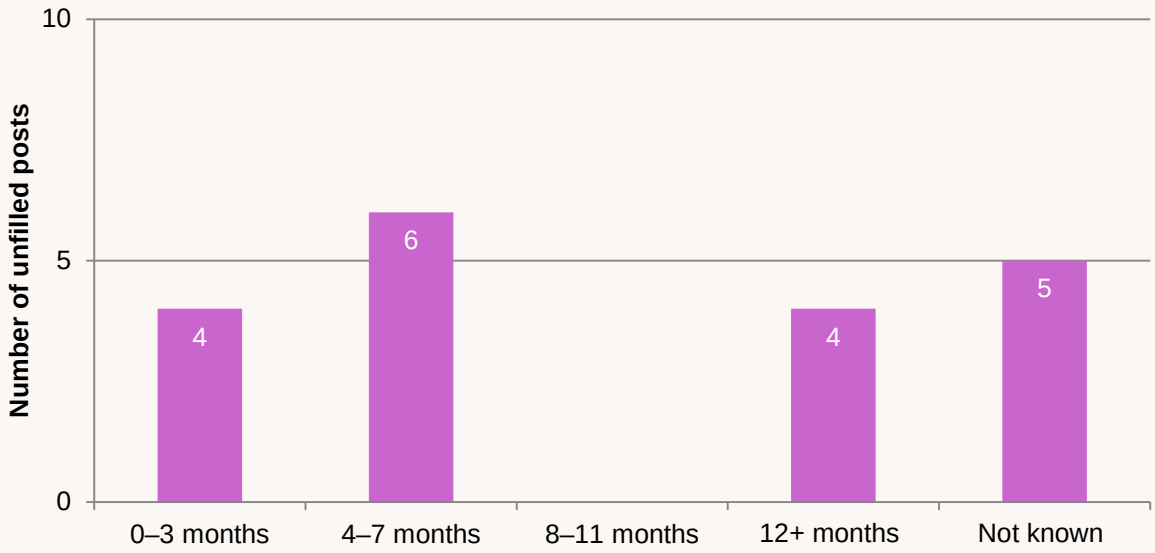
Status of unfilled posts

In many cases, the recruitment effort to fill a vacant post is likely to result in a failure to appoint (this is the case for 68% of unfilled posts). This is probably due to candidates taking up another position or no suitable candidates applying in the first place. Four of the 19 unfilled posts identified through the census have been vacant for 12 months or longer. The use of locums can mitigate some of the problems vacant posts can cause departments. Eight of the 19 unfilled posts are covered by locums but this comes at considerable expense to the NHS.

Table 18. Status of unfilled consultant radiologist posts, 2015

Status	Count	% of unfilled posts
Advertised but failed to appoint	13	68%
Appointed but not yet taken up	3	16%
Funded but not yet advertised	3	16%

Figure 21. Length of time consultant radiologist posts have been left vacant, 2015



7. Activities and spending of radiology departments

Methods used in meeting departmental reporting requirements

Nearly all radiology departments in Scotland were unable to meet their reporting requirements for the period 1 April 2014 to 31 March 2015. This is inevitable given that in recent years the rate of increase in workload and number of CT and MRI scans has been at a rate that has far outpaced the limited expansion of the consultant radiologist workforce (see Figure 7). As one Scottish clinical director commented in their census return:

We are approximately 1,000 [programme activity] sessions per year short when comparing available sessions against sessions to be covered.

Departments are increasingly employing methods that incur direct costs in meeting shortfalls in their reporting requirements. Some 80% of departments now make additional payments to their radiologists to report outside of contracted hours, and 60% outsource some of their reporting to an independent sector company. Methods involving no or indirect costs were also used by departments. It is notable that 55% of radiology departments in Scotland rely on the goodwill of radiologists to provide additional, unpaid reporting of images. There are concerns about relying too heavily on the goodwill of consultants to deliver a service as explained by one clinical director:

On-call is now run on goodwill, with no time back taken, as service would be threatened. This is unsustainable so overnight outsourcing is being looked at.

