

The clinical radiology workforce in Scotland: 2014 census report

RCR Standing Scottish Committee

Faculty of Clinical Radiology

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Foreword

This report comes at a time when we know that radiology departments across Scotland are facing considerable difficulties in the provision of safe, high-quality diagnostic and interventional services. The pressures are, in the main, due to 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, with this in mind, it was decided to commission this report which draws on data collected through the RCR 2014 census.¹ Many of the demand and workforce issues discussed are UK wide but this report provides data relating specifically to radiology in Scotland.

In total, 22 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. 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 2014 census

Shortage of radiologists in Scotland

Between 2012 and 2014 there was a reduction in the number of consultant radiologists in Scotland measured by headcount, whole-time equivalent (WTE) and per 100,000 people. While the overall number of WTE consultant radiologists in the UK has increased by 1.7% since 2012, Scotland experienced a significant reduction of 5%, from 302 to 288.¹

In comparison with other European countries, Scotland has the lowest number of radiologists per 100,000 people (5.4 consultants only; 7.1 consultants and trainees), similar to Turkey and Macedonia, and is some way behind the mean figure for western European countries (11.7).^{1,2}

During the 2012–2014 time period, workload has increased substantially, as demonstrated by the continuing 11–13% yearly increases in numbers of imaging and radiodiagnostic (particularly magnetic resonance imaging [MRI] and computed tomography [CT]) examinations.³ These sets of figures could be interpreted as radiology departments becoming more efficient – doing more with the same number of or fewer radiologists, however, the census found that 82% of departments were unable to meet their reporting requirements during 2013–14. This inability is mainly due to a shortage of radiologists to manage departmental workload, a finding confirmed by comments received through the census from clinical directors and workforce leads of departments.

Shrinking workforce in radiology

The overall reduction in numbers of consultant radiologists and in WTEs is an obvious concern given the ever-increasing demands made on radiology departments to deliver diagnostic services. This concern may be further compounded in the long term by retirement rates among radiologists. In Scotland it is estimated that up to 11% of the consultant workforce will retire by 2019 and 45% by 2029. Another consideration that could reduce the WTE (although not necessarily the headcount) figure is less than full-time (LTFT) working. There are signs that LTFT working is

increasing among radiologists (with 13%, 15%, 21% of the workforce working LTFT in 2010, 2012, 2014 respectively); this increase may continue in the future.

Difficulties in recruiting radiologists

Radiology departments in the UK face considerable difficulties in recruiting consultant radiologists. The census found that 35% of unfilled consultant posts in Scotland were advertised but failed to appoint. The reasons given for failure to appoint to posts include no suitable candidates identified for interview or appointment and no candidates applying in the first place. Of all substantive consultant radiologist posts in Scotland, 13% were vacant (on 31 March 2014), and in some regions the rate was as high as 21%. This is made worse by the fact that many of these posts have remained unfilled for considerable periods of time; 56% of all vacancies have been unfilled for eight months or more and 42% for more than a year.

Spending by radiology departments on outsourcing

A consequence of the workload not being met by NHS radiology departments is outsourcing of work to commercial organisations. Work that is outsourced includes the reporting of images and scans. Outsourcing helps towards radiology departments meeting the demands made on them. Based on data collected through the census, it is projected that the total spend on outsourcing during 2013–2014 across Scotland was approximately £3.5 million. This projection is equivalent to the combined annual salaries of 42 full-time NHS consultants.⁴

Additional work by radiologists

Almost six-in-ten departments relied partly on the goodwill of their radiologists to provide additional, unpaid reporting of images to meet workload demands. This additional work is often not adequately reflected in figures on workforce and workload. Furthermore, WTE figures are calculated according to the NHS convention of excluding PAs

that exceed ten PAs, however, the census data shows that more than half of all consultant radiologists work in excess of ten PAs. The sum of this excess (and officially unaccounted) work by all radiologists nationally, as recorded by the census, is equivalent to an additional 22 WTE consultants.

2. Background and methodology

Background

This report is based on data collected through the RCR 2014 census and relates specifically to the clinical radiology workforce in Scotland. The main census report for 2014 covers the UK and can be downloaded from the RCR website.¹ The intention of this document is to focus on the composition of and demands made upon the radiology workforce in Scotland. The information in the census can influence future planning which should take both supply (number of radiologists) and demand (represented by workload) into account. This is important as radiologists provide a vital role in the healthcare pathways of many patients, using their expertise to diagnose and treat serious diseases including cancer.

The census therefore captures information in two related domains, workforce and workload.

- **Workforce** – this includes information on consultant radiologists in substantive posts, including their demographic details, work roles, professional activities and subspecialty interests. Information on unfilled consultant posts and workforce attrition (current and predicted) in radiology departments is also included.
- **Workload** – this includes information on the ability of radiology departments to meet their reporting requirements, the extent of out-of-hours (including night-time and weekend) work, time spent by radiologists preparing for and attending multidisciplinary team meetings (MDTMs) and information on the costs of outsourcing of radiology work by departments.

Methodology

Clinical directors and workforce leads in 22 radiology departments across 12 NHS health boards in Scotland were contacted to submit data via a secured website. All those contacted responded, giving a 100% response rate for the 2014 census. Respondents were asked to provide data to reflect their workforce at the census date of 31 March 2014. Information on departmental activity and spending was sought based on the date range 1 April 2013 to 31 March 2014.

Excluded from the census were NHS Orkney and NHS Shetland. These health boards do not employ radiologists in substantive posts. NHS Western Isles was included as a consultant radiologist was being sought to fill a vacant post and data on radiology work (undertaken by short-term locums and via outsourcing) could be provided.

Presentation of data

One of the intentions of the census is to try and establish trends in data relating to workforce and workload issues in radiology. Where appropriate, data from the 2014 census is presented alongside data from previous censuses, mainly 2010 and 2012, to allow for comparisons to be made.

When presenting the data 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 present statistics on medical workforce and activity.

Table 1. Regions and health boards covered by the census

Region	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. Consultant radiology workforce in Scotland

Headcount

As of 31 March 2014, there was a headcount of 307 consultant radiologists in full-time and less than full-time posts in Scotland (see Table 2). This represents a 3% decrease in the 2012 headcount figure. The North region lost 11% of its consultant workforce. It is worth noting that across the UK

there was an overall 2% increase in the radiology workforce during the same period. Table 3 shows number of trainee radiologists in post (31 March 2014) in the four radiology training schemes in Scotland.

Table 2. Headcount of consultant radiologists by region (2010–2014)

Region	2010	2012	2014
East	68.0	81.0	78.5
North	67.0	68.0	60.5
West	156.0	168.0	168.0
Scotland – total	291.0	317.0	307.0

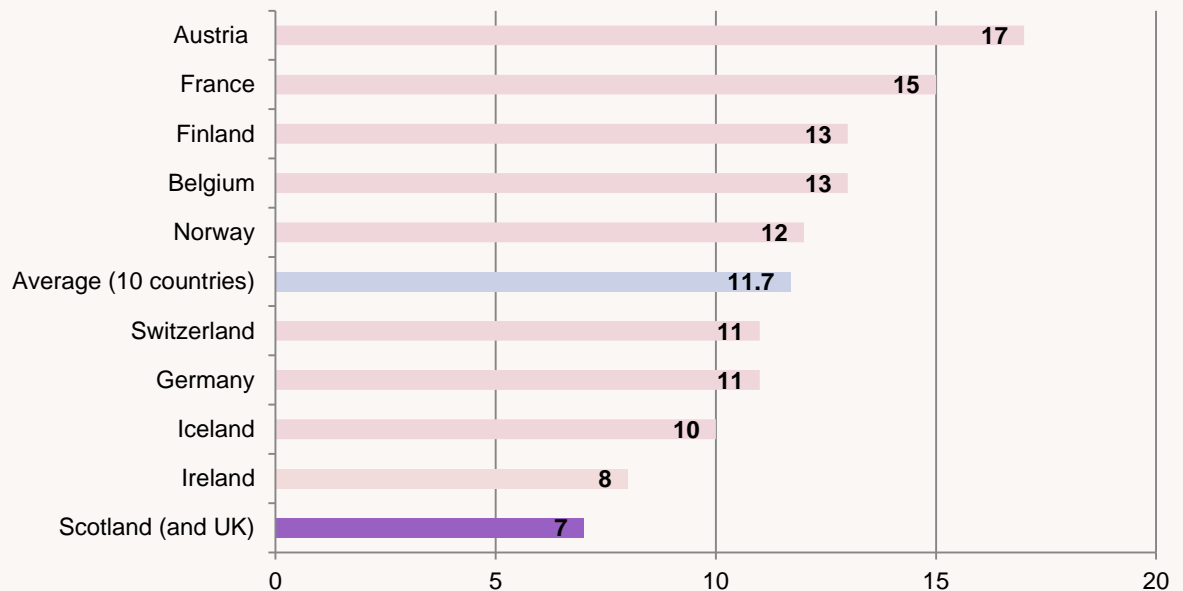
Table 3. Headcount of trainees by regional training scheme (2014)

Training scheme	Headcount
East	12
North	16
South East	24
West	40
Scotland – total	92