Figure 22. Percentage (and number) of radiology departments meeting and not meeting their reporting requirements within contractual hours, 2014 and 2015

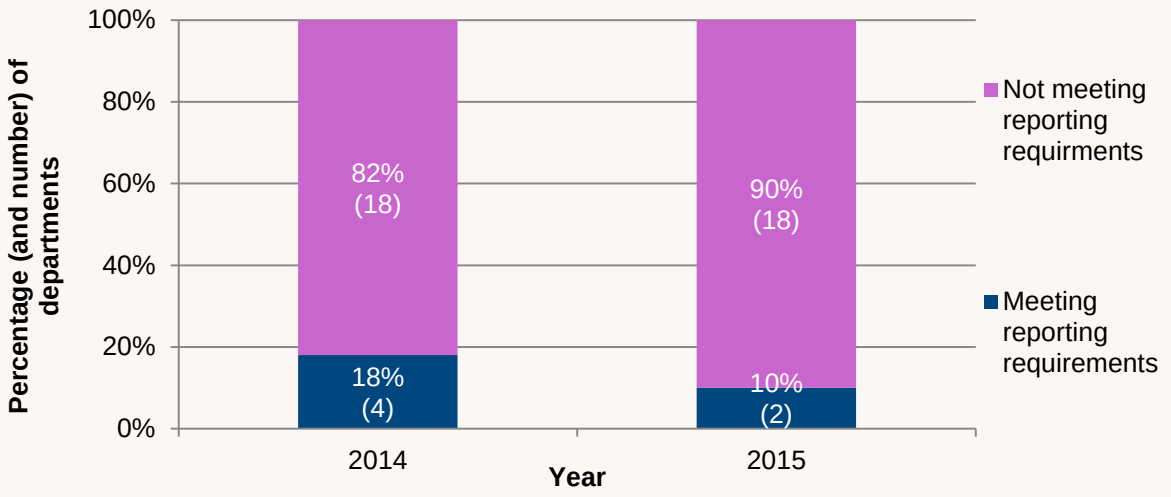


Figure 23. Percentage (and number) of radiology departments employing methods involving direct costs in meeting shortfalls in reporting requirements, 2014 and 2015

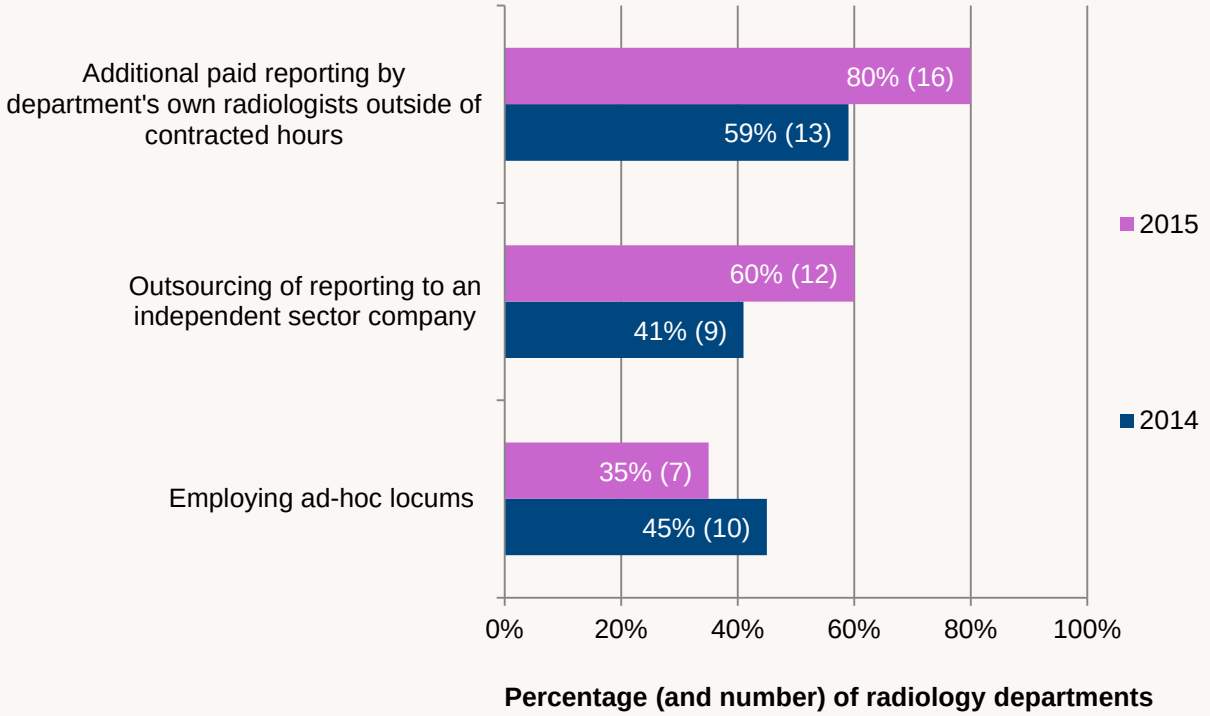
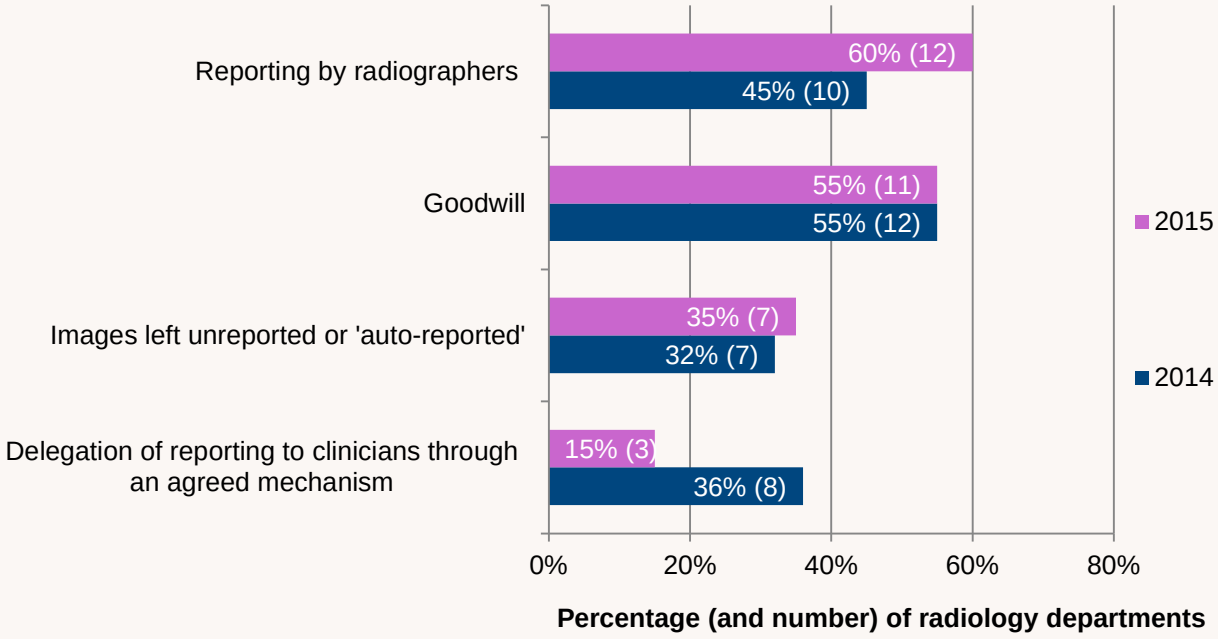


Figure 24. Percentage (and number) of radiology departments employing methods involving no or indirect costs in meeting shortfalls in reporting requirements, 2014 and 2015



Spending on outsourcing

For the period 1 April 2014 to 31 March 2015, total spending by Scottish radiology departments on outsourcing is estimated to be around £5.25 million. Included in this figure are overnight and outsourcing payments made to teleradiology companies, as well as additional payments to radiologists already contracted to the department (called 'insourcing'). This represents a 50% increase on the estimated £3.5 million spent during 2013–14. To put this into perspective, the £5.25 million spent on outsourcing is equivalent to the combined salaries of 60 full-time consultants (or 21% of the workforce) based on point 5 of the basic pay scale for NHS consultants in Scotland for 2016–17.[9]

Figure 25. Estimated total spending on outsourcing by radiology departments, 2013–14 and 2014–15