When both consultant and trainee headcounts for 2014 are taken together, there are 399 radiologists, equating to seven per 100,000 people, in Scotland. This corresponds approximately with the figure reported for the UK by the European Commission (the latest data available is for 2011–12 which takes into account all grades of radiologists and those

working in the private sector).² Along with Turkey and Macedonia, Scotland (and the UK) has the lowest number of radiologists per 100,000 people in Europe, and is some way behind the mean figure of 11.7 for western European countries where the number of radiologists is known at a national level (see Figure 1).^{1,2}

Figure 1. Radiologists per 100,000 people in western European countries (2011–2012)²

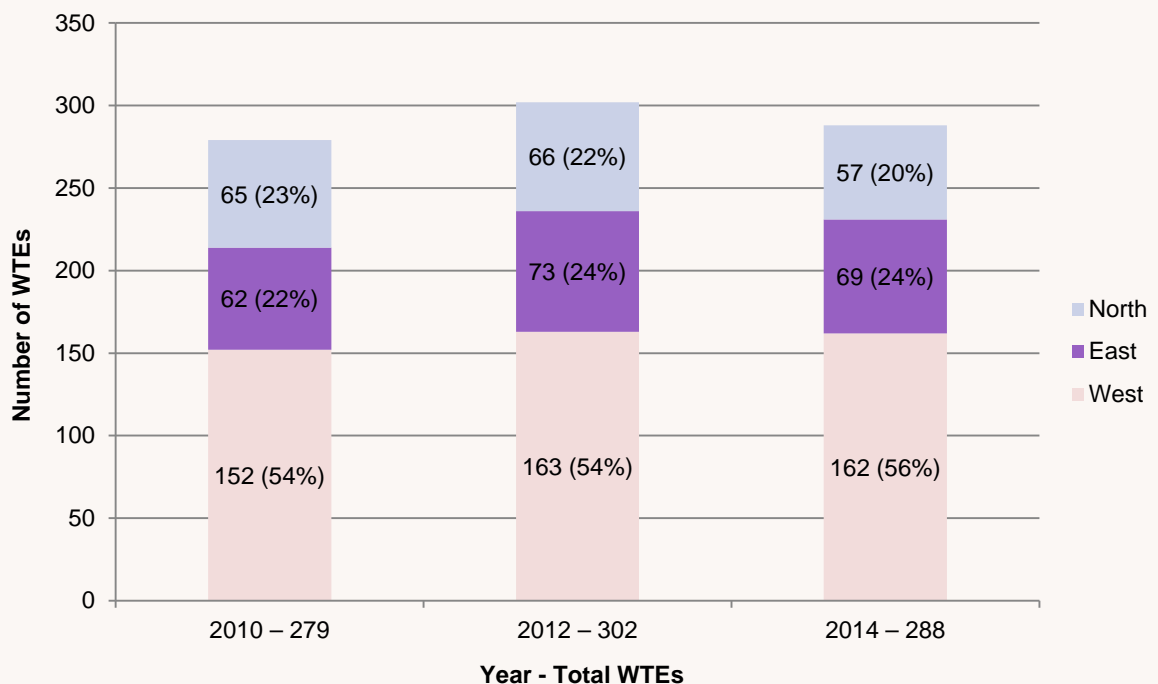


Whole-time equivalents

There has been a 5% decrease in the number of whole-time equivalent (WTE) consultant radiologists in Scotland – from 302 in 2012 to 288 in 2014. The decrease should be compared to the overall increase of nearly 2% across the UK

between 2012 and 2014.¹ Scotland fared the worst out of all the UK regions/countries covered by the RCR census in terms of WTEs lost between 2012 and 2014.

Figure 2. Number of WTE consultant radiologists by region (2010–2014)



Uncapped WTE data

Where WTE data are shown, the calculation conforms to the current NHS convention of excluding PAs that exceed ten PAs. The conventional WTE consultant radiologist figure for Scotland in 2014 is 288. However, the census data

shows that 53% of full-time consultants work in excess of ten PAs. If this were taken into account the uncapped WTE figure would be 310. The overall 'excess' worked (that is, the difference between the conventional and uncapped WTE figures) is equivalent to an additional 22 WTE consultants.

Table 4. Excess work by consultant radiologists in regions measured in WTEs (2014)

	Conventional WTEs	Uncapped WTEs	Excess WTEs worked
East	69	75	6
North	57	64	7
West	162	171	9
Scotland – total	288	310	22

WTE consultant radiologists per 100,000 people

There is quite a variance in the number of WTE consultant radiologists per 100,000 people across the areas covered by NHS health boards. Table 5 shows that the overall figure for Scotland is 5.4, with a low of 3.3 for NHS Dumfries and Galloway and NHS Fife and a high of 8.1 for NHS Greater Glasgow and Clyde. The figure of 5.4 WTE consultant radiologists per 100,000 people for Scotland compares favourably with the overall UK figure of 4.7 (but not when compared to other

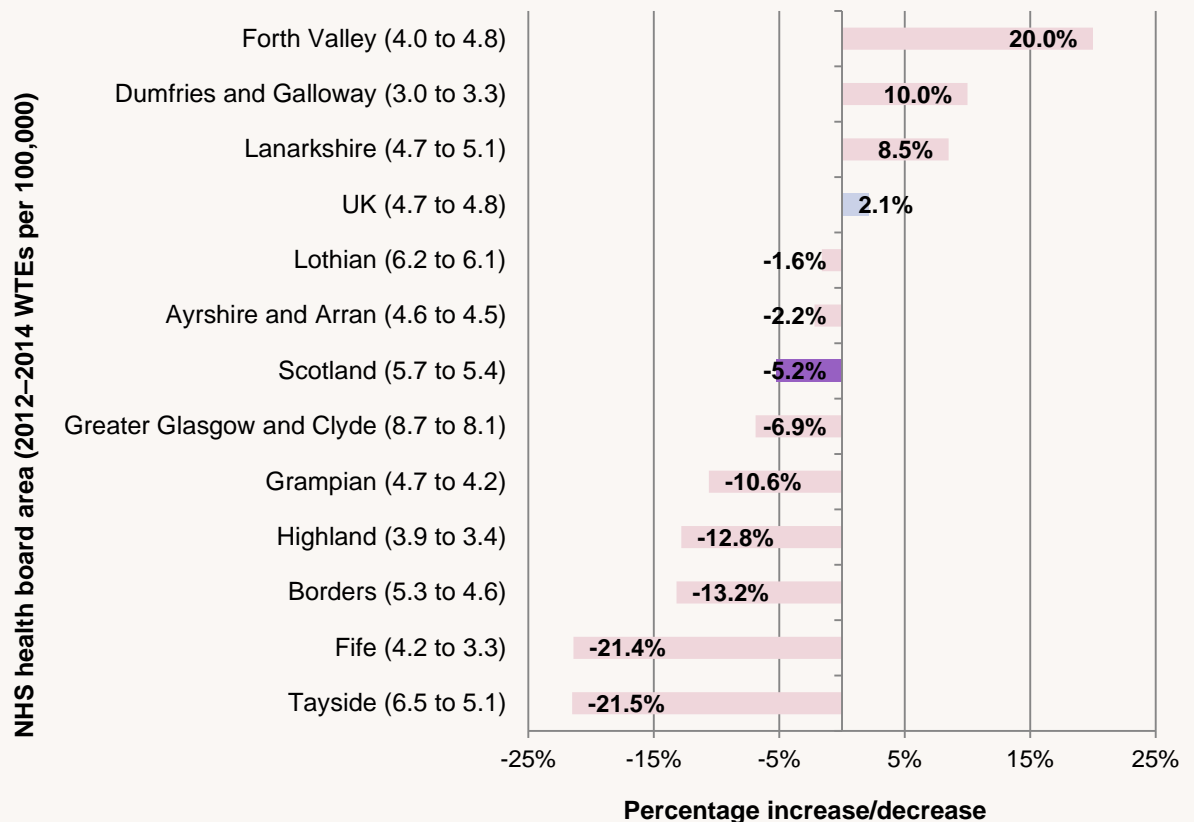
countries – the UK has one of the lowest numbers of radiologists per 100,000 people in Europe).²

Figure 3 shows the percentage change in the number of WTE consultants per 100,000 people between 2012 and 2014 by NHS health board. The largest decrease can be found in NHS Tayside which lost 21.5% of its WTE consultant radiology workforce. The largest increase was in NHS Forth Valley which gained 20%. Overall, Scotland experienced a 5% reduction in WTE consultants per 100,000 people between 2012 and 2014. This is due to a decrease in the number of WTEs and a growing population.

Table 5. WTE consultant radiologists per 100,000 people by NHS health board area (2014)

	WTEs	Population ^a	WTEs per 100,000
Ayrshire and Arran	16.6	372,274	4.5
Borders	5.2	113,867	4.6
Dumfries and Galloway	5.0	150,141	3.3
Fife	12.0	368,524	3.3
Forth Valley	14.6	301,551	4.8
Grampian	24.6	580,886	4.2
Greater Glasgow and Clyde	92.5	1,140,341	8.1
Highland	11.0	320,000	3.4
Lanarkshire	33.2	653,575	5.1
Lothian	51.9	857,451	6.1
Orkney	–	21,585	–
Shetland	–	23,389	–
Tayside	21.3	415,231	5.1
Western Isles	–	27,305	–
Scotland – total	287.9	5,346,120	5.4

^aNHS Board Population Projections 2012–2037⁵

Figure 3. Percentage increase/decrease in WTE consultants per 100,000 people by NHS health board area (2012–2014)

Type of consultants

Consultant radiologists in substantive posts include NHS consultants, those described as holding mixed NHS/academic posts (on NHS contracts) and those holding wholly academic

posts (on university contracts). The 2014 headcount and WTE figures for these groups are reported in Table 6.

Table 6. Type of consultant radiologists

	NHS consultant	Mixed NHS/academic	Academic	Total
Headcount	290	6	11	307
WTEs	274	5	9	288

Profile – gender

Just over one-third of consultant radiologists in Scotland are women, a proportion that has not

changed significantly since 2010. However, this might gradually change in the future as 50% of consultants in the under-35 age group and 46% of radiology trainees are women.⁶

Figure 4. Percentage of female and male consultant radiologists (and headcount) (2012–2014)

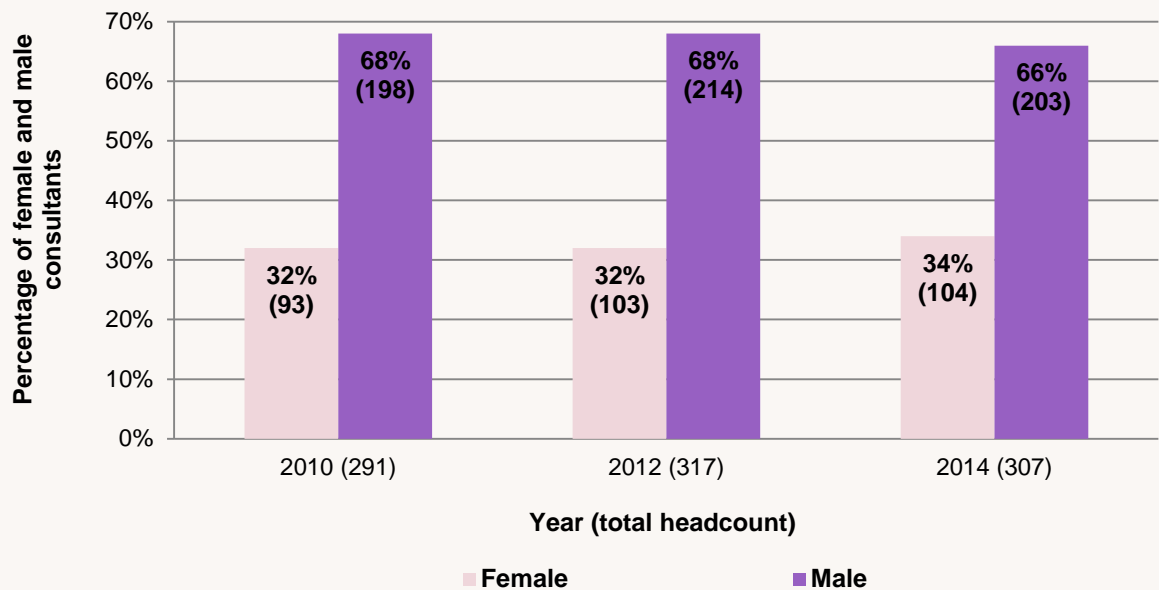
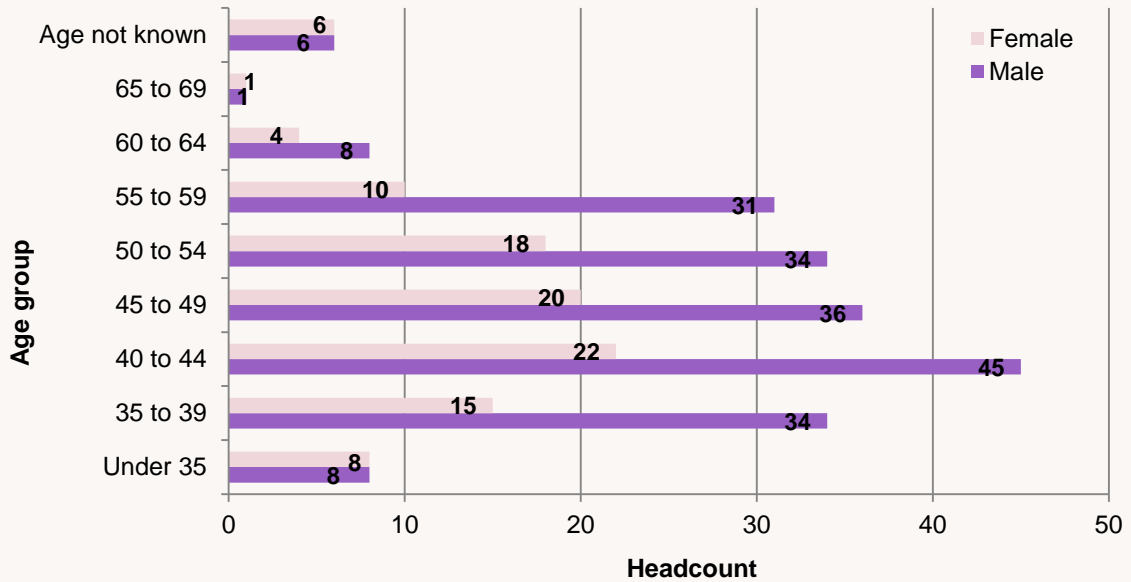


Figure 5. Consultant headcount by gender and age (2014)

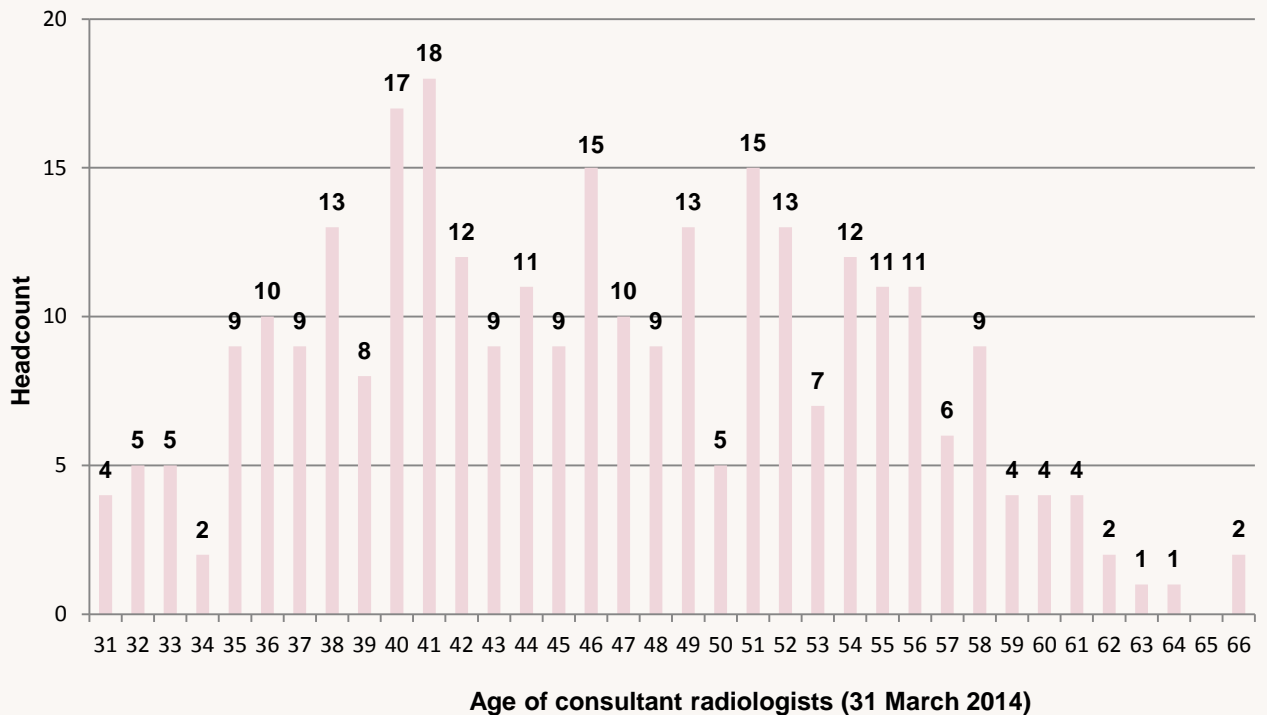


Profile – age

Figure 6 shows the number of consultants at each age from 31 to 66 years, as at 31 March 2014. Those aged in their 40s make up 40% of the consultant workforce, and those aged 50 and over

make up 35%. Table 7 shows how the proportions of each age group have changed in the last few years. It is worth noting the fall in the number of consultants in the under-35 and 35 to 39 age groups between 2012 and 2014, as it may impact on future replenishment of the workforce.

Figure 6. Age distribution of consultant radiologists, 2014^a



^aDoes not include the 12 consultants whose ages are unknown

Table 7. Consultant radiology workforce by age group (2010–2014)

	2010		2012		2014	
	Headcount	% of total	Headcount	% of total	Headcount	% of total
Under 35	11	4%	24	8%	16	5%
35 to 39	58	20%	60	19%	49	16%
40 to 44	49	17%	60	19%	67	22%
45 to 49	55	19%	52	16%	56	18%
50 to 54	49	17%	56	18%	52	17%
55 to 59	40	14%	42	13%	41	13%
60 to 64	14	5%	13	4%	12	4%
65 to 69	2	1%	3	1%	2	1%
Age not known	13	4%	7	2%	12	4%
Total	291	100%	317	100%	307	100%

Profile – country of primary medical qualification

Although this information was not collected through the census it was possible to identify, through searching the General Medical Council (GMC) List of Registered Medical Practitioners database, the country in which each individual covered by the RCR census obtained their primary medical qualification. This was done to indicate (although not with absolute certainty) the country of origin for each consultant radiologist working in Scotland.