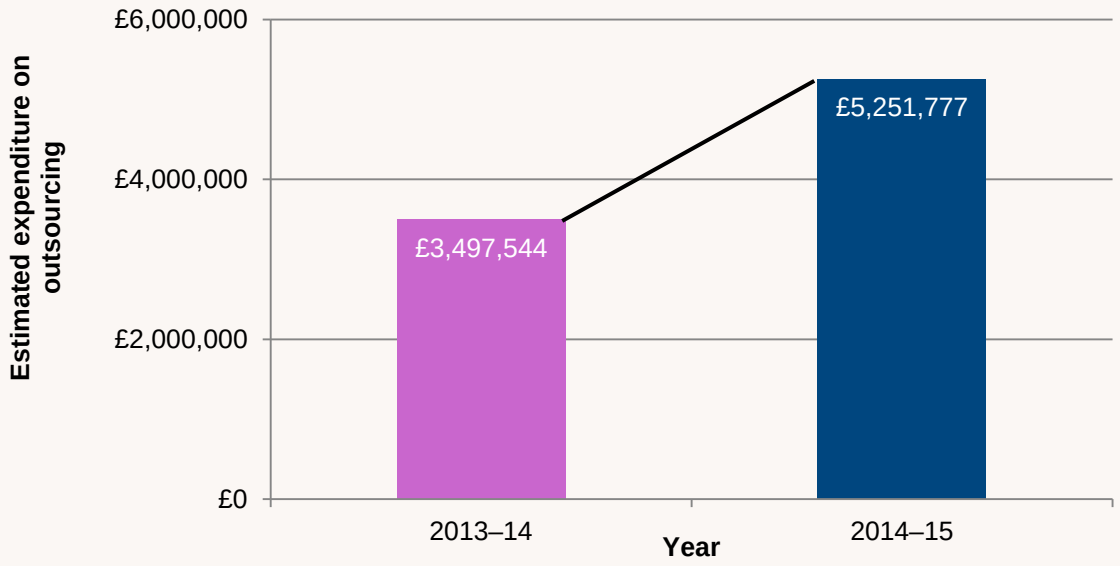


Table 19. National and regional spend on outsourcing, 1 April 2014 to 31 March 3015

Region	Departments submitting expenditure data	Known expenditure	Mean expenditure	Departments outsourcing	Estimated total expenditure	% increase – 2013–14 to 2014–15
East	2	£830,000	£415,000	2	£830,000	14%
North	3	£859,242	£286,414	4	£1,145,656	-21%
West	6	£1,520,177	£253,363	12	£3,040,354	103%
Scotland – overall	**11**	**£3,209,419**	**£291,765**	**18**	**£5,251,777**	**50%**

Out-of-hours radiology

The census asked radiology departments how many of their consultants provided a general out-of-hours (OOH) service. Information on departmental spending in providing this service was also sought. Across Scotland, 72% of consultants (n=218) provided OOH services in 2015, compared to 76% (n=232) in 2014. Based on the information received, it is estimated that the total OOH service cost across Scotland was £4.7 million for the period 1 April 2014 to 31 March 2015.

In additional to the financial costs, ten of the 20 radiology departments in Scotland lost some sessions (DCC or SPA) in the average week to compensate consultants for providing an OOH service. The lost sessions were necessary to allow consultants to rest after working nights or weekends. This impacts on the provision of services during normal working hours as commented by one Scottish clinical director.

With the drive to seven-day working there has been a gradual extension of routine work at weekends which, by negotiation, has been compensated on a time in lieu basis. This has significantly impacted on weekday working.

Table 20. National and regional spending on out-of-hours general radiology services, 1 April 214 to 31 March 2015

Region	Departments submitting expenditure data	Known expenditure	Mean expenditure	Departments providing OOH services	Estimated total expenditure
East	1	£231,000	£231,000	3	£693,000
North	2	£65,000	£32,500	4	£130,000
West	4	£1,537,734	£384,434	11	£4,228,769
Scotland – overall	**7**	**£1,833,734**	**£261,962**	**18**	**£4,715,316**

Multidisciplinary team meetings

Radiology departments were asked the following question: In an average week, approximately how much radiologist time in total, measured in programmed activities (PAs), does your department spend preparing for and attending multidisciplinary team meetings (MDTMs)? The 18 departments that responded to this department accounted for 303 consultants. Multidisciplinary team meetings took up an average of just under one PA for each consultant.