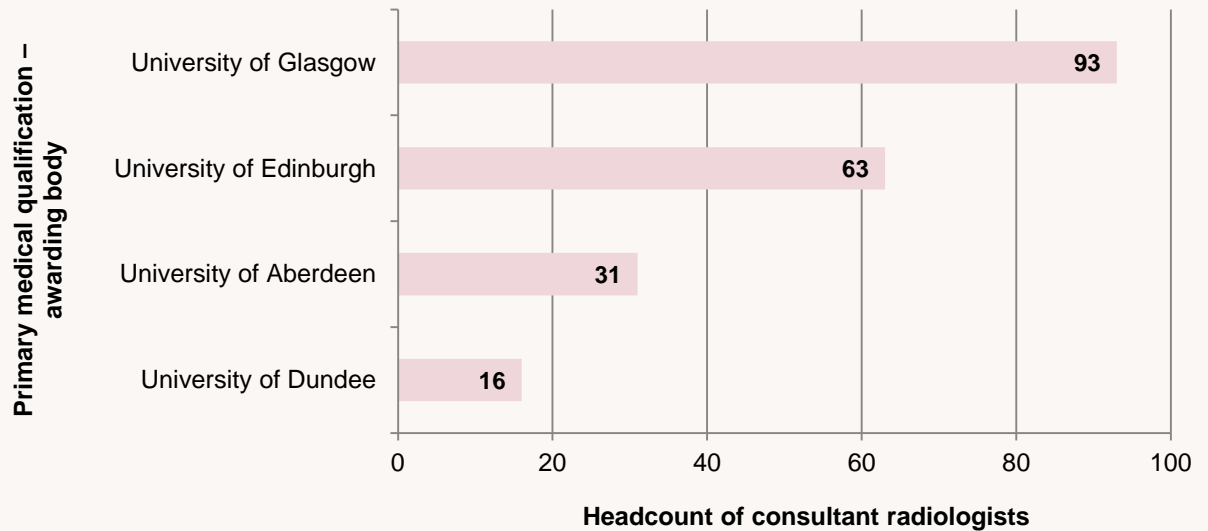
Radiology in Scotland is provided by an international workforce with one-third of consultants originally coming from another country. Some 20 countries can be listed although surprisingly Wales and Northern Ireland are not. Scotland is the country in which most consultants gained their primary medical qualification, after which most consultants qualified in England (40), India (20) and the Republic of Ireland (10).

Two-thirds of consultant radiologists gained their primary medical qualification in Scotland. Figure 7 lists the medical schools in order of the number of current consultants gaining their qualification.

Table 8. Country of primary medical qualification by country/continent

Country/continent	Headcount	% of total
Scotland	203	66%
England	40	13%
Rest of Europe	29	9%
Asia	27	9%
Africa	4	1%
Oceania	2	1%
North America	1	<1%
Unknown	1	<1%

Figure 7. Headcount of consultant radiologists gaining their primary medical qualification in Scotland – by awarding body



Less than full-time working

The number of consultant radiologists working less than full-time (LTFT) has increased from 38 in 2010 to 65 in 2014 (equating to a change from 13% to 21% of the workforce) (Figure 8). In the East region, nearly four-in-ten consultants now work LTFT (Table 9). The extent of LTFT working is likely to remain at this level and may

possibly increase in the next few years. When examining those consultants working LTFT, women are much more likely than men to fall into this category. The data in Figure 9 show that, for some age groups, women are between eight and ten times more likely than men to work LTFT. Figure 9 also shows that as male consultants get older there is an increased likelihood that they will work LTFT

Figure 8. Percentage of consultant radiologists working LTFT in Scotland and the UK (2010–2014)

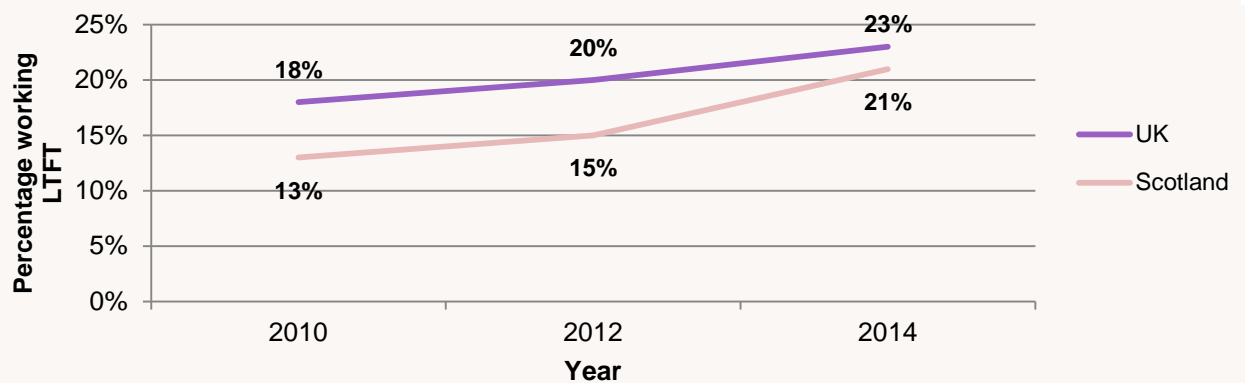
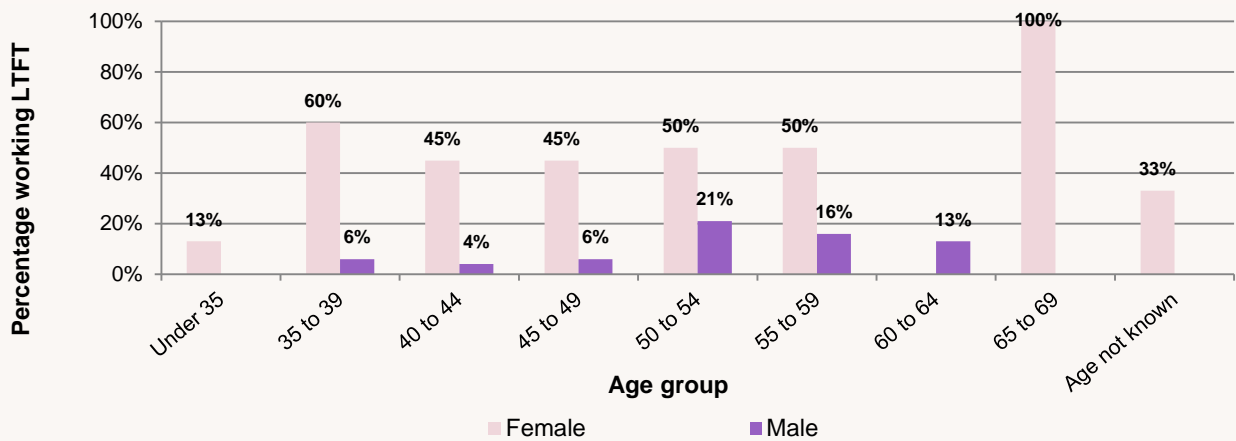


Table 9. Consultant radiologists working LTFT in Scotland (2010–2014)

Region	2010 LTFT – headcount	% working LTFT	2012 LTFT – headcount	% working LTFT	2014 LTFT – headcount	% working LTFT
East	19.0	28%	21.0	26%	29.5	38%
North	7.0	10%	9.0	13%	14.5	24%
West	12.0	8%	19.0	11%	21.0	13%
Scotland – total	38.0	13%	49.0	15%	65.0	21%

Figure 9. Percentage of male and female consultant radiologists in each age group working LTFT in Scotland (2014)

Programmed activities

The census collected data on the number of programmed activities (PAs) per full-time consultant radiologist, subdivided into direct clinical care (DCC) and supporting professional activity (SPA). The data was then considered against the RCR guidance on job planning.⁷ The RCR considers 1.5 SPA as the minimum to enable a consultant to provide evidence for enhanced appraisal and revalidation, and 2.5 SPAs for activities not related

to direct patient care including appraisal, teaching, training, research, service development, clinical governance and contribution to management. The census data collected shows that 63% of full-time consultants in Scotland had 2.5 SPAs or more. The average number of SPAs per consultant was 2.3, however, 37% of consultants (85) fell below this average.

Table 10. Average contracted SPAs by region (full-time NHS consultants only) (2010–2014)

Region	2010	2012	2014
East	2.42	2.18	2.08
North	2.27	2.25	2.24
West	2.44	2.33	2.34
Scotland – total	2.39	2.29	2.27

Table 11. Number of SPAs in jobs plans of full-time NHS consultants

SPAs	Headcount	% of full-time consultants
1.5 or less	15	7%
1.75 to 2.25	70	30%
2.5 or more	147	63%

Type of radiologist – generalists and specialists

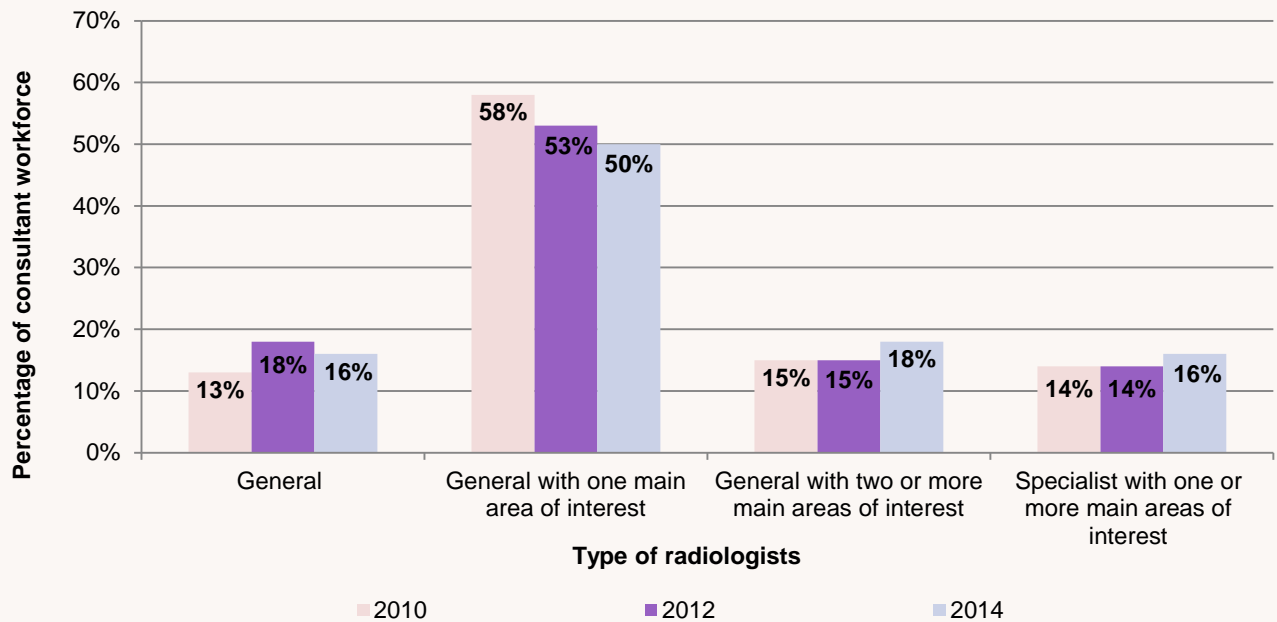
Data collected through the census on each individual consultant radiologist included whether they were a generalist or specialist, with or without one or more areas of specialty interest.

The largest category remains 'general with one area of specialty interest' although this has decreased from 58% in 2010 to 50% in 2014. Most specialists are based in the East and West regions, in the hospitals of Edinburgh and Glasgow.

Table 12. Type of radiologists (general and specialist) by region (2014)

Type of radiologist		East	North	West	Scotland
General	Headcount	18.0	10.0	21.0	49.0
	% of total	23%	17%	13%	16%
General with one area of specialty interest	Headcount	37.0	28.5	88.0	153.5
	% of total	47%	47%	52%	50%
General with two or more main areas of specialty interest	Headcount	4.0	19.0	31.0	54.0
	% of total	5%	31%	18%	18%
Specialist with one main area of interest	Headcount	18.5	3.0	26.0	47.5
	% of total	24%	5%	15%	15%
Specialist with two or more main areas of interest	Headcount	1.0	0.0	2.0	3.0
	% of total	1%	0%	1%	1%

Figure 10. Type of radiologists (general and specialist) as a proportion of the consultant workforce in Scotland (2010–2014)



Consultant subspecialties

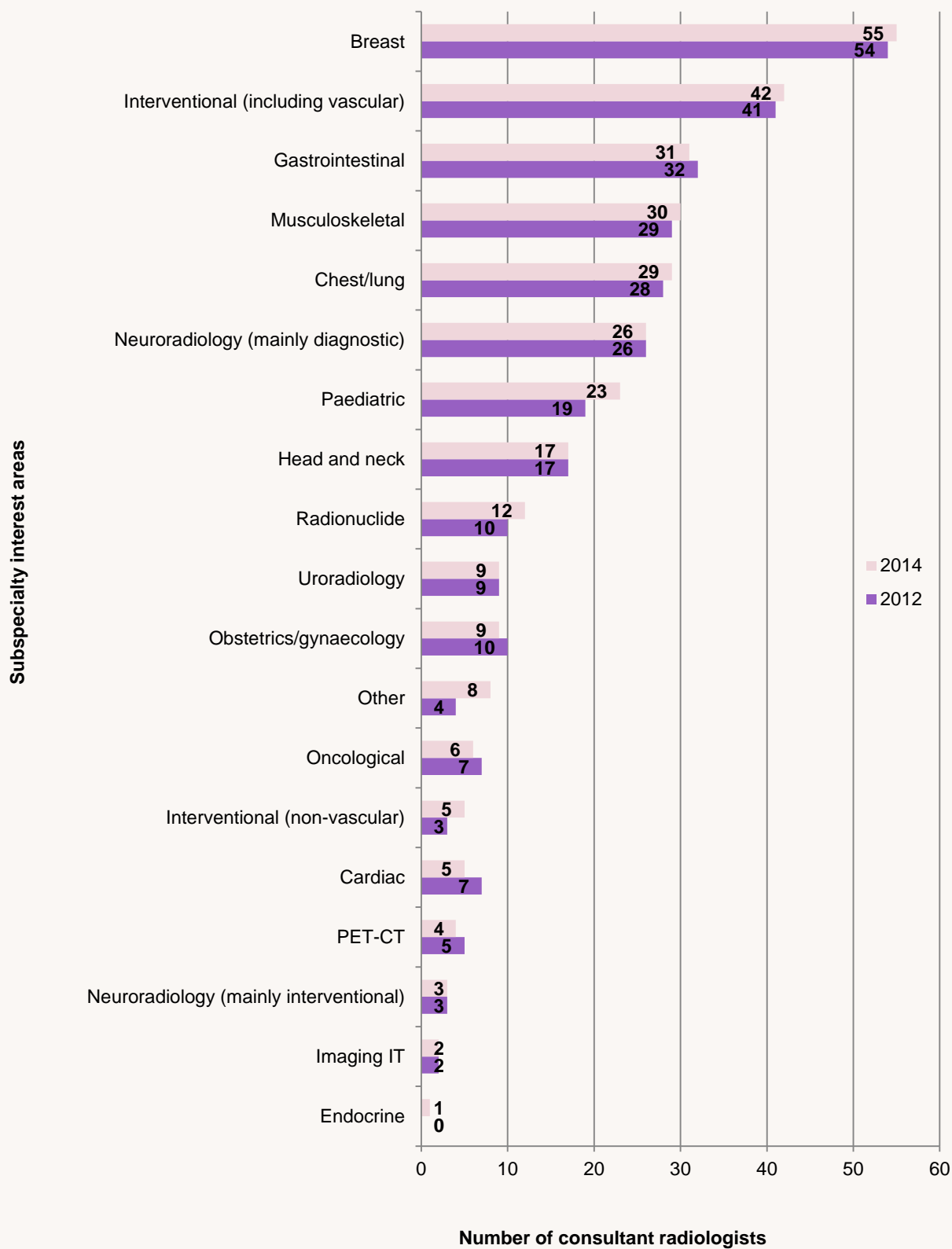
Information on the subspecialty interests of consultant radiologists was collected through the census. The census allows for more than one subspecialty to be entered against each consultant to reflect their job plan. Therefore, the sum of responses against these subspecialty interest areas exceeds the total number of consultants in Scotland. In Table 13, it should not be interpreted

that there are 55 consultants solely specialising in breast radiology, rather there are 55 consultants whose job plan includes breast radiology (and possibly another subspecialty interest area). Figure 11 shows that for most subspecialties the number of consultant radiologists has remained more or less static between 2012 and 2014. There were no consultants with trauma or paediatric neuroradiology recorded as a subspecialty interest area during these years.

Table 13. Consultant subspecialty interests (multi-response) by region (2014)

Subspecialty	East	North	West	Scotland
Breast	11	11	33	55
Cardiac	0	3	2	5
Chest/lung	2	7	20	29
Endocrine	1	0	0	1
Gastrointestinal	7	7	17	31
Head and neck	1	2	14	17
Imaging information technology (IT)	0	0	2	2
Interventional (including vascular)	8	13	21	42
Interventional (non-vascular)	0	0	5	5
Musculoskeletal	7	6	17	30
Neuroradiology (mainly diagnostic)	8	5	13	26
Neuroradiology (mainly interventional)	2	0	1	3
Obstetrics/gynaecology	1	2	6	9
Oncological	1	1	4	6
Paediatric neuroradiology	0	0	0	0
Paediatric	7	4	12	23
Positron emission tomography-computed tomography (PET-CT)	2	0	2	4
Radionuclide	5	1	6	12
Trauma	0	0	0	0
Uroradiology	2	5	2	9
Other	2	3	3	8

Figure 11. Consultant subspecialties/interests (2012–2014)



4. Consultant radiology workforce attrition

Consultants leaving the NHS workforce

The census identified ten consultants who left the NHS workforce in Scotland between 1 April 2013 and 31 March 2014. These individuals made up 3.3% of the consultant workforce. All those who left were working on a full-time basis.