Table 21. Average number of programmed activities spent by consultants per week on multidisciplinary team meetings, 2015

	PAs spent on MDTMs per consultant each week
Mean	0.9
Median	0.9
Range	0.3–2.5

References

1. The Royal College of Radiologists. *Clinical Radiology UK workforce census 2015 report.* London: The Royal College of Radiologists, 2016.
2. www.gov.scot/Topics/Health/Services/Cancer/Detect-Cancer-Early (last accessed 1 September 2016)
3. The Scottish Government. *Beating Cancer: ambition and action.* Edinburgh: The Scottish Government, 2016.
4. http://ec.europa.eu/eurostat/web/products-datasets/-/hlth_rs_spec (last accessed 1 September 2016).
5. www.isdscotland.org/Health-Topics/Workforce/ (last accessed 1 September 2016).
6. www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/ (last accessed 1 September 2016).
7. www.isdscotland.org/Health-Topics/Finance/Costs/Detailed-Tables/Radiology.asp (last accessed 1 September 2016).
8. Royal College of Radiologists. *A guide to job planning in clinical radiology.* London: RCR, 2013
9. www.bma.org.uk/advice/employment/pay/consultants-pay-scotland (last accessed 1 September 2016).

Appendix 1. 2015 census questions

Section 1: Organisational details

1.1 Hospitals

1.2 Trust or Health Board

1.3 Census contact

1.4 Contact details

Section 2: Permanent staff details

2.1 Name (forenames and surname)

2.2 Gender

2.3 Grade

- NHS consultant (NHS contract)
- Academic post (university contract)
- Mixed NHS/academic – part NHS/research-funded (NHS contract)
- Staff grade or equivalent
- Other

2.4 Total PAs

- DCC PAs
- SPA PAs
- Training only PAs

2.5 Employment type

- Full-time
- Part-time

2.6 Type of radiologist

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

2.7 Area(s) of interest

- Primary area of interest
- Secondary area of interest

2.8 Employed as a locum

- Obtained primary medical qualification in the UK (yes/no/unknown)
- Completed a UK radiology training programme (yes/no/unknown)
- Previously been in a substantive consultant post (yes/no/unknown)

- Period employed as locum as of 31 March 2015
- Expected duration of locum period from 31 March 2015
- Reason for locum position

2.9 Expected to retire by end of 2015

2.10 Left since March 2014

- Reason for leaving

Section 3: Unfilled permanent posts

3.1 Unfilled post status

3.2 Grade

3.3 Total PAs

3.4 Employment type

3.5 Type of radiologist

- Primary and secondary areas of interest

3.6 Locum filled

3.7 Unfilled period (to the nearest month)

3.8 Have you tried to recruit candidates from overseas from 31 March 2014 to 1 April 2015?

- If yes, was this successful?

3.9 Additional comments relating to recruitment

Section 4: Department activity and spending

4.1 For the period 1 April 2014 to 31 March 2015, was the full reporting requirement met by the department's consultant, trainee radiologists and staff grade staff within their contractual hours?

Please indicate how your department addressed any shortfalls in reporting requirements – check all that apply:

- Additional paid reporting by the department’s own radiologists outside their contracted hours
- Delegation of reporting to clinicians through an agreed mechanism
- Employing ad-hoc locums
- Goodwill by radiologists
- Images left unreported or auto-reported
- Outsourcing of reporting to an independent sector company
- Reporting by radiographers
- Other (please specify)

4.2 What was the total department spend on outsourcing for period 1 April 2014 to 31 March 2015? (This includes overnight and daytime outsourcing to teleradiology companies, and additional payments to radiologists (and others) already contracted to the trust or Health Board).

4.3 What was the total department spend to provide out-of-hours radiology for the period 1 April 2014 to 31 March 2015?

4.4 Approximately how many of the consultant clinical radiologists included in your census submission regularly provide a general out-of-hours service? (Headcount)

4.5 In an average week, approximately how many sessions (direct or SPA) are lost due to compensatory arrangements following out-of-hours working?

4.6 In an average week, approximately how much radiologist time in total (measured in PAs) does your department spend on preparing and attending MDTMs? For example, 12 Consultants spending 1 PA per week = 12.

4.7 How many Administration of Radioactive Substances Advisory Committee (ARSAC) license holders currently work for your institution?

- Number of radiologists
- Number of nuclear medicine physicians

Section 5: Final comments

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

Citation details

The Royal College of Radiologists. *The clinical radiology workforce in Scotland: 2015 census report*. London: The Royal College of Radiologists, 2016.

Ref No. BFCR(16)7

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