The main reason given for leaving the workforce was retirement (see Table 14). One of the individuals whose reason for leaving was not known was aged 71 and therefore is presumed to have retired. The ages of those eight consultants retiring during 2013–2014 ranged from 59 to 71. The median age for retirement was 61, the mean was 62.

Table 14. Number of consultants leaving the NHS radiology workforce and reasons given (2013–2014)

Reason	Headcount
Retired from NHS	7
Resigned from NHS	1
Reason not known	2
Scotland – total	10

Projected retirement rates – up to 2029

Figure 12 estimates the percentage of the current WTE consultant workforce that will retire by 2019, 2024 and 2029. The estimates are based on a retirement age of 62. In Scotland, it is estimated that 129 WTE consultant radiologists will retire by

2029 – this represents 45% of the workforce. In the short term (up to 2019), 11% of WTE consultants are expected to retire. These retirement rates are similar to those projected for the whole of the UK consultant radiology workforce.¹ Table 15 lists the subspecialty areas of those consultants expected to retire by 2019.

Figure 12. Estimated retirements as a percentage of the current 2014 WTE workforce – by region

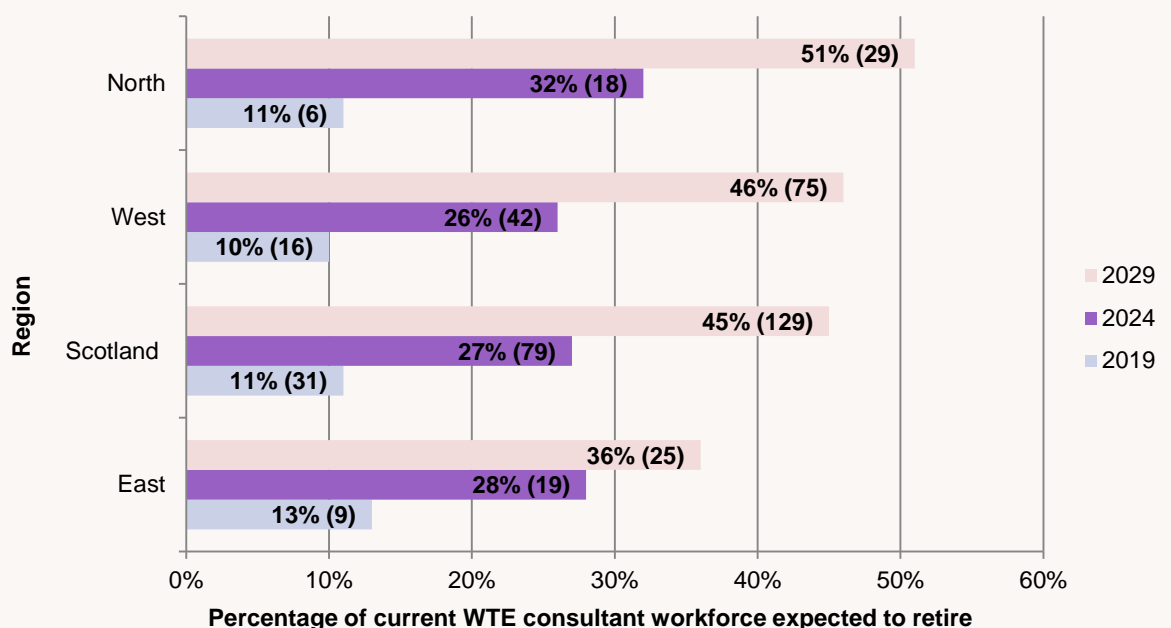


Table 15. Estimated headcount of retirements by subspecialty interest in the next five years (up to 2019)

Subspecialty interest	Number of consultants retiring	% of current subspecialists
Breast radiology	6	11%
Interventional radiology (including vascular)	6	14%
Musculoskeletal radiology	3	10%
Radionuclide radiology	2	17%
Uroradiology	2	22%
Chest/lung radiology	1	3%
Gastrointestinal radiology	1	3%
Head and neck radiology	1	6%
Neuroradiology (mainly diagnostic)	1	4%
Oncological radiology	1	17%
Other	1	13%
Paediatric radiology	1	4%

5. Unfilled consultant radiology posts

Unfilled consultant posts – nationally and by region

In addition to consultant radiologists in post, the census also collected information on unfilled posts as of 31 March 2014. Radiology departments are finding it increasingly difficult to recruit consultants. Figure 13 shows that both the absolute number and percentage (as a proportion of all substantive

posts) of unfilled posts are increasing. The 2010 census recorded 24 unfilled posts (8%), by 2014 this had risen to 45 (13%). It should be noted that these 45 posts were all full-time positions. Particular concerns exist in the North region where 21% of substantive posts are currently vacant.

Figure 13. Number of unfilled consultant posts in Scotland (2010–2014)

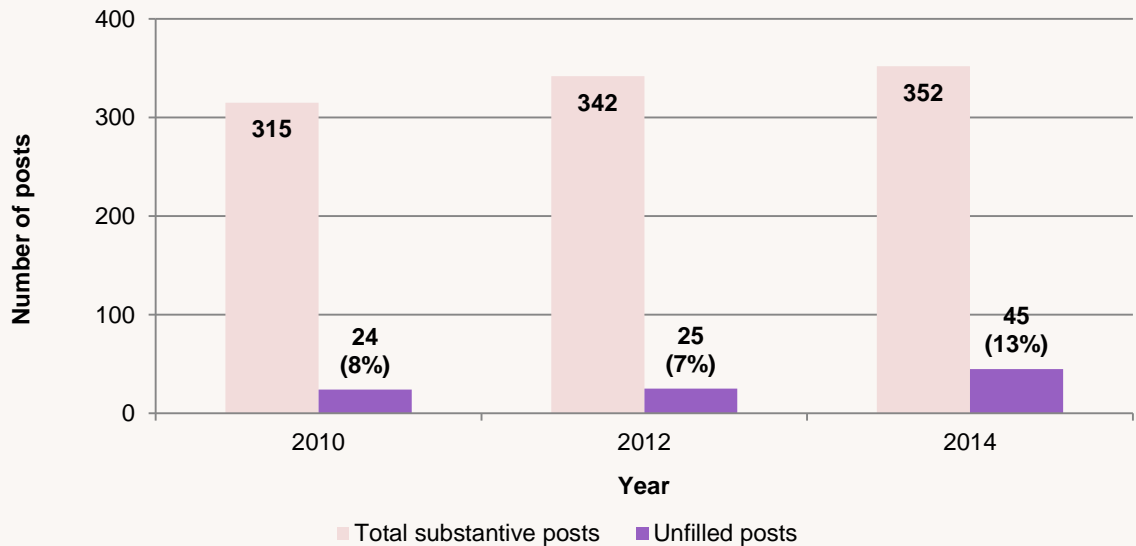
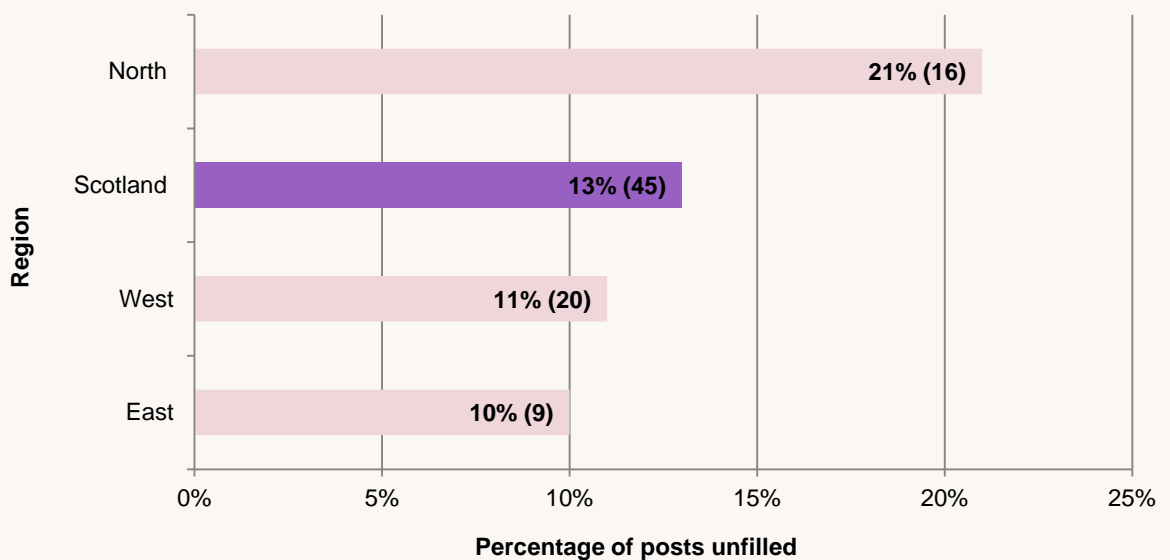


Figure 14. Unfilled posts as a percentage of total substantive posts by region (2014)



Status of unfilled consultant posts

Of the 45 unfilled posts reported to the 2014 census, 35% were advertised but failed to appoint. This is probably due to candidates taking up another post, no suitable candidates being identified for interview or appointment or

no candidates applying in the first place. Another concern is the length of time many of these unfilled posts are left vacant. As of 31 March 2014, 16 of the 45 unfilled posts had been vacant for over eight months. In eight out of ten cases, they have been left entirely vacant with no locums employed to cover on a temporary basis.

Table 16. Status of unfilled consultant radiology posts (2014)

Status	Count	% of unfilled posts
Advertised but failed to appoint	16	35%
Advertised but not yet interviewed	7	16%
Appointed but not yet taken up	8	18%
Funded but not yet advertised	11	24%
Funded but not yet appointed	3	7%

Figure 15. Time period for which current unfilled posts have been vacant

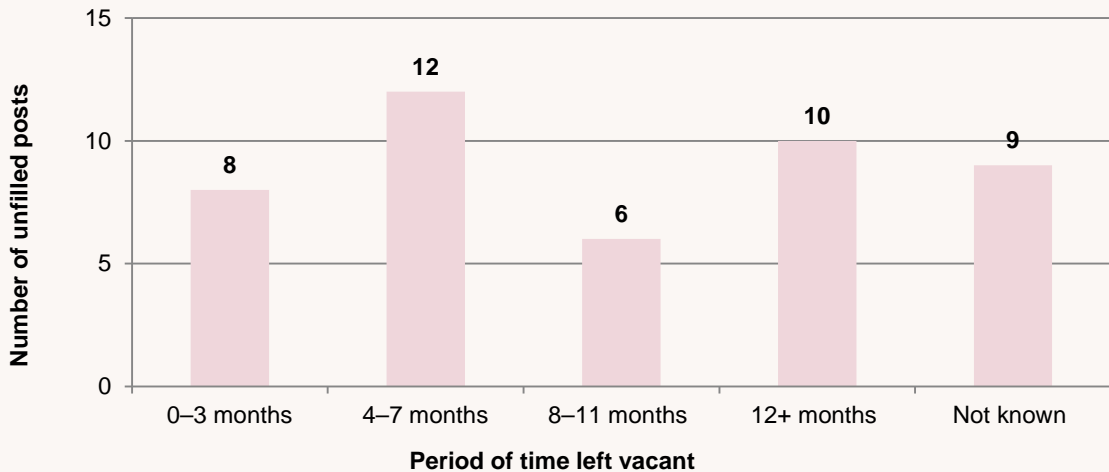
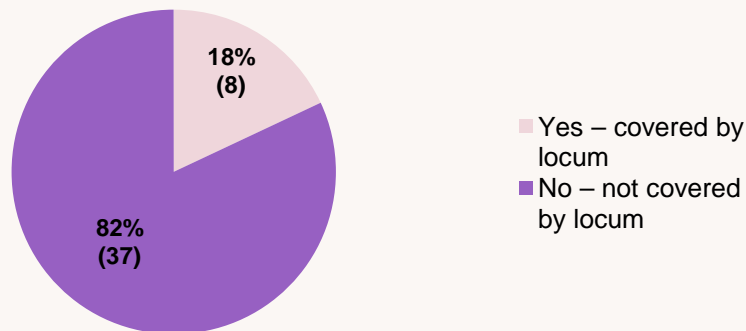


Figure 16. Locum cover for unfilled posts

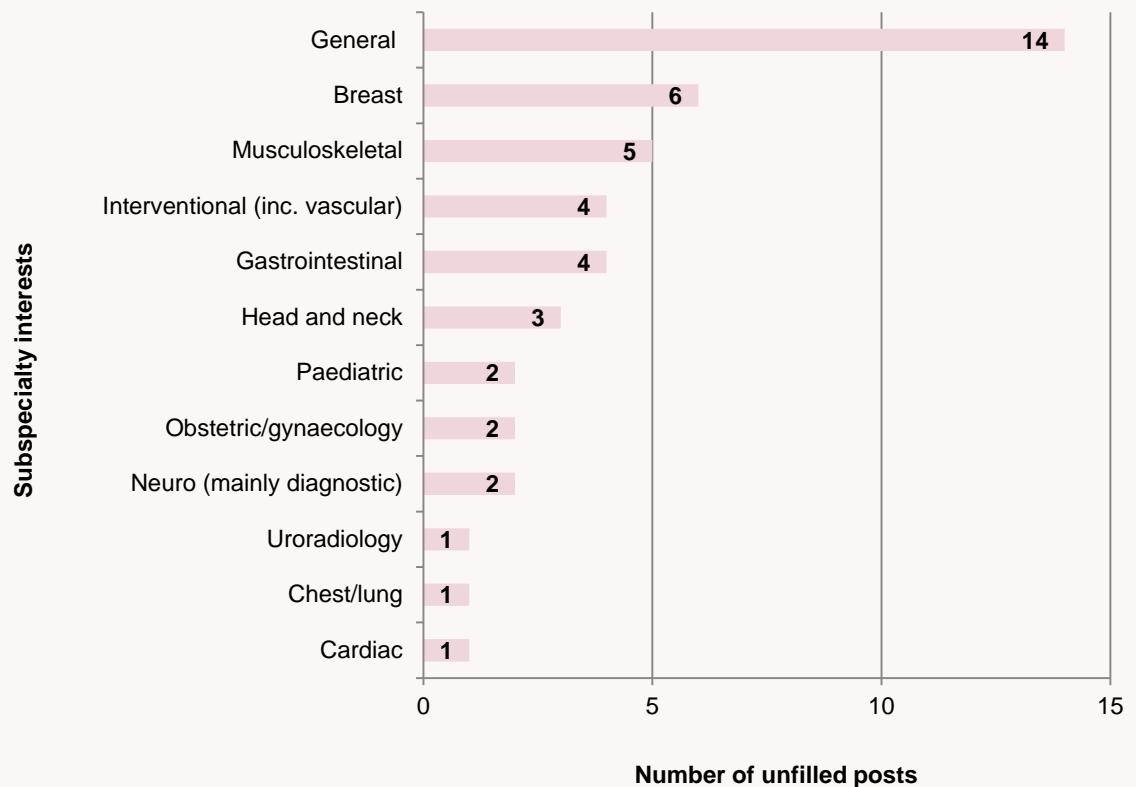


Unfilled subspecialty posts

Of the 45 unfilled posts, 14 had 'general' as the primary subspecialty interest in their job plans. These 14 vacancies represent 22% of all general radiology posts in Scotland. The recruitment of

general radiologists seems to be a problem affecting not only Scotland but many other regions/countries of the UK as documented in the RCR census report.¹

Figure 17. Status of unfilled posts by primary subspecialty interest (2014)



6. Radiology departments – activity and spending

Information was collected on the activities of the 22 radiology departments in Scotland. Not all of the questions in this section of the census were answered and in some instances the responses given were not valid.

Departmental reporting requirements

Only four of the 22 radiology departments (18%) in Scotland were able to meet their full reporting requirements for the period 1 April 2013 to 31 March 2014 (see Figure 18). For the majority (82%)

of departments unable to meet their reporting requirements, this was mainly due to inadequate numbers of radiologists working within their contracted hours to meet workload demands. To address any shortfalls in reporting requirements, more than half of departments turned to their own radiologists to undertake this work outside of contracted hours. This work was done for additional payments or as an unpaid goodwill gesture on the part of the radiologist. Other methods used by departments to address reporting shortfalls are listed in Table 17.

Figure 18. Number of departments meeting and not meeting reporting requirements within contractual hours during 2013–14



Table 17. Methods used to meet shortfall in reporting requirements (2013–2014) (multi-response)

Methods used to meet shortfall (multi-response)	Number of departments	% of departments
Additional paid reporting by own radiologists outside contracted hours	13	59%
Goodwill	12	55%
Reporting by radiographers	10	45%
Employing ad hoc locums	10	45%
Outsourcing of reporting to an independent sector company	9	41%
Delegation of reporting to clinicians through an agreed mechanism	8	36%
Images left unreported or auto-reported	7	32%

Spending on outsourcing

The census collected information on total departmental spending on outsourcing. Included in this consideration was overnight and daytime outsourcing to teleradiology companies as well as additional payments to radiologists already contracted to the department (called 'insourcing'). Of the 16 departments who outsourced, 12 provided information on spending. Based on the mean spend figure for these 12 departments, it is possible to project a total spend covering all 16 departments in Scotland who outsourced. The total spend figure is around £3.5 million for the period 1 April 2013

to 31 March 2014. This figure is equivalent to the combined annual salaries of 42 NHS consultants (based on point 4 of the NHS pay scale for consultants in Scotland).⁴

Note: some of the responses regarding the spend on outsourcing included a certain number of additional programmed activities (PA), extra paid sessions or consultant whole-time equivalents (WTE). In these cases, for the purposes of this report, a monetary value was allocated based on one additional WTE and PA equating to £83,972 and £8,397 respectively (reflecting point 4 of the 2015 NHS pay scale for consultants in Scotland).⁴

Table 18. Regional and national spend on outsourcing – 1 April 2013 to 31 March 2014

	Number of respondents	Total expenditure	Mean expenditure	No. of depts outsourcing	Projected expenditure
East	3	£727,650	£242,550	3	£727,650
North	2	£728,247	£364,124	4	£1,456,494
West	7	£1,167,261	£166,752	9	£1,500,764
Scotland – total	12	£2,623,158	£218,597	16	£3,497,544

Out-of-hours radiology

Just over three-quarters of consultant radiologists in Scotland regularly provided out-of-hours radiology, including at night and weekends (see Table 19). In four of the NHS health boards, all consultant radiologists regularly worked nights and/or weekends.

In providing out-of-hours radiology, all NHS health boards except one lost some sessions (direct clinical care or SPA) in an average week to compensate their consultant radiologists for this arrangement. The lost sessions were necessary in many cases to allow consultants to rest after working nights or weekends.

Table 19. Number and percentage of consultant radiologists providing out-of-hours services

Region	Total headcount of consultant radiologists	Number providing out-of-hours services	% providing out-of-hours services
East	79	58	74%
North	61	47	78%
West	168	127	76%
Scotland – total	307	232	76%

Multidisciplinary team (MDT) meetings

For the 2014 census the following question was asked: *In an average week, approximately how much radiologist time (measured in sessions) is taken up preparing for and attending MDT meetings?*

- Valid responses were received from radiology departments covering 219 of the 307 consultant radiologists in Scotland.

- Respondents to the census recorded a total of 210 sessions spent preparing for and attending MDT meetings.
- The average number of sessions spent on MDT meetings works out to be just under 1.0 for each of these 219 consultants.
- Across departments, the average number of MDT sessions per consultant ranged from 0.50 to 2.50.

Difficulties faced by departments

Clinical directors and workforce leads were invited to provide free-text comments relating to workforce and workload issues in their departments. The following comments were received. Most focussed on difficulties faced by departments:

- *As we have been unable to recruit, further funding has been withheld.*
- *At present there are no interventional neuroradiology trainees within Scotland. There is an impending skills crisis.*
- *Attendance at regular [quality assurance] QA activities as part of the requirement to participate in the Breast Screening Programme. Per radiologist, averages 0.25 sessions per week over the year.*
- *Complexity of examinations not captured. With every role extension post, the work of the radiology consultant becomes more detailed, specialised and complex, and intense. This is appropriate but cannot be captured by numbers of exams. Most radiologists do specialist [ultrasound] US and CT lists are often 15 or more neck, chest abdomen and pelvises with follow-up and comparison with previous, etc.*
- *Subspecialty cover is a hidden issue. Few departments have the luxury of radiologists doing only a single subspecialty, which creates major problems with scheduling and cross-cover for leave especially in smaller departments.*
- *In Scotland with the advent of CT in [district general hospitals] DGHs and breast screening, there was a bulge in recruitment in the late 80's and early 90's, many of these consultants are approaching retiral or taking early retiral due to pension changes, there are insufficient trainee numbers to fill these posts.*
- *Some consultants provide in-hours and out-of-hours service on pan [health board] basis which is reflected in the distribution of PAs out with the [name]/[name] Hospitals.*
- *The main pressures are ever increasing workloads, particularly CT (+10% 2013–14) and*

MR (+14%). We can ramp up additional scanning time easily enough but finding additional reporting capacity is always a problem. And pressure to get MR/CT's reported leads to plain film reporting time getting squeezed, so that unreported plain films become a significant clinical risk. This is particularly a problem at [hospital] where there is a gap of 400–500 unreported exams on average each week. We now employ a retired consultant for four sessions a week to try and cover this gap.

- *Vacant slot likely to be locum filled rather than substantive. Increasing workloads mean we are still short – funding for further posts applied for but given current status of paediatric radiology in [the] UK [the] chances of filling substantive posts [are] small*
- *We have not had a substantive consultant/clinical lead in post since January 2012. We have advertised numerous times and have failed to recruit. We rely on a sporadic series of short-term locums for cover and outsource reporting to [commercial company]. We have only had two weeks of on-site radiologist presence since January 2014.*

Increasing number of radiology examinations

Using data from the Radiology Services Cost Book tables compiled by NHS Scotland, it is possible to show that the number of radiology examinations has increased substantially over the last ten years.⁸ This has been the case particularly for MRI examinations which saw an increase from around 60,000 in 2003–2004 to just over 200,000 in 2013–2014 (an average annual growth rate of 13.2%) and also CT scans which increased from 160,000 to 465,000 (11.5% annual growth rate).³ As well as these increases, it must also be noted that MRI and CT are complex, large data volume examinations with multiple images and therefore (per patient examination) are more labour intensive and time-consuming for a radiologist to interpret and report.

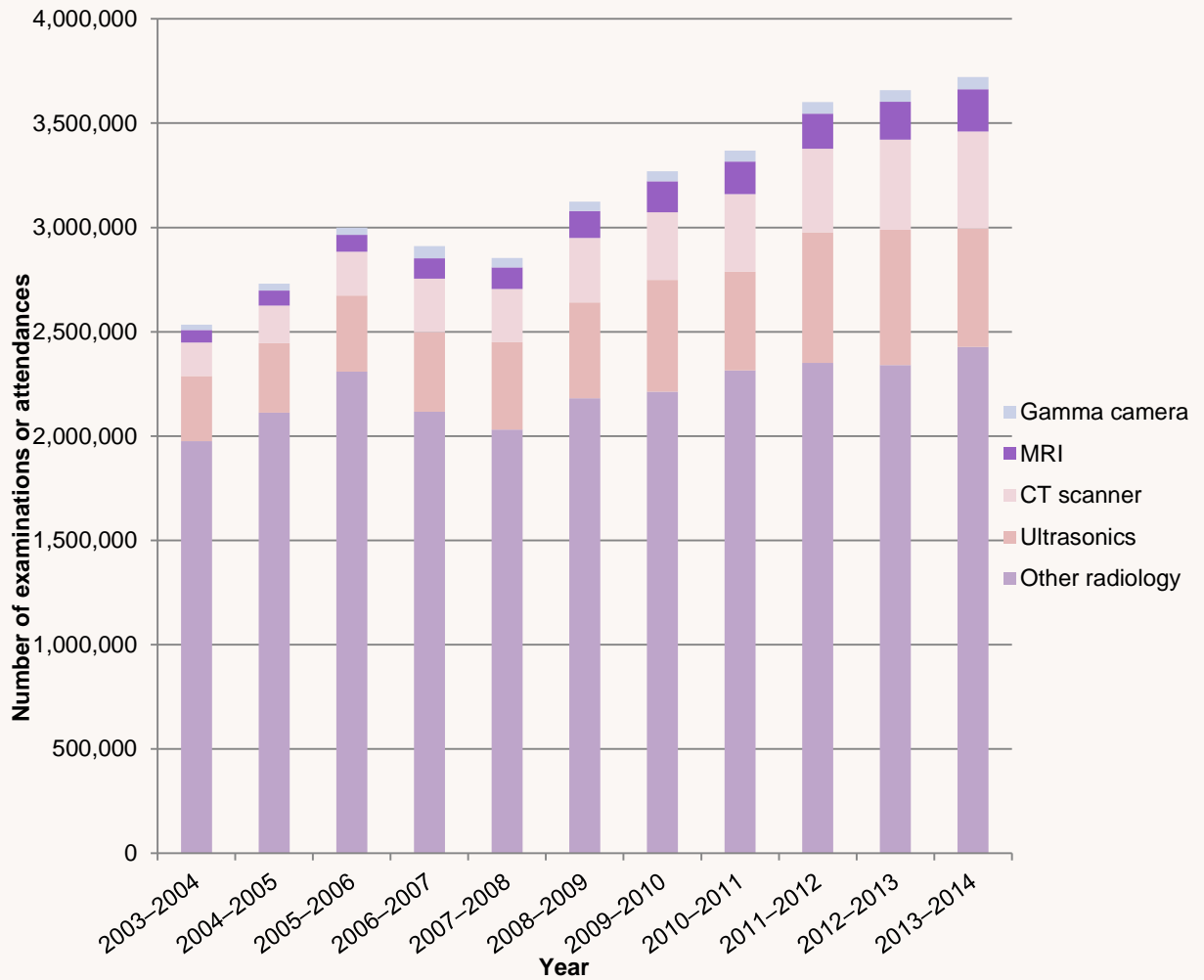
Table 20. Total number of radiology attendances or examinations, by modality, for Scotland (2003–2004 to 2013–2014^a)

Year ^b	MRI	CT scanner	Gamma camera	Ultrasonics	Other radiology
2003–2004	59,802	160,508	25,374	312,704	1,975,447
2004–2005	72,004	180,334	31,973	333,114	2,112,714
2005–2006	81,095	209,620	35,086	364,485	2,309,499
2006–2007	96,724	257,816	59,113	381,067	2,116,487
2007–2008	103,763	254,747	45,436	419,751	2,030,489
2008–2009	129,501	308,417	45,952	460,221	2,180,450
2009–2010	148,793	325,064	47,937	535,722	2,212,377
2010–2011	156,409	372,160	52,076	473,650	2,314,068
2011–2012	169,394	400,068	54,441	625,307	2,351,545
2012–2013	182,621	431,436	55,478	649,142	2,340,035
2013–2014	203,363	465,247	58,153	566,749	2,427,513
Growth 2012–2013 to 2013–2014	11.4%	7.8%	4.8%	-12.7%	3.7%
Average annual growth over ten years	13.2%	11.5%	10.6%	6.8%	2.2%

^aSource data: NHS Scotland radiology cost book tables – up to 2007–2008 numbers given as ‘attendances’ and from 2008–2009 as ‘examinations’.⁸

^bYear – 1 April to 31 March

Figure 19. Total number of radiology attendances or examinations, by modality, for Scotland (2003–2004 to 2013–2014)



